TANSEI

TANSEI aims at sharing worldwide the latest developments at UT with everyone interested in education and research.

The University of Tokyo Magazine

Vol. 06
June, 2006

Toward a Truly Comp rehensive University

Gu Binglin, *President of Tsinghua University*
Hiroshi Komiyama, *President of the University of Tokyo*

Although conditions in Japan and China and their respective university systems differ, the universities themselves face the same problems.
Gu Binglin, president of Tsinghua University, one of China's major academic institutions, and Hiroshi Komiyama, president of the University of Tokyo, discussed their visions of the comprehensive university and how they hope to achieve them.

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TANSEI – The school color of the University of Tokyo is light blue (tansei in Japanese). It was initially used at the first rowing regatta between the University of Tokyo and Kyoto University in 1920. The colors of the two universities were determined by drawing lots. Kyoto University drew dark blue and the University of Tokyo light blue. Since then, light blue has been the school color of the University of Tokyo.

It is a pleasure to issue volume 06 of TANSEI. This issue's special feature deals with the Presidents' Discussion between Gu Binglin, President of Tsinghua University, and Hiroshi Komiyama, President of the University of Tokyo, which was held concurrently with the University of Tokyo Forum 2005 in China. In it they discuss their visions "Toward a Truly Comprehensive University".

Also included in this issue is the Executive Vice-Presidents' Discussion, on the topic of "On Becoming an Intellectual: The University and Liberal Arts Education" which touches on the debate between Kenzaburo Oe, Novelist, Nobel laureate in literature in 1994, and Motoo Furuta, Executive Vice-President of the University of Tokyo.

Another special feature deals with the Action Plan 2005-2008, which presents the key items of the university's development program. This is an expression of President Komiyama's determination during his term of office to build up the University of Tokyo so as to stand at the forefront of the times.

Through these special features, we hope readers will become more familiar with the University of Tokyo's academic activities as a university that is aiming for the pinnacle of global knowledge.

Ichiro Sakuma, Ph.D. *Chairman of the Public Relations Committee*

Contents

Komiyama:
You assumed the presidency of Tsinghua University in 2003. I became president of the University of Tokyo only on April 1, 2005, so you're my senior. China is currently the country growing at the fastest rate in the world, and it also has a huge population. Tsinghua University is one of the most important universities in China. As I understand it, you are taking an especially active role in administering Tsinghua University. You're establishing new academic departments and building a series of new facilities for students. For example, the dormitories, swimming pool, and new Faculty of Law are really wonderful. I think you're actively involved in both the tangible and intangible aspects of the university.

Gu:
Tsinghua University has one goal, to build up a comprehensive, open research institution. We have laid out a long-range plan in three nine-year stages for achieving this objective. We are currently in Stage 2, which runs from 2003 to 2011, which is the centennial of the university's founding. We seriously believe that by the end of Stage 3 in 2020, we will be a first-rate international university.

Komiyama:
What's really interesting is that Tsinghua University was originally a comprehensive university, but it was turned into a university of science and engineering in 1952, under the influence of the old Soviet system, and now you are taking it on the road back to being a comprehensive university. My understanding is that there are very few comprehensive universities in the true sense anywhere in the world. For example, few European universities, even the ones with the longest histories, include faculties of engineering. If they do have engineering departments, they were added as an afterthought. In the United States, Stanford University leans toward technology, to a certain extent. I thought that Harvard was a comprehensive university, but it emphasizes medicine and the liberal arts. Evidently, Harvard is now considering adding an engineering department.

The University of Tokyo was founded during the Meiji Period and boasts a 127-year history, and it followed the path of

We are still not completely satisfied that the collection of these individual faculties brings about a synergistic effect, in which 1 + 1 + 1 equals more than 3.

becoming a comprehensive university by incorporating several specialized schools, such as a medical school and an engineering school. Each institution, Tokyo, Tsinghua, or Harvard, has its own unique history.

At present, the University of Tokyo is plagued by problems unique to comprehensive universities. We have a Faculty of Law, a Faculty of Medicine, a Faculty of Engineering, a Faculty of Letters, a Faculty of Science, etc., all on one campus. We are still not completely satisfied that the collection of these individual faculties brings about a synergistic effect, in which 1 + 1 + 1 equals more than 3.

Gu:

Certainly, as you say, 1 + 1 + 1 = 3 is nothing more than a bit of mechanical addition, and further new things must arise from this sum.

Komiyama:

To that end, I am now preparing an academic integration project. It's a plan in which a variety of programs will combine and create something new. First of all, I'm thinking of using a theme of "human." This morning I attended the forum at the Chinese Academy of Sciences and heard a number of reports on medicine and life sciences, and it seemed that the fields were finely defined and deeply specialized. At a comprehensive university, you have to consider integrating this kind of deeply fragmented research and harmonizing it to produce the fruits of new knowledge. A comprehensive university is exactly the type of place where such a thing is possible. I'd like us to discuss these issues and cooperate with our counterpart departments at Tsinghua University.

Tsinghua University has a lot of resources and receives a fairly large subsidy from the government. Despite these favorable conditions, you are probably under several kinds of pressure. Now, where does this pressure come from? From other universities? Does it come from society? Also in our case, the world looks at the University of Tokyo in a number of ways.

Gu:

In China, we have a saying, "The bird that sticks its neck out gets killed," or, in other words, if you're prominent, they

Hiroshi KOMIYAMA

Born in 1944.
1967 Graduated the Faculty of Engineering
1972 Doctor of Engineering (University of Tokyo)
1988 Professor in the Faculty of Engineering
2000 Dean of the Graduate School of Engineering
2003 Executive Vice-President
2005 28th President of the University of Tokyo

fight you. I think that pressure comes from both society and other universities.

The social pressure is basically about how much to invest in education. This is where opinions diverge, and there are many opinions about the actual amounts of money to spend on education.

In addition, there are differing opinions about whether educational funding should go to basic education or to higher education. Of course, basic education is extremely important, but the important problem is that when a country like China educates its people, I think that it should make efforts to train human resources at a high level. We cannot establish a lot of first-rate universities, but we can manage to build two or three of them. China's plans for promoting education originally included only two universities, Peking and Tsinghua, but due to input from other universities, the number was increased to nine. This year, the plan was expanded to 39 universities. The total amount of financing remains small, so I think that the people in charge of distributing the money make snap decisions, distributing a lot of money to the good institutions and not so much to the not-so-good institutions.

Komiyama:

I understand that Tsinghua University has the right to make its own decisions in the process of transforming itself from a scientific and technical university to a comprehensive university, but the president's leadership in deciding what sort of university to create is important in this process. Could you tell me what you, as a leader, are thinking of doing and explain some of your goals as Tsinghua moves along the path to becoming a comprehensive university?

Gu:

Actually, there are a lot of different opinions within the university itself. The professors in each department insist repeatedly that their own area is the most important, but the university needs what I call a "top-down design." The role of figuring out the direction that the university is going and the final right to make decisions belong to the academic affairs committee made up of the president, the vice-president, and other officials.

Let me continue to talk about the subject that you brought up, namely, the

Certainly, as you say, 1 + 1 + 1 = 3 is nothing more than a bit of mechanical addition, and further new things must arise from this sum.

comprehensive nature of universities. Any problem that exists in the society and nature is originally an all-encompassing one. It's just that people have divided it into little segments. For example, there are cases in which the professors in the science departments ask "why," the professors in the engineering departments ask, "how." That's why it's necessary to blend a variety of details without forcing them, and this is advantageous even for their own work. Today's scientific research is comprehensive.

Second, I'd like to point out that comprehensiveness also has many advantages when it comes to training students. The most important thing in education is to turn the students into complete human beings instead of steering them into narrow specialties. This is the reason why Tsinghua University is emphasizing comprehensiveness.

Komiyama:

I am in complete agreement with what you said.

I'd like to take the question that you brought up before, whether to have equal departments or a combined concentration of them, and look at it from another angle. There are many problems in the world, with a lot of problems looming large in front of us. Examples include problems of poverty or the North-South problems, the disparity between North and South, and problems of aging. Which people in which places will solve or at least mount a challenge to these problems, and how? I don't think that many universities can mount a challenge to these problems. I believe that the top-ranked comprehensive universities should assume responsibility and are expected to do so.

I want to do everything I can as an individual to try my hand at these problems and mount challenges to them. No matter what other people say to me in this process, I want to assume a proactive attitude and accept societal pressures.

I'd like us to cooperate with Tsinghua University, joining forces to solve and tackle the worlds' most serious problems. I am confident that we can cooperate on overcoming these issues.

(This conversation took place in the president's office at Tsinghua University on April 29, 2005.)

