

Higher Education Research in Japan

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Viewpoints of the Trow- and Knowledge-models from an International Comparative Study of Higher Education

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The Six-Nation Higher Education Research Project started in 1995 as one of the five sub-projects of the Six-Nation Education Research Project that itself began in 1993. Participating countries consisted of China, Singapore, Switzerland, Germany, U.S.A., and Japan. The author of this paper organized the relevant research and management of the higher education project for several years from its outset. A final report of the higher education project was made at the conference on “Global Education for the 21st Century: East Meets West “at the” Culminating Conference of the Six-Nation Education Research Project” that took place at the University of Pennsylvania on October 7-10, 2001. This paper, based on that report,¹ focuses on one of the intermediate aspects of the preceding research outcomes.

The project has studied various matters underlying the massification stage of higher education such as research, teaching, service, administration and management, academic reforms, and presidential leadership. By focusing on one specific problem among these, this paper attempts to examine the usefulness of the theory based on the Trow-model of higher education development, which has prevailed for more than twenty-five years in higher education research in Japan. The aim is to compare the theory with the realities of developments in each of the six countries’ higher education. Is it possible to observe limits to the Trow-model if we examine it on the basis of empirical data and understandings through an international comparative study of the six countries, each showing different stages of development? Is an alternative knowledge-model preferable if we analyze those systems of higher education that are confronting a digital rather than an analogue approach to their current situations? Focusing on a comparison of the usefulness of the Trow-model and the Knowledge-model provides a meaningful basis for a tentative approach to these hypotheses as the theme of this paper.

Anticipating one of the conclusions, while the Trow-model may be positively evaluated as a model of structural-historical theory as well as of macro developmental theory, it may not necessarily be sufficient to serve for international comparative research based on empirical orientation.

Accordingly, this paper considers the following matters: (1) a methodological framework for the international comparative research; (2) an analysis of the research outcomes; (3) their interpretation; and (4) the derived conclusions.

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A Methodological Framework for the International Comparative Research: the Trow-model and the Knowledge-model

Before discussing the research outcomes, it is useful to review a number of preliminary issues: (1) the characteristics of the Trow-model; (2) the background that has enabled it to become a prevailing paradigm; (3) the characteristics of the knowledge-model; and (4) the background to its less prominent status.

The Trow-model, in effect a structural-historical theory, or a theory of the influence of population change on development of higher education, was introduced by Martin Trow in 1973. It was immediately and directly imported into the Japanese academic world. At the outset, Trow stated its basic precept in the following words.

“Countries that develop a system of elite higher education in modern times seem able to expand it without changing its [the system’s] character in fundamental ways until it is providing places for about 15% of the age grade. At about that point the system begins to change its character; if the transition is made successfully the system is then able to develop institutions that can grow without being transformed until they reach about 50% of the age grade. Beyond that, and so far only in the U.S.A., large sections of the population send nearly all their children to some kind of higher education, and the system must again create new forms of higher education as it begins to move rapidly toward universal access.”²

This precept offers a clear statement that university and college enrollments of the same age cohort tend to promote, in every higher education system, similar effects on the developmental stages of elite, mass, and universal higher education. According to the theory, access to higher education is realized gradually, step by step. Social classes can enjoy educational opportunity: from privilege at the elite stage, to right at the massification stage and finally to obligation at the universal stage.

Consider the background to this theory that has now become a prevailing paradigm. Immediately after the theory was originally presented, it received much attention from Japanese scholars, who introduced it into their academic world.³ The basic concept, which expresses lineal development of higher education, was thought to be as adaptable to the Japanese higher education system as to its counterpart in the U.S.A. Subsequently it has consistently achieved fairly high acceptance among scholars with few reservations until the present time. The reason why it was readily adopted in Japan is probably attributable to the fact that Japanese higher education at that time was facing expansion to the mass stage from the elite stage: in this context it appeared that development according to the model was the natural sequence. In other words, it was appropriate to regard transition from the elite to the mass stage as merely a matter of time. Ikuo Amano stated recently:

“Many problems Japanese universities and colleges were experiencing were those American counterparts had already experienced and those then occurring in America were thought to be problems for the future in Japan. It was a sort of compromise of Trow’s

‘historical-structural theory’ and a component of the process of viewing Japan in relation to America, as by mirrors reflecting each other. To analyze in this way the state of Japanese higher education and its future perspective in future has become part of the mainstream of higher education research in Japan.”⁴

Though the theory conformed to a great popular trend, it is undeniable that consideration of questions of content has been neglected. Certainly, the Trow-model, with its historical and macro viewpoint has characteristics of a macro theory that possesses a framework like a *furoshiki* (a Japanese bag created by folding a sheet of cloth that can flexibly envelop small and large things) that can be adapted, sooner or later, to accommodate systems throughout the world. In other words, as far as we can observe, all systems that tend to undergo change individually over time, follow a route of, more or less, quantitative development. Kazuyuki Kitamura pointed out that: “The Trow-model is widely recognized as a prediction of the direction of higher education development in the advanced industrial countries.”⁵ We should though note that the design of the original theory has received some modifications and transformations, since initially it did not have such a macro perspective.

The span of the first stage, which Trow himself indicated to be a more or less ten-year difference in countries other than U.S.A., applied to European and some similarly developed countries (The theory dealt with the situation in the U.S.A., Britain, western European countries, Canada, Australia, and Japan, and so excluded Asian countries other than Japan.). Later in the 1970s, Trow identified limitations to the extensibility of the original theory: “But still other sections, especially my analysis of the movement of European systems toward an American-style system of mass higher education, were, I believe wrong in the light of what has happened since 1973, and perhaps were visibly wrong even then.”⁶ In this respect, the trends seen in every country thereafter revealed progress beyond the framework of the initial theory.

While movement overall, from an elite stage to a massification stage is in accord with the theory, movement in individual countries varies. Even in the U.S.A. and Japan, development from the massification stage to a universal stage has not been made swiftly according to the theory but rather has lingered for a long time at the massification stage. It has become apparent that adaptation of the theory to the variety of countries passing through different stages of development is difficult. In the early 1990s when the Six-Nation research project was started, enquiry had reached a phase that needed to examine this situation. In spite of this, the countries were not themselves clear in detail about the content of the study because no comprehensive comparative study of countries passing different developmental stages had been performed by a single project. Moreover, a comprehensive study might be expected to reveal trends that may be concealed when countries are studied separately. The project explicitly sought to locate common broad trends in its experimental design for an international comparison of the Trow-model.

Methodologically, we attempted to compare the “Knowledge-model” with the Trow-model and juxtapose this qualitative model, which stresses the position and function of knowledge, against the quantitative model, which stresses a structure-history perspective. In making this comparison with the quantitative model, we introduced a qualitative method as the research method by drawing on the support of the sociology of knowledge but also paid attention to the disposition and function of knowledge (*i.e.* both scientific knowledge and its disciplines). The functions of knowledge consist mainly of five components and their relevant roles: learning, as understanding of knowledge; research, as discovery and invention of knowledge; teaching, as dissemination of knowledge; service, as application of knowledge; and administration and management, as control of knowledge. Among these, the main role of the university is focused on academic work and consists of the main components, learning, teaching, research and service.

In Japan, many conditions are thought to have sustained the fact that the Trow-model became an important paradigm from the 1970s to 1990s, strongly and uniquely influencing higher education research and policy.

First, must be the circumstances that did not conceal the emerging social structural changes. In an age when the rise of productivity due to industrial development and continuous economic growth, gradual development from an industrial to a knowledge society was taking place to the extent of entry to the post-modern age. In addition, appearance of an information society was becoming evident as a consequence of the electronic revolution. In spite of this, no simultaneous worldwide change was evident at that time. Accordingly, it is understandable that a developmental theory would be accepted without question in an industrial society that had reached an early stage of development towards a knowledge-based society, as well as, through development of analogue mode, in an agricultural society where there exists a clear distinction between yesterday, today, and tomorrow.

Second, we can recognize that a structure-history theory is persuasive in identifying a direction of change for higher education drives from a panoramic viewpoint to the extent that it can indicate a positive direction at a “time of uncertainty.” At least, it supports such an image. If we consider the history of higher education from the medieval period to the present, changes occurred with fairly long intervals of 2-3 centuries. The elite stage itself lasted for many centuries. It is manifest that compared to this time scale, the massification stage has been brief, lasting only half a century since its start. In this context, the time interval from the massification stage to the subsequent universal stage is difficult to estimate in advance as it is inevitably contains uncertainties in its starting point. While it is not to be denied that ultimately it may be realized in a macro perspective, this is only a theoretical prediction with scant evidence of fulfillment.

For such reasons, the knowledge-model failed to become a dominant theory and despite its introduction into Japan has remained in the shade with a consequent negative effect on development of higher education research development. However, elsewhere the knowledge-model gained wide acceptance. It was Ben-David who first articulated a sociology of science, which had developed so

much after the 1960s, with higher education research.⁷ Subsequently it was in Burton Clark's *Higher Education System* (1983) that the knowledge-model was first extensively discussed.⁸ At that time, Clark himself might not have fully perceived the knowledge-model's usefulness as clearly as today: this is indicated by the emphasis he later placed on the work of Tony Becher.⁹ However, it is clear that Clark was well aware of the necessity and importance of constructing higher education systems on the basis of the knowledge-model, a development he later made explicit.¹⁰

The fact remains that few researchers paid attention to the knowledge theory despite these developments in the application of sociology of science, the early notification of its importance by the author of this paper,¹¹ and even the recent trend of reevaluating Clark's *Higher Education System* from a perspective of organization theory.¹² This has clearly delayed development in this area of research in higher education.¹³ Nevertheless, now we are able to bring the theory into full view and reconsider its importance for the international comparative study that is the focus here. The main characteristics of the two models are identified in Table 1.

Table 1. Characteristics of the Trow- and Knowledge-models

Characteristics	Trow-model	Knowledge-model
Initiator	M. Trow	B. Clark, T. Becher, M. Kogan, etc.
Discipline	History of higher education	Sociology of science
Unit of analysis	Eighteen-year old population	Knowledge material
Scope of object	Mainly on education and teaching	Research, teaching, service, administration and management
Approach	Historical, structural, developmental, vertical, and analogue	Sociological, functional, simultaneous, horizontal, digital
Culture type	Specific, U.S.A.	Universal, all countries worldwide

Analysis of Research Results

Research results related to the whole project are omitted as they have already been published in a series of reports. The main findings from the detailed reports may be summarized in the following three points. (1) If we apply the Trow-model to the six countries, Germany and Singapore are passing through stages of massification; the U.S.A. and Japan have reached "the stage of post-massification"; China remains at an elite stage; and Switzerland is passing from an elite stage to massification.¹⁴ (2) Academic reforms of research, teaching, service, and administration and management occurring in every system are responding to the functions of discovery, dissemination, application, and control of knowledge. These reforms were established as the first research object for the project after discussion in an international seminar held in 1997 in Hiroshima. Later the focus of research became an international comparative study on administration and management based on a questionnaire prepared by the Japanese team; the responses were discussed in a seminar held in 2001 also in Japan.¹⁵ (3) Problems related to academic reforms, presidential leadership, and the relationship between university and economic development were discussed at the "Presidents'

Summit” in 1999 and subsequently published.¹⁶

The main theme of this article draws on the results obtained in the first of the listed points, that is, it seeks to examine the applicability of the Trow-model through international comparison, and through observation of the validity and problems of this model in the light of the research results. In this way we are able to perceive the similarities among systems passing through different stages of development. For example, the fact that China, now in an elite stage, possesses many characteristics similar to those in Japan is fairly difficult to explain by a front-end type developmental model. A series of country reports, presented in the international seminars with explanations of situations and trends in the individual countries, were also discussed by participants. Discussion of the mutual relationships between countries is possible on the premise that all countries share scope and common items. On this point, Ulrich Teichler analyzed the country reports, applying his own standard of analysis, under the following headings: definition and trends; constitution of student groups; content of education and reforms; changes in the relation between higher education and society; changes of university administration and management.¹⁷ Use of these criteria allows the possibility of embracing in a common framework material concerning each country. As a result all the countries were able to discuss problems of higher education within a common framework and make mutual comparisons.

The problem we face is that although the Trow-model is a developmental theory with different stages of development, there are similarities and differences among the systems that arise at every stage of development and not necessarily do they arise from developmental causes. This can be illustrated by several examples.

First, it is evident that clear differences at every stage cannot be attributed to the effects of privatization. Expenditure for higher education has put pressure on budgets in national and public sectors at the massification stage where, to a considerable extent, quantitative expansion has taken place and, as a result, private provision has naturally expanded. Particularly in Japan, less control of student enrollment in the private sector has been exercised in the massification stage, while control in the national and public sectors has been maintained. In fact, in Japan, private provision expanded even more than in the U.S.A. The private sector enrolls three-quarters of the students in Japan, while it enrolls only one-fifth of the students in the U.S.A. In contrast, in the other four countries the private sector contributes much less and indeed the public sector absorbed much of the growth in student enrollment, with little evidence of privatization until recently. Contrary to the situation in Japan, where pressure for privatization increased by virtue of its early experience of massification, other countries — including Germany and Switzerland in Europe and Singapore and China in Asia — show a far less manifest trend towards privatization and have public sectors providing a high proportion of the increased enrollment.

As Toru Umakoshi pointed out, William Cummings “J (Japan) model” has affected Asian countries and privatization has been promoted with typologies of a peripheral private sector in China, Vietnam,

Malaysia, a supplementary private sector in Indonesia and Thailand, and a prevailing private sector in Japan, South Korea and the Philippines.¹⁸

However, if we ask whether privatization is promoted only in the massification stage, this is clearly not so. From the international comparative study it is apparent that privatization was already evident at the elite stage. For example, in the U.S.A., many private colleges were established before the Morrill Act; and in China, now at the elite stage, it was reported that non-governmental universities and colleges were established accompanying a shift from the government sector monopoly. These facts do not conform to the occurrence of similar development in all systems according to the Trow-model.

The fact that systems at differing stages of development show similar trends must also be emphasized. In this context it is interesting to note that China, at the elite stage, and Japan, at the post-massification stage, have many similarities. The similarities include: decline of student achievement; necessity of institutionalization of Faculty Development (FD); class evaluation by students; innovation in the curriculum with regard to general and professional education; introduction of contract systems in recruitment of academic staff. As described by Wei Xin, removal of out-of-date knowledge and introduction of up-to-date knowledge are inevitable in China if the country is to adapt its educational material to recent developments in science, technology and culture.¹⁹

Decline of student achievement is also unavoidable as massification implies massification of universities and colleges. However, development of student diversification is recognizable even at the elite stage, as elite and mass students coexist. In Japan, the numbers of students in colleges and universities are 2.7 million, with participation reportedly almost 50% of the age cohort. In China on the other hand, students number as many as 7 million (2001), although participation is no higher than 11 %. This fact alone may suggest that a mass stage is also contained within an elite stage. In other words, while elite and massification components coexist at the elite stage, not only a massified element but also an elite element coexist at the massified stage as well. Accordingly, a simple explanation of a linear front-end from elite to massification does not conform to reality.²⁰

Second, it is difficult to explain by a developmental theory the concentration of administration and management into the positions of president and steering committees. It is a characteristic of this concentration of management responsibility in universities that it follows a policy of deregulation similar to that for privatization applied to national and public institutions. By introducing corporatization, the process of concentration of administration and management in the office of the university president is now in process in the national universities in Japan. This trend is not immediately explicable by a developmental theory. In patterns of administration and management, several types — European, British, American, Japanese — are distinguishable. Among these, the European type, and particularly the German type, has strong faculty autonomy with its accompanying professorial hegemony. In effect it has kept a form originating with an academic guild, or collegial institution, and reflecting a tradition predating the modern university with an administrative and

managerial structure that possesses a bottom-up form established in the era of the elite stage. At the massification stage, all systems seem to tend towards a bureaucratic, or vertical structure, with power residing in the president, an increase in middle-level administrators such as vice-presidents and assistants for the president, and decreasing powers for professors.

The prototype both of the guild model and of the corporation in an industrial society model is recognizable even in the elite stage. The massification stage represents a shift towards the latter. “All countries analyzed seem to experience some internal change. Models borrowed from management changes in private enterprises gained some popularity. The author of the U.S.A. study wrote ‘higher education has begun to borrow new business models from industry by downsizing, outsourcing, and reengineering.’ In the countries where government played a strong supervisory role in the past, strong efforts were made to strengthen the power of the key managers in higher education, *i.e.* the rectors or presidents and possibly to introduce boards.”²¹

As described, privatization and rationalization with regards to management and administration are developments arising from academia’s response to social change, but they are also trends reflecting social structural reconstruction that after the 1980s emphasized a tendency to low economic growth, application of market principles, and quality assurance of higher education. In the case of China, as Yutaka Otsuka reported, “In accordance with establishment of a market economy, the governmental administration function in the economy and enterprises has brought a great deal of change to the extent that it has changed from direct administration to indirect administration, from micro administration to macro administration, and from permission and allocation of money and materials to plan, accordance, control, service.”²² This kind of trend to social change arises not only in the elite stage but also in the massification stage. The Trow-model, which seeks explanation on the basis of student population cannot accommodate this directly. Nor can the numbers of institutions in the system indicate changes of this sort. In the U.S.A., responses vary among institutions. Takekazu Ehara pointed out that: “as shown in the case of the U.S.A. the designated administration related to strategic planning and strategic administration is individualistic and unique to each institution and so conditions affecting reform depend on institutions.”²³

Considering these facts, they are far more amenable to explanation on the basis of knowledge rather than by the Trow-model. It is necessary to view the problem from the perspective of whom controls knowledge, as the control of knowledge is the concern of the administration and management. In universities at an elite stage in the medieval and modern eras, guilds generally had hegemony as shown by the fact that chair holders and faculty meetings had hegemony with respect to administration and management. In the universities that were established in modern nations, confrontation developed between government and university due to enlargement of power in central governments. The situation in Germany has been analyzed by Akiro Beppu. As he explicitly noted, deregulation has progressed to a great extent across the nation and yet the power residing in positions such as the steering committee, the president, and the deans have become much stronger.²⁴

Coincidentally this is moving in accord with the structural changes appearing in the knowledge society that transfer knowledge from within academia to the whole of society outside academia. At a time when the scope of the knowledge function is no longer restricted within the territory of academia and interaction between academia and society is increasingly demanded, it is clear that conflict between autonomy, as exercised by faculty, and accountability will tend to strengthen and as a result the control of knowledge will be forced to move from chair, the base operating level, to the president, the top ruling level, because it strengthens rationalization of the upper structure of university.

This becomes an imperative because survival of a university organization is more important than survival of a professorial organization. The trend of demanding that knowledge be available to society rather than open only to academia is likely to occur spontaneously either in an elite or a massification stage in a knowledge-based society and it is a trend that will be accelerated by globalization, marketization, and IT orientation. A knowledge economy has an intimate relationship with establishment of a knowledge policy, which can efficiently and effectively manage to discover, convey, apply, and control knowledge, and leads to a necessity to move from the traditional guild, or collegiate type, to a new bureaucratic and vertical type. In these circumstances, administration and management theory necessarily requires, on the basis of knowledge, an adequate analysis of academia as a complex organization rather than one limited to academia as a simple monocultural organization.²⁵

Third, if we take the example of the strengthened graduate school as an illustrative case, this is inadequately covered by the developmental model. Extension of the graduate school and graduate education is more likely to occur in a knowledge-based society. At the elite stage, even German universities, which were the origins of the institutionalization of research, were not successful in realization of graduate schools. However, in a structure in which specialized education focused on the undergraduate course after completion of general education at high school, it is not unreasonable that research conformed to the undergraduate structure of academic disciplines. It follows that implicit in the structure of the undergraduate level was a substantial element of a graduate school. This implicit graduate school element attained a fruitful outcome when it was institutionally planted in the U.S.A. In this regard, a strengthening of the graduate school and its teaching had already started in the elite stage of higher education development. Certainly, as far as education is concerned, as the Trow-model suggested, massification at the undergraduate level would bring about massification at the graduate level and this pattern is recognizable in five of the six countries. Yet in the U.S.A. where the graduate school was invented, it does not apply. Rather, in the U.S.A., as there was no place available to insert a German-type “knowledge-creation” oriented university, so it became necessary to invent the graduate school as a new structure to be installed at a stage beyond that for undergraduates.²⁶

Accordingly, it was pressure of research rather than of education and teaching that led to invention of the graduate school in the U.S.A. On this basis it becomes reasonable to account for it by the

knowledge-model rather than the education and teaching model. Discovery and invention of knowledge are essential in a knowledge-based society and places responsible for generating them are indispensable regardless of the elite stage and the massification stage of higher education.

In the context of this discussion, two explanations can be considered in regard to growth of graduate schools. One explanation comes from the expansion of massified education toward an upper tier; and the other from the knowledge function. Both models can explain why in China, currently passing through the elite stage, graduate education is not sufficiently developed. Graduate schools and education are now expanding rapidly due to the necessity of their functions: the absolute number of students already surpasses the number in Japan.²⁷ Moreover while sending many students to other countries can be seen either as a necessity or as a brain drain phenomenon, some of them have been called back in the so-called “sea turtle strategy” (named because sea turtles usually return to the place of their birth) after their graduation in graduate schools of foreign countries, especially in the U.S.A. These facts appear to be more readily reconciled by the knowledge-model than the Trow-model.

Fourth, we can consider the case of lifelong learning. It seems difficult to account for its expansion on the developmental theory. While the discussion has shown that the Trow-model can adequately describe educational development, its extension to experiential development is more doubtful. If we attempt to extend the model to a universal stage, it predicts that at least half of the population has access to higher education. Nevertheless, we can recognize an active trend towards lifelong learning already shown in China. Adult education, to promote the quality of workers in China is conducted in various ways: by correspondence education, in worker’s colleges and farmer’s colleges, by radio and TV. Wei Shin pointed out in 1995 that the enrollment ratio in 1995 had already reached 1.49 times that of 1985 and by number the students comprise 46.9% of total enrolments; he also pointed out that Chinese higher education is expected to develop lifelong education.²⁸

Interpretation

As we reflect on the Trow-model thirty years after it was originally released, it becomes evident that although it can still explain some parts of higher education development, its applicability is considerably restricted. Some of the issues apparent at the final stage of the six nation comparative study can usefully be analyzed.