GU Binglin

Born in 1945
1970 Graduated the Department of Engineering Physics
1982 Got Doctoral Degree of Natural Science at Aarhus University, Denmark
1988 Professor of Physics
1999 Elected as a member of the Chinese Academy of Science
2000 Dean of the Graduate School
2003 17th President of Tsinghua University

[Executive Vice-Presidents' Discussion]

On Becoming an Inte llectual:

The University and Liberal Arts Education

Kenzaburo Oe, *Novelist*
Motoo Furuta, *Executive Vice-President of the University of Tokyo*

At present, as the framework of our society is beginning to undergo major transformation, new graduates just departing the nest of academe are being called upon to demonstrate their ability, like migratory birds, to navigate without maps. To address this issue, we have invited the University of Tokyo alumnus and Nobel Prize-winning novelist Kenzaburo Oe to join in our featured dialogue with Motoo Furuta, Executive Vice-President of the university.

I Stimulating the Desire to Learn

Furuta:

Recently I have vacillated between two contradictory opinions with regard to students. One is the sense that the number of truly outstanding students has increased. My specialty is Vietnam, and Vietnamese, with its six different tones, is a very difficult language for Japanese to hear and speak. But recently some young Japanese students have developed really splendid Vietnamese pronunciation. Vietnamese when spoken by young women is a beautiful language, like the singing of birds, and the number of students with the language ability to achieve this has been increasing. And I must say, if you heard my Vietnamese it would certainly not sound like the singing of birds… But then I see students' papers, graduation theses, and so forth, and their ability to express themselves in Japanese is poor, after fifty pages or so the logic falls apart, and I get worried. Yet these same students go on to the doctoral program, and I see the papers they are producing, and a lot of it is confident, outstanding work. It makes me think that they have somehow developed new strengths that we didn't have in my generation.

On the other hand, the number of students who look at mastering a foreign language as being too much trouble seems to be on the rise. My field is regional studies, so mastering the local language is indispensable, but students these days seem to lack the patience to sweat through language study and fieldwork and the methodical accumulation of data and then the final write-up of the research.

My colleagues and I feel this is not a problem of academic ability, but rather of the desire to learn, and the question of how to simulate that desire to learn is something we are quite concerned about at the University of Tokyo. At this year's matriculation ceremony, President Komiyama addressed the entering students saying that he hoped they would "make the effort to acquire three things: the wisdom to get to the heart of the matter, the ability to empathize with others, and the courage to be a frontrunner." I think this has something to do with the "desire to learn" I have just mentioned.

Oe:

Listening to what you have said, I am reminded of my time at Komaba and Hongo [campuses of the University of Tokyo]. I was in the Department of French Language and Literature, where I concentrated solely on reading. I made myself read about fifty pages a day. To this day I am deeply grateful to the University of Tokyo. What I learned at Todai was how to read a foreign language. Todai provided me with the foundation for reading books in other languages. A foundation in English, a foundation in French. It's been fifty years since I entered university, but I don't think there has been a day since that I haven't read at least a page in another language. We literary types are basically fine as long as we are reading

rather of the desire to learn, and the question of how to simulate that desire to learn is something we are quite concerned about at the University of Tokyo

something, and here I was given a direction that enabled me to continue reading for my entire life. This has served as the foundation for the literary work I have done.

Also, when I was twenty I bought two books at the Komaba student co-op. I still have them both: Selected Poetry of Auden and Eliot by Professor Motohiro Fukase of Kyoto University. The unique thing about these two books was that both contained the English originals of the poems as well as Fukase's translations/commentaries. In the Auden collection the originals were printed as an appendix; in the Eliot volume they were printed at the foot of each page. I was reading these books straight through my student years, and the work of my early and middle periods was clearly under the influence of Auden. The title of my novel Miru mae ni tobe (Leap Before You Look, 1958) was taken from a line in an early Auden poem. The title of Warera no kyoki o ikinobiru michi o oshieyo (Teach Us to Outgrow Our Madness, 1969) was taken from one of poems Auden wrote on behalf of the Chinese people of the time of the Shanghai Incident. It was these books of Professor Fukase's that opened my early and middle work to the influence of W.H. Auden.

I've recently written a novel titled Sayonara, Watashi no hon yo! (Farewell, My Books!) that is clearly influenced by Eliot. Fukase's Eliot did not contain Four Quartets, a work of Eliot's later years, and since I wanted very badly to get my hands on a copy of Four Quartets, I went to the British Council, where they allowed me to copy it out by hand—there weren't any copying machines in those days. I continued to read this after I graduated, but for a long time was unable to understand it. But after I turned sixty, I found a pristine copy of Four Quartets at a bookstore in Kanda, Tokyo. It was a bit expensive, but I bought it, and as I began to read it on the train, I felt as if I was understanding each line of this long poem I had read so often and not understood until now. Inspired by this, I wrote Sayonara, watashi no hon yo! So I have lived my life and done my work on the foundation of the capacity for reading that Todai gave me. This has continued to the present, and the two books that I bought at Komaba in my student days are symbolic of my relationship between my life and the university.

Furuta:

It is a pleasant surprise to learn that these books that have been such an influence on your activities as an author were something that you discovered at Komaba.

Studying at the "Eternal University"

Oe:

Another way in which I was fortunate in my years at Komaba was in the wonderful professors I encountered. When I was still in high school I read Kazuo Watanabe's Furansu runesansu dansho (Fragments of the French Renaissance) in the Iwanami Shinsho

Motoo FURUTA

Born in 1949
1974 Graduated the School of Arts and Sciences
1995 Professor in the School of Arts and Sciences
2001 Dean of the School of Arts and Sciences
2004 Executive Vice-President of the University of Tokyo

paperback series and decided then and there that I wanted to study with this man. I didn't pass the entrance exams the first time around, but I did the next year, and at the age of twenty attended Professor Watanabe's intensive lecture course for the first time. After listening to two 100-minute lectures I felt I had accomplished my purpose in life! He impressed me as being such a splendid man. If you had to describe him in a single word I think "intellectual" would be accurate. Alongside Kazuo Watanabe the specialist in French literature, there was Kazuo Watanabe the intellectual, and it was studying with this man that determined the course of my life. If I have a "philosophy of life" then I believe I learned it from Kazuo Watanabe. My thought and my life were gradually built through reading his books and by frequent conversations with him.

Furuta:

I was really impressed when I heard that you have taken Professor Watanabe's advice and every three years have chosen a particular writer, poet, or thinker to tackle, often reading their work in the original language, and that Eliot was the fifteenth person you chose. This style you have of choosing a theme for your reading, reading original sources, and then writing novels on the basis of this engagement makes me feel that from the time you first encountered Professor Watanabe's books in high school straight through to the present, you have had a kind of "eternal university" inside you.

Oe:

Yes, I think "eternal university" is quite an accurate description.

On Being an Intellectual

Oe:

When I was about to graduate from university, I went to Professor Watanabe and said, "I am going to be a novelist, so I am not going on to graduate school." To this, he replied, "If you spend your entire life just writing novels you are bound to get bored. To keep this from happening, pick a new theme every three years and read about it." What he said next was very important. "When three years have gone by, stop. Why? Because in three years time you can get a clear outline of a poet, writer, or thinker, but three years will absolutely not make you a specialist. For that you would need to devote another three years to the same topic, and if you did, your perspective would narrow. It is fine for a specialist to be narrow but deep. But it really won't do for a novelist to fall into thinking he's an expert on the basis of some half-baked autodidactic reading. Look at some of the novelists that have preceded you who have come out of a background in French literature." This is the first time I have told this story to anyone (laughs). I think this "read for three years, but three years only" method that Professor Watanabe taught me is actually an educational recipe for producing an intellectual.

Furuta:

Todai provided me with the foundation for reading books in other languages.

Yes, one certainly becomes an intellectual by being able to maintain the passion for learning after one graduates from university.

Oe:

Yes, that is really true…. I mentioned this at the commencement ceremony, but I read Edward W. Said's book Représentation des Intellectuels, and had a number of conversations with the author.

Said says that "Intellectuals must express themselves clearly and forcefully to the world. That is the condition for being an intellectual." He stresses the concept of "representation" as the essence of being an intellectual, and calls on intellectuals to "be conscious of who it is that you are representing." If I look at myself in that light… I have been active in the Article 9 Association, arguing that Japan should not revise its constitution and maintain pacifism. I want to represent this position clearly through lectures and other means. Moreover, I am conscious of who it is that I am joining with in expressing this position…. So I think I am engaging in what Said calls "representation."

Another thing Said says is that "it is the role of the intellectual to make representations to society as an amateur." Of course intellectuals are experts in their own fields of endeavor. Kazuo Watanabe was one of the world's leading authorities on François Rabelais. Said goes on to say that "social criticism by intellectuals must be grounded in morality and ethics."

From this point of view, if I were to say what I would hope to see in Todai students…it would be for this small elite of potential experts to engage in the kind of study that would enable them to carry out fieldwork and converse with local people. To those who are somewhat lazy and find foreign languages to be too much of a bother, I would say that they should develop a fundamental passion for learning while they are at university. Because I think of the university as a place for accomplishing this. While at university, I think it is crucial for students to develop enough foreign language ability to be able to read for the rest of their lives; to encounter someone they would like to model their own life on; and to acquire a passion for learning, even if they do not become experts.

On the other hand, you have universities, such as Harvard Business School, that are geared towards producing graduates who will be of practical use in society. That is fine as well, I suppose…

"Practical" and "Impractical" Knowledge

Furuta:

I think you have just raised an extremely important point. In April last year, along with other Japanese universities, the University of Tokyo has become incorporated, and one aspect of this change in legal status is an effort to rethink the relationship between the university and society. As a result, along

Kenzaburo OE

See the biographical sketch in Page 15

with the incorporation, we have created several new graduate professional schools. A law school and a school of public policy have been established in an attempt to strengthen the university's engagement with society. However, I do not think that this means that Todai is moving in the direction of emphasizing practical education in the narrow sense of an immediate response to social needs. We must also continue to emphasize educational themes that will contribute to the development of scholarship in its own right, and take the position that "impractical" knowledge must be cherished as well as "practical" knowledge. In that sense, I think one of the pillars of undergraduate education is the liberal arts. Particularly at a time when students themselves are increasingly eager to acquire practical credentials, I think we must provide the kind of education that motivates an interest in scholarship, and encourages their intellectual and personal development. I think this is probably similar to what you meant by "being an intellectual."

Oe:

Yes, quite so.

Furuta:

At present, with the fundamental nature of our society on the verge of major transformation, I believe it is essential to produce people who can navigate without maps. They will definitely be intellectuals. The University of Tokyo has made a deliberate decision to retain its College of Arts and Sciences, and as such, is in a position to always be able to stress the importance of a liberal arts education. Fortunately, Todai is not alone in this; it is heartening to note that a number of other Japanese universities, and universities throughout Asia are also reassessing the importance of liberal arts education.

Oe:

Do you think there is an anti-liberal arts tendency among the students these days?

Furuta:

There's a problem with the fact that students simply don't read books anymore, but one of the biggest problems of the university as a whole is probably "overspecialization." People are becoming specialists in their narrow fields and becoming unable to talk with specialists from other fields. And the brighter they are, the greater the tendency to burrow deeper into some narrow area. At commencement, President Komiyama spoke of "the capacity to empathize with others," and I think this came out of an urgent concern that we restore a sense of the larger picture.

Oe:

I think it is a good thing for talented people to specialize and dig deeply into their field. If they don't we will be unable to keep up with global progress in the sciences. The "frontrunners" President Komiyama spoke of are essential. So it is only natural that one of the important things asked of students at Todai is to

narrow their focus and polish their expertise in a specific area. Because the people who specialize in this way are a minority, and the gifted among them will produce future innovations in the sciences.

In my student days there were about 40 people in my class studying French literature; now there are fewer. That's fine. In today's world there are plenty of places to study French outside the university, and it is just as well that there are fewer people making a narrow specialty of it. However, if a corporatized university should decide that since there are few students of French literature the department itself should be downsized and faculty members laid off, then I am opposed to this. I think one aspect of the university is to be a place where a very high level of education is offered even to a minority among the students. This is true throughout the world. Even though it has incorporated, I think it is important that Todai continue to put money even into departments that are not especially popular.

I said at the beginning that what I learned at Komaba is still the foundation for the way I think and the way I live. In this present-day world, with its diversity of representations, I hope that students will make a few discoveries in their first and second years at university that will serve as the root of their way of thinking and living. I believe this will be useful to them no matter where they go, and no matter how narrow a field of study they may choose after that.

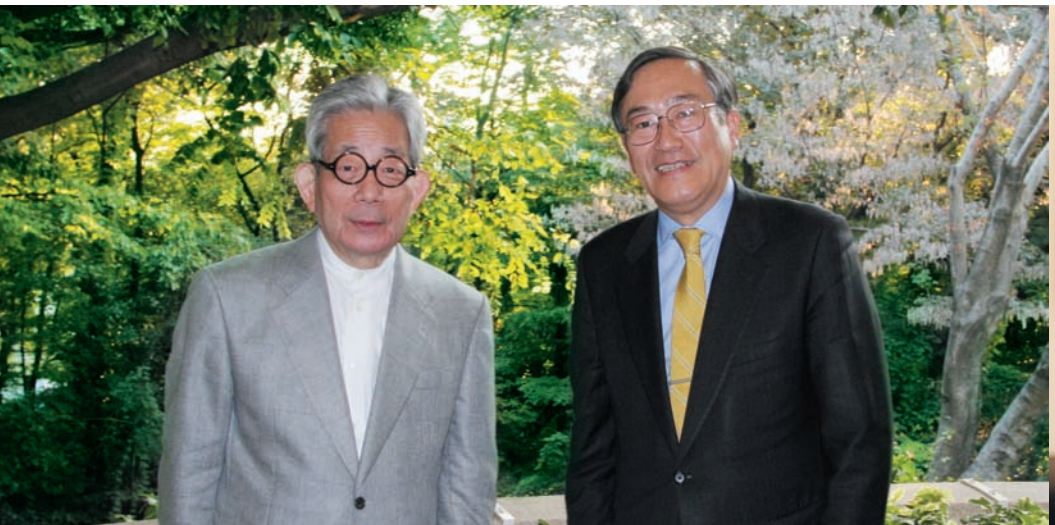
Furuta:

Thank you so much for taking the time to talk to us today.

(November 10, 2005, at the Faculty Club "Kanran" on the Komaba Campus)

Kenzaburo Oe / Biographical Sketch

1935	Born in Ehime Prefecture, Japan.
1954	Enters the University of Tokyo.
1956	Advances to the Department of French Literature, where he studies under Professor Kazuo Watanabe.
1957	Has his debut as a student writer when his story Kimyo na shigoto (Odd Job) is published in the University of Tokyo Newspaper.
1959	Graduates the Department of French Literature.
1994	Awarded the Nobel Prize for Literature.
2005	Establishes the Oe Kenzaburo Prize. Publishes the novel Sayonara, watashi no hon yo! (Farewell, My Books!).



THE UNIVERSITY OF TOKYO

Action Plan 2005-2008

A University at the Forefront of the Time

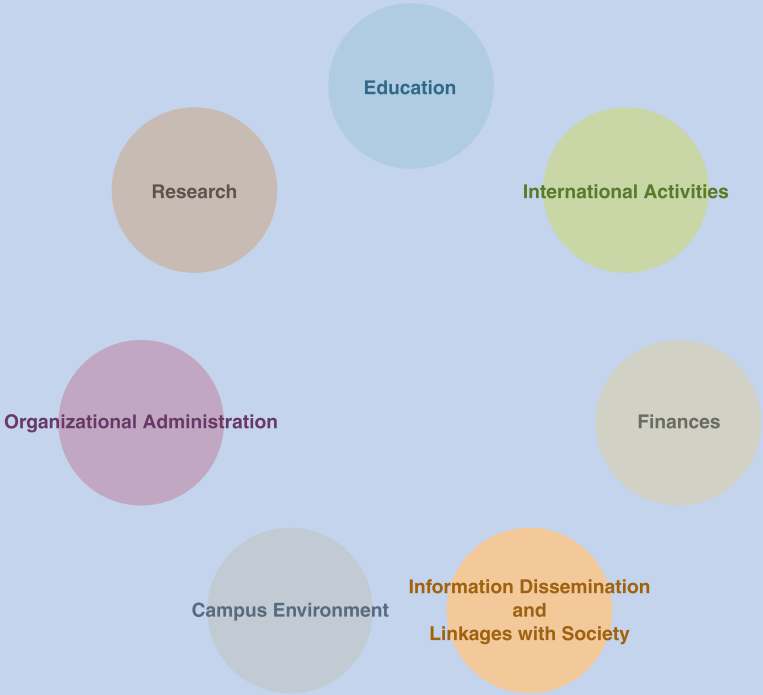
- Aiming at the Pinnacle of Global Knowledge

Hiroshi Komiyama, *President*

This Action Plan presents the key items as an expression of my determination to build up the University of Tokyo during my term as president so that it will stand at the forefront of the times and aim at the pinnacle of global knowledge.

The Action Plan presents concrete measures for the path that the University of Tokyo should pursue to realize a form that is appropriate for the new era, at this historical turning point in Japan's university system. To steadily proceed along that path, the first prerequisite is for all members of the university to take responsibility and collaborate, and the Action Plan incorporates the message of promoting such cooperation.

We want everyone to fully recognize the role of higher education in ceaselessly spreading sophisticated knowledge and providing talented personnel who are eagerly sought by society. The University of Tokyo will implement bold reforms while firmly maintaining our good traditions so we can continue to receive strong support from society at large. That is our firm resolve, and it constitutes another important message of the Action Plan.