First, as we review it from the international comparative perspective of the situations in six nations at different developmental stages of higher education, some aspects of the theory are unclear. This may arise because the theory that was based only on experiences valid in the U.S.A. and not based on actual circumstances relevant to other countries in Europe and especially in Asia. In the project, we really made an analysis of the Trow-model on higher education development by applying it to areas where the theory was found to offer explanations, sometimes useful or sometimes of questionable validity.

According to the model, progress from an elite to a universal stage by way of a massification stage is thought to be a simple linear development, with no reverse process from the universal back to the elite stage. Reality presents a fairly different situation from that envisaged in the original theory in that the progress takes a highly complex path although it may not actually go into reverse. It follows a sort of zigzag course from the elite to the massification stage; and subsequently in the massification to the universal stage some additional corrections and modifications to the theory are needed.

Many conflicts occur between the aspects of quality and quantity. From a perspective of quantity, certainly, over a lengthy period of time, systems progress from an elite to a massified stage but this shift is not seen to occur either simply or in accord with the theory in countries other than the U.S.A. In European countries especially, as Trow himself pointed out, although they obey the theory eventually it is only after remaining for a long time at the elite stage. Further progress from the massified stage in the U.S.A. and Japan, which had reached this stage earlier than any other countries in the Six-Nation group, were confronted with difficult situations. According to Ehara's analysis, which extended Trow's theory by counting number of students in the 18-year old cohort, it is evident that the U.S.A. has not shifted smoothly to the universal stage as the theory suggested. The situation in Japan is similar.²⁹ Here a linear shift to the universal stage has not been realized at all: and instead a phenomenon of drifting can be recognized. At the same time, the "learning society", which is comparable to Trow's universal stage, itself deviates to some extent from the original expectation of its location at the universal stage.³⁰

In addition, as far as the universal stage is concerned, universal access and universal participation were added to the original concept of universal attendance.³¹ It is fair to say that these modifications greatly change and transform the original model, as the concept of attendance was included in the original theory on the basis of the traditional student population; its extension to include the concepts of access – embracing adult students – and of participation – including all learners in society – were later additions.

Second, if we accept the theory's validity in relation to its macro and super-macro characteristics, it seems inescapable that additional concepts have to be introduced to accommodate the non-linear elements. Given the original developmental theory, an "intermediate stage" has to be inserted in order to explain the observed process. Identifying a "post-massification stage", which we used from the outset in the Six Nation project, may function as one such useful concept.³² While Trow's front-end and linear model is certainly suitable to the U.S.A., this is entirely reasonable as the model was itself constructed to reflect the actual situation in the U.S.A. Even so, although it represented the progression from the elite to the massification stage, it did not fit over a short time span the change from massification to a universal stage. Specifically, it was not adequate for the situation beyond the massification stage without introduction of a post-massification stage – a situation applying to Japan as well as the U.S.A.

Third, the idea, belatedly included in the theory, that American social structure and culture has universalism could be partially adaptable to other systems but it seems to lack validity from the viewpoint of empirical study and positively oriented research. As has been noted, there are many observed circumstances that are not in accord with the theory. We are now aware that all systems will not achieve the same stage of development in the short run, although they may do so over time. The reason may well lie in the fact that the background of history, culture, and society driving each system is unique and inherently precludes identical developments. Roger Geiger introduced the concept of culture intrinsic to Belgium in order to explain the fact that its enrollment rate was not as improved as expected in a European country.³³ This explanation is useful mainly for development from elite to massification stages, but we can also observe in our current research a similar problem development from massification to the universal stage.

The situation in U.S.A. has been carefully analyzed by Zemsky and Gumpert, who showed that it stayed at the post-massification stage for a long time before shifting linearly to the universal stage.³⁴ The situation in Japan is even clearer. A retrospective overview of the period from the 1970s to the present shows a major deviation from the supposition that shift from a massified to a universal stage would be realized shortly after massification had been attained. In fact, over the first 20 years enrollment grew slowly, mainly among male students. In the 1990s, enrollment developed more rapidly but because of the collapse of the bubble economy, the enrollment ratio did not increase, so that by 2002 enrollment had decreased slightly. According to a simulation made by *Daigaku Shingikai* (The University Council) in 1998,³⁵ the enrollment ratio could rise to 58%: but based on current data, realization of this figure will be difficult to achieve. The actual trend is neither as simple nor as linear as the theory predicts. Rather it reveals the complexities due to history, culture, climate, or social structure unique to each country. Furthermore, it is also clear that even within a culture, the trend is differentiated through ascriptions such as gender, social class, region, institutional classification, and institutional sector.

Fourth, it must be pointed out that in some areas theory does coincide with reality to a considerable extent. Although the theory is severely limited in its application to the research function, for certain aspects of education and teaching in every system it provides useful explanation. For example, the Trow-model can be applied to exchange of students transferring between two institutions, a process that usually takes place on the basis of practices such as an elective system, a modular system, and credit accumulation. In accord with the theoretical expectation that a system shift, from a lower to a higher level of development, would open educational opportunity and also widen the educational curriculum, content, and method, it is found to require much more diversification and integration. This seems to be evident in several cases where we can observe structures and functions that were developed in the American higher education system became models for developing systems elsewhere to introduce, follow, and emulate.

In the Japanese higher education system, which at an early date followed American development, the implantation of American higher education structures revealed fairly high usefulness. In particular, this applies to practices that Trow identified as indicators of a massification stage: modular courses, credit accumulation, and student transfer between institutions.³⁶ Indeed, at the time of establishing a new system in Japan, in order to construct a system of mass higher education it was intended to improve undergraduate and graduate education by following closely the American model. The American higher education system, which had moved into a massified stage earlier than anywhere else, had developed many of the essential large and small scale tools: general education in a Faculty of General Education (the Japanese version of it is *Kyoyo-bu*, Faculty of Liberal Arts), a credit and credit accumulation system, a system for student transfer between institutions, the grade point average for degrees, a CAP system limiting the credit to be gained in a semester, syllabus development and reform, a system of office hours, centralized admission system, and teaching evaluation by students. Many of these tools were gradually imported into the Japanese higher education system in the postwar years. Difficulties of institutionalizing and assimilating them were manifest and attributable to the different culture, climate, social structures of Japan and the U.S.A.

Such differences exist naturally but some arise from the influence of the developed stage on the developing stage. In the case of China, now shifting from an elite to a massification stage, it is seeking to facilitate the changes by establishing the same kind of system that Japan had previously imported from the U.S.A. In this sense, we can recognize similar trends throughout the world and, also in this sense, as elite, massification, and universal developmental stages exist, it is true to say that the Trow-model demonstrates its value.

Fifth, in contrast, for the systems and function of research, the value of the Trow-model is extremely low. Given the circumstances of a growing knowledge-based society, whose growth has been accelerating since the 1980s, a theory of simultaneous development of structure and function of higher education systems is more persuasive than a theory of differential development of systems. In the realm of research, a function, such as priority in competition for discovery and invention, is so severe that regardless of its placement in an elite or massified stage, it is normal to emphasize the first discovery, creativity, statement and originality. As a result, functions such as simultaneous and multiple discoveries become symbols of digital progress. Phenomena such as creating international research networks, which lead to brain drain as well as brain gain around centers of excellence (COE) and centers of learning (COL), exemplify the digital trend. In modern university society, which developed in the same environment as industrial society, the research function became institutionalized. German universities as the centers of institutionalized research were successful in attracting many scholars and students from around the world and in exporting the concept of research elsewhere in the world. Networking of centers of learning existed around Germany at the elite stage of higher education development. The spread of the concept of research proceeded simultaneously throughout the world regardless the elite and massification stage of development: in the U.S.A., it occurred at

the massification stage.

As has been discussed already, elite and mass activities are evident in every stage and as a result both elite and mass effects can be found in every stage. An elite indicator is naturally demonstrated in competition for attaining priority in establishing centers of excellence. For example, an elite component of the system or a COE in China, is in a competition for priority with its counterpart or a COE in Germany in order to attain a worldwide COE position. Construction of research networks by communication through exchange of human resources between elite and COE components around the world has existed for a long time. This is identified in the sociology of science as a mechanism for the university version of the knowledge-based society. Its driving force is due to the research mechanism related to the function of knowledge discovery. Competition for priority to discover the latest frontier type knowledge is conducted strenuously among scientists and researchers, brain drains and gains occur, cases of stealing the newest knowledge and information are exposed, and a sequence of “scrap and build” of the social stratification of systems and institutions related to the COE is ceaselessly undertaken worldwide.³⁷

In that the U.S.A., as the current COE, receives many scholars and students from China passing through an elite stage, from Germany, Switzerland, and Singapore at massification stages, and from Japan at a post-massification stage, indicates that the frontiers of science are developing simultaneously throughout the world. The academic community, as a part of the science and research community has always belonged to a knowledge-based society in which such dynamics worked. In accord with accelerating orientation to globalization, information technology, and market mechanism, a similar situation begins to extend to society beyond academia to the extent that the border between academia and society worldwide is vanishing. In other words, it becomes clear that knowledge-based society increasingly brings academia and the wider society together.

The contrast between Trow’s analogue type model, which hardly explains the phenomenon of the knowledge-based society, and the knowledge-model, which accommodates it fundamentally on the basis of the role and function of knowledge, is clear. China passing through an elite stage, Germany, Switzerland, Singapore at massification stages, must confront the same kinds of problems and resolve them just like the U.S.A. and Japan at post-massification stages. As technological innovation is particularly affected by information technology (IT), its influence in the world simultaneously generates an environment that is accelerated by globalization and marketization. As Trow himself has written recently: “The development of the new Information Technologies over the past few years creates new possibilities and problems for European systems of higher education even before they have fully solved those associated with the creation of mass systems – a process that is still under way.”³⁸

Sixth, from comparative study, it has become clear that as much attention needs to be paid to the problems quality as to the changes in quantity. Teichler, for example, pointed out that there are a lot of differences between the U.S.A. and China in terms of enrollment. He stated: “At the one extreme,

enrolment in higher education in the U.S.A. already surpassed the maximum for 'mass higher education' more than two decades ago; while at the opposite extreme, China is likely to reach the minimum point of mass higher education only around the year 2010. The enrollment quota at one extreme is more than ten times as high as at the other extreme."³⁹ These quantitative differences reveal differences between the elite and massification stages according to the Trow-model that explain differences in the developmental stages. On this basis would it be possible to say that there are no similar kinds of problems in connection with qualitative differences between the two systems paralleling their quantitative differences? It is of interest to discover whether there are indeed such problems.

The fact that both systems could be confronted with similar problems and conflicts is not logical if we use only the quantitative model; in contrast it is empirically understandable whenever we compare them both on the same basis and at the same time. In empirical observation, we pay much attention to qualitative matters, which are apt to be ignored in quantitative observation. According to the model emphasizing the quantitative approach, China is now in the midst of an elite stage, but, when viewed qualitatively it is evident that it is confronting the same kinds of conflicts facing the U.S.A. and Japan currently at post-massification stages.

Philip Altbach argues that the U.S.A.'s higher education system today is confronting critical changes that include: IT, pursuit of profit by higher education, higher education as a "matured industry", demands for high productivity, and the problem of basic research.⁴⁰ As the U.S.A. system was first among all systems to achieve massification, embodiment of this argument in the American higher education system makes it uniquely proper to the U.S.A. The problem of higher education as "matured industry" must have an especially deep relationship with the massification and universal stages. However, such matters as IT, pursuit of profit, demand for high productivity, matters of crisis over basic research, are realities affecting not only the American system but all systems worldwide. In other words, higher education reforms in all systems, under the social pressures that contain some traits of market mechanisms and accountability as well as globalization and the knowledge-based society, are compelled to face and resolve the same kinds of problems in the fields of research, education, social service, management and administration.

Seventh, the matter of coordination of quantity and quality is connected to the matter of quality assurance of the system. An awareness of the need to confront the academic standards of the system is evident regardless of what stage of development has been reached. At a time of overwhelming growth of orientation to globalization, knowledge-based society, and market mechanisms, quality assurance is proceeding simultaneously throughout all systems worldwide. On the basis of experience it is recognizable that the conflicts between quantity and quality are increasing in all higher education systems even though they are passing through differing developmental stages. It is undeniable that conflicts have increased in parallel with expansion of the scale and quantity of higher education. According to the Trow-model, discrepancies and conflicts should be less at the elite stage when no

more than 15% of a cohort, highly homogeneous in age, social class, scholastic achievement, and habits, enrolls in universities and colleges; moreover, there should be fewer discrepancies and conflicts in various factors internal to the system. In this regard, conflicts should reach a maximum volume in the U.S.A. and Japan. In fact the most evident conflicts are observable in China, where students' scholastic achievement as well as faculty development (FD) have already become problematic. This is no more than an illustration of an important fact: that conflicts occur within a developmental stage, not just during transition between stages as Trow suggested.

Observation that the problem of coordination between quantity and quality applies to the massification stage necessarily implies a technical distinction between the massification and the post-massification stages. Quality assurance of academic work has become a focus of policy especially at the post-massification stage. The Carnegie International Survey on the Academic Profession in its report pointed out that, in general, student achievement had declined at the massification stage.⁴¹ However, conflicts between quality and quantity are able to be resolved only by establishment of quality assurance into academic work. At a time when implementation of quality assurance in higher education is developing globally, it is forced to extend to all areas of academic work including research, teaching, social service and to all developmental stages; trends seen in the processes of organizations such as WTA, GATS, JABEE, are likely to affect higher education at all stages of development.⁴²

Concluding Remarks

The comparative study conducted in the Six-Nation research project was not primarily intended to examine the Trow-model and no survey was intentionally conducted strictly from that viewpoint. The study was based on case study analyses with regard to the project's main theme on the basis of country reports presented in the various seminars, interviews conducted with people both inside and outside the Japanese system, and reports published relation to the project. In this respect, it is true to say that the research had limitations. At the same time, however, it is also true that this tentative approach, as an attempt to shed light on a structure-history model and a sociological model by this kind of international comparative study, was thought to be useful to the extent that no such approach had previously been undertaken.

As has been described, it is observed that the Trow-model has strong points as a macro and historical framework, but it has dogmatic limitations through its failure to pay sufficient empirical attention to history, culture, social structure of countries other than the U.S.A. This results, to a large extent, in an emphasis on U.S.A. centered ethnocentrism: for example, its range of applicability is constrained by its lack of observation of Asian countries. In contrast, the knowledge-model provides a theory adequate to accommodate an international comparison of higher education systems, though it has limitations in regard to insufficient study of teaching, service, administration and management in higher education, despite a long tradition in the sociology of science from which it has developed in

the theoretical study of “research on research.” In this context, it is possible to point out that the model has undeveloped aspects and latent potentiality. We can reach a tentative conclusion by pointing out that the work to identify clearly the strong and weak points of the two models contributes to a needed elaboration of methodology in higher education research. By employing cross-observations from vertical and horizontal perspectives, the comparative study has yielded a fruitful and meaningful outcome.

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A Study on the Fixed-Term System for Faculty Members: focusing on the Analysis of a National Questionnaire Survey

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Introduction

A survey of the effects of the introduction of the fixed-term tenure system (FTS) for members of faculty has been published previously (Yamanoi & Kuzuki, 2004). The survey covered 333 units (chairs, courses or departments) operating FTS and the 2,853 faculty members employed under FTS in 2001. The analysis included the grades of appointments, the lengths of contract, and possibilities for renewal introduced by the fixed-term system. The results of that analysis can be summarized as follows. (1) FTS has been applied to only about 2% of all faculty members in Japan; where it is operated, FTS has been introduced mainly by the national universities to research institutions and to departments regardless of university sector. (2) By university sector, the academic fields where FTS is most common are medicine and pure (natural) science in the national universities; and humanities and social science in the private universities. (3) The type of FTS that has been introduced most widely is the “research organization type”; and there are few units that have introduced the “research project type.” (4) The combinations of grades to which each unit has introduced FTS vary widely from unit to unit. However, the grade to which FTS has mainly been applied is that of “research associate only.” (5) The length of contract ranges widely from 1 to 12 years. Most commonly established contracts were for 5-years, followed by 7- and 10-years in national universities; 3- or 5-years in public universities; and 1-, 3- and 5-years in private universities; no faculty members appointed under FTS have a contract longer than 5-years in public or private universities. FTS faculty members with a right of renewal of contract (68%) could work until their retirement if their renewal was approved. Faculty members with no right of renewal include research associates at national universities and professors at private universities; they amount to 15.0% of the total number involved in FTS. It could be said that FTS functions as one of the periodic evaluations of faculty members.

These quantitative analyses of the types, lengths of contract and rights of renewal examined FTS from the viewpoints of university sector, academic fields and units, grades of appointment and numbers of faculty members. However, as was noted in the previous paper, the study had four

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analytical frameworks: (1) FTS and personnel policy; (2) organizational reform and personnel affairs; (3) role changes of faculty members; and (4) FTS and academic productivity. This paper reports extension of the research by conducting a new national questionnaire survey in accordance with this four point analytical framework. In particular, as we could only analyze the situation quantitatively in the previous analysis, the new national survey attempted to emphasize a qualitative analysis.

Specifically, this paper seeks to analyse the following points qualitatively from data collected by the national survey of units operating and faculty appointed with FTS: (1) the purposes of and the background to introduction of FTS; (2) the reasons for introducing FTS and the issues addressed; (3) the reason for deciding grades of appointment, lengths of contract, and provisions for renewal; (4) the current situation surrounding FTS, (5) preferential conditions of employment associated with FTS posts; (6) a review of FTS and the issues; and (7) the relationship between FTS and mobility.

General Description of the Survey by Questionnaire

In response to the National Statistical Survey by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in 2001, 333 heads of units (such as chairs, departments, graduate courses and research institutions) had answered that they had introduced FTS. These 333 heads of units were surveyed by questionnaire in “*The National Survey on the Fixed-Term System for Faculty Members: Unit Survey*” through November to December, 2003. Of the 333 heads of unit, 105 of them answered the survey, giving a response rate of 31.7%¹. At the same time “*The National Survey on the Fixed-Term System for Faculty Members: Faculty Survey*” was also conducted for their 2,853 faculty members who were appointed with FTS by 2001: of these 450 responded to the survey, a response rate of 15.8%. Such low response rates to the surveys might suggest that the surveys were difficult to conduct. There may be valid reasons for these low rates of response. (1) It was impossible to collect answers from faculty members who had already ended their appointments by 2001. (2) Some universities declined to conduct the survey of their faculty members. Table 1 shows the outlines of the surveys of both heads of units and faculty members. This paper reports mainly on the results of the unit survey, partly by using the faculty survey for comparison.

Table 1. Outlines of the Surveys for Units and Faculty Members. by university sector

	Unit Survey			Faculty Members Survey		
	Number of samples	Number of respondents	Response rate (%)	Number of samples	Number of respondents	Response rate (%)
National	142	51	35.9	1,600	350	21.9
Public	22	9	40.9	238	25	10.5
Private	169	45	26.6	1,015	73	7.2
Total	333	105	31.7	2,853	450	15.8

Note: The responses from faculty members included 2 answers for which the university sector was uncertain.

Purpose and Background to the Introduction of FTS

Background The most common position from which the decision to introduce FTS was initially

proposed was “chancellor/president/executive” (52.7%), followed by “dean/head of graduate course” (29.0%) (see Table 2). By university sector, this was maintained in the private sector where “chancellor/president/executive” was most commonly cited (76.9%), but in the national universities, presidents accounted for only 34.8%, lower than “dean/head of graduate course” (47.8%).

**Table 2. At which level (level of positions) was the initial proposition for introducing FTS made?
by university sector (unit data)**

	National	Public	Private	Total
Chancellor/President/Executive	16 (34.8)	3 (37.5)	30 (76.9)	49 (52.7)
Dean/Head of Graduate Course	22 (47.8)	2 (25.0)	3 (7.7)	27 (29.0)
Head of Department/Chairperson	2 (4.3)	1 (12.5)	2 (5.1)	5 (5.4)
Other	6 (13.0)	2 (25.0)	4 (10.3)	12 (12.9)
Total	46 (100.0)	8 (100.0)	39 (100.0)	93 (100.0)

Note : Values in parenthesis are proportions (as %) of the total number. A similar format is used in other tables.

As is shown in Table 3, the most usual process for discussion of the type and the content of FTS and for preparation of draft procedures for introducing FTS was a “special departmental committee” (33.0%), followed by a “special university committee” (29.8%). In private universities, the most common procedure was “other”, nearly half of which were identified as “executive office.”

**Table 3. At what level were the types and content of FTS discussed and where was a draft of procedures for introducing FTS prepared?
by university sector (unit data)**

	National	Public	Private	Total
Special University Committee	17 (35.4)	2 (22.2)	9 (24.3)	28 (29.8)
Special Departmental Committee	22 (45.8)	4 (44.4)	5 (13.5)	31 (33.0)
Departmental / Class Conference	4 (8.3)	0 (0.0)	3 (8.1)	7 (7.4)
Individual	0 (0.0)	0 (0.0)	2 (5.4)	2 (2.1)
Other	5 (10.4)	3 (33.3)	18 (48.6)	26 (27.7)
Total	48 (100.0)	9 (100.0)	37 (100.0)	94 (100.0)

The most common body that had a substantive right to determine the type of FTS and its provisions was “faculty meetings” (57.6%), followed by “councils/administrative boards” (30.3%) (see Table 4). While faculty meetings (79.6%) dominated decisions in national universities, in private universities, “councils/administrative boards” (46.3%), were more common than “faculty meetings” (31.7%).

Table 4. Who had the substantive right to decide on types and the provision for FTS?

	National	Public	Private	Total
Councils/Administrative Boards	8 (16.3)	3 (33.3)	19 (46.3)	30 (30.3)
Faculty Meetings	39 (79.6)	5 (55.6)	13 (31.7)	57 (57.6)
Departmental/Class Conferences	0 (0.0)	0 (0.0)	2 (4.9)	2 (2.0)
Other	2 (4.1)	1 (11.1)	7 (17.1)	10 (10.1)
Total	49 (100.0)	9 (100.0)	41 (100.0)	99 (100.0)

Purposes for Introducing FTS The most common purpose for introducing FTS was “revitalization of research activities” (75.2%), followed in sequence by “revitalization of educational activities” (54.3%) and “promoting changes in the attitudes of faculty members” (33.3%) (see Table 5). These results indicate that introduction of FTS was an internal initiative aimed at invigorating the activities of the university rather than merely a response to the extrinsic motivation of satisfying demands issued by MEXT.