As human society changes at an unprecedented pace, there are great expectations of universities as institutions to revitalize scholarship through the creation and application of new knowledge, and to continuously develop human resources to shoulder this task.

In this context, universities are being exposed to fierce competition on a global scale and required to make changes rapidly. Those institutions that fail to adapt to the changing environment will certainly decline. The University of Tokyo, while recognized as one of the world's leading universities, is no exception. We take these demands of the times as an excellent motivator for us to work toward becoming a university capable of leading humanity worldwide in the 21st century. This means developing the University of Tokyo into a place that attracts the most talented youth on earth and fosters their abilities, a place where researchers generate new knowledge through friendly competition and promote its beneficial use throughout society as the common property of mankind. To become such an institution, the University of Tokyo must swiftly and persistently reinvent itself, while retaining as our foundation the strengths and traditions which have been cultivated by previous generations. Through the endeavors to achieve "Structuring of Knowledge" and "Autonomous and Decentralized yet Cooperative Systems," we must prepare an environment in which all members of the university can willingly engage in joint work with enthusiasm.

The key points are (1) to reinforce the foundations required to maintain and exploit the university's potential as a federation of highly autonomous departments; (2) to establish a framework for university-wide cooperation to those ends; and (3) to promote the structuring of knowledge as a catalyst for the generation of new knowledge and the interaction between academia and society.

Accordingly, we will further reinforce the University of Tokyo's education, research, and international activities and its links with society while making the best possible use of the university's outstanding and diverse human resources. To these ends, we must strengthen our financial capabilities, upgrade the campus environment, and implement organizational and administrative reforms. This will enable the University of Tokyo to establish a vibrant 21st century university model that enjoys the trust of society, centering on the three mechanisms of an agile central management, moderate distribution of power, and a flexible interface. While striving toward our own goals, we will also offer to society a vision for higher education in Japan.

The following sections summarize the main areas that the University of Tokyo will be addressing during the coming four years: education, research, international activities, organizational administration, finance, campus environment, information dissemination and linkage with society.

I. Education

- Provide a venue for fostering the world's best human resources
- Develop individuals with the capacity to grasp the essence of issues, understand and appreciate others, and have the courage to take the lead
- Foster cultured individuals who are worthy of being 21st century global citizens

I-1 Strengthening Liberal Arts Education

– Commence Academic Overview Lectures
– Incorporate the results of the Science Integration Project into liberal arts education and promote creative linkages between state-of-the-art research and the basic education offered in the Junior Division of undergraduate studies
– Obtain university-wide support for implementing the new curriculum for the 2006 academic year aimed at reinforcing fundamental academic capabilities and boosting academic aspirations, ensure support for liberal arts education by the Network for Life Science Education, and secure university-wide support for the Experience Seminar
– Strengthen the Komaba Organization for Educational Development, and transmit the University of Tokyo liberal arts education model worldwide
– Improve and upgrade the Komaba campus student facilities to provide comfort and satisfaction for new students entering the University of Tokyo

I-2 Structuring of Knowledge and Creation of an Educational System for Interdisciplinary Fields

- Create a structured curriculum that embodies structuring of knowledge
  • Publicize The University of Tokyo Course Catalog on the Internet with a search function
  • Promote the University of Tokyo Open Courseware (UTOCW) project to structure and visualize the curriculum and release knowledge to the public; improve the educational environment by implementing information and telecommunications technologies
- Greatly enhance graduate school education
  • Improve the curricula of graduate school Master's courses and promote their structuring
  • Fundamentally improve the success rate of students in earning doctorates and enhance doctoral course education
  • Support postdoctoral career development
- Ensure student quality--stricter standards for grades and graduation, give awards to students demonstrating superior academic performance, etc.
- Create an educational system for interdisciplinary fields and introduce a major/minor system
  • Examine the establishment of new departments at the undergraduate level such as the Department of Finance within the Faculty of Economics and the Departments of Bioinformatics and Media Contents within the Faculty of Science
  • Start undergraduate and graduate education in organizations that transcend departmental boundaries, such as the Integrated Research System for Sustainability Science (IR3S), the Network for Life Science Education, and the Asian Studies Network (ASNET)
  • Promote linkages at the graduate school level, such as the collaboration between the Faculty of Medicine and Faculty of Engineering [such as medical-engineering collaboration]
- Implement the University of Tokyo Entrepreneur Program to support students and researchers hoping to establish start-up businesses
- Consider an introduction of university-wide management policy for the prescribed number of students, which has traditionally been conducted by each department

I-3 Active Development of Cooperative Education

- Establish educational and research methodologies that integrate the liberal arts with the natural sciences to address environmental, energy and other problems and issues in econometrics; make organizational arrangements accordingly
- Establish diverse models for collaboration between industry and academia, including human resource development and personnel exchanges
- Promote global human resources development including examining the potential for overseas branch campuses

I-4 Promotion of "Human Education" and Improvement of Campus Life

- Greatly reinforce support systems for learning, mental care, and career development for students from the perspectives of "human education" and improvement of students' social environment (the student support center initiative)
- Expand and improve the internship system, and seek cooperation from society for "human education"
- Establish systems that listen to students' comments and swiftly respond to their anxieties, improve the emergency systems on each campus, and establish a process for formally appealing against grade evaluations and for requesting a change in academic advisors, among others

I-5 Fostering Highly-Skilled Professionals and Promoting Advanced Education for Working Adults

- While strengthening professional education at regular graduate schools, promote education of highly-skilled professionals at specialized professional graduate schools and at "executive education programs" targeting working adults
- Support self-learning through the use of IT

I-6 Recruiting and Educating Students Appropriate for the University of Tokyo as a Global Institution

- Prepare university pamphlets and hold student fairs
- Modify the major selection system and strengthen guidance at the time of entry to the Senior Division of undergraduate studies
- Substantially expand scholarship and grant systems for graduate students, particularly for doctoral students
- Enhance scholarship programs and devise strategies to secure excellent students from around the world, in particular from Asia, and improve study abroad programs for the University of Tokyo students

II. Research

- Reinforce scholarship through the creation and application of new knowledge

- Generate knowledge through autonomous and decentralized research

- Structure knowledge and integrate academic fields through harmonization

- Interact with society: present solutions and options to resolve the important issues which global society faces

II-1 Support of Autonomous and Self-Directed Research

- Promote bottom-up research through the effective use of outside funds
- Support departmental budgetary requests--application to the Ministry of Education, Culture, Sports, Science and Technology, university internal appropriation, and obtaining support from the private sector
- Maintain a library of fundamental academic publications

II-2 University-wide Challenge of Innovative Research Led by the Office of the President

- Promote the structuring of knowledge
  - Integrated Research System for Sustainability Science (IR3S)
  - Alliance for Global Sustainability
  - Network for Life Science Education
- Promote frontier science fields
  - Expand and improve the Division of Project Coordination
  - Promote the Science Integration Project (humans, goods, the earth, space) and pioneer new fields
- Invigorate the Kashiwa Campus through these projects

II-3 Review of Recently Implemented Initiatives, and Revision of Future Plans

- Further enhancement of postgraduate education, information research education system, Kashiwa Campus, and the Komaba Campus

II-4 Support for Researchers Using University of Tokyo Funds

- Upgrade the research support system for talented young researchers
- Improve the conditions and compensation of doctoral researchers
- Hold conferences of world-top level including Horiba Conference and Horiba Symposium

II-5 Promotion of Internationally Competitive Research at Affiliated Institutes and Research Centers

- Upgrade the center functions including the consolidation of research and service missions
- Further promote research and education activities at affiliated institutes and research centers
- Promote research and education activities based on the University Hospital

II-6 Establishing a New University Model through Exchanges and Linkages

- Examine new agenda-setting for the purpose of contributing to future society and the international community; consider making policy proposals through the Policy Vision Research Center (tentative name) and interdisciplinary and international research frameworks
- Utilize network research organizations

II-7 Expeditious Provision of Research Results to Society

- Respond to the diversification of licensing options
- Improve the strategic management and application of intellectual property through the accumulation and analysis of case studies
- Promote the application of research results by use of start-up businesses

II-8 Further Reform of the Scheme for Industry-Academia Collaborative Research

- Advance large-scale joint research using the Proprius 21 joint design format
- Upgrade the support structure for collaborative research between industry and academia
- Make active use of diverse schemes for linking industry with academia, and develop new joint research schemes
- Promote personnel exchange between academia and industry

III. International Activities

- Address issues concerning global sustainability and the survival of mankind
- Promote friendly competition and exchanges with top level universities worldwide]
- Secure an honorable position in global academia

III-1 Expand Overseas Activities through Linkages with the Departments and through the leadership of the Division for International Relations; Enhancing the International Presence of the University of Tokyo

- Strengthen ties with the world's top universities and research institutes and expand overseas bases
- Investigate the establishment of overseas branch campuses
- Strengthen human networks to build credibility in Asia
- Construct strategic international exchange networks and alliances, create database on foreign universities and draft a long-term plan to promote the internationalization of the University of Tokyo