By university sector, “revitalization of research activities” was most common (86.3%) in national universities, followed by “revitalization of educational activities” (51.0%); in private universities, “revitalization of educational activities” (64.4 %) slightly exceeded “revitalization of research activities” (62.2%).

Table 5. The Purposes of Introducing FTS. (multiple answers) (unit data)

	National	Public	Private	Total
Revitalization of research activities	44 (86.3)	7(77.8)	28 (62.2)	79 (75.2)
Revitalization of educational activities	26 (51.0)	2(22.2)	29 (64.4)	57 (54.3)
Establishment of research/educational cycle	9 (17.6)	2(22.2)	8 (17.8)	19 (18.1)
Obtaining permission to reorganize/transform the organization	5 (9.8)	0(0.0)	2 (4.4)	7 (6.7)
Institutionalization of customary fixed-term employment as a gentleman’s agreement	5 (9.8)	0(0.0)	3 (6.7)	8 (7.6)
Defeat of the seniority system	3 (5.9)	1(11.1)	5 (11.1)	9 (8.6)
Defeat of lifetime job-security	7 (13.7)	3(33.3)	12 (26.7)	22 (21.0)
Utilization of mobile faculty by the University	13 (25.5)	1(11.1)	3 (6.7)	17 (16.2)
Proposals/suggestions by MEXT	6 (11.8)	0 (0.0)	1 (2.2)	7 (6.7)
Promoting collaboration with the community	11 (21.6)	1 (11.1)	9 (20.0)	21 (20.0)
Purpose of receiving preferential treatment for budget requests	3 (5.9)	0 (0.0)	0 (0.0)	3 (2.9)
Strong request by Chancellor or Head of Unit	6 (11.8)	1 (11.1)	11 (24.4)	18 (17.1)
Establishment of periodical assessment for faculty members	12 (23.5)	2 (22.2)	6 (13.3)	20 (19.0)
Promotion of changes in the attitudes of faculty members	22 (43.1)	2 (22.2)	11 (24.4)	35 (33.3)

Discussions on Introducing the Fixed-Term System It seems that in the national universities there was much more discussion of the *pros* and *cons* of introducing FTS than in either the public or the private universities (see Table 6): it is relevant that 5 of 45 units in private universities (12.2%) answered that they have never discussed it.

Table 6. Did your unit discuss the following issues in introducing FTS? (unit data)

	National	Public	Private	Total
<i>Pros. and Cons.</i> of introducing FTS	3.98	3.33	3.22	3.61
Difficulties in securing excellent human resources	3.77	3.00	3.13	3.48
Careers after contract	3.61	2.71	2.86	3.27
Enhancing a support system for research/education	3.39	2.00	2.86	3.09
Securing transparency in performance evaluation	3.53	2.57	2.21	3.00
Commitment to short-term performance and efficiency	3.36	2.57	1.89	2.80
Inhibition of long-term research plans	3.15	1.71	2.15	2.70
Risks posed by formally introducing FTS	2.85	1.86	2.57	2.67
Conflict with the <i>Labor Law</i> & the <i>Public Service Law</i>	2.56	1.86	2.79	2.58
Securing finances for implementing FTS	2.60	1.57	2.69	2.54
Balance between independent & collaborative studies	2.70	2.14	2.00	2.41
Biases towards items and fields of assessment	2.75	1.71	2.00	2.41
Encouraging staff relations and individualism	2.54	2.43	2.14	2.40
Inhibition of long-term educational plans	2.30	1.57	2.57	2.33
Disregard of educational activities	2.30	1.57	2.52	2.32
Dissatisfaction with sharing administrative & management work at university/unit level	2.38	1.33	2.37	2.30
Developing an appeals system against the outcomes of evaluation	2.57	2.00	1.70	2.23
Enhancing University autonomy & academic freedom	2.32	2.00	2.00	2.19
Preferential conditions of service (<i>e.g.</i> salary, housing, benefit package, <i>etc.</i>)	2.26	1.43	2.15	2.15
Increasing authority of assessors	2.38	1.57	1.85	2.14
Disregard of social contributions	2.26	2.00	1.93	2.12
Use of generous grading and easy assignments to promote popularity with students	1.68	1.57	2.00	1.77

Note: Each entry in the table is an average value.

(* based on a 5-point scale: "not discussed at all"=1 to "fully discussed"=5)

Specifically, "difficulties in securing excellent human resources", "careers after contracts end" and "enhancing the support system for research/education" were discussed more than others. In contrast, "use of generous grading and easy assignments to promote popularity with students" was discussed least.

By university sector, the most extensively discussed topic was "difficulties in securing excellent human resources", and national universities seem to have discussed it more than the public and private universities. The greater extent of discussion in the national universities appears to be a common tendency. The topic that shows the greatest gap between national universities and public universities was "inhibition of long-term research plans"; between national and private universities it is "commitment to short-term performance and efficiency". Meanwhile, items that were discussed much more by national and especially private universities than public universities were: (1) education topics ("disregard of educational activities", "inhibition of long-term educational plans", and "use of generous grading and easy assignments to promote popularity with students"); (2) financial topics ("securing of finances for implementing FTS"); and (3) legal matters ("conflicts with the *Labor Law* and the *Public Service Law*").

Responses to the unit survey presented in Table 6 are complemented by responses to the faculty survey shown in Table 7. It is immediately clear that, as well as units, faculty members are most concerned about their careers after the completion of contracts (Table 7). But concerns about, “commitment to short-term performance and efficiency” and “inhibition of long-term educational plans” were not seen to have been discussed sufficiently by each unit when FTS was introduced.

By university sector, the results of the faculty survey show national and private universities demonstrate similar tendencies. In public universities especially, faculty members tend to have greater concern about the assessment procedures, such as “securing of transparency in performance evaluation” and “developing an appeals system against the outcome of evaluation.”

Table 7. Did you worry about the following item being applied to FTS? (faculty data)

	National	Public	Private	Total
Careers after contract	3.46	3.36	3.63	3.49
Commitment to short-term performance & efficiency	3.30	4.00	3.23	3.33
Inhibition of long-term research plans	3.23	3.72	3.38	3.29
Increasing authority of assessors	3.21	3.72	3.07	3.22
Securing of transparency in performance evaluation	3.11	3.84	3.07	3.15
Developing an appeals system against the outcome of evaluation	3.01	3.76	3.03	3.06
Enhancing support systems for research/education	2.98	3.28	3.03	3.01
Encouraging staff relations and individualism	2.89	3.62	2.79	2.91
Conflicts with the <i>Labor Law</i> & the <i>Public Service Law</i>	2.94	3.04	2.63	2.90
Inhibition of long-term educational plans	2.61	3.08	2.89	2.68
Preferential conditions of service (<i>e.g.</i> salary, housing, benefit package, <i>etc.</i>)	2.64	2.72	2.75	2.66
Dissatisfaction with sharing administrative & management work at university/unit level	2.59	3.25	2.58	2.63
Enhancing university autonomy & academic freedom	2.56	2.80	2.62	2.59
Inability to handle social contributions	2.56	2.88	2.41	2.55
Inability to handle educational activities	2.47	3.20	2.47	2.51
Accommodation of student needs in education	2.40	3.16	2.51	2.47
Adjustment of balance between independent studies and collaborative studies	2.28	2.64	2.37	2.31

Note: Each entry in the table is the average value.

(* based on a 5-point scale: “not discussed at all”=1 to “fully discussed”=5)

Comparison of the responses to the unit survey and the faculty members survey, shows that the latter has a higher rate of response in almost all items except for “balance between independent and collaborative studies” and “enhancing support systems for research/education.” The biggest gap between the two responses is seen in the two entries: “increasing authority of assessors” and “developing an appeals system against the outcome of evaluation.” These results indicate that it is likely that FTS has been introduced in most units, and especially in the public universities, without sufficient discussion of those items about which faculty members are most concerned.

Decisions on Grades and Length of Contract and Provisions for Renewal

Grade of Appointment According to the survey, units that introduced FTS for research

associates only identified common reasons for setting the grade of fixed-term appointmentⁱⁱ were “to avoid a freeze in specific sectors” and “to promote mobility of research associates.” Also relatively common answers were “a need for continuity in research and education” and “the difference in length of contract needed between those who are mainly engaged in research and education and need continuity, and those who assist them.”

There were few answers from units that decided that the FTS system should apply to grades of appointment including faculty members above lecturers, so no particular tendency could be identified.

Length of Contract The most common reasons for setting the length of contract were: to “guarantee continuity in research” (49.5%), “continuity in education” (40.0%) and to have an “adequate period for assessment” (39.0%) (see Table 8).

By university sector, the most common reasons differed: in national universities they were, to “guarantee continuity in research” (64.7%) and to have an “adequate period for assessment” (51.0%); in private universities they were, to obey the “*Labor Standards Law*” (37.8%) and to “guarantee continuity in education” (37.8%).

Table 8. Did your unit reflect the following points when setting the length of contract ?
(multiple answers)

	(unit data)			
	National	Public	Private	Total
Conform to period of project	24 (47.1)	3 (33.3)	8 (17.8)	35 (33.3)
Limitations of the <i>Labor Standards Law</i>	4 (7.8)	0 (0.0)	17 (37.8)	21 (20.0)
Conform to the promotion cycle	13 (25.5)	0 (0.0)	10 (22.2)	23 (21.9)
Encourage career development	12 (23.5)	1 (11.1)	9 (20.0)	22 (21.0)
Institutionalization of existing custom	5 (9.8)	1 (11.1)	3 (6.7)	9 (8.6)
Guarantee of continuity in research	33 (64.7)	4 (44.4)	15 (33.3)	52 (49.5)
Guarantee of continuity in education	23 (45.1)	2 (22.2)	17 (37.8)	42 (40.0)
Adequate period for assessment	26 (51.0)	4 (44.4)	11 (24.4)	41 (39.0)

Provisions for Renewal As is shown in Table 9, the most common reason for which units chose to exercise the right of renewal was: to “guarantee continuity in research” (56.8%), followed by to “guarantee continuity in education” (43.2%). By university sector, these two reasons were also common, with the latter the more common than the former in private universities.

Table 9. The Reasons for Exercising a Right of Renewal. (multiple answers)

	(unit data)			
	National	Public	Private	Total
Focus on periodic assessment of faculty members	15 (37.5)	1 (14.3)	8 (23.5)	24 (29.6)
Academic marketplace lacks maturity	9 (22.5)	0 (0.0)	4 (11.8)	13 (16.0)
Guarantee of continuity in education	18 (45.0)	2 (28.6)	15 (44.1)	35 (43.2)
Guarantee of continuity in research	30 (75.0)	4 (57.1)	12 (35.3)	46 (56.8)
Institutionalization of existing custom	1 (2.5)	0 (0.0)	3 (8.8)	4 (4.9)
Limitation of the <i>Labor Standards Law</i> / <i>Public Service Law</i>	0 (0.0)	0 (0.0)	1 (2.9)	1 (1.2)

Note: Responses from units that exercised the right of renewal.

In contrast, units that did not exercise the right of renewal gave “encouragement of career development” (23.3%) as the most common reason (see Table 10). It is, however, considered that there were other reasons for not exercising the right of renewal besides the possibilities identified in the questionnaire because about one-fourth of the units did not select any of them.

Table 10. The Reasons for not Exercise the Right of Renewal. (multiple answers) (unit data)

	National	Public	Private	Total
Encourage career development	2 (14.3)	0 (0.0)	5 (35.7)	7 (23.3)
Financial reasons	0 (0.0)	0 (0.0)	1 (7.1)	1 (3.3)
Institutionalization of existing custom	2 (14.3)	1 (50.0)	0 (0.0)	3 (10.0)
Limitation of the <i>Labor Law</i> / the <i>Public Service Law</i>	0 (0.0)	0 (0.0)	4 (28.6)	4 (13.3)
Not appropriate to the grades concerned.	2 (14.3)	0 (0.0)	0 (0.0)	2 (6.6)
Encouragement of community interaction	2 (14.3)	1 (50.0)	1 (7.1)	4 (13.3)

Note: Responses from units that did not exercise the right of renewal.

Current Status of the Fixed-Term System

Application of Fixed-Term System The most common status of FTS was that of “a unified standard for applying FTS is shared by all in the unit.” While this was a majority response (74.0%), a significant minority (26%) indicated that “each department has a different standard.” The tendency to apply a uniform FT system was least evident in the national universities where half of them identify differing standards for each department Table 11.

Table 11. How has your unit implemented FTS? (unit data)

	National	Public	Private	Total
A unified standard applies to all units	27 (56.3)	7 (87.5)	37 (92.5)	71 (74.0)
Each department has its own system	21 (43.8)	1 (12.5)	3 (7.5)	25 (26.0)
Total	48 (100.0)	8 (100.0)	40 (100.0)	96 (100.0)

Note: In the table, “unit” can be identified as “department.” In subsequent tables there is similar usage.

The most common practice is to provide FTS for a proportion (18 units, 45.0%) or all posts (12 units, 30.0%) or posts for new employees only (see Table 12). The results suggest that the introduction of FTS is seen as incomplete in most units and that many of them wish to implement their FT system with complete uniformity in the future. This tendency appears strongly in national but especially in private universities.

Table 12. To whom has FTS been introduced?

Responses only from Units that Have Adopted a Unified Standard for FTS. (unit data)

	National	Public	Private	Total
All posts for new employees only	5 (29.4)	0 (0.0)	7 (38.9)	12 (30.0)
Part of posts for new employees only	7 (41.2)	2 (40.0)	9 (50.0)	18 (45.0)
All posts including incumbent faculty	3 (17.6)	0 (0.0)	2 (11.1)	5 (12.5)
Part of posts including incumbent faculty	2 (11.8)	3 (60.0)	0 (0.0)	5 (12.5)
Total	17 (100.0)	5 (100.0)	18 (100.0)	40 (100.0)

Preferential Conditions for FTS Posts According to the survey, 54.3% of all those that have introduced FTS at least partially have provided some sort of preferential conditions for the FTS posts. In contrast, many units have made no such provision (see Table 13), and this is more evident in the private universities than in the other two sectors. Of the measures provided, “reduced burdens of service” (18.6%) and “preferential welfare treatment” (17.1%) appear to be common conditions.

Table 13. Which of the following preferential conditions are applied to faculty with FTS?
(multiple answers)

	(unit data)			
	National	Public	Private	Total
Some sort of preferential condition	22 (57.9)	4 (57.1)	12 (48.0)	38 (54.3)
Preferential assistance over accommodation expenses	1 (2.6)	0 (0.0)	2 (8.0)	3 (4.3)
Reduced academic load (e.g. teaching)	4 (10.5)	2 (28.6)	4 (16.0)	10 (14.3)
Additional research funds	2 (5.3)	0 (0.0)	0 (0.0)	2 (2.9)
Preferential allocation of research time	4 (10.5)	0 (0.0)	5 (20.0)	9 (12.9)
Reduced load of service work within unit	9 (23.7)	1 (14.3)	3 (12.0)	13 (18.6)
Reduced load of service work within university	1 (2.6)	0 (0.0)	0 (0.0)	1 (1.4)
Increased salary	7 (18.4)	0 (0.0)	1 (4.0)	8 (11.4)
Preferential welfare treatment	7 (18.4)	1 (14.3)	4 (16.0)	12 (17.1)

Note: All responding units have introduced FTS partially.

The parallel faculty survey indicated what preferential conditions members of faculty considered to be necessary for the introduction of FTS (see Table 14). Their most common requirements were in connection with research, such as “preferential allocation of research time” (46.9%) and “additional research funds” (44.2%). By university sector, a desire for “reduced service loads within unit” and “reduced teaching loads” were rated higher than “additional research funds” in private universities.

Table 14. What preferential conditions do faculty members feel are necessary with introduction of FTS?
(multiple answers)

	(faculty data)			
	National	Public	Private	Total
Preferential assistance over accommodation expenses	28 (8.0)	2 (8.0)	1 (1.4)	31 (6.9)
Reduced academic load (e.g. teaching)	81 (23.1)	7 (28.0)	22 (30.1)	110 (24.6)
Additional research funds	168 (48.0)	13 (52.0)	17 (23.3)	198 (44.2)
Preferential allocation of research time	157 (44.9)	13 (52.0)	40 (54.8)	210 (46.9)
Reduced load of service work within unit	111 (31.7)	9 (36.0)	28 (38.4)	148 (33.0)
Reduced load of service work within university	84 (24.0)	7 (28.0)	19 (26.0)	110 (24.6)
Increased salary	143 (40.9)	11 (44.0)	19 (26.0)	173 (38.6)
Preferential welfare treatment	35 (10.0)	0 (0.0)	12 (16.4)	47 (10.5)

Applicants for FTS Posts The unit survey asked whether there were any differences or changes in applicants for FTS posts, in comparison with those for permanent employment. The responses showed there was no diminution of quantity or quality, either in numbers of applicants (91.8%), in academic degrees (75.3%), or in performance (52.1%) (see Table 15). Indeed, 15.1% of units, answered that “the number with doctoral degrees increased” and 45.1% of units said that “the quality

of performance was improved.” These results suggest that the quality of applicants has slightly improved: at private universities specifically, 63.0% of units answered “the quality of applicants has improved.” It would, however, be wise to regard this not as a consequence of introducing FTS but rather a reflection of the current situation, notably the difficult state of employment opportunities and increase in number of doctoral graduates.

Table 15. Are there differences and changes in applicants for FTS posts in comparison with applicants for post offering permanent employment? (unit data)

		National	Public	Private	Total
Number of Applicants	Reduced	0 (0.0)	0 (0.0)	1 (3.6)	1 (1.4)
	Same	37 (90.2)	4 (100.0)	26 (92.9)	67 (91.8)
	Increased	4 (9.8)	0 (0.0)	1 (3.6)	5 (6.8)
	Total	41 (100.0)	4 (100.0)	28 (100.0)	73 (100.0)
Academic Degrees	Same	35 (85.4)	2 (50.0)	18 (64.3)	55 (75.3)
	Bachelors Increased	0 (0.0)	1 (25.0)	0 (0.0)	1 (1.4)
	Masters Increased	0 (0.0)	0 (0.0)	6 (21.4)	6 (8.2)
	Doctors Increased	6 (14.6)	1 (25.0)	4 (14.3)	11 (15.1)
	Total	41 (100.0)	4 (100.0)	28 (100.0)	73 (100.0)
Performances	Quality was Improved	14 (35.0)	1 (25.0)	17 (63.0)	32 (45.1)
	Same	25 (62.5)	3 (75.0)	9 (33.3)	37 (52.1)
	Quality was Unimproved	1 (2.5)	0 (0.0)	1 (3.7)	2 (2.8)
	Total	40 (100.0)	4 (100.0)	27 (100.0)	71 (100.0)

Assessment of the Fixed-Term System

Revitalization of Units associated with introduction of FTS More than 60% units indicated that they acknowledged a comprehensive revitalization following introduction of FTS (see Table 16). In a survey of the heads of units and departments by the National Institute of Science and Technology Policy (NISTP) in 2004ⁱⁱⁱ, more than 60% of respondents across all subjects gave a positive answer to the question, “Will the introduction of FTS bring any positive effect on revitalization of your organization and increase efficiency in research and development?” This result suggests that the utility of FTS was generally acknowledged.

Specifically, the proportions of units, which identified revitalization, were: in research activities (77.0%); in educational activities (60.5%); and in social contributions (56.8%). For the revitalisation of management, however, the proportion was low at 30.8%. Overall, few units said that their organizations were not revitalized through introduction of FTS.

By university sector, at national universities, 47.6% of units acknowledged revitalization through FTS on educational activities, but 82.6% on research activities. In contrast in private universities, the proportion seeing consequential changes in educational activities (73.5%) was higher than for research activities (68.6%).

Table 16. Which of the following activities were revitalized by introduction of FTS?

	(unit data)			
	National	Public	Private	Total
Comprehensively	29 (67.4)	5 (83.3)	22 (64.7)	56 (67.5)
Research Activities	38 (82.6)	5 (83.3)	24 (68.6)	67 (77.0)
Educational activities	20 (47.6)	4 (80.0)	25 (73.5)	49 (60.5)
Management	13 (30.2)	2 (33.3)	9 (31.0)	24 (30.8)
Social Contributions	24 (55.8)	4 (66.7)	18 (56.3)	46 (56.8)

Note: Each entry in the table is the number of positive answers.

As the parallel survey for faculty members used different scaling from that of the unit survey, the results could not be directly compared. However, if the responses “greatly contributed” and “slightly contributed” in the faculty survey (see Table 17) are combined, 37.7% of the subject faculty members indicate some revitalization through FTS. In comparison, this is about half the level recorded with the unit survey. The proportions vary with university sector, 37.1% at national universities; 58.3% at public universities; and 33.3% private universities. The unit survey showed greater acknowledgment of the utility of introducing FTS in public universities, than in either national or private universities but in each case, the positive responses in the faculty survey were notably lower than from the units. In the faculty survey the most common answer from the national universities was that the effect of introducing FTS was “the same as before”; and from the private universities, “there are issues that need to be solved.”

Table 17. What are your impressions of the effects of introducing FTS into your unit? (faculty data)

	National	Public	Private	Total
FTS has contributed greatly to revitalization of educational and research activities	34 (10.2)	5 (20.8)	4 (5.8)	43 (10.1)
FTS has contributed slightly to revitalization of educational and research activities	90 (26.9)	9 (37.5)	19 (27.5)	118 (27.6)
Introducing FTS has not changed educational and research activities	106 (31.7)	4 (16.7)	11 (15.9)	121 (28.3)
There are issues that need to be solved about the formal introduction of FTS	69 (20.7)	3 (12.5)	25 (36.2)	97 (22.7)
Others	35 (10.5)	3 (12.5)	10 (14.5)	48 (11.2)
Total	334 (100.0)	24 (100.0)	69 (100.0)	427 (100.0)

As in the unit survey, for separate academic activities, the faculty survey identifies most revitalization of research activities, followed by educational activities, social contributions and management (see Table 18). The proportions acknowledging revitalization are, however, much lower than those of the unit survey; and by university sector, the results show a similar pattern.