III-2 Exchange of Students and Researchers with Top Class Universities and Research Organizations Worldwide

- Improve the environment to provide greater incentives for exchange students and foreign researchers to come to the University of Tokyo: upgrade lodging facilities for foreign researchers (International Guest House) and enrich materials in foreign languages

III-3 Development of Kashiwa Campus as an International Campus

- Prepare world-class research facilities, upgrade lodging facilities for foreign researchers and exchange students, prepare a living support system in collaboration with the local community, and improve the environment for promoting the internationalization of the campus

IV. Organizational Administration

- Construct a new university model based on autonomy, decentralization and cooperation
- Ensure the employment of the current faculty and administrative members supporting the university while promoting staff mobility at the same time
- Substantially reinforce the university's financial foundation
- Improve quality and efficiency of administration by streamlining operations

IV-1 Securing Time for Education and Research by Strengthening Front-Line Support by Administration

- Develop a research cooperation office: identify and support cooperative research and teaching activities; assist with obtaining outside funds
- Make use of "HISHAKAKU (departmental partners)" system and realize a one-stop service for departments, research institutions and research centers
- Strengthen inter-divisional collaborations such as between International Affairs and University Corporate Relations
- Formulate programs for after the termination of the "Project Developed by Intellectual Property Headquarters in Universities" and train specialists in the technology transfer of research findings
- Strengthen information systems for efficient management of education and research information

IV-2 Development of Education and Research Support Staff

- Enhance the abilities of education and research support staff by expanding the scope of their work and delegating greater responsibilities
- Indicate the capabilities that employees should possess, and present models for career development and skills improvement
- Advance integrated efforts to improve

human resources management for staff, review organizational structures, and revise operations

IV-3 Support for the Revitalization of Education and Research via Flexible Organizational Management

- Support diverse styles of education and research activities ("authorized organizations" and "affiliated/adjunct organizations")

IV-4 Establishment of a University of Tokyo Model for a Motivational Compensation System

- Examine systems that provide incentives to individuals who have made a valuable contribution to the progress of the University of Tokyo
- Create an attractive working environment that secures the international competitiveness of the University of Tokyo

IV-5 Upgrading the Decision-Making System of the Office of the President

- Retain a small number of highly capable presidential advisors, and strengthen the decision-making support function
- Clarify the responsibilities of the directors and strengthen ties among them
- Make the activities of the Office of the President more transparent through appropriate information disclosure

IV-6 Strengthening of Linkages and Communications between the Office of the President and Departments, Faculty and Staff, and Students

- Expand opportunities for the Office of the President to exchange opinions with departments, faculty, staff and students--breakfast meetings, use of Internet bulletin boards, etc.
- Start the "office hours" for the directors and other executives in which they are available for consultation

IV-7 Expansion of Freedom of Personnel Management

- Offer model rules and options for a personnel system
- Conduct comprehensive personnel administration

IV-8 Strengthening of the University Hospital Appropriate for a World-class University

- Strengthen the functions of the University Hospital as a point of contact between the University and society
- Strengthen the University Hospital's financial foundations
- Consider the re-positioning of the Health Service Center with a view to strengthening its function

V. Finances

- Establish a financial model that facilitates the development of diverse, comprehensive, and self-directed education and research

- Establish a financial foundation that enables the identification and full development of seeds of new science created in the diverse research environments

- Establish a financial foundation that enables the synthesis of academic endeavors through linkages between diverse education and research activities

- Establish a financial foundation that enables the upgrading of facilities and equipment appropriate for a leading university

V-1 Efforts toward Easing Institutional Restrictions

- Seek deregulation on such items as funds management, asset utilization, bond issuance, long-term borrowing, donation tax system, investment, and ministerial ordinance on expenses
- Seek deregulation of such systems as procurement and audit to obtain greater latitude in budget

implementation

V-2 Establish of a Budgetary System that Supports both Diversity and Comprehensiveness

- Establish rules for the effective use of the president's and department heads' discretionary funds
- Develop a budgetary structure that can secure a high allocation of funds to autonomous and decentralized basic education and research
- Establish a budgetary structure that can promote and support linkages and cooperation among autonomous and decentralized organizations
- Make budget administration as flexible and comprehensive as possible

V-3 Improvements in the Execution of the Education and Research Support Budget including Achievement of Efficient Procurement

- Achieve more efficient procurement by making full use of the scale of the University of Tokyo
- Improve cost management of utilities expenses, etc.
- Clarify and communicate to departments the merits of improving efficiency

V-4 Establishment and Development of an Endowment Fund

- Clarify the "endowment" concept at the University of Tokyo
- Introduce specified donations
- Establish the core of the endowment by implementing the "UT 130" campaign
- Promote activities toward establishing a large-scale endowment and develop systems to manage it.

V-5 Support for Obtaining Outside Funds

- Proactively discuss education and research plans with the faculty members, organize projects (including identification of potential funding sources), and approach appropriate funds providers
- Organize and prepare budgets for education and research plans concerning comprehensive and integrated issues based on the University of Tokyo's academic vision, and submit requests to external funding sources as appropriate
- Establish a research support office to support the above-listed functions

VI Campus Environment

- Implementation of the tripolar structure toward creating a distinctive campus

- Improvement of facilities and creation of rules governing their usage for the coexistence of decentralized autonomous systems and cooperative systems

- Upgrading facilities and equipment appropriate for a leading university

- Establishing a campus that nurtures a rich learning and research environment

VI-1 Toward Realizing the Tripolar Structure

- Grasp the overall financial image of campus maintenance based on the tripolar structure concept, and examine maintenance methods
- Hongo Campus: Enhance functions while preserving trees and landscape--make use of underground spaces
- Komaba Campus: Continue campus beautification and upgrading of facilities
- Kashiwa Campus: Develop into an international campus and establish world-class research facilities to serve as a campus symbol
- Install organic linkages among the three campuses
- Form linkages with the local communities (Chiba Prefecture, Kashiwa City, Bunkyo Ward, etc.)

VI-2 Establishment of Property Management

- Manage facilities to ensure vibrant education and research with a view for internationalization
- Introduce a cost management perspective

VI-3 Optimization of the Utilization of Education and Research Space

- Examine new area calculation standards, based on a revised faculty size inclusive of project faculty members
- Share information regarding the usage of space on campus
- Secure university-wide common spaces
- Establish spaces for library and equipment storages
- Optimize location of university-wide common spaces in accordance with needs and activities [Locate common

spaces in accordance with needs and activities]

VI-4 Creation of a Safe and Comfortable and Sustainable Campus

- Realize an ecological, crime-resistant, and barrier-free campus
- Prepare an intellectual promenade featuring research results
- Make the campus more disaster-resistant
- Establish and maintain high-quality health and welfare facilities

VI-5 Upgrading of Information Systems

- Appoint a chief information officer
- Upgrade the information infrastructure to prepare for future expansion while giving consideration to existing departmental systems
- Strengthen information dissemination capabilities by enhancing and utilizing electronic information assets throughout the university

VII Information Dissemination and Linkages with Society

- Communicate the attractiveness of the University of Tokyo, reflecting structuring of knowledge, via linkages with society and diverse media

- Draft and disseminate a 21st century university model with a global perspective

- Provide support for building the foundations for "autonomous, decentralized yet cooperative systems" through the revitalization of intra-university communications

- Revitalize the university through interaction with alumni

VII-1 Active Dissemination of Research Findings and Educational Contents

- Upgrade *Tansei* (University of Tokyo Magazine) and the university website to enhance the ability to transmit information outside the university, and adjust their contents to better match their purposes
- Effectively transmit academic information via the Policy Vision Research Center (tentative name) and other channels
- Construct a knowledge network with world class researchers and educators, and share ideas on academic and social issues and results worldwide

VII-2 Drafting and Disseminating a 21st Century University Model with a Global Perspective

- Implement comprehensive investigation and analysis on 21st Century University Model, compile and apply data for drafting a model, and actively disclose the findings to society at large
- Present proposals for organizational and financial improvement to further advance the institutionalization of the University of Tokyo in line with the higher education vision, and actively lobby all sectors of society toward their realization

VII-3 Revitalization of Intra-University Communications

- Share essential information and problem awareness by reviewing and improving the contents and distribution methods of *Gakunai Koho* (University of Tokyo Newsletter), and promote cross-disciplinary intellectual curiosity across different academic fields
- Enhance availability of shared intra-university information by improving the university's internal website

VII-4 Promotion of Linkages with Society

- Promote projects to increase linkages with society as a vehicle for promoting and disseminating the structuring of knowledge, and utilize these cases for brand development
- Utilize the UT University Corporate Relations Network (UNICORN) as a channel for disseminating information
- Reinforce internal and external services including supporting the linkages between academia and industry

VII-5 Enhancement of Alumni Program

- Establish a network of alumni and foster support groups for the University of Tokyo--The University of Tokyo Alumni Association (GAKUYUKAI), The Supporters' Association of "UT 130 Campaign," The University of Tokyo Homecoming Day, etc.--to bolster effective linkages between the university and alumni
- Form venues for interchange between alumni and students to foster mutual communications and expand students' perspectives: the succession of information from generation to generation

UT Forum 2005 Held in China

To date, the University of Tokyo has hosted four UT Forums in order to make its academic research better known overseas and, at the same time, to promote exchanges with academic institutions in other countries.