Table 18. Which of the following activities have been revitalized by introduction of FTS?

	(faculty data)			
	National	Public	Private	Total
Research activities	140 (42.9)	14 (56.0)	31 (47.0)	185 (44.4)
Educational activities	104 (32.1)	10 (40.0)	31 (46.3)	145 (34.9)
Management	54 (16.8)	8 (32.0)	15 (23.1)	77 (18.7)
Social contributions	71 (21.8)	4 (16.0)	16 (24.2)	91 (21.9)

Note: Entries in the table are the number of “yes” responses.

As described, the results of both surveys show similar tendencies, but there are great differences between their estimates of the effects. A number of possibilities exist. For example, it may be difficult for new faculty members to recognize revitalization from FTS because they were not familiar with the previous situation. Furthermore, an accumulation of revitalization by faculty may not appear as such at unit level. However, there is clearly a possibility that the utility of introduction of FTS may be overestimated by the unit survey.

Issues after Introducing FTS As issues following the introduction of FTS, common concerns (see Table 19) were “career after completion of the fixed term” and the “risks posed by formal introduction of FTS”; in contrast, matters such as “use of generous grading and easy assignments to promote popularity with students” and “disregard of social contributions” were not substantial issues.

Compared with the national universities, units in the public and private universities seem to be less aware of issues arising from introduction of FTS. But irrespective of university sector, “careers after completion of contracts” and “risks posed by formal introduction of FTS” were cited highly as issues. Units in the national universities were especially concerned about “securing of finances for implementing FTS” and “enhancing support systems for research/education.”

Table 19. What kind of issues concern your unit following introduction of FTS? (unit data)

	National	Public	Private	Total
Careers after completion of contract	3.31	4.00	3.14	3.29
Risks posed by formal introduction of FTS	2.84	3.17	2.71	2.81
Inhibition of long-term research plans	2.74	2.67	2.56	2.66
Enhancing support systems for research/education	2.93	2.33	2.36	2.66
Difficulties in securing excellent human resources	2.46	2.33	2.58	2.50
Conflicts with the <i>Labor Law</i> & the <i>Public Service Law</i>	2.71	2.67	2.14	2.47
Commitment to short-term performance and efficiency	2.57	2.33	2.31	2.45
Securing finance for implementing FTS	2.93	2.33	1.86	2.44
Developing an appeals system against outcomes of evaluation	2.53	2.50	2.29	2.42
Preferential conditions of service (e.g. salary, housing, benefit package, etc.)	2.77	2.67	1.92	2.40
Increased authority of assessors	2.43	1.83	2.42	2.38
Bias towards items and fields of assessment	2.36	2.50	2.36	2.37
Encouraging staff relations and individualism	2.53	2.17	2.17	2.36
Dissatisfaction with sharing administrative & management work at university/unit level	2.36	2.33	2.19	2.29
Inhibition of long-term educational plans	2.07	2.00	2.33	2.17
Securing transparency in performance evaluation	2.09	2.33	2.00	2.07
Enhancing university autonomy & academic freedom	2.11	2.17	1.89	2.02
Balance between independent & collaborative studies	1.98	2.17	2.03	2.01
Disregard of educational activities	2.04	1.75	1.86	1.95
Use of generous grading and easy assignments to promote popularity with students	1.82	2.00	1.74	1.80
Disregard of social contributions	1.70	1.67	1.85	1.76

Note: Entries in the table are average values. (5-point scale: “not concerned”=1, “much concerned”=5)

The parallel faculty survey similarly identifies issues that concern faculty members following introduction of FTS (Table 20). Again the most common issues were “risks posed by formal introduction of FTS” and “careers after completion of contracts”; matters such as “use of generous grading and easy assignments to promote popularity with students” and “disregard of social contributions” are of lower substance. In effect there is little difference between issues that concern units and faculty.

Overall, those in national and private universities show closely similar patterns of concern but in public universities more concern is expressed about assessment procedures such as “developing an appeals system against the outcomes of evaluation” and “securing of transparency in performance evaluation.”

Compared to the unit survey, the faculty survey showed higher levels of concern in all items. Particularly, there were great differences between the two surveys in the levels of concern about evaluation in the components: “transparency in performance evaluation”, “bias towards items and fields of assessment”, “increasing authority of assessors”, and “developing an appeals system against outcomes of evaluation.” These issues might arise not by their actual roles in the process of renewal evaluation but through chronic dissatisfaction with a lack of any evaluation system: this is supported by cross-analysis with the unit and faculty surveys of the renewal experience, which showed no significant differences.

Table 20. What problems concern you following the introduction of FTS? (faculty data)

	National	Public	Private	Total
Risks posed by formal introduction of FTS	3.58	3.48	3.57	3.58
Careers after completion of contract	3.52	3.44	3.84	3.57
Commitment to short-term performance and efficiency	3.46	3.80	3.53	3.49
Inhibition of long-term research plans	3.37	3.54	3.68	3.44
Increasing authority of assessors	3.35	3.80	3.41	3.39
Biases towards items and fields of assessment	3.35	3.76	3.41	3.39
Securing transparency in performance evaluation	3.29	4.00	3.54	3.38
Developing an appeals system against outcomes of evaluation	3.27	3.96	3.56	3.37
Difficulties in securing excellent human resources	3.16	3.46	3.29	3.20
Enhancing support systems for research/education	3.02	3.04	3.46	3.09
Encouraging staff relations and individualism	3.01	3.60	3.22	3.08
Conflicts with the <i>Labor Law</i> & the <i>Public Service Law</i>	3.09	3.00	2.94	3.07
Inhibition of long-term educational plans	2.97	3.32	3.28	3.04
Disregard of educational activities	2.96	3.25	3.13	3.01
Dissatisfaction with sharing administrative & management work at university/unit level	2.88	2.96	3.03	2.92
Preferential conditions of service (e.g. salary, housing, benefit package, etc.)	2.90	3.00	2.99	2.90
Securing finance for implementing FTS	2.91	2.96	2.79	2.89
Balance between independent & collaborative studies	2.81	2.72	3.01	2.85
Enhancing university autonomy & academic freedom	2.80	2.80	2.99	2.84
Use of generous grading and easy assignments to promote popularity with students	2.70	3.20	2.94	2.77
Disregard of social contributions	2.71	2.68	2.87	2.74

Note: Entries in the table are average values. (5-point scale: “not concerned”=1, “much concerned”=5)

The Reviews of the Fixed-Term System and the Subsequent Response Those units that, having introduced FTS, have in some way reviewed it, account for only 28.7% of the total (see Table 21). The most common specific reviews were into: “grades of appointment” (11.2%), “ranges of appointments” (9.4%), “types of FTS” (9.3%) and “range of applicants” (9.0%). However, in total they account for only 10% of all FTS. Reviews of “appointment procedure/ assessment procedure” (4.4%) were least common.

National university units appear to have made a much wider variety of reviews than have the public and private universities. However, the national universities have so far made no reviews on appointment and/or assessment procedures. This may be because the lengths of contracts at national universities are longer than in either of the other two sectors and difficult issues on assessment have been postponed.

Table 21. Has your unit ever reviewed the FTS? (multiple answers) (unit data)

	National	Public	Private	Total
Reviewed in some way	13 (26.0)	3 (33.3)	13 (31.0)	29 (28.7)
Grades of appointment	8 (17.0)	1 (11.1)	2 (4.8)	11 (11.2)
Range of appointments	7 (15.6)	1 (11.1)	1 (2.4)	9 (9.4)
Range of applicants	4 (8.5)	0 (0.0)	5 (11.4)	9 (9.0)
Length of contract	6 (13.0)	0 (0.0)	1 (2.4)	7 (7.2)
Provisions for renewal	4 (8.7)	0 (0.0)	2 (4.7)	6 (6.1)
Types of FTS	5 (10.9)	0 (0.0)	4 (9.5)	9 (9.3)
Appointment procedure / Assessment procedure	0 (0.0)	1 (11.1)	3 (7.5)	4 (4.4)

Future Prospects for the Fixed-Term System

Future Prospects for FTS in the Responding Unit The most common response was to expect FTS “to spread gradually” (58.8%) through the responding unit in the future; a further 10.3% of respondents “expected it to spread widely.” In other words, about 70% of units predict that FTS will spread in their own units in the future (see Table 22). Similar tendencies are seen in each of the university sectors, though rather weakly in private universities.

According to the NISTEP survey, more than 60% of the heads of subject units and departments had hopes of increasing the extent of application of FTS, a result that suggests that the prediction of an upward trend reflects not merely an awareness of their responsibilities but a positive desire to introduce FTS widely.

Table 22. How do you predict FTS will develop in the future in your unit? (unit data)

	National	Public	Private	Total
Expected to decline	1 (2.1)	0 (0.0)	0 (0.0)	1 (1.0)
Expected to hold the current status	12 (25.5)	2 (22.2)	15 (36.6)	29 (29.9)
Expected to spread gradually	32 (68.1)	2 (22.2)	23 (56.1)	57 (58.8)
Expected to spread widely	2 (4.3)	5 (55.6)	3 (7.3)	10 (10.3)
Total	47 (100.0)	9 (100.0)	41 (100.0)	97 (100.0)

Future Prospects for FTS itself Consideration of the future prospects for FTS itself elicited some positive responses to the propositions that “careful consideration should be given to international trends in discussion of FTS” and “a distinctive Japanese FTS should be promoted.” But many units indicated negative responses by identifying the proposition that “FTS does not fit the Japanese personnel system and the possibility of its abolition should be discussed” (see Table 23). Consequently, it could be concluded that most units took a cautious stance on FTS but felt no need to seek to limit or abolish it. By university sector, private universities seemed to be somewhat less concerned about introducing FTS than the other two sectors.

Table 23. What do you think should happen to FTS in the future? (unit data)

	National	Public	Private	Total
Following the USA and global pattern, in the future FTS should become part of the personnel system.	2.67	2.50	3.08	2.83
A distinctive Japanese FTS should be promoted.	2.38	3.25	2.80	2.63
Careful consideration should be given to international trends in discussion of FTS.	2.60	2.86	2.21	2.46
FTS does not fit the Japanese personnel system, and the possibility of its abolition should be discussed.	4.04	3.71	3.87	3.95

Note: Each entry in the table is an average value. (5-point scale: “disagreed”=1, “agreed”=5)

Will the Fixed-Term System Promote Mobility of Faculties?

Before discussing whether FTS promotes mobility, mobility in the whole academic marketplace in Japan needs to be noted. Yamanoi^{iv} calculated a metabolic rate^v from the annual number of new faculty recruited, faculty moving among universities, and faculty displaced. According to this procedure, the metabolic rate in 2001 was 10.23%. That is, in the year 2001, 10% of faculty members were transferred. The metabolic rate in 1998 was 9.15%: so the rate had increased by 1% in 3 years. (It is, however, difficult to calculate accurately the rate due to FTS because substitutional mobility could not be distinguished from other factors *e.g.* retirement, increase in size of universities or departments, and FTS. In order to measure the effects of personnel policy, faculty transfers caused by FTS need to be added as an indicator in the *Survey of School Teachers*.)

According to the National Statistical Data provided by MEXT, FTS had been applied to 2,842 faculty members by 2001: this corresponds to only 1.9% of the total of faculty members in Japan^{vi}. Of these 2,842 faculty members, 1,920 (67.5%) had unlimited right of renewal and, if their renewal were approved, they were guaranteed employment until retirement. In other words, the number forced to transfer after their contracts expired was 922 (32.5%) members of faculty.

The mobility due to FTS, however, needs to be viewed from two aspects: forced transfer caused by expiration of contracts; and voluntary transfer before the contract had run its full-term. Based on the faculty survey, information on both of these is available.

In responses to the question, “What will you do when your contract expires (or is renewed)?”, about 20% of faculty members with a right of renewal answered that “I will transfer regardless of whether renewal is approved or not” (see Table 24). According to the number of renewals in the

contract, the proportions choosing to transfer were: one renewal, 25.5%; more than one renewal, 16.2%; and unlimited renewals, 13.3%. In other words, of those faculty members with unlimited rights of renewal – who could continue in employment until retirement if their renewal were approved – 13.3% plan to transfer voluntarily. (It should be noted that these numbers will include other transfers not necessarily related to FTS.)

If the respondents of this survey accurately reflect the faculty members who were appointed to the FTS when the national survey by MEXT was conducted, 255 faculty members (13.3% of 1,920 faculty members) could be expected to transfer voluntarily even though they could remain in employment until retirement if their renewal was approved. Together with the 922 faculty who would be required to transfer, this yields a total of 1,177 faculty members seeking transfers. To obtain an annual rate, this total was divided by 5, corresponding to the most commonly established FTS term of 5 years, resulting in 235 faculty transfers per year due to FTS. This corresponds to 0.16% of the total number of faculty members in 2001, and this could be the rate of transfer due to FTS.

It would though be wise to regard this value as only a guide because its estimation depends on multiple assumptions.

Table 24. What will you do when your contract expires (or is renewed)? (faculty data)

Number of times contract may be renewed	Only Once	More than Once	Unlimited	None
I will transfer because I do not have a right of renewal.	0 (0.0)	0 (0.0)	0 (0.0)	25 (58.1)
I want to renew the term if I can although I do not have a right of renewal.	0 (0.0)	0 (0.0)	0 (0.0)	11 (25.6)
I will transfer although I could work until retirement if my renewal was approved.	35 (25.5)	17 (16.2)	11 (13.3)	0 (0.0)
I expect to renew the term because I have a right of renewal.	46 (33.6)	49 (46.7)	40 (48.2)	0 (0.0)
I have the right of renewal, and I will decide whether to stay depending on the result of evaluation on renewal.	41 (29.9)	30 (28.6)	24 (28.9)	0 (0.0)
Others	15 (10.9)	9 (8.6)	8 (9.6)	7 (16.3)
Total	137 (100.0)	105 (100.0)	83 (100.0)	43 (100.0)

Conclusion

The results of these surveys can be summarized as follows.

1. Introduction of FTS was most commonly decided by the “chancellor/president/executive” in private universities (76.9 %); in national universities they accounted for a much lower proportion (34.8%) and lower than proportion due to “deans/heads of graduate course”(47.8%).
2. The most common purpose of introducing FTS was “revitalization of research” (75.2%), followed in sequence by “revitalization of teaching” (54.3%) and “promoting changes in the attitudes of faculty members” (33.3%) (see Table 5). The results are seen as indicating that FTS has been introduced with an intrinsic motivation of revitalization of the organization rather

- than the extrinsic motivation of conforming to demands from MEXT.
3. Comparison of the unit survey with that of faculty members, shows that faculty have higher levels of concerns about the introduction of FTS in almost all items except for “the balance between independent and collaborative studies” and “enhancing support systems for research/education.” (see Tables 6 & 7) The biggest gaps between the surveys were shown in “increasing authority of assessors” and “establishing an appeals system against the outcomes of evaluation.” The results show that FTS is likely to have been introduced to most units, and especially in public universities, without sufficient discussion of those items that are of most concern to faculty members.
 4. Corresponding to the issues revealed by the unit survey, the faculty survey identified the concerns of faculty following introduction of FTS. The responses show that both units and faculty members are most concerned about “careers after the end of contracts” (see Table 7).
 5. According to the survey, units which introduced FTS for research associates only sought to “avoid a freeze on specific sectors” and “promote mobility for research associates.” Relatively common answers were the “need for continuity of research and education” and “the difference in length of contract needed for those who are mainly engaged in research and education and need the continuity and those who assist them.”
 6. The most common institutional status of FTS was that of a “the uniform arrangement for FTS that is applied across the unit” which was the response from 71 units (74.0%); conversely, 25 units (26.0%) said that “each department has different arrangements.” In other words, there is a tendency to share a common practice throughout the unit (see Table 11). National universities, however, seemed not to share this trend, with half of their units not sharing uniform practices. According to the survey, 54.3% of units that have introduced FTS partially provide some sort of preferential treatments for those in FTS posts, though many units have not adopted this approach (see Table 13); the latter appears to be especially true for private universities.
 7. More than 60% units identify comprehensive revitalization from introducing FTS (see Table 16). The units and faculty members surveys used different scales so on this issue their results could not be compared directly. However, if responses to the faculty survey (see Table 17) of “greatly contributed” and “slightly contributed” can be regarded as equivalent to “revitalized” in the units survey, then 37.7% of faculty survey respondents also acknowledge revitalization through FTS, that is about half the proportion on the unit survey.
 8. Units and faculty were asked in regard to issues arising from introduction of FTS. Results from both surveys show similar tendencies, with no great differences between their results. “Securing transparency in performance evaluation” caused relatively less concern to units after applying FTS.

9. More than 60% of units showed a positive response to the future prospects for FTS. On the other hand, many of the units showed a negative response by agreeing with the proposition that “FTS does not fit the Japanese personnel system, and the possibility of abolishing FTS should be discussed.” Consequently, it could be concluded that a majority of units took a cautious stance on FTS but do not actually seek to diminish or abolish it.

As is noted in the summary above, there were big difference in evaluations between the leaders of units (deans or senior professors) and faculty members appointed to posts with FTS. It is clearly difficult to implement immediately an FTS policy according to mutual agreement or to infer how Japanese FTS will develop in the future.

We think that application of market forces to personnel affairs in universities following corporatization of the national universities will make rapid progress on Japanese universities. The role of the academic professions will change significantly and at variance with the idealized spirit of the Humboldtian University. Both as an ideal and pragmatically, we need to consider the implications. In 2007, the number of 18-year old students bottom out in Japan: it may well be that the resultant retrenchment of the student population may itself cause instability in the academic marketplace in Japan.

It is, however, difficult to make quantitative predictions. Our ambitious attempt to calculate the mobility rate caused by FTS yielded a value of 0.16% of the total faculty members. Consequently, by 2001 it had a negligible effect on the Japanese academic marketplace. But in the future a number of new factors will intervene.

First, personnel affairs of the national corporatized universities may be changed substantially by policies of Government or MEXT. Second, following incorporation of the national universities in 2004, it is now possible for each institution freely to introduce its own new contractual policy. Irrespective of sectors, universities will be able to implement new FST policies: this could well raise institutional mobility rates. Third, mobility rates will be defined by the conditions of the academic marketplace. Ultimately, FST will be dependent on these three factors: government policy, institutions, and the academic marketplace. Increases in mobility rates due to tight market pressures and instability of academic faculty will not make significant contributions to academic productivity on any level-teaching, research or social services. So, we shall need to proceed with further additional national questionnaire surveys, seeking comparative study of each institution so as to examine the effectiveness and problems of FST.

Notes

- i. However, we have 123 answers in fact because some units answer through the university. Including these units, the collection rate is 36.9% in all universities, 50.0% in public universities and 36.1% in

- private universities.
- ii. We asked respondents to describe the reason for deciding on the grade of appointment because the combinations of grades to which each unit has introduced FTS vary widely from unit to unit, so it is difficult to set appropriate alternatives to cover them all.
 - iii. National Institute of Science and Technology Policy (2004). *Syuyou na Kagaku Gizyutu Kankei Jinzai Ikusei Kanren Puroguramu no Tasseikouka oyobi Mondaiten* (Achievement effect and problems of major programs which are associated with science and technology related human resource development: research report for 2003).
 - iv. Yamanoi, A. (2001). *Daigaku Kyouin no Ryudousei* (The Mobility of Faculty Members), IDE, *Gendai no Kotokyouiiku: Daigaku Kyouin no Henka* (Modern Higher Education: Change of University Teachers), 432, 20-27, Tokyo.
 - v. $\left[\frac{\text{(the number of new hired faculty + the number of faculty moving between universities)}}{\text{(the number of faculty - the number of displaced faculty)}} \times 100 \right]$
 - vi. Yamanoi, A., & Kuzuki, K. (2003). *Daigaku Kyouin no Sentakuteki Ninkisei no Kenkyu: Taipu/Ninki/Sainin no Bunseki* (A Study on the Fixed-Term System for Faculty Members: Focusing on the Analysis of Types, Length of Contract and Renewal), *Daigaku Ronshu (Research in Higher Education)*, 34, 1-20.

Research Productivity in Science

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Introduction

The relative position of Japanese universities in the world in the field of scientific research provides a topic of interest for many academic and non-academic persons. We have examined the research productivities of major world universities over a period more than 20 years by using the database (DB) of Chemical Abstracts (CA).¹

Many institutions of higher education in Japan have promoted admission of foreign students and some have established research centers in foreign countries. At the same time, some foreign universities have established branch campuses in Japan. Japanese institutions face difficult situations that come from budgetary problems such as the strict assessment required by the government: this assessment must be quantitative and objective, so that scientific measurement with a DB are frequently used.

Currently there are other common databases in addition to CA. They include the Science Citation Index (SCI), the Social Sciences Citation Index (SSCI), and the Arts & Humanities Citation Index (AHCI) published by the Institute for Scientific Information (ISI).² SCI is a commercial DB for science, so that SCI is often compared with CA. SCI gathers data from mostly English language literature but also includes some non-English literature that provides English abstracts. SCI surveys the literature of selected journals that achieve extensive citation in other journals. In contrast, CA, a branch of the American Chemical Society (ACS), abstracts material from both English and non-English publications as widely as possible. Results obtained by using the DB's depend on which DB is used and on the search conditions. Therefore, we identify the differences distinguishing these two DB's and will comment on how best to evaluate university research activities in these days when university assessment has become widespread.

Productivities of Leading Universities in the World¹

Table 1 lists the top 37 universities in the world that achieve an annual productivity of over 1,000 research publications.³ The research productivity is assessed as the number of academic papers

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published in 2002 by using CA. The reason for using 2002 is to enable the small increase in productivity that ensues as material published in 2002 is abstracted during the following few years (further comments on this issue are made in discussion of Fig. 3).

Table 1 shows that the University of Tokyo retains its position as number 1 in the world list of research productivities and that 8 Japanese universities have also kept their positions within the top 10 since the late 1990's. Tsinghua University, China becomes a member of the top 10 group. The productivity of several other Chinese universities has drastically improved. Imperial College, UK is included in the top 20 as a result of hospital mergers and the resultant size advantage.

Table 1. Research Productivities of Leading Universities in the World from CA in 2002

Order	University Name	Country Name	Productivity
1	Univ. Tokyo	Japan	3,551
2	Kyoto Univ.	Japan	2,955
3	Osaka Univ.	Japan	2,936
4	Harvard Univ.	USA	2,868
5	Tohoku Univ.	Japan	2,476
6	Tsinghua Univ.	China	1,968
7	Kyushu Univ.	Japan	1,757
8	Tokyo Inst. Tech.	Japan	1,633
9	Hokkaido Univ.	Japan	1,624
10	Nagoya Univ.	Japan	1,566
11	Peking Univ.	China	1,526
12	Zhejiang Univ.	China	1,449
13	Univ. Michigan-Ann Arbor	USA	1,442
14	Johns Hopkins Univ.	USA	1,415
15	Stanford Univ.	USA	1,409
16	Imperial Coll.	UK	1,342
17	Univ. Pennsylvania	USA	1,333
18	Univ. Cambridge	UK	1,331
19	UC-Berkeley	USA	1,328
20	Univ. Wisconsin-Madison	USA	1,324
21	UCLA	USA	1,317
22	Univ. Washington (Seattle)	USA	1,314
23	Moscow M. V. Lomonosov State Univ.	Russia	1,301
24	Univ. Toronto	Canada	1,299
25	Seoul Natl. Univ.	Korea	1,293
26	Cornell Univ.	USA	1,277
27	Univ. Oxford	UK	1,254
28	Pennsylvania State Univ.	USA	1,252
29	MIT	USA	1,245
30	Univ. Florida	USA	1,222
31	Univ. Sao Paulo	Brazil	1,152
32	Univ. Illinois-Urbana Champaign	USA	1,109
33	Ohio State Univ.	USA	1,090
34	UC-San Diego	USA	1,058
35	UC-Davis	USA	1,040
36	Yale Univ.	USA	1,022
37	ETH	Switzerland	1,010

Note: For inclusion institutions have achieved more than 1,000 publications in the year 2002.

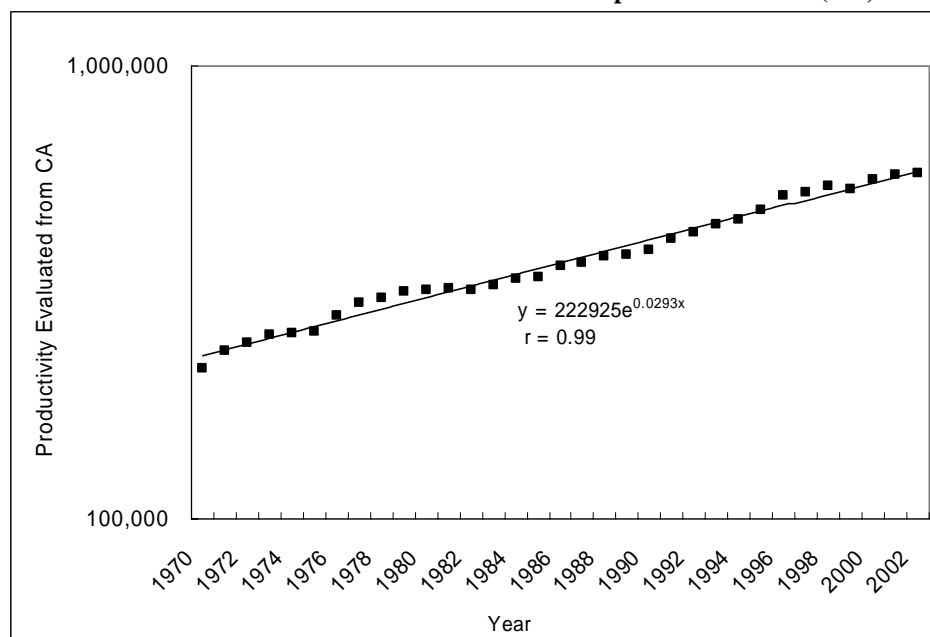
Intense international competition in the academic sector can be seen in the variations of productivity among countries and universities. All over the world, universities are already exposed to the era of M&A for economic growth. Higher education institutions may be forced to scale up the size of their organization to strengthen research activities and to establish strong management in ways similar to those used by private enterprises. Nowadays, a commercial enterprise-like top-down management of a university is believed to be good for strengthening research activities and improving educational performance, so that one of the indicators of research output is its productivity and this is expected to increase continuously to emulate economic growth.

Annual Rates of Increase of Productivities in the World and in Countries

De Solla Price examined world research productivities between 1900 and 1960 by using CA, Physical Abstracts, *etc.* He established that they increased exponentially at an annual rate of 4.6%, doubling the productivity in 15 years (Price, 1963). We also examined productivity after 1940 by using CA and show a part of the results in Fig.1 as a semi-logarithmic graph. Up to 1945 research productivity decreased due to the effects of World War II, but then it increases sharply.⁴ The data approximate to a linear semi-logarithmic plot: where the y-axis is a common logarithm of productivities and x-axis is linear in time, then the slope gives the annual rate of increase.⁵

By using the data in Fig. 1, an average annual rate of growth, measured over 32 years from 1970, is 2.9%, doubling in around 23 years. The current annual rate of growth for the world is slightly lower than that obtained by Price.⁶ Our study concentrates on the 32 year period from 1970, so a 2.9% rate of growth can be regarded as the standard value across the world in the following discussion.

Figure 1. Annual Variation in the Number of Academic Papers in the World (CA, 1970-2002)



Annual rates of increase for countries can also be obtained similarly. The rate for the USA is 2.9% and, because the USA's share of literature is the highest, this is consistent with the world average rate. The rate of increase for Japan is 4.8%, close to that obtained by Price; the UK shows a rather low value of 2.1%. For China, there has been a very rapid increase in productivity from the late 1970's, corresponding to a steady exponential increase of 11.7% after 1981. Korea shows the same rate of increase as China for the period of 1970 to 2002. In Europe, Spain, with a rate of growth of 8.5%, is the highest; and in South America, Brazil has a rate of 7.1%.

The annual rates of increase for countries fall into two groups: *i.e.*, 1) "average rate countries" which have annual rates close to the world average rate; and 2) "high rate countries" where the rate is several times greater than the average.

Annual Rates of Growth of University Research Productivities

Annual rates of universities can also be determined over the period of steady exponential growth. Sharp increases are shown by many universities over this period, corresponding to the increase in the rates shown by their countries. Again, by plotting the data semi-logarithmically, annual rates of increase for leading universities in major countries can be estimated. Results are shown in Table 2: figures in parenthesis are the corresponding national rates of increase (As is indicated in the notes to Table 2, the rate of increase for Germany is measured after 1991, to eliminate reunification effects; for China after 1981, as mentioned above; for Russia after 1993 to minimize the effects of disintegration of the Soviet Union; and for other countries they are averages over the period 1970 and 2002).

Except for Russia, the rates of increase of research productivity of leading universities in "average rate countries" are around 4%. The rate for the University of Tokyo is also 4%, high enough to maintain after 1970 its leading position in the world for research productivity. The rates of increase for other leading universities are higher than those of their respective countries, except in Japan; this tendency appears to be particularly strong in European countries by virtue of the hierarchy that may exist among them. In Japanese universities, dispersions in productivity are not large.

Table 2. Annual Rates of Leading University Productivities of Advanced Countries from CA

University Name	Annual Rate of Productivity, %
Harvard Univ.	3.8 (2.9)
Univ. Tokyo	4.0 (4.8)
Univ. Cambridge	4.0 (2.1)
Munchen Univ.	4.4 (1.9) *
Paris-Sud Univ.	4.2 (2.9)
Peking Univ.	17.4 (11.7) **
Seoul Natl. Univ.	12.6 (11.7)
Moscow M. V. Lomonosov State Univ.	8.0 (0.0) ***
Lunds Univ.	4.1 (3.3)
ETH	6.6 (3.5)

Notes: * Average from 1991 to 2002. ** Average from 1981 to 2002. *** Average from 1993 to 2002.

Annual rates of growth of research productivities for leading university in “high rate countries” also exceed those of their countries. That of Peking University is outstanding and it is due mainly to institutional mergers promoted by the Chinese government. Some leading universities in “high rate countries” have already become major world universities, and their performance in the near future may well be remarkable.

Characteristics of Research Categories

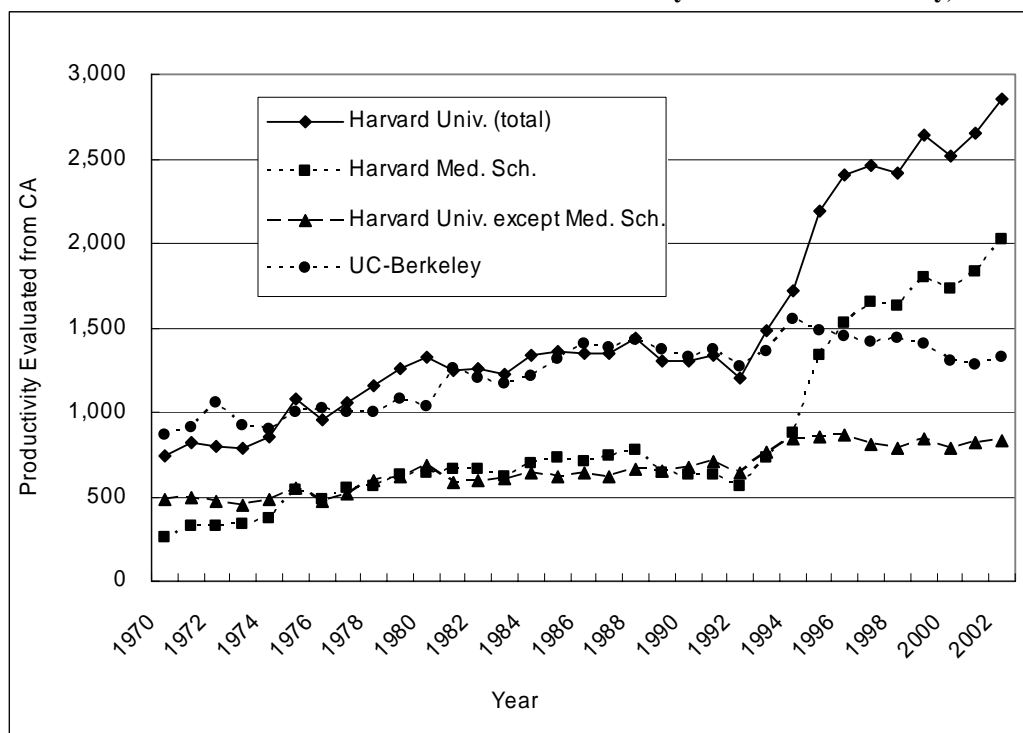
CA classifies its abstracted literature into 5 research categories. Table 3 shows the average annual rate of increase in productivity for these five categories derived from semi-logarithmic plots for 1970 to 2002.

Table 3. Rates of Increase of Productivity by Research Categories of CA

Research Category	Annual Rate of Increase Productivity, %
Biochemistry	3.5
Organic Chemistry	0.8
Macromolecular Science	2.8
Applied Chemistry	3.5
Physical, Inorganic, Analytical Chemistry	2.4

Two of the categories, biochemistry and applied chemistry, exceed the average annual rate of increase of 2.9%. Therefore, countries and universities that are strong in these two categories can be expected to show large increases in productivities. For example, Harvard University, with its famous Medical School, is strong in research. Fig. 2 shows research productivity for the whole of Harvard University, for the Harvard Medical School alone, and for Harvard University except the Medical School; for comparison, UC-Berkeley is also included. In Fig. 2 a linear y-axis is adopted to facilitate comparison among these four examples. Harvard Medical School and the residual fraction of Harvard University except the Medical School show productivity of the same order up to the first half of the 1990's, but subsequently that of the Medical School increases to twice that of the rest of the University. This accounts for the abrupt increase in productivity of Harvard University over this period. A tendency for a high contribution from the medical sector is a common characteristic in US universities: in the USA, the share of biochemistry has increased in the most recent decade and now constitutes over 60% of the academic papers in CA, the highest in the world.

For comparison, the research productivity of UC-Berkeley is also shown in Fig. 2. UC-Berkeley was a leading US university in the 1970's, becoming comparable with Harvard University in 1980's but falling behind the Harvard in the latter half of 1990's. At that time, UC-Berkeley suffered a slight decrease in research productivity because of budget cuts by the California state government in 1991 and its lack of a medical school.

Figure 2. Contribution of Harvard Medical School to Productivity in Harvard University, 1970-2002

Characteristics of SCI

The number of publications surveyed by SCI in 1991 was 230,464. ISI works on the basis that material to be gathered must be written in English or have at least an English language abstract. With these conditions, 93% of the material is written in English. In contrast, the English language content of CA was 75% in 1991, some 20% lower than that of SCI.⁷ In CA, the English language content of literature from the Soviet Union was 13%, China 28%, Korea 53%, and about 60% from Japan and East European countries. In the case of SCI, the number of languages accessed is 20 even though literature in only one language is included. On the other hand, for CA the number is close to 200. The difference in numbers of languages accessed is a distinctive characteristic of the two databases.

The classifications of the literature are also different. In SCI there are 6 major classes: articles, proceedings, letters, notes, editorial material, and reviews. In CA there are 7: academic papers, patents, reviews, proceedings, technical reports, dissertations, and books. Significant aspects are that SCI does not include the classes of patents and dissertations, and that 70% of literature is composed of academic papers in both CA and SCI.

The classification of research subjects is also very different. CA classifies literature in 5 categories: biochemistry; organic chemistry; macromolecular chemistry; applied chemistry and chemical engineering; and physical, inorganic, and analytical chemistry. These are subdivided into 80 subcategories. In contrast, SCI classifies journals into 253 categories, which are shared between the natural (SCI) and social sciences (SSCI) and humanities (AHCI). These two classifications do not match each other. So, for our comparative purposes we reclassified the SCI entries cited in 1991

according to the CA categories. This indicates that around 57% of SCI entries will have been cited in CA.

The research categories excluded from this 57% are mathematics, a part of physics, information science, mechanics, civil engineering and architecture, control engineering, and the categories which include little artificial materials such as physiotherapy, biology, forestry, mineralogy, and brain and neuroscience, *etc.*

Comparison of CA with SCI

The differences between CA and SCI are well known. CA is a DB for chemical fields and, irrespective of language, covers literature concerning materials in many academic categories. On the other hand, SCI gathers science literature but is limited to English language material published in high circulation journals. DB users should recognize these characteristics and select which DB is better fitted to their purpose.

Fig. 3 shows the numbers of entries cited by CA and SCI for 1980-2002. The variations of the two DB's are very similar. The coverage of CA is around 80%⁸ of that of SCI in each year. SCI started to survey the literature in 1983, so a small amount of material published before 1983 is also included. This implies that a similar proportion of literature published in 2004 is surveyed in 2005. The time delay in 1991, from SCI data, corresponded to 4 months. CA shows similar lag in response but with a little longer delay, so that we identify the data analysis for 2002 as the latest confirmed.

Figure 3. Comparison between CA and SCI (1980-2002)

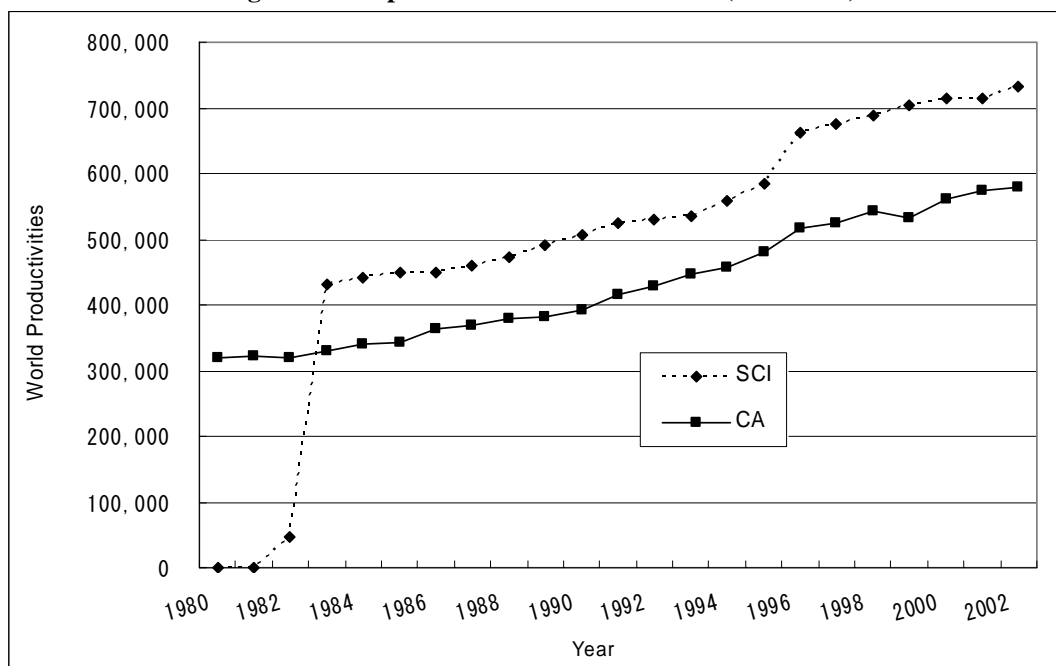
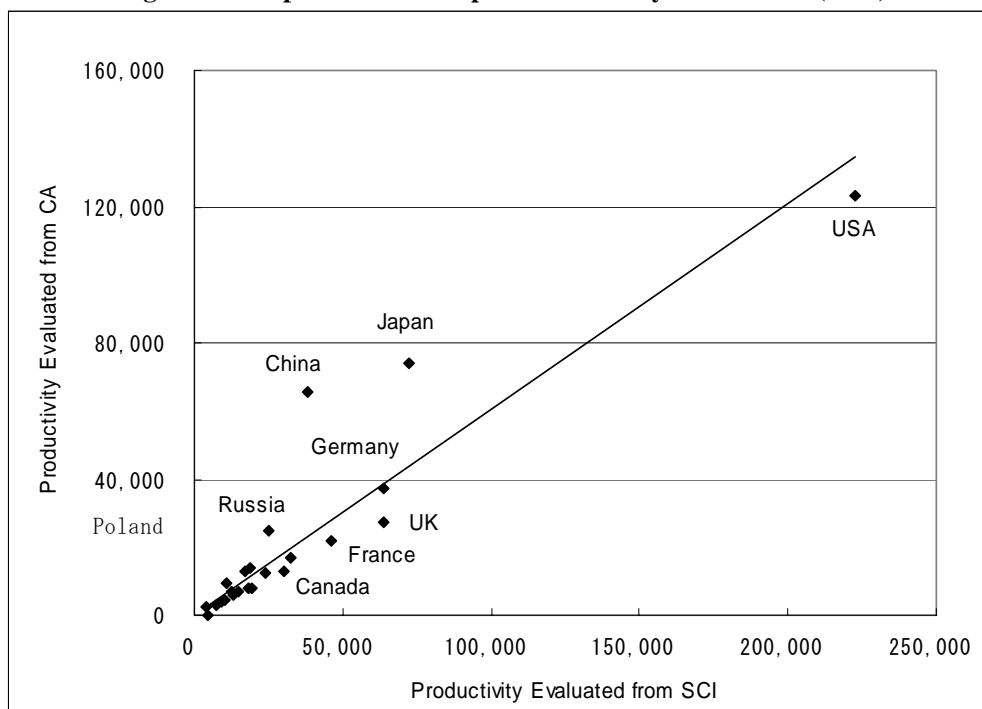


Fig. 4 is a dispersion plot of entries in CA against those for SCI. It shows a quantitative relation between CA and SCI for research productivities by country. The regression coefficient for the data in

Fig. 4 is 0.91 and reflects the significant dispersion of two points, for China and Japan from the straight line. When the data are limited to English language publications only, the correlation improves (0.99) and points for China and Japan fall on the line. China and Japan remain typical of countries that publish much literature in their mother languages.

Figure 4. Comparison of Excerpted Amounts by SCI and CA (2002)



About 60% of the literature cited in SCI concerns materials science and chemistry according to our reclassification. This high fraction is explained by the industrial and/or economic aspects that correlate scientific research with materials science and technologies directly or indirectly. Measurement of productivity obtained from CA might be a good indicator of the level of research activities in all science.

On the other hand, SCI includes two thirds of the literature cited by CA, *i.e.*, SCI gathers two thirds of CA-like material science literature from those top scientific journals that were reselected after having reviewed their circulations by using an impact factor.

Which database is better depends on the purposes of the research. The two databases have the following characteristics.

SCI. Literature is cited from the top journals in the relevant research categories but is restricted to only English language articles or, if non-English, to those with English abstracts; the volume of cited literature might be two-thirds of the whole relevant categories.

CA. Literature is surveyed in as many categories and languages as possible, covering 60% of the whole range of science categories and is expected to provide good quantitative correlation with the whole of science.

A most important point to emphasize is that CA provides as good a quality for macroscopic quantitative analysis such as productivity as does SCI, *i.e.*, data obtained by CA must be capable of explaining not only materials science categories but also all scientific activities because of its good agreement with SCI in respect of world and country-level productivities.