UT Forum 1: Boston, January 2000
UT Forum 2: Silicon Valley, December 2000
UT Forum 3: Singapore, November 2002
UT Forum 4: Sweden, August 2004

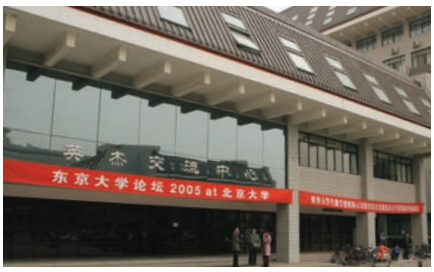
The most recent UT Forum (Number 5), extended over two days, April 28-29, 2005, in Beijing, China. In today's world, China has grown with remarkable speed, and in every area, especially politics and economics, it will be essential for Japan to maintain healthy cooperative relations with the neighboring country in the future. The same is true when it comes to academic matters. The University of Tokyo has academic agreements with over thirty Chinese research and educational institutions and is in the process of intensifying its exchange programs, but this UT Forum in China has further significance in reaffirming the importance of the University of Tokyo and major Chinese universities knowing each other even better.

420 people participated in the forum sessions including the Chinese Studies Session at Peking University, the Materials Science Session at Tsinghua University and the Molecular Medicine Session at the Chinese Academy of Sciences. All the sessions were the scene of lively discussions, the UT Forum as a whole closed on a note of success, and we came away with a feeling for the depth of interest in Japan and in the University of Tokyo on the part of the Chinese academic community. A joint symposium between the University of Tokyo's Institute of Industrial Science and the Beijing University of Aeronautics and Astronautics was held concurrently with the UT Forum. This event also attracted a large number of participants and enjoyed great success. In addition, the University of Tokyo and the Chinese Academy of Sciences signed a bilateral academic exchange agreement.

We carried out our plans during a difficult period in which anti-Japanese demonstrations broke out in China just before the conference, and we are sincerely grateful to the participating Chinese academic institutions, which did not stint in their cooperative efforts. We would also like to express our thanks to the many specialists in contemporary chinese studies who were so generous with advice about arranging the Forum. Note that, due to the circumstances described above, we were forced to postpone the student exchange project that was supposed to take place concurrently with the UT Forum, but in August and September of 2005, we invited researchers and students from Peking University, Tsinghua University and the Chinese Academy of Sciences to the University of Tokyo for a Student Forum and deepened our ties with the participants.

In the future, we would like to continue to make use of these kinds of activities to expand multifaceted exchanges with China, the nation that holds the key to global sustainability.

Tsinghua University



Peking University


Chinese Academy of Sciences

UT Forum 2005
in China included:

Materials Science Session

Challenges in Material Science and e-Sciences

April 28, 2005, at Tsinghua University

Chinese Studies Session

Chinese Studies from an Asian Perspective

April 28, 2005, at Peking University

Molecular Medicine Session

Microbial and human genomes: from pathogenesis to personalized medicine

April 29, 2005, at the Chinese Academy of Sciences

The University of Tokyo Beijing Office is Established

In order to strengthen its ties with the rest of Asia, especially China, the University of Tokyo opened the University of Tokyo Beijing Office as a base for academic exchanges with China. We completed Chinese domestic registration procedures on April 13, 2005 and were chartered as a local corporation. We held a grand opening ceremony on April 27 in advance of the UT Forum.

Universities all over the world, not only in Japan, are actively pursuing exchanges with Chinese universities and research institutions, and increasing numbers of universities are establishing overseas bases all over China including in Beijing. However, the University of Tokyo Beijing Office is the first of these overseas bases to be formally registered in China and to achieve certification as a local corporation. This step simplifies the procedures necessary for staff members from Japan to stay in China, and we anticipate that it will prove very advantageous in building future international industrial and academic ties with China.

With its base at the University of Tokyo Beijing Office, the University of Tokyo plans to promote academic exchanges with Chinese universities and research institutions, admit superior Chinese students to its own programs and send our students to study in China, and support the activities of the University of Tokyo alumni association in China.

The University of Tokyo Beijing Office
Address: Room 1201, Block A, Freetown, 58 South Dongsanhuan Road, Beijing, 100022, China
Telephone: +86-10-5867-2584

Beijing Office is located in the building 'Freetown' in southeastern Beijing

Staff of the Beijing Office

President Komiyama made an address at the opening ceremony

Indian Philosophy and Buddhist Studies

Hiroshi Marui
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http：//www.l.u-tokyo.ac.jp/eng/

The introduction of an incorporation system into Japan's national universities would endanger the continued existence of fields of scholarship that are considered not to be of immediate and tangible value to the society at large.

Amid the academic disciplines frequently cited in these cries of alarm is the "Indian philosophy and Buddhist studies" (generally called *Intetsu* in an abridged form in Japanese), to which I have been committed for a long time. I cannot help saying to myself, "But why?"

The discipline of Indian philosophy and Buddhist studies as a field of modern scholarship was born out of the encounter between the traditional Buddhist studies based on the Chinese texts of the Buddhist canons until the Edo period and the Western scholarship of *Indologie* introduced into Japan in the Meiji period, which has made a remarkable progress in Europe since the late 18th century with much stress laid on research of Indian classics in Sanskrit and other languages. As early as 1879, only two years after the founding of the University of Tokyo, the first lectures in Buddhism were given, though it was not until 1916 that a chair of Indian philosophy and Buddhist studies was established (preceded in 1901 by the chair of the Sanskrit Language and Literature). This was made possible by a huge donation by Zenjiro Yasuda, whose name still graces the University of Tokyo's best-known building, Yasuda Hall. At present, the Department of Indian Philosophy and Buddhist Studies is comprised of three full professors (Indian philosophy, Indian and Tibetan Buddhism, and Japanese Buddhism), one assistant professor (Indian Buddhism), and one department assistant. The composition of the student body is a reverse pyramid, with only six undergraduates but fifty-eight graduate students (including ten in Indian literature), a situation which has long been the case. The major reasons for this are that most of the undergraduates go on to graduate work in the department, there are a large number of foreign graduate students, and finally that research and teaching posts in this field are relatively hard to obtain.

Sometimes I am asked, "If you graduate in *Intetsu,* are you qualified to be a Buddhist priest?" The answer is no. The academic discipline of Indian philosophy and Buddhist studies is not intended to educate students on the actual Buddhist practices, nor to acquaint them with the specific beliefs of any particular Buddhist sect. Instead, the main emphasis is laid upon developing the capacity to engage in close reading of the classic texts of Buddhism and Indian philosophy. For this purpose, knowledge of Sanskrit—often said to possess the most complex grammar of any of the world's languages—is essential, while Pali, the language of the scriptures of early and Theravada Buddhism, is also extremely important, as are classical Tibetan and classical Chinese, which are indispensable for the study of Mahayana Buddhism. In addition, in order to absorb the contributions of Western scholarship to the study of Indian philosophy and Buddhism, one must be able to read academic papers and monographs in English, French, and German, and there are many occasions to publish papers written in English.

Research in original sources frequently requires one to examine handwritten manuscripts and sometimes even to carry out the task of textual criticism. Important manuscripts are still being discovered, some of which may open the way for a major rewriting of the history of Buddhism and of Indian thought.

However, the mere philological analysis of textual sources is never the sum total of the discipline of Indian philosophy and Buddhist studies. In his valedictory lecture in the Faculty of Letters at the University of Tokyo, the late Professor Hajime Nakamura, a world-renowned scholar of Indian philosophy and Buddhist studies and recipient of the Order of Cultural Merit, emphasized that the study of Indian philosophy and Buddhism must not be, like Egyptology, merely an excavation of the past. There is a famous passage in one of the Zen texts that says, "The teachings of the past illuminate the mind; the mind illuminates the teachings of the past." In the present day, with all its varieties of confusion, it is valuable to study the messages of the great thought of the past as a way of giving direction to the self that is alive, right here, right now. For this purpose, it is not enough to objectively analyze what is written in a text—the mind and spirit of the one who is reading must also be cultivated.