We have already pointed out that analysis using a DB depends strongly on the characteristics of the DB. “The number of journals handled by ISI is 8,000. The areas in which the journals are published are distributed 46% in North America and 42% in Western Europe, *i.e.*, around 90% are in these areas. Of the rest, 5% of the journals come from the Far East and Pacific areas of which 2 of the 5%, *i.e.*, around 160 journals, are from Japan. From the viewpoint of articles, 7% of the articles in the ISI databases are from Japan and correspond to the Japanese contribution to academic activities. The journal share of 2% appears to be very low in comparison with the article share of 7% and it may be that the article share better represents academic research activity.” (Tsuji, 1999)

A further comment might also be significant when surveying research activities in science. “The comments of Tsuji, ... are to the point and instructive. Monthly or seasonally issued scientific journals total 5,000 in SCI. Of these journals, 90% are from North America and Europe. SCI operators delete surnames such as Suzuki, Tanaka, Takahashi and Nakamura in computer processing for citation analysis, because too many persons have same surname and cannot be distinguished. This fact constitutes a kind of bias and is caused by the ethnocentrism (homeland first ideology) of American and British researchers. Ethnocentrism might be stronger than problems caused by language. Even though assessment for research activities widely requires use of ISI databases through their quantitative-ness and objectivity, we dislike the commercialism of their rising price.” (Keii, 2004)

English Imperialism in Scientific Literature

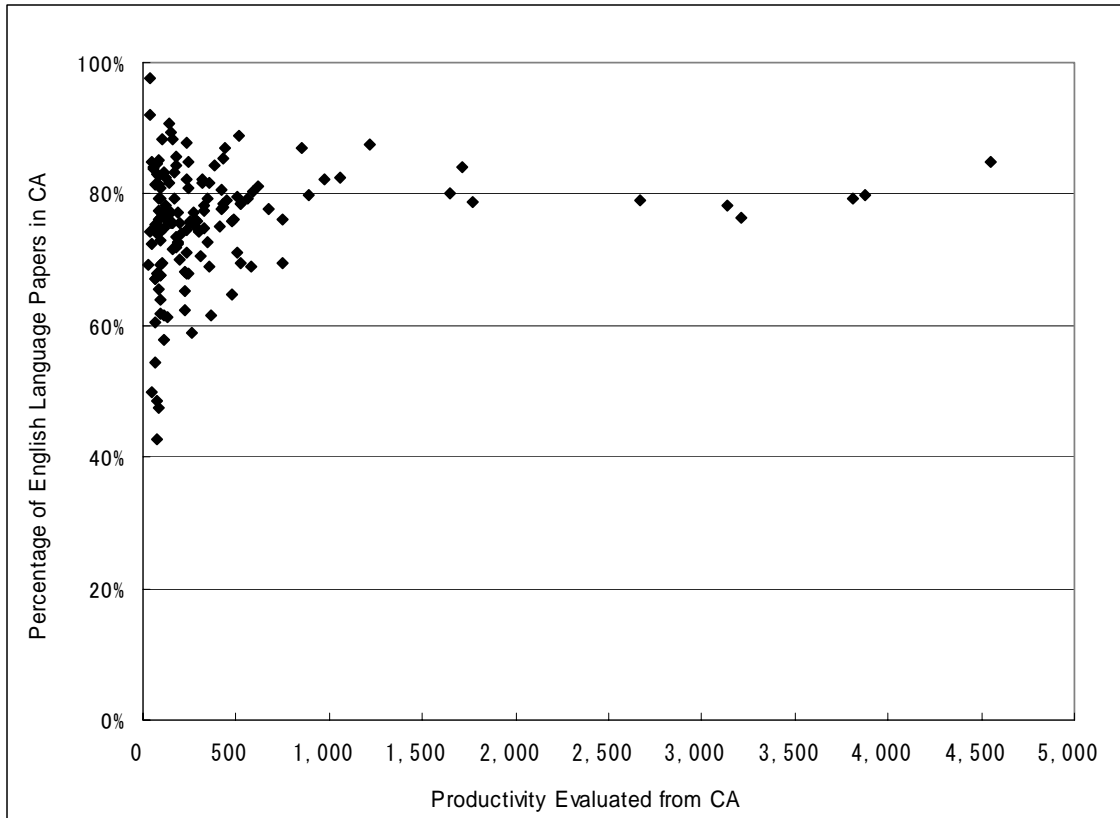
English has become a major language in science, too. For example, the fraction of English language papers written by French scientists reached 94% in 2002 from 20% or less in 1970, even though French people are believed to take pride in using their mother language. But even in advanced countries, textbooks in the mother language are used in classrooms and mother language journals are published for domestic academic activities.

Japanese researchers have tended to write papers in English so that they can get good international circulation. What is the real situation? Fig. 5 shows percentages of English-language papers from about 144 Japanese universities with productivity greater than 500 according to CA.

It shows a constant percentage of 80%. The remainder of the publications is almost entirely in Japanese and is derived from domestic academic activities. According to our experience, significant numbers of overseas researchers read or want to read Japanese language papers. This is understandable as a consequence of the level of Japanese academic activity. Inability to do so may mislead understanding of current research. Moreover, the contribution of Japanese researchers must be greater than the proportion of articles in SCI - this point is obvious irrespective of the point made

by Tsuji (1999). In this sense, it can be said CA is one of the best databases for quantitative scientific analysis.

Figure 5. Percentage of English-language Papers from Japanese Universities (CA, 2003, 144 Universities)

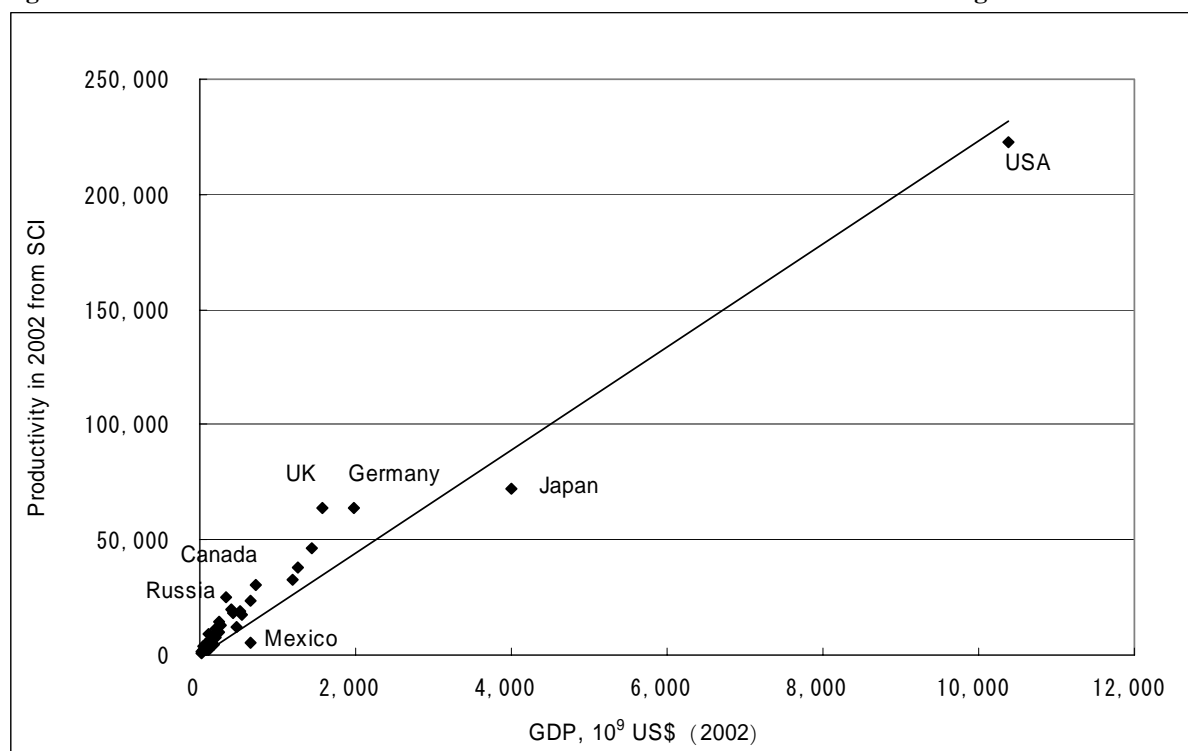


Correlation between Research Productivity and GDP

Productivity in science can also provide an indicator to the correlation between science and economics. In Fig. 6 is plotted the research productivities of several countries in 2002 against their GDP (unit, 10^9 US-\$) and shows a good linear correlation. The USA and Japan, which have huge GDP's, and Mexico fall below the proportional line. Other countries are dispersed, with Germany, UK, Canada and Russia above the line. Among the reasons for this dispersion are the low GDP of Russia and the low productivity of Mexico. The data for Fig.6 is taken from SCI, but similar results are also available from CA: in both cases, the data include academic and industrial sectors.

The coefficient 0.97 obtained for the regression of the data in Fig.6 indicates a close relationship between research productivities and GDP's to the extent that it may imply, directly or indirectly, a causal relationship. We are interested in which is the cause and also in whether its determination is possible by using a statistical method only.

The research productivities of countries in 2002 were plotted in a similar way against GDP's over the period 1999-2003. These yield the 5 correlation coefficients shown in Table 4. They indicate that within the trial period, correlation rises from a minimum value to a maximum value in 2003.

Figure 6. Research Productivities Evaluated from SCI and GDP's of 40 World Leading Countries in 2002**Table 4. Correlation Factors between Productivities Obtained by SCI in 2002 and GDP's in 1999-2003**

Year of GDP	1999	2000	2001	2002	2003
Correlation Coefficient	0.96	0.96	0.96	0.97	0.98

For the purpose of examining the hypothesis, two possibilities were considered: 1) GDP's grow as a result of increase of research activity; and 2) through increases in research funding research productivities follow the growth of GDP. Although circumstances vary for each country, some correlations between productivities and GDP's can be observed. While it is conventional to compare variation of correlations over time, it is of interest to see whether this can be related to other factors by our procedure. We do not intend to claim that this process is uniquely reasonable and will welcome suggestions and comments.

Summary

- The annual rate of increase of world research productivity in 1970-2002 was 2.9%, a little smaller than that reported by Price (1963).
- For growth of research productivity countries fall into two categories: 1) average rate countries such as the USA, UK and Japan, which show annual rates of growth close to the world average rate; and 2) high rate countries, which show a rate several times greater than the world average.
- Leading universities in average rate countries show rates of growth higher than the world average of 2.9% even though the rates of growth in their respective countries are lower than 2.9%.

- Some of the high rate countries, such as China and Korea, show annual rates of growth of over 10%. In some of these countries, rates of growth increase rapidly over some periods but then show steady exponential increases.
- Research productivity depends strongly on the research category; biochemistry and applied chemistry show the highest annual rates of growth. Universities and countries that have strength in these categories show high annual rates of increase in productivity.
- In SCI, 60% of the data belongs to categories that are cited in CA. For research productivity at country level, strong correlations exist between CA, and SCI suggesting that CA provides a measure of macroscopic numerical trends in research of science.
- CA includes 1.5 times more data than SCI in the categories of materials science and chemistry, and surveys literature not only in English but also in non-English languages. This allows us to access data without a bias to America and the European countries.
- English language imperialism has now been propagated worldwide in research publications in science. However, uniform percentages of around 80% of research articles written in English are shown by the leading Japanese research universities. This implies that they still regard their mother language as important and useful. An analysis of this sort is not possible by using SCI databases.

Notes

1. The number of entries cited in CA is over 21,314,650 (for the period up to 2002.12 by STN pamphlet), including 7,600 abstracts issued before 1907 from CAS's HP.
2. The numbers of citations in ISI is respectively 18,149,884 for SCI, 2,933,621 for SSCI and 2,472,455 for AHCI (for the period up to 2004.9.11, from NACSIS's HP). These databases began in 1983.
3. The numbers of universities in the list are respectively USA 18, Japan 8, UK and China 3. The number of universities becomes 145 when the list is extended to productivity of greater than 500; then the numbers of universities becomes respectively USA 58, Japan 21, China 13, UK 11, Germany 8, Australia, Netherlands and Canada 4.
4. The average annual rate of growth for the 57 years from 1945 to 2002 is 4.9% and close to that of Price, doubling in every 14 years.
5. The slope corresponds to an annual rate of growth as the x-axis is a time-axis and measured in years. Speaking strictly, the slope indicates the current annual rate of growth at the moment because we use a continuous exponential function.
6. Price counted accumulated amounts up to the year for the estimation of productivity. Differentiation with respect to time of the amounts also gives an annual rate when the amounts are expressed as an exponential function. However, a differential graph shows much bigger fluctuations

than those of an integrated one.

7. This value was 84% in 2003 and remains 10% lower than that of SCI.

8. The average value for 1983-2002 is 79.1%, and the standard deviation is 2.1%.

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Internationalization of the University Curriculum: a Case Study of China

Fu-tao Huang*

Introduction

It seems that, among the early studies of internationalization of higher education, much focus has been placed on research in personal mobility across borders — in particular, the mobility of international students — yet little is known about internationalization of the undergraduate curriculum. However, with advancement of globalization, internationalization of the undergraduate curriculum has constituted an integral and important part of higher education reforms and internationalization of higher education in individual countries. Moreover, in a sense, by analyzing actual situations relating to internationalization of higher education, one can understand how a significant international dimension has been incorporated into university education in an individual country. Especially in China, the internationalization of the undergraduate curriculum is not only an indicator being adopted to measure the degree to which its university education has been opened to the outside world in recent years, but also as one of the important means to build world-class universities, to enhance its internationalization, and to cultivate personnel with an international perspective. By examining the actual situation of internationalization of the undergraduate curriculum in China since the 1990s, this article discusses how significantly Chinese higher education has opened to the world. In particular, it deals with the recent situation concerning the undergraduate curriculum designed for both Chinese students and international students and the process of internationalization from various perspectives: different student groups, types of internationalized curricula, and educational organizations. Then, based on a number of case studies, focused on the undergraduate curriculum specially provided for international students and the internationalized undergraduate curriculum in general, the article touches on the characteristics, models and the extent to which internationalization of the undergraduate curriculum in China has been pursued.

Current Studies and Research Framework

Current Studies Internationalization of university education has been pursued as an integral part of higher education, from as early as the latter part of the 18th century when the modern European universities emerged. However, by the early 1990s, internationalization of higher education was

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characterized by personal mobility across borders, typically in the form of student and faculty mobility. Moreover, internationalization of university education had been confined to only a few countries or religious organizations, being small-scaled and incidental. Since the later 1980s, with increasing transfer of academic credit, certificates, and degrees among universities in the EU member countries, which is reflected in the Socrates Program, and a gradual formation of a European market, much research into diverse aspects of internationalization of university curricula has been conducted. Research on the definition and patterns of internationalized curricula by the OECD/CERI in 1994 still exerts a profound influence. In the OECD report, the term ‘internationalization of the university curriculum’ is defined as “curricula with an international orientation in content, aimed at preparing students for performing (professionally/socially) in an international and multicultural context, and designed for domestic students and/or foreign students.” The research group identified nine types of internationalized curriculum. They include (1) curricula with an international subject; (2) curricula in which the traditional/original subject area is broadened by an internationally comparative approach; (3) curricula that prepare students for defined international professions; (4) curricula in foreign languages or linguistics which explicitly address cross-cultural communication issues and provide training in intercultural skills; (5) interdisciplinary programs such as regional and area studies, covering more than one country; (6) curricula leading to internationally recognized professional qualifications; (7) curricula leading to joint or double degrees; (8) curricula in which compulsory parts are offered at institution(s) abroad, staffed by local lecturers; and (9) curricula in which the content is especially designed for foreign students.¹ Furthermore, Professor van de Wende also made a detailed study of the research framework of internationalization of university curricula based on a case study of the Netherlands. Prof. Wende examined the changing situations, issues and measures concerning internationalization of the university curriculum in the Netherlands by analyzing the quantity, scale, related educational organizations, and effects. Part of this study was also published in the OECD document “Internationalisation of Higher Education” in 1996 and has greatly influenced studies in internationalization of the university curriculum since then.²

Research Framework Based on the studies identified above, the term ‘internationalization of the undergraduate curriculum’ in this article is used in its broad sense. It refers to programs provided for foreign students and Chinese students with a focus on the process of designing and implementing curricula concerning other countries, regions or culture, or any programs leading to internationally recognized professional qualifications or degrees. As for the term ‘undergraduate curriculum’, it includes various fields of study and specifications; it not only means systematic educational programs or groups of courses leading to degrees, but also denotes some short course programs or even single subjects that do not necessarily lead to degrees, qualifications, or certificates.

Actual Situations and Changes of Internationalized Curriculum

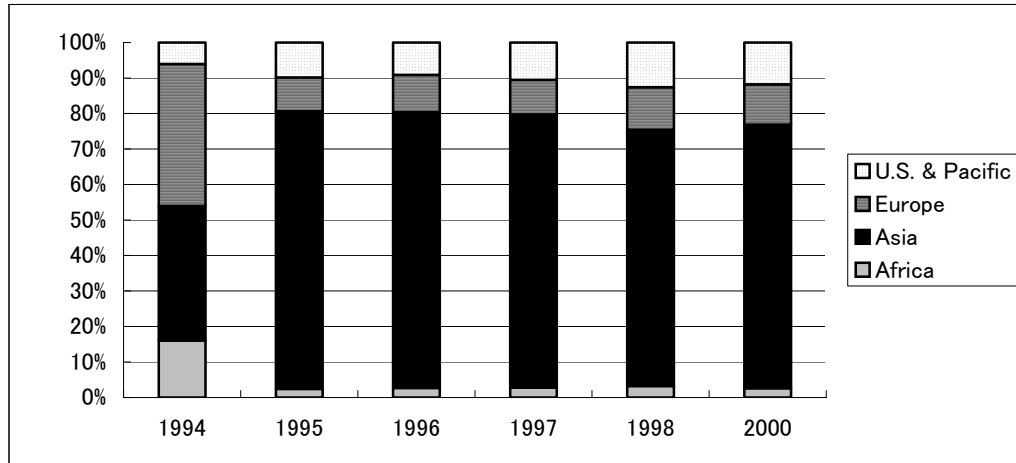
As indicated previously, according to different student groups, internationalized curricula can be roughly classified into two groups: programs for foreign students (overseas students, but in this article this does not include students from Hong Kong, Macau and Taiwan) and programs for local Chinese students. First, changes and actual situations of curricula for foreign students from 1990 to 2000 will be dealt with.

Internationalization of the Curriculum for International Students In Chinese universities, programs for international students consist of two groups: programs for international students who study in the same classes as Chinese students; and programs specially designed for international students. Strictly speaking, the first group cannot be called curricula only provided for international students, but as changes in programs for this group can indicate how significantly university curricula in China have been opened to international students, it forms part of the internationalized curriculum in its broad sense, whereas for the second group it is used in its narrow sense.

Since 1950, shortly after the People's Republic of China was established, China started its education of international students. The international education for foreign students was mainly concerned with providing Chinese language, Chinese history and history of the Chinese revolution for students from socialist countries, including the former Soviet Union, East Europe, and students from Africa. These students were financed by the Chinese government based on inter-governmental agreements for student exchange.³ In a major sense, international education at that time was undertaken as part of the political and diplomatic policies of the new China.

However, since the latter part of the 1970s, and especially since the 1990s, curricula for international students have experienced tremendous changes in both scale and content. First, with a regard to student origin, from 1990 to 2000 as shown in Fig. 1, international students from Asia made up the biggest share. Especially since 1995, their numbers accounted for approximately 70% of the total, followed by students from Europe. Students from the U.S.A. formed the third largest group. In terms of country of origin during this period, students from Japan, South Korea and the U.S.A. comprised the top three groups: students from Japan and South Korea accounted for a substantial share, providing approximately 70% of the total almost each year. So, in recent years, the curricula specially designed for international students were basically provided for international students from Asia, and in particular for students from Japan and South Korea where traditional Chinese culture still exerts a considerable influence.

Second, the curricula for international students can be classified for practical purposes into two major groups: formal educational programs, for which degrees or certificates are usually issued; and informal programs, for which only diplomas or certificates are offered. This article discusses only the formal programs and focuses on undergraduate programs.

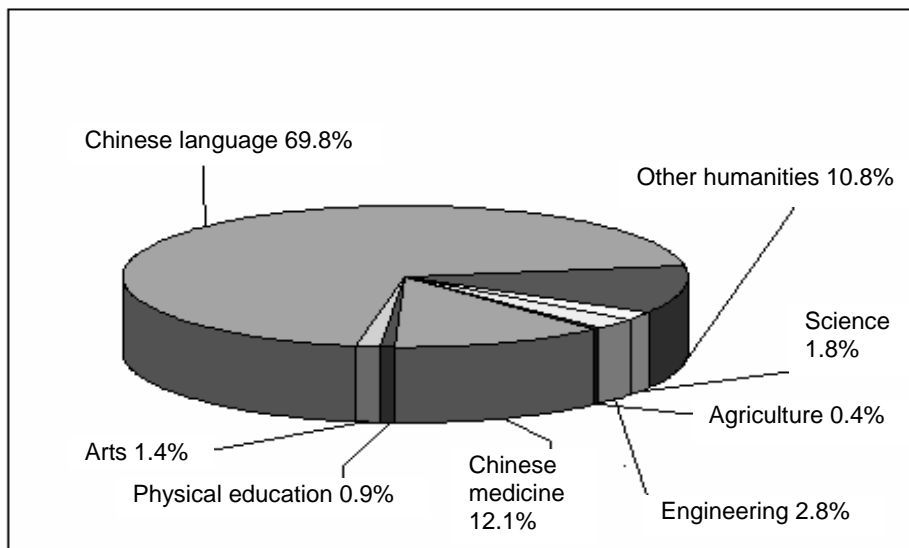
Figure 1. Changes in the Composition of International Students in China (1990-2000), by source

Sources: China Education Yearbook Editorial Board, *China Education Yearbook 1995, 1996, 1997, 1998, 1999 and 2001*. People's Education Press (in Chinese).

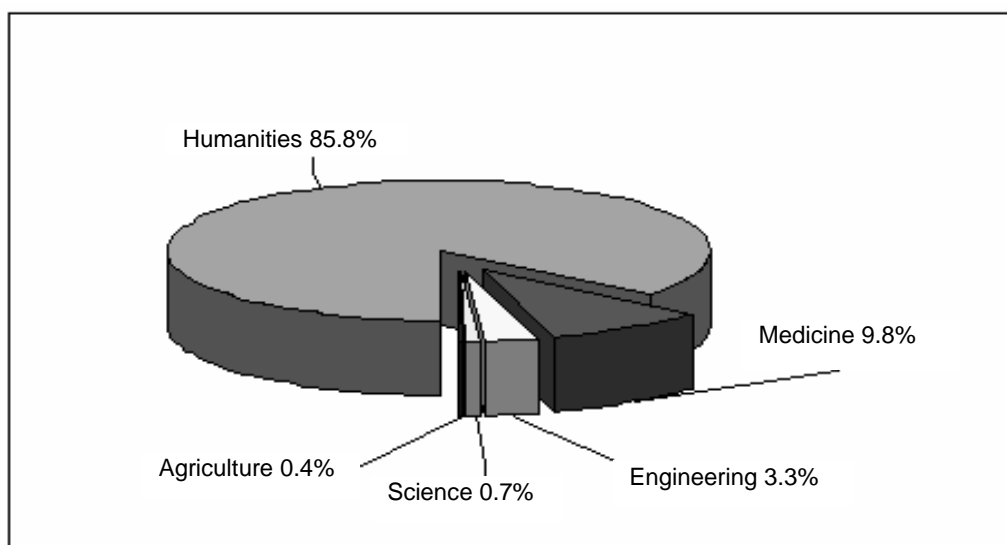
In 1990, there were only 252 international students who were enrolled in programs that are called formal educational programs in Chinese higher education institutions. They amounted to 4% of the total number of international students. A majority of international students were enrolled in short-term programs as trainee or research students.⁴ However, by 2000, the number of students that were enrolled in formal programs had increased to 13,703, constituting 38.4% of the total.⁵ By the early 1990s, almost all the curricula for international students were offered at an undergraduate level. For example, the percentage of international students who were enrolled in masters' degree programs and PhD programs was less than 10%;⁶ in contrast, by 2000, the percentage had risen to more than 20%.