My field of specialization is the Brahmanical schools of Indian philosophy, particularly the Nyaya and Vaisheshika Systems, which attach much value to logical and analytical thought instead of a mystical experience or the religious authority. Recently I have been reading the *Nyaya-manjari* (Garland of Logic), whose author was Jayanta, flourishing in Kashmir at the end of the ninth century. While rejecting the use of reasoning that would willfully destroy the religious (and by extension, cultural) tradition as "the dry and fruitless logic," Jayanta dedicated considerable efforts toward the construction of arguments for harmonizing and mediating among a diversity of religious tenets. I would like to do something to call more attention of a general readership to the appeal and rich intelligence of his world of philosophy as dialogue.

Generally speaking, Indian philosophy and Buddhist thought have been encouraging the individual's internal reflection on the self and its relationship to others, rather than the interest in the outside world and society. In my view the attempt to translate the words of these philosophers, woven out of deep reflection and thought, into a form that will speak to the hearts and minds of contemporary people should be an important way in which scholars of Indian philosophy and Buddhism can "contribute to society." And I strongly hope that in return society may show a due respect for the efforts of young scholars who, despite the economic hardships, devote themselves to the difficult path of understanding each and every word of old texts in the faith that new possibilities may still be found there-for themselves, for the human mind, and for human society.

Seminar on Indian philosophical texts.

Manuscript of an Indian treatise on logic. These ancient manuscripts were written on palm leaves or bark; this one is on bark.

Conversation with Professor M. Deokar of the University of Pune. Blind from birth, Professor Deokar has memorized all the texts.

Global Climate Modeling

Teruyuki Nakajima
Director, Professor, Center for Climate System Research
http : //www.ccsr.u-tokyo.ac.jp/

Look up at the light blue sky. With the sun and the white clouds and a gentle breeze blowing, it's an exhilarating feeling. This is all part of the global climate in which we live, and its modeling is the focus of this article.

In the late 1940s, John von Neumann, father of the modern digital computer, assembled a team of young meteorologists at Princeton University's Institute for Advanced Study to develop the discipline of numerical meteorology project in the promising new field of computational science. In 1950, the first continental-scale weather simulation was carried out using the ENIAC computer. Working with a horizontal resolution of 700 km, these scientists were focused on the key challenge of using such a simulation to simulate high- and low-pressure systems. But long-term time integration of the strongly nonlinear fluid dynamics equations proved exceedingly difficult. This was the problem that gave rise to the notion of "Lorenz's butterfly," or the "butterfly effect"—the idea that the complex disturbance caused by the wings of a butterfly in Beijing could result in a storm in New York City.

Fifty years later, running a high-end supercomputer called the "Earth Simulator" here in a small corner of East Asia, we were able to use a numerical climate model with a horizontal resolution of 100 km and integrate it over a period of several centuries. As a result, we have been able to run simulations for a wide variety of global conditions to predict such things as the effect of global warming on Japan's climate, the global spread of atmospheric pollution, and so forth (figures 1-3). By analyzing the results in detail, we have been able to determine that the earth's climate has changed over the last 100 years in response to such external factors as changes in solar output and volcanic eruptions, as well as human-generated carbon dioxide and aerosol emissions, and that within a time frame of tens of thousands of years, such forces as continental upheavals and changes in the earth's orbit have resulted in a repeating cycle of glacial and interglacial periods.

This type of simulation can be used to study a variety of problems, but it is especially important for research on global warming. According to the simulation result shown in figure 1, warming could become pronounced in the years ahead, to the point where, by the end of the century, mid-summer temperatures are recorded 30% of the days of the year. In order to respond appropriately to the challenge of global warming, it is essential that we develop a model that can predict global weather patterns accurately. The next-generation model currently under development, with a horizontal resolution of less than 10 km, will be capable of decomposing climate down to phenomena on a scale comparable to the area inside Tokyo's Yamanote Line. Figure 4 shows the cloud cover over the globe based on a test simulation recently conducted using this model. It looks like the real thing, doesn't it?

The numerical climate model we have been discussing is an extraordinarily complex model incorporating all kinds of physical and chemical processes involving sun, clouds, wind, and ocean. When the Center for Climate System Research was established in 1991, there were some who argued that an accurate model with that degree of complexity was impossible to be made by a university organization. But we have developed such a sophisticated model as the fruit of collaboration between faculty and graduate students.

According to Mahayana Buddhism, the Buddha Maitreya—who inspired the logo you see on publications of the Center for Climate System Research —will appear some 5,670,000,000 years in the future to save humankind. We cannot look that far into the future, but by means of our climate modeling, we are gradually learning how to simulate the earth's systems numerically, though not perfect as by Buddha. And although it is not obvious from nonlinear theory, thus far it appears that the more natural factors and human factors we incorporate, the closer we approach reality. This being the case, there can be few more rewarding activities today than the development of a global climate model at a university blessed by a large number of researchers in various fields. Our computers may soon show us what happens to the planet when Lorenz's butterfly flutters its wings. Interested in finding out?

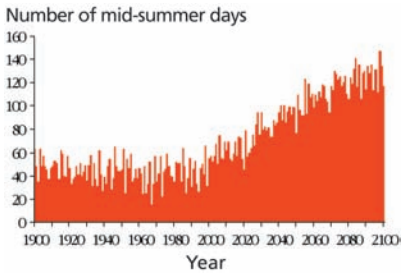

Figure 1. Projected change in the number of mid-summer days due to global warming

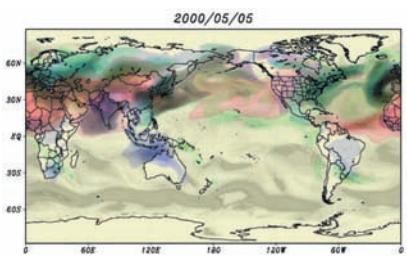

Figure 2. Flow of aerosol pollutants on May 5, 2000 (blue = sulfates ; green = carbon). Particles of dust (red) and sea salt (gray) are also shown

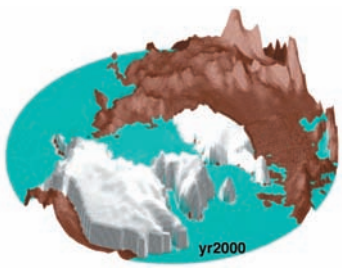

Figure 3. Simulation of continental ice sheets during the last ice age, viewed from above the Arctic Ocean

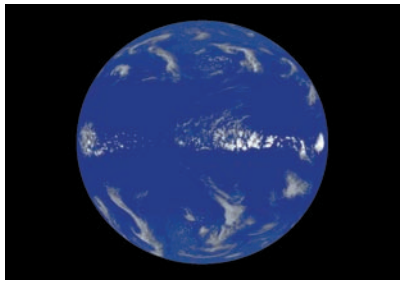

Figure 4. Simulation of clouds over the aqua planet using new non-hydrostatic model

The Importance of Motor Organs and Exercise: From Falls Prevention to Childhood Education

Yoshiteru Muto
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We are engaged in research and practical educational activities predicated on the well-established need for people to optimize and enhance the structure and function of their "motor organs"-the mechanism by which the human body moves-and on the belief that exercise appropriate to one's physical condition is important to each individual's health and happiness regardless of age or gender.

Prevention of falls, fractures, and long-term nursing among the elderly

Japanese society continues to age as the fertility rate falls, and with the elderly population increasing, measures to prevent seniors from becoming bed-ridden or requiring long-term nursing care have become an urgent priority, not only for seniors themselves but for families, communities, and the nation as a whole. One important means of avoiding long-term nursing care is to prevent serious accidents and injuries from happening, especially the falls that so frequently lead to femoral neck fractures.

The key to preventing falls among the elderly lies in our understanding of such falls. Combining our own research findings with those of other precedent researchers in Japan and abroad, we arrived at the basic understanding that falls are both a result and a cause (figure 1). A complex combination of internal factors, including the physical decline caused by aging and lack of exercise, illness, and drug side-effects, makes older people susceptible to falls. In other words, falling can be seen as a manifestation of the breakdown of physical control mechanisms supporting the function of upright bipedal locomotion that human beings acquired during the long process of evolution. Such falls can result in bone fractures and disuse syndrome and lead seniors to become housebound or bedridden.

Working from this conceptual framework, we concluded that if falls among the elderly are treated as a kind of lifestyle illness, it should be possible through appropriate exercise and lifestyle guidance to help the elderly prevent falls, and the bone fractures and long-term care that result, and so help each senior citizen live a more healthy and fulfilling life. On the ground of this theory, we have undertaken a number of academic and community activities. We developed ✗fall prevention workshops," held them around the country, and trained others to lead such workshops. In addition, we have set up study groups, designated October 10 Fall Prevention Day in Japan ("10-10," when pronounced ten-tou, being a pun on the Japanese word for fall, figure 2), and set up a fall-prevention telephone hotline.