Third, by field of study, except for a small number of programs concerning agriculture, medicine, architecture and textiles that were specially provided for students from Africa and other developing countries, in the early 1990s most of programs were concerned with Chinese language and Chinese-related subjects. For example, in 1990, among 6,291 international students, only 252 of them pursued degree-conferring programs in other than Chinese language or Chinese-related subjects: the vast majority of them majored in Chinese language, Chinese literature, or Chinese history. In recent years, in most Chinese universities, in addition to Chinese language and Chinese-related programs, programs such as economics, management, law, international politics, English language, computer science, chemistry and mathematics have also been provided for international students. However, by 2000, the overall situation had not changed substantially, because the number of programs concerning humanities, represented by Chinese language studies, still constituted a predominant component (see Figures 2 & 3).

Four, with a steady increase in the number of international students, there has been a gradual growth in the number of higher education institutions able to provide programs specially designed for international students. At the same time, changes have also occurred in the educational organizations in charge of overseas student education. As indicated in Fig. 4, during the period from 1990 to 2000, the number of institutions that accepted international students had increased from 120 to 346.

Figure 2. Distribution of International Students between Major Subjects (1995)

Source: China Education Yearbook Editorial Board (1997) *China Education Yearbook 1996*. People's Education Press. p.359 (in Chinese).

Figure 3. Distribution of International Students between Major Subjects (2000)

Source: China Education Yearbook Editorial Board (2002) *China Education Yearbook 2001*. People's Education Press. p.282 (in Chinese).

Accompanying this expansion, changes took place in the educational organizations responsible for international student education. Initially, as noted earlier, international student education was mainly concerned with studies of the Chinese language and related programs; it was intensively undertaken in specially established and independent divisions, such as a 'Section for International Students', or a 'Training Section' or 'Center for International Students.' However, currently, international education is implemented in a College of International Exchange, a College of International Cultural Exchange, or some similarly designated college or department in the university. Increasing numbers of international students now come to study with Chinese students in the same class.⁷ For example, in Fudan University, by 1990 more than 90% of international students had been enrolled in the Training Section of Chinese Language of the College of International Exchange and the Division of Chinese

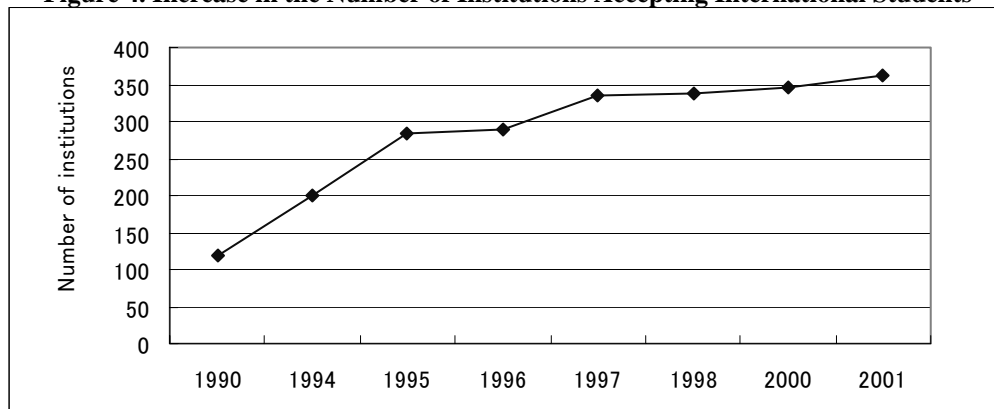
Language and Culture: in contrast, by 2002, 35% of international students were located in individual colleges and received their degree-conferring programs in various professional disciplines. However, as shown in Table 1, the number of programs provided for international students varies greatly between different universities. In Tsinghua University and Shanghai Jiaotong University, two leading universities in China that are famous for their science and engineering courses, the number of internal admission programs at an undergraduate level was far more than at Peking University and Nanjing University, which are considered as comprehensive universities in China.

Table 1. Current Situation of Curricula for International Students in Major Universities (as of 2002)

University	Undergraduate Curricula	
	Total	Percentage of Total
Peking Univ.	44	28.3
Tsinghua Univ.	38	82.6
Nanjing Univ.	26	42.3
Shanghai Jiaotong Univ.	48	87.2
Tongji Univ.	17	24.6

Sources: Based on online information available at <http://www.pku.edu.cn>, <http://www.tsinghua.edu.cn> <http://www.nju.edu.cn>, <http://www.sie.sjtu.edu.cn>, <http://www.tongji.edu.cn> with author's modifications, accessed on June 21 2003.

Figure 4. Increase in the Number of Institutions Accepting International Students



Sources: China Education Yearbook Editorial Board, *China Education Yearbook 1991, 1995, 1996, 1997, 1998, 1999, 2001*. People's Education Press. Based on online information available at <http://www.studyinchina.net.cn> with author's modification accessed on July 9 2003.

Internationalization of Curricula for Chinese Students From 1979, the Ministry of Education had attempted to introduce textbooks adopted in some European and American universities through translation, but with only limited success. Since 1992, following incorporation of market factors into the universities and especially after China's participation in the WTO in 2002, more authority has been delegated to individual universities. Cultivating faculty and staff with an international perspective who can meet the challenges from economic globalization has become a big issue for individual Chinese universities. Accordingly, internationalization of the university curriculum has become one of the important strategies for carrying out university reforms and

facilitating internationalization in most universities. In the following discussion, a special emphasis will be put on the types, contents, disciplines, design and implementation of internationalized curricula for Chinese students.

In terms of the types of internationalized curricula, various developments have been made at institutional level in recent years. But even so, based on the types of internationalized curricula summarized by OECD/CERI, by exploring changes in internationalized programs, for example, in Fudan University (see Table 2) in comparison with what happened in 1990, even by 2002 the percentage of internationalized programs had not surpassed 20% of the total. Though the number had increased from 213 to 479 in an absolute term, the proportion of the total had dropped slightly from 18.9% to 17.1%. Among them there had been a striking growth in the number of programs concerning foreign languages/cross-culture and interdisciplinary regional/area studies. Thus, it is safe to say that the expansion in the number of internationalized programs in Fudan University took place substantially in the fields of language, and of humanities and social sciences. However, the fact that the number of programs in curricula preparing students for defined international professions had declined, and that no big changes in the number of programs leading to internationally recognized professional qualifications and joint or double degrees, had occurred indicates that at least there had been no great change in the recent progress of these programs.

Table 2. Changes in the Internationalized Programs at Fudan University

Types by OECD	1990		2002			
	specification	program	specification	change	program	change
International subject	3	48	1	<u>-2</u>	53	<u>+5</u>
Internationally comparative approach	0	11	0	0	40	<u>+29</u>
Curricula preparing students for defined international professions	3	37	1	<u>-2</u>	18	<u>-19</u>
Foreign languages/cross-culture	4	89	6	<u>+2</u>	255	<u>+166</u>
Interdisciplinary region/ area studies	0	28	0	0	113	<u>+105</u>
Curricula leading to internationally recognized professional qualifications	0	0	0	0	0	0
Curricula leading to joint or double degrees	0	0	0	0	0	0
Curricula of which compulsory parts are offered at institution(s) abroad, staffed by local lecturers.	0	0	1	<u>+1</u>	7	<u>+6</u>
Total	9	213	9	0	479	<u>+266</u>
Percentage of the total	14.5	18.9	14.3	<u>-0.2</u>	17.1	<u>-1.8</u>

Sources: Division of Teaching Affairs of Fudan University (1990) *Teaching at a Glance*. unpublished document (in Chinese). Division of Teaching Affairs of Fudan University (2002) *Teaching Plan for Undergraduate Students in 2002*. unpublished document (in Chinese). Online information available at <http://www.software.fudan.edu.cn/htm/jiaoxuejihua02.htm> accessed on May 23, 2002.

As for development of internationalized curricula, a diversity of efforts has been made in individual universities with the purpose of enhancing internationalization of the undergraduate curriculum. According to practices in many universities, three major types can be identified in the design of internationalized curricula.

A. Independent Type. This type reflects efforts made mainly by existing faculty members to design programs based on an individual university's traditions or its current situation. The internationalization of undergraduate programs is often facilitated through an increase in the number of foreign language programs, or curricula in which the traditional/original subject area has been broadened by an international comparative approach. It normally occurs in institutions of humanities and comprehensive universities but only in a very few of institutions of science and engineering. It is often implemented by establishing more foreign language Faculties, or by expanding numbers of professional programs delivered in English.

B. Partnership Type. This type corresponds to an expansion of degree-conferring programs or curricula that can be recognized by, or transferred between individual countries in cooperation with foreign universities or Faculties. By August 2002, approximately 15 Chinese universities had established bachelor's programs in partnership with more than 10 universities in the U.S.A., Canada, Australia, the Netherlands and Hong Kong.⁸ Universities that had delivered degree-conferring programs in cooperation with foreign partners were mostly prestigious higher education institutions with strong professional fields of study especially in science and engineering, agriculture, economics and biology. Many specialized curricula, including international economics, international trade, computer science, or mechanical engineering are offered in these institutions.

C. Imported Type. This type includes introduction of academic staff from overseas and import of textbooks. The former entails development of internationalized curricula through accepting scholars or faculty members who have studied or have conducted research activities in universities abroad. The latter mainly implies the import to Chinese campuses of textbooks and other academic material used in foreign universities. For example, since 2002, most of the leading universities, including Peking University and Tsinghua University, have introduced many textbooks used in Harvard, Yale, MIT, and other US universities.⁹ However, it should be emphasized that these activities are usually permitted only in some of the leading universities. Moreover, it is stipulated that only textbooks basically concerning information technology, biological technology, new-material technology, international finance, law, and other fields of study that are emergent and important for Chinese academics can be imported.¹⁰

Characteristics and Types of Internationalized Curricula

Since the 1990s, the major characteristics of the internationalization of the undergraduate curriculum in Chinese university can be summarized in three categories.

First, with regard to the regional and national origins of international students, international educational programs are mainly provided for students from Japan and South Korea. Except for some leading universities, such as Peking University and Tsinghua University, in most universities, the vast majority of these programs are concerned with Chinese language and humanities. In most cases, they

are offered for international students in specially established sections or divisions specially designated for international students, but in the most recent years, more and more foreign students have moved from these special divisions so as to study together with Chinese students.

Second, in terms of internationalization of university-wide undergraduate curricula, varied attempts have been made recently at institutional level. Some universities are involved in activities such as providing joint degree programs in cooperation with foreign partners, encouraging academic credit transfers with foreign partners, and importing foreign textbooks; others are trying to provide more English programs, and programs in specified areas of study. Thus, though the methods vary, in recent years internationalization of the undergraduate curriculum has been rapidly stimulated.

Third, the changes in numbers of internationalized programs, the proportion of international students enrolled in degree-conferring programs, and the numbers of institutions that are able to provide programs for international students, indicate steady increases in both numbers of programs designed for international students and the proportion of international students enrolled in undergraduate programs. However, by country of origin and by field of study, there have been no significant changes. Furthermore, it should be pointed out that situation varies greatly in the numbers, the structure, or the components of programs specially designed with distinctive features for international students according to different institutions.

Regarding policies and measures for the internationalization of the undergraduate curriculum in China, there are few regulations on programs for international students. They vary between universities, but undergraduate education for international students and Chinese students are normally provided separately. There may even exist differences in program content for international students and Chinese students. As for programs for international students, the majority of them are concerned with Chinese language, Chinese history, and Chinese culture. In contrast, as for programs for local students, more internationalized program are delivered by means of introduction of foreign textbooks or materials, through a rise in the number of professional programs concerning management or economics, and by expansion of English programs and programs taught bilingually (see Table 3).¹¹

Table 3. Characteristics of the Internationalization of the Undergraduate Curriculum in China

Definition	International students	Chinese students
Rationales	Cultural/academic	Academic
Goals	Learning language of the host country or cultural experience	Learning science and technology in advanced countries
Field of study	More programs concerning the humanities such as language or culture of the host country	More programs concerning economics, management, computer science and other science & engineering programs.
Educational organization	In a specially-established section or division	In an individual college or department
Teaching method	In addition to formal curricula, more focus on visits or field investigations.	Through a systematic curriculum
Medium of language	Using the language of the host country as a major medium of instruction	Using the national language as a medium of instruction

Major Issues

As has been indicated, internationalization of the undergraduate curriculum in China still leaves a lot to be accomplished. Compared with a decade ago, there has been a tremendous growth in numbers of programs concerning English language, linguistics, humanities, and social science; and also in the numbers of educational organizations responsible for providing these programs. However, there are few examples of the existence of programs preparing students for defined international professions or for internationally recognized programs other than humanities. In particular, there are only a very few programs in professional areas for international students at a graduate level. Thus, greater efforts in these aspects will have to be made if further internationalization of the undergraduate curriculum in China is to be achieved.

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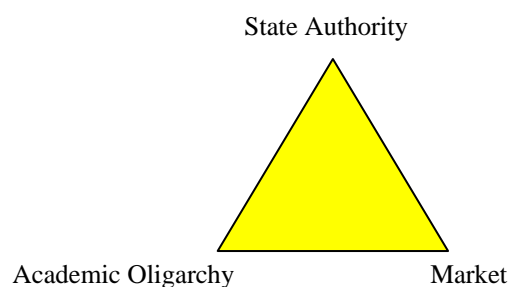
Modes of Higher Education Co-ordination: the Cases of England and Japan

Keiko Yokoyama*

Introduction

‘Co-ordination’ implies regular operations that shape a higher education system. Clark’s ‘triangle of coordination’ (1983) gives an insight into the conceptualisation of ‘higher education co-ordination.’ Clark distinguishes between state authority, academic oligarchy, and the market as the forces that determine the way in which higher education systems are coordinated. He conceptualises power relationships among the three forces across eight countries, including Japan and the UK (see Figure 1). Each corner of the triangle in the model indicates the extreme form of one force and marginal contributions from the other two forces. Clark positions the power relationships among the three forces within the triangle, representing different degrees of combination of the three elements. The market in this model was conceptually taken as synonymous with ‘non-governmental’ and ‘non-regulated’ forces (Clark, 1983, p. 138).

Figure 1. Clark’s Triangle of Co-ordination



Source: Clark (1983).

Clark’s model provides a broad idea of the definition of co-ordination, which is shaped by the power balance of three main forces — the state, the universities, and the market. The three forces identified in the ‘Triangle of Co-ordination’ may need to be re-contextualised, by giving attention to contemporary trends epitomised as: (i) the relationship between the state authority and the market; and (ii) the main players within the state authority. The first point is that it could be difficult conceptually

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to locate a market force as independent of the state's force in the context of English higher education since the mid-1980s and of Japanese higher education since 1945 by virtue of the ability of the state to involve, condition, and operate the market to some extent. Williams (1992) argues that the state can involve the market in student numbers and costs in the UK. In the Japanese context, the state regulations, as Amano argues, have not, since 1945, opposed the principle of competition, and have, to some extent, been compatible with the market (1996, pp. 25-44).

The second point is that 'state authority' is not a single unified entity, but consists of different players within the state authority, including government, central administration (ministries), agencies, and intermediate bodies. The differences between co-ordinators imply differences in the characteristics of co-ordination, and in the relationships between the state and the universities.

The purpose of this study is to elucidate the nature of higher education co-ordination that shapes the higher education systems in England and Japan. The choice of countries for the study relies upon an assumption that two different types of co-ordinators, seen in two different higher education settings, could shed light on differences in the characteristics of higher education co-ordination between the two countries.

The study, incorporating an historical perspective, examines the role and function of the main co-ordinators, and the particular methodology through which the co-ordinators are involved in the university sector, such as financial allocation, legislation, planning, and evaluation. The time period of the analysis in this study is from 1919 in England — when a funding council was established as a buffer body — and 1945 in Japan — when new relationships between the state and the universities were established by introduction of the new education system in Japan. The terminus of the analysis of the study is 2004.

Modes of Co-ordination

'Co-ordination' could be related to the 'regulation' by central administration, a governmental agency, an intermediate body, and the market. It can be, as Meek (2002, p. 54) points out, linked to an ideology, which shapes the regulatory framework, and the relationship between external structure and institutional governance and management:

“...a more eclectic approach to co-ordination, (examines) not only the different machinery used to control higher education institutions and systems but also the ideological foundations upon which such machinery is based, and the relationship between external authority structures and internal forms of governance and management.”

This study applies Meek's definition, by giving attention to the ideological foundations — in particular, neo-liberalism — because of its applicability to the purposes of the study.

With this in mind, the study identifies co-ordination as regular operation by particular entities, which shapes the higher education system, and which could be based upon a particular ideology. The study distinguishes ‘co-ordination’ from ‘reform.’ ‘Co-ordination’ is, in the study, taken as an act to organise and operate on a regular basis, while ‘reform’ is an *ad hoc* act to change the existing system. ‘Co-ordination’ applies to the relationship between co-ordinators in central authorities and the universities, while ‘reform’ could be linked to conflict and compromise within central authorities, between central authorities and the universities, or between external and internal stakeholders.

Co-ordination could be understood within the terms of regulation, control, and in ‘remote steering’ (Neave, 1988, 1995). A set of such terms could suggest the types of central authorities’ involvement, and the relationship between central authorities and the universities. Regulation is, as van Vught defines it: “the efforts of government to steer the decisions and actions of specific societal actors according to the objectives the government has set and by using instruments the government has at its disposal” (1994, p. 3). In this sense, regulation is a synonym for steering, implying governmental or a stakeholder’s manoeuvre or monitoring. Control could be direct, sometimes involving a coercive meaning, such as rule or command. The core concept of Neave’s ‘remote steering’ is inherent in two powers: one being continuous government involvement, not as previously exercised, directly but from a distance and focused upon output, performance and quality management; the other being increasing self-regulation of individual universities as a result of the decentralisation and devolution in continental Europe. Individual universities, despite the continuity of government involvement, can, according to Neave, decide their own strategic responses to the broad guidelines on national policy and market forces.

In the context of contemporary English and Japanese higher education, observation suggests that regulation, control and ‘remote steering’ coexist in a complex way. ‘Remote steering’ is observed in England, not through deregulation, but through regulation. Williams (forthcoming), in relation to the idea of remote steering, comments:

“British universities were in a uniquely privileged position to take advantage of the new circumstances. Unfortunately for them, however, whereas in many other countries [in continental Europe] steering from a distance involved loosening rigid state control mechanism, in the UK the emphasis was on the strengthening of government instruments to steer the system.”

In contemporary Japanese universities, remote steering is seen in the complexity of Ministerial regulation and deregulation. Ministerial deregulation includes curriculum design (since the 1990s), internal financial allocation (since 2004), and academic and administrative personnel (since 2004). Ministerial regulation has strengthened in the areas of evaluation and through medium-term planning in relation to the corporatisation of the national universities in 2004, creating a conceptual

contradiction in the neo-liberal agenda of coporatisation, which originated from an increase of institutional latitude and market forces.

On the basis of the above framework, the study gives attention both to the types of policy instrument and to the types of co-ordination.

The Types of Policy Instrument The level of restraint is manifest in the various means by which central authorities regulate, control, or remote-steer universities in particular areas, such as funding, evaluation, legislation, and planning. Goedegebuure, Kaiser, Maassen and de Weert (1994), identify four types of 'policy instrument' — funding, planning, evaluation, and regulation, (see also Goedegebuure & Van Vught, 1996). Regulation in their terms is shown by the range of deregulation policy. Similarly, Dale (1997) adopts three forms of state governance of education, derived from existing studies of the forms of state intervention in the welfare state: funding, regulation, and 'provision and delivery'. Dale, in his analysis of 'regulation', gives attention to deregulation, jurisdiction, and "New Public Management"; for 'provision and delivery', he focuses on the material and cultural capital of consumers, taking a Marxist perspective.

This study selects funding, planning, evaluation, and legislation as components in the analysis of involvement by central authorities in the university sector. The choice is based upon a comparison between England and Japan, where in both cases the central authorities' involvement in these areas is significant. The analysis of 'legislation' in this study involves an analysis of 'regulation' as defined in the studies by Dale (1997), and by Goedegebuure, Kaiser, Maassen, Meek, and de Weert (1994). The choice of the term, 'legislation' seeks to avoid the dual meaning of 'regulation'.

The Types of Coordination The co-ordinators in central authorities could be central administration (perhaps a ministry), a governmental agency, or, as previously seen in the UK, a buffer body — the University Grants Committee (UGC). The different types of co-ordinators imply differing relationships between central authorities and universities, and differing methodologies of central authorities' involvement in the market.

The regulators in the co-ordination of higher education include the following: (1) a governmental agency, (2) the central administration, (3) an intermediate or buffer body, and (4) the market. First, an agency's coordination relies upon the relationship between government and its agency — or the suppliers of resources and the providers of resources according to the suppliers' intention. The relationship between government and its agency entails the 'principal-agent problem': that is, how a principal or a supplier of resources ensures that the agent allocates public funds in accordance with the principal's priorities. Williams (forthcoming) presents five forms that this may take: coercion, administrative or legal authority, charismatic persuasion, professional expertise, or the provision of incentives. He notes that the provision of incentives is most effective in persuading the agent to

achieve the outcomes desired by the principal. The form of agency co-ordination used in England is one in which the Higher Education Funding Council for England (HEFCE) allocates public funds to the institutions strategically, according to state priorities (*e.g.* special funds and the “Higher Education Reach-Out to Business and the Community” fund) and selectively on the results of a Research Assessment Exercise (RAE).

Second, the co-ordinator is central administration. This form of co-ordination is not value-free as the political neutrality and rationality of a central administration is at least contestable. The nature of central administration is not politically neutral; on the contrary, its nature is similar to that of a number of interest groups. Clark, for instance, observes:

“... central administrative staffs are not neutral tools of higher education policy, but rather become interest groups themselves, ones with privileged access, vested rights, and self-sustaining points of view.” (Clark, 1983, p. 120).

The Japanese case bears testimony to the characteristics of ministerial co-ordination. Legislation, as Kuroha argues (2001), has been an effective tool in ministerial co-ordination, as seen in Japan. Legislative tools have not only included laws, statutes, and acts, but also ministerial ordinances, regulations, circulars, and oral advice. According to Kuroha, oral advice, in particular, has been efficient and effective in the Japanese context.

Third, an intermediate body allocates public funds by acting as a buffer between government and the universities, as exemplified in the UGC’s funding mechanism in the UK between 1919 and 1988. The UGC, at least before the mid-1980s, functioned to protect universities from external control, including that of the government. It can be assumed that buffer co-ordination is, at least in principle, not driven by the co-ordinator’s ideology in contrast to the situation with agency co-ordination.

Fourth, market co-ordination offers an ideal model. In practice, the market could be considered as related to agency or bureaucratic co-ordinations, because of the central authorities’ conditioning, and operation in the market. Regulation and the market are, as Meek (2002) argues, not always against each other. On the contrary, together with the state’s conditioning, the market functions in the context of higher education (Yokoyama, 2003).

Different co-ordination brings about a different culture in the central authorities’ involvement in the university sector. As is shown in Table 1, a culture of buffer co-ordination by an intermediate body implies looseness, arbitrariness, and lack of selectivity. A culture of buffer co-ordination is conditioned by an academic ideology – university autonomy, which protects the university sector from external pressure. Individual institutions have great latitude in institutional governance and management.

Agency co-ordination is intense, frequent, and selective. The culture in agency co-ordination could be based upon neo-liberal doctrine, allowing an agency to monitor universities’ quality and

financial health, and by which institutional governance and management could be indirectly steered. The relationship between central authorities and the universities in the co-ordination is based upon contract (see Neave, 1988).

Ministerial co-ordination is identified by its rigidity, routines, prescription, and conventionality. The culture in ministerial co-ordination reflects not only government ideology but also ministerial conservatism, which tends to maintain the *status quo* and often brings about some regulation in institutional governance and management. The relationship between the Ministry and the universities is based upon legislation — laws, acts, orders, and circulars.

The ideal model for market co-ordination — pure market co-ordination — is based upon Adam Smith's invisible hand — and ruled by demand and supply.

The following sections examine the cultures of buffer, agency, and bureaucratic co-ordinations which were/are observed in England and Japan, by focusing upon the policy instrument and the relationship between central authorities and the universities. This section does not scrutinise the ideal model of market co-ordination.

Table 1. Characteristics of the Central Authorities' Involvement in the University Sector: England and Japan

Buffer Co-ordination	Agency Co-ordination	Ministerial Co-ordination	Market Co-ordination
Looseness Arbitrariness Lack of Selectivity	Intensity Frequency Selectivity	Rigidity Routines Prescription Conventionality	Openness Competition

Buffer Co-ordination

Buffer co-ordination was the pattern for the early years of the UGC [1919-1988] in England. The main policy instrument of the UGC was funding rather than evaluation and legislation before the mid-1980s, when the UGC introduced RAE and allocated funding selectively as a consequence of the constraint of public funding for higher education. The funding methodology, based upon block grants and a lack of selectivity, financial sanction and transparency, shaped a loose and non-selective culture of buffer co-ordination before the mid-1980s. The provision was not systematic. The management of the UGC was arbitrary. The relationship between the UGC and the universities was not legally based in the UGC regime, in which no legislation stipulated the role and the function of the UGC, or the relationship between the UGC and the universities.

The relationship between the UGC and the universities can be understood in relation to its role and function. Salter and Tapper (1995) and Neave (1988) interpret the UGC as a 'buffer body', which created an informal relationship between the government and the universities. The UGC, according to them, functioned to insulate the universities from state pressure and economic values, minimise state control, and defend university autonomy. Salter and Tapper illustrate the limited influence of external

stakeholders on the UGC, including governments, the Public Accounts Committee, Treasury, and the Department of Education and Science.

Salter and Tapper (1995) argue that traditional university values, which originally consisted of the Christian-Hellenic and liberal traditions, had strong ideological power which could insulate the universities from other ideological challenges, such as economic ideology, at least until the 1960s. This ideological power of the universities, for example, had insulated them from governmental pressure to respond to an increasing economic demand for scientists, engineers, and technologists in the 1950s.

Similarly, Neave (1988) interprets the role of the UGC as a 'buffer.' The foundation of the UGC, he argues, created 'an area of negotiation between state and university', which the universities themselves controlled. Neave identifies this negotiation with government as informal and based upon 'trust and confidence', not formal administration or a constitution. These informal relationships between government and the universities are similarly pointed out by Trow (1996). There was no detailed code of regulation at that time. Even university charters did not refer (and still do not refer) to the relations between government and the universities, although they do secure university autonomy in principle.

The relationship between the UGC and the universities during the buffer period was not static, but changeable. It can be interpreted that establishment of the UGC in 1919 indicated formation of an active relationship between government and the universities. This event, however, does not necessarily imply the creation of a hierarchical power relationship between them. The dominance of academic members in the UGC, and the lack of a planning role for the UGC before 1945, provides counter-evidence for any argument of government control of the universities; rather it suggests the significant influence of the universities on the UGC. The large proportion of university representatives and small proportion of staff from the Department of Education in the UGC minimised state influence and protected university autonomy (Clark, 1983, p. 119). Shattock's historical description of the role of the UGC suggests a passive role before 1945; it functioned simply as a funding mechanism for resource allocation (Shattock, 1994, pp. 1-5).

Between 1945 and 1963, a change in the characteristics of the UGC from a passive to a positive entity was observed, in which significant independence of the UGC from government pressure, and a high degree of university autonomy — despite their increasing dependency on public funding — were maintained concomitantly. A 1945 proposal of the UGC for a ten-year university development plan, which was submitted to the Treasury in order to increase government grants (Shattock *loc cit.*), suggests a change in the UGC from a passive to a more proactive entity.

An increasingly direct influence of the UGC on the universities was demonstrated by a change in its funding methodology through modifying the full block grant. The change in funding methodology included earmarking of funds for particular fields of study (*e.g.* medical and dental education, agricultural and veterinary studies, teacher education, social science, Oriental and African studies, and

Slavonic and East European studies in the period 1947–1952); it was accompanied by renewal of quinquennial visits of the UGC to the universities.

There is a lack of substantial evidence to support the view that there was an increase in government intervention in the universities through the UGC; on the contrary, events provide a plausible interpretation that the UGC insulated the universities from government intervention. The example of the UGC's rejection of a ministerial statement in the House of Lords in 1952 is, to a significant extent, testimony to the UGC's independence from government pressure (Shattock *loc. cit.*). (The ministerial statements referred to public funding for a new technological university, special funds for Imperial College, and technology Faculties in some universities).

Between 1963 and the mid-1980s, the UGC changed towards a becoming a planning body. In 1963, the recommendations of the Robbins Report on the expansion of higher education prescribed a more pro-active role for the UGC, including a planning role in order to increase student enrolment, and therefore increasing the UGC's influence over the universities. In 1964, a change in administrative links of the UGC, from the Treasury to the Department of Education and Science (DES), suggests increasing government interest in the university sector (Kogan & Hanney, 2000). In 1967, the change of legislative control, through the introduction of the General Memorandum of Guidance for the universities, could be interpreted as an attempt by the UGC to increase its influence over the universities. These changes, however, do not provide sufficient evidence to suggest a substantial change in the degree of government involvement in the sector through the UGC, but support the idea of an increase of the UGC's authority.

The UGC in the mid-1980s changed the nature of its role towards a more selective entity by providing public funding selectively for research.

Agency Co-ordination

Agency co-ordination has been observed in the English funding system since 1988. In 1989, a change in the funding body from the UGC to the University Funding Council (UFC) [1988-1992] effected a major shift in the function of the buffer to one of a state apparatus. Williams has identified differences between the UGC and the UFC (1992, pp. 13-16): the UGC was to distribute 'core funds', which constituted the largest part of the income of universities, while the UFC was 'to provide funds in exchange for the provision of specific academic services rather than to subsidise institutions'. In other words, the state purchased higher education, which implied that the higher education system was subordinated to state interests such as economic prosperity. Similarly, Pritchard (1994) argues that establishment of the UFC was illustrative of governmental intention to attempt to create a competitive market environment by using financial incentives, limiting resources, and encouraging the universities to increase student numbers.

A letter from the Secretary of State for Education and Science to the Chairman of the UFC in 1988 is testimony to Williams' and Pritchard's views on the change in the nature of the funding body:

“I shall look to the Council to develop funding arrangements which recognise the general principle that the public funds allocated to universities are in exchange for the provision of teaching and research and are conditional on their delivery.”

The new values adopted by the UFC largely aligned with those of the Conservative Government, stressing a market doctrine, in which traditional university values were no longer emphasised. This was evident in the same letter from the Secretary of State for Education and Science, which expressed governmental intention to position the higher education system within the market economy:

“I very much hope that it will seek ways of actively encouraging institutions to increase their private earnings so that the state’s share of institutions’ funding falls and the incentive to respond to the needs of students and employers is increased.”

In 1992, the further change from the UFC to the HEFCE has brought no shift in the type of co-ordination, and so conforms to the continuity of the culture observed in agency co-ordination (see Table 1). The HEFCE is involved in the university sector through the allocation of strategic funding and financial contracts based upon ‘Financial Memoranda’ between government, the HEFCE, and individual universities, and through performance-based evaluation which links funding distribution in research. The HEFCE’s main policy instruments are financial incentives and evaluation rather than legislation. The methodology of the RAE and the subsequent financial allocation indicate the HEFCE’s selectivity in the provision of research funds. The HEFCE’s exercise of RAE is intensive and frequent in terms of both its methodology and the frequency of its 4-8 years’ regular exercise.

It does not necessarily imply that the HEFCE’s regulation of the universities by using funding and evaluation and the development of its planning capacity has removed all power from the universities, establishing a vertical relationship between the HEFCE and the universities. The financial block grant allocation¹ preserves institutional discretion, suggesting that the value of traditional English university autonomy has not been totally eroded.

The interpretation of the relationship between the HEFCE and the universities as an agency co-ordination, in comparison with that in buffer co-ordination, is not straightforward. One interpretation is that the funding mechanism in agency co-ordination — an output and performance-oriented funding mechanism in research, and an input-related budget in teaching — is now more restrictive in terms of funding autonomy than it was in buffer co-ordination, which allowed greater funding autonomy to the universities. The other interpretation is that the funding mechanism under agency co-ordination also preserves institutional funding autonomy, as both pre- and post-1992 institutions are free to distribute

¹ The block grant is a collective funding unit that does not categorise such areas as teaching, research, and related activities in each institution, allowing each institution to be free to allocate finance internally at its own discretion and according to its own priorities, as long as it complies with the conditions set out in its financial memorandum with the HEFCE.

block grants internally for teaching, research and related activities at their own discretion. Moreover the forthcoming introduction of increased tuition charges in 2006 could extend this financial discretion by decreasing institutional financial dependency on HEFCE. Observation of the HEFCE's strategic funding allocation and the existing but constrained meaning of block grants suggests that the most plausible interpretation is one of financial autonomy within a framework of the HEFCE's policies and demands.

Ministerial Co-ordination

Ministerial co-ordination has been observed in Japan since establishment of the higher education system in the Meiji era. The main instrument of the central administration of education for both national university corporations and private universities is legislation and to some extent planning, which shapes the rigid, routine, prescriptive, and conventional culture of ministerial co-ordination.

The Ministry of Education, Science, Sports, and Culture (MESSC) (formerly Ministry of Education, Culture, Sports, Science and Technology, MECSSST) developed planning capacities between 1945 and the early 1980s, indicating increasing Ministerial regulation and control of the universities. Between 1945 and 1952, during the period of occupation by the US, there was an absence of a Japanese Ministerial planning role: the CIE (Civil Information and Education Section of the US Administration) instead controlled education in Japan. The CIE's policies included minimal intervention by the Japanese Ministry in the university sector, power devolution from the Ministry to local authorities, and legalisation of the status of the universities and of the power of the Ministry over the universities (Terasaki, 1998). The CIE, furthermore, attempted to remove the power of the Ministry in the area of quality control by setting up non-bureaucrat examiners for the review of chartering and accreditation. Confrontation between the CIE and the Ministry and the universities (Ijima, 1999) resulted in a certain amount of prudence on the part of the universities regarding joining the Accreditation Association, and an inefficient methodology for accreditation in the post-war period. The absence of any CIE proposal to abolish the Ministry's role in the allocation of funding to the national universities suggests that the CIE did not intend to remove the Ministry's funding role, but only its planning role. The lack of Ministerial policy on the universities between 1952 and the late 1950s, when manpower policy was launched, suggests that the policy of the CIE to minimise the power of the Ministry was effective until the late-1950s.

Kitamura (1997) argues that the Japanese Government did not involve itself in higher education before the early 1970s, and that higher education policy in Japan did not exist because of the ideology of university autonomy and a governmental focus upon the level of compulsory education (1997, pp. 141-150). This argument holds water in respect of the lack of government or ministerial policy concerning higher education before 1970. However, government and ministerial involvement in the university sector was observed in the economic policy of an earlier period.

Between the mid-1950s and the early 1960s, ministerial policy incorporating national economic targets suggests a change in function of the Ministry towards a planning entity. The education policy of the Ministry in the 1960s related to two economic plans: the 1957 'New Long-term Economic Plan' (*Shin-choki Keizai Kekaku*), and the 1960 'Double Income Plan' (*Syotoku Baizo Keikaku*), which was meant to double GDP (Amano, 1996). The logic of economic growth and education during the period was based upon an assumption of correlation between economic growth and an increased number of graduates in science and technology. The 1957 Report of the Central Council on Education (CCE), 'Policy on the Promotion of Science and Technology Education' (*Kagaku Gijyutsu Kyoiku no Shinko Hosaku ni tsuite*), was testimony to the linkage between economic and education policy during the period. The Report focused on the increase in graduate numbers in science and technology.

In the 1960s, the MESSC strengthened its control over the universities in relation to expansion of the universities by utilising the "Standards for the Establishment of Universities" (*Daigaku Secchi Kijyun*) — legislation which the Ministry has frequently used to steer both national and private universities, and in particular for manipulation of student numbers. Kuroha illustrates the changes in the Standards, which have been amended 16 times between 1955 and 1990 (1995, p. 46). In the 1960s, the Ministry deregulated the Standards for establishment of new universities and departments. The main methodologies adopted by the Ministry were to remove regulation over the number of departments and student places and the size of university estate. The increase of ministerial power did not indicate the universities' complete subordination to ministerial control or the lack of university autonomy. The failure to implement ministerial policy, which was caused by the resistance of the universities, itself testifies to the power of the universities. For example, in 1968 and 1971, CCE recommendations on differentiation policy, which categorised universities in various groups, failed to be implemented as a result of resistance by the universities.

Between 1976 and 1986, the first (1976-1980) and second (1980-1986) five-year higher education plans, as well as establishment of a Department of Higher Education Planning in MESSC in 1972, all signify its increasing control (Amano, 1996). The first and second five-year higher education plans included two reviews of the pattern of expansion. One review concerned expansion of the private universities and the large gap between the planned number of student places and the substantial number of re-enrolled students. The other review considered the density of student populations in the large cities and the emphasis on local universities.

During the same period, specifically between 1975 and 1985, the MESSC manipulated student numbers by using the Standards. The Ministry adopted a regulation policy in respect of expansion of the universities, particularly private universities. This consisted of two strategies. One was introduction of a new ministerial statute that tightened the approval procedures for establishing departments (departments of medicine in 1972 and other departments in 1976). The other was to introduce a system of ministerial approval for the number of departments and student places (an amendment to Article 5 of the Private University Law). The policy of restriction on the number of

departments and student places in private universities in the mid-1970s was linked to a funding policy that sought to increase public funding to private universities. The logic behind this policy was that by creating a condition of higher dependency of private universities on public funding, the state could control private universities more strictly than before. This policy was, however, never accomplished.

The policies of the MESSC in the 1970s, according to Amano, differed from those in the late 1950s and early 1960s (1996, pp. 170-180). Education policy in the 1970s was comprehensive, and included socio-cultural concerns, while education policy in the 1950s and 1960s was explicitly related to economic planning.

Since the 1980s, the central administration's financial instrument has changed to introduce strategic funding allocations, which maintain a vertical relationship between the central administration and the universities. Selective funding by the MECSSST for academic staff in both national and private universities in the area of project-based research has increased since the mid-1980s. Expenditure on 'grants-in-aid for the scientific research system' (*kagaku kenkyu hi*) — a major strategic grant for research projects for individual researchers or research groups — increased from 45.1 billion yen in 1987 (3.6 percent of the increase in GDP) to 170.3 billion yen in 2002 (www.mext.go.jp). The selectivity implies that the research-oriented national universities have been influenced more by this ministerial policy than the private universities, which tend to be teaching-oriented.

In 2004, corporatisation of the national universities implies some changes in the regulation of, and relationship between, the MECSSST and the new national university corporations. The changes are seen in two aspects: (i) the financial instrument; and (ii) the evaluative instrument. No change has occurred in the tools of ministerial legislation, such as ministerial ordinances, rules, circulars and oral advice. The changes do not indicate a shift to another type of co-ordination, or to a change in the culture of bureaucratic co-ordination. Rather, they can be understood as changes within the same regulatory framework, as the cultural elements in bureaucratic co-ordination continue to be observed.

The first change, to the financial instrument, indicates contradictory trends in terms of the increased financial autonomy of the national university corporations (former national universities), but continuity of bureaucratic financial control. Increased financial autonomy is related to the following elements: introduction of a form of block grant in public funding distribution; and of deregulation in the area of endowment. The national university corporations were fully funded in 2004. However, the 'operating cost' (*uneihi kofukin*) will start to reduce at the rate of one percent of the previous year's operating cost in the 2005/06 fiscal year, which could encourage the universities to seek to increase external funding.

The increase in financial autonomy of the national university corporations does not signify a decline of bureaucratic co-ordination of the financial instrument. A link between financial allocation and the result of performance evaluation in teaching and research will be established after 2010; ministerial audits of individual universities will continue; a formula for operating costs will be based

upon the previous year's budget; and fund-raising activities will require the Education Minister's approval through the process of assessment of individual universities' mid-term planning.

The second change, in the MECSST's evaluation tool, implies the significance of quality control. Evaluation has not been a powerful instrument of the MECSST either in national university corporations or in private universities. The introduction of an external evaluation system, which will apply to both national university corporations and private universities, in 2001 focusing on output and performance-based quality control, and the link (from 2010) between the Ministry's funding allocation for national university corporations and the results of both research and teaching evaluation for national university corporations, all suggest that the MECSST will emphasize this policy instrument in the area of evaluation in addition to its existing funding tools. The changes have implications for the post-expansion period, which had already started in the 1990s. As a result of demographic decline and a declining 18 year old cohort in the post expansion era, the ability of the ministerial quantitative methodology to steer and regulate the universities — in particular private universities — by using its legislative tool, the Standards, is questionable. Instead, ministerial quality regulation could provide a useful replacement.

Bureaucratic co-ordination of the private universities is also based upon the legislative tool and supplemented by the financial instrument. The co-ordination is however, far less rigorous in comparison with that for the national university corporations. The ministerial legislative tool for the private universities together with the Ministry's conditioning of the market is implicit in ministerial policies for regulation and deregulation in the context of expansion of higher education. The ministerial deregulation policies, which were developed in the 1960s and between the mid-1980s and the early 1990s, were implemented by deregulating general standards in the Standards, for example in the processes of application for establishment of new institutions. Conversely, between 1975 and 1985 the Ministry imposed restrictions by tightening the same legislation.

A lower financial dependency of private universities suggests a limitation in the effectiveness of the Ministerial financial instrument on private institutions where government subsidies have contributed less than 30 percent of the total income of individual private universities between 1970, when government subsidies of private universities were introduced, and 2000 (MECSST, 2004). The self-funding of private universities, whose revenues come mainly from tuition fees paid by students or their parents, signifies the greater funding autonomy of private universities.

Conclusion

This study has found that the types of higher education co-ordination do not determine particular policy instruments. The result of the study on English agency co-ordination and Japanese ministerial co-ordination suggests that different types of higher education co-ordination could share similar policy instruments. Both types of higher education co-ordination in these two higher education settings emphasise financial incentives and output evaluation — since the mid-1980s in England and in the

2000s in Japan.

The trends can be explained in terms of Neave's 'Evaluative State' (1988, 1998), which is based upon the notion of change in government strategies by setting targets and monitoring individual universities. He identifies the common factors of an evaluative state in his comparative studies, such as public financial constraint, which is also observed in England and Japan. In addition to Neave's point, it can be seen that application of common political philosophies — governments' neo-liberal policies — in 1979 in England, and in 1983¹ in Japan, have led to the use of similar instruments in both cases. The application of common doctrine and similar political instruments suggests that political philosophy is influential in terms of the choice of political instruments rather than the types of particular co-ordinators.

The 'Evaluative State' is also insightful in terms of the relationship between central authorities and the universities, which is observed in agency and ministerial co-ordination. In theory, an evaluative state emphasises the negotiating capability of individual institutions with government. Such a concept of negotiation between central authorities and the universities is applicable to the English agency co-ordination (*e.g.* negotiation between the two on the process of creating a financial memorandum). The negotiating power of the university sector in England suggests a horizontal relationship between the HEFCE and the universities. In the context of Japanese Ministerial co-ordination even after 2004 corporatisation, the power of negotiation is questionable. Negotiation between the MECST and national university corporations can be observed only partially, such as in the process of setting individual universities' mid-term plans. Such partial negotiation suggests a vertical relationship between the Ministry and national university corporations.

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¹ An attempt to apply neo-liberal doctrine in the education sphere was seen in the 1983-1987 National Council on Education Reform, an advisory council to the then Prime Minister Yasuhiro Nakasone. An application of neo-liberalism appeared in 1995 in the platform of the Liberal Democratic Party, a ruling party.

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