A comic book to teach children and adults about their bodies

The basic goals of physical and health education can be summed as follows: (1) to learn the mechanisms of the human body, (2) to learn the importance of the body, life and health, and (3) to learn the importance and pleasure of exercising the body.
The Bone and Joint Decade (2000〜2010), initiated at Sweden's Lund University and organized and supported by the World Health Organization and the United Nations, is currently under way. As one of Japan's initiatives to mark this decade, I joined with seven (initially) students from the Faculty of Education to approach the topic from the standpoint of physical and health education and create a comic book to convey to children the importance of their motor organs and exercise.

Using current research findings as a basis, we compiled key understandings for activities at home, at school, and when involved in sports and presented them in easy-to-understand comic-book form to create an effective teaching tool. We feel this was an important undertaking from the standpoint of linking our research with children's actual education.

As a result of this project, the students involved were awarded the University of Tokyo Presidential Award for 2005. We also produced an edition that translates a portion of the text into English (figure 3) and had one of the students present it at the 2005 Bone and Joint Decade World Network Conference (Ottawa, Canada).

We believe that the best and ultimate measure for preventing long-term nursing care is to raise healthy and fit children. For this reason, we are working to ensure that children learn and fully understand the importance of their motor organs and exercise beginning in elementary school and are continuing to carry out both basic research and practical programs aimed at instituting the kind of instruction that will lead to the prevention of accidents and motor-organ impairment.

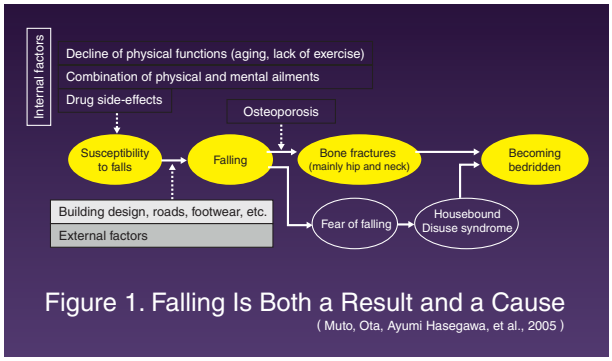

Figure 1. Falling Is Both a Result and a Cause
(Muto, Ota, Ayumi Hasegawa, et al., 2005)

Figure 2. 10/10 (ten tou) is Fall (tentou) Prevention Day Stop falling!

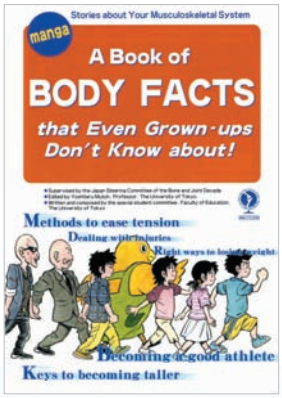

Figure 3.

Making Liquid Transport Fuel from Biomass

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http://www.bme.en.a.u-tokyo.ac.jp/index-e.htm

One area in which my laboratory is involved is the analysis of biomass energy systems. Specifically, we have been engaged in research focused on the production of liquid transport fuel, a key process in the conversion of biomass to energy.

Although wood and other biomass emits carbon dioxide into the atmosphere when burned for fuel, as long as the same amount of CO_2 is fixed by photosynthesis as a result of reafforestation and so forth, it will not raise atmospheric concentrations of carbon dioxide over the long run. This kind of cycle is called carbon neutral. Meanwhile, since the fuel cycle generates energy without reliance on fossil energy, it benefits us by substituting for fossil fuels and reducing carbon dioxide emissions from such energy sources.
Among renewable energy sources, biomass is unique in that it is organic (carbonaceous), which means that it can be used not only to generate electricity and heat but also as a raw material for the manufacture of transport fuel and chemical products.

In Asia, energy demand has far outstripped supply as rapid economic development has caused consumption to soar. The rapid increase in oil imports in this part of the world is especially important to note. In 2003, oil consumption reached 1.041 billion tons and net imports totaled 655 million tons. If we look at long-term trends in oil supply and demand in Asia, we see an increase in demand from 618 million tons in 1990 to 1.041 billion tons in 2003, representing an average yearly increase of 3.8%. The ongoing impact as China continues its rapid transition from bicycles to automobiles has been stressed too frequently to require reiteration here.

As a result of these trends, tight oil supply and rising costs are anticipated, and the environmental impact of rising CO_2 levels is a source of concern as well. Under these circumstances, hopes are high for the use of biomass fuel as an alternative to oil.

Figure 1 gives an overview of the processes for producing liquid fuel from a particular category of biomass, that is, woody and herbaceous waste. These include promising processes of gasifying biomass and using the synthesis gas to produce fuels alternative to diesel by the methanol, DME, or FT process, as well as of manufacturing ethanol using as the starting material lignocellulose that may not compete with food resources. With petroleum prices expected to continue rising, practical techniques for manufacturing alternative fuels from untapped biomass could also play an important role as a hedge against the soaring cost of oil.

Focusing on untapped biomass and waste biomass, rather than biomass that can be used for food or high value-added products, we are carrying out quantitative studies to find the best process designs for the production of alternative liquid fuel, as well as determining their CO_2 reduction benefits, economic feasibility, and potential for functioning as a clean development mechanism under the Kyoto Protocol.

A study by the Japanese Agency for Natural Resources and Energy estimates biomass resources in the Asian region at 49 EJ (exajoules, or 10^{18} joules) for forestry, agriculture, and livestock waste biomass and 38 EJ for energy crops, for an estimated total of 87 EJ. This is equivalent to about 20% of current worldwide primary energy consumption.

One example of our research focuses is to utilize the fruit of the oil palm (figure 2) after the oil has been extracted, as well as the discarded trunks. When old oil palms are cut down to make room for new trees-every 20 to 25 years-the old trunks are discarded. In Malaysia alone, this waste, on a dry basis, totals some 5 million tons annually. Our goal is to offer a process that uses one or more of the processes illustrated in figure 1 to produce transport fuel from biomass that is not being effectively utilized, such as these discarded trunks.

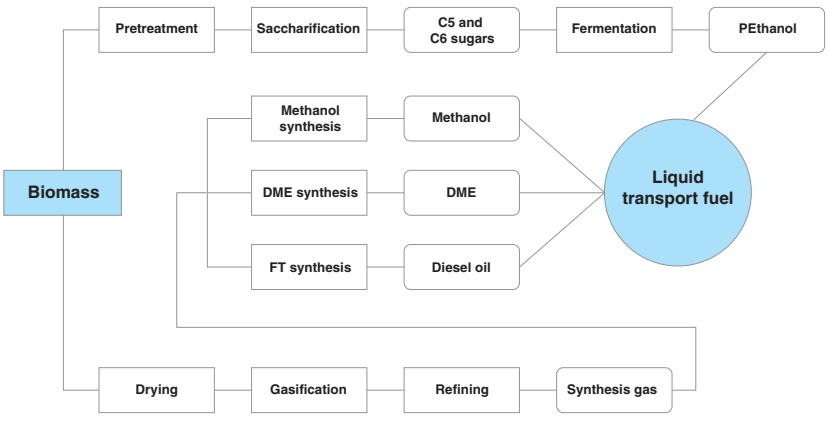

Figure 1. Processes for Manufacturing Liquid Fuel from Biomass

Figure 2. Fruit of the oil palm

News in Brief

2005 January to December

February

-Drs. Tadao Ando, Masatoshi Koshiba, Yoji Totsuka and Akira Fujishima were awarded the Special University Professor.

March

-Ms. Mary McAleese, the President of Ireland, visited the University Komaba campus and gave a speech entitled "Ireland and Japan at the Beginning of the New Millennium".

-Graduate School of Science completed the new Faculty Building 1 and opened the Koshiba Hall in commemoration of Dr. Masatoshi Koshiba's Nobel Prize winning.

-Commencement Ceremony
Dr. Hans Wigzell, Former President of Karolinska Institute of Sweden and Mr. Kenzaburo Oe, Novelist and the Novel Prize Laureate in Literature were invited to the ceremony and each gave a congratulatory speech.

-The Communication Center opened at Hongo Campus
Many items that symbolize the research and education activities at the University are displayed or available for purchase at the Center, acting as a hub for communication between the University and the society.

April

-Professor Hiroshi Komiyama was inaugurated as the President of the University (See page 16)

-Matriculation Ceremony

-UT Forum 2005 in China along with the opening ceremony of the University of Tokyo Beijing Office was held (See page 24)

May

-The 79th May Festival

June

-The Science Integration Program Inauguration Symposium was held
The Science Integration Program, inaugurated by President Komiyama in April 2005, aims to structure complex knowledge along the four themes of "human", "material", "earth", and "cosmos". As the first step, the "Science Integration Program - Human" has been started.

August

-The Open Campus 2005 was held, and 2,400 senior high school students took part in.

October

-Academic Overview Lectures started
To give junior students the overview of research fields, College of Arts and Sciences started the Academic Overview Lectures. For the first time, four professors including President Komiyama and Dr. Koshiba gave a series of lectures on the theme of "Materials Science".

-Space Shuttle Astronaut Soichi Noguchi visited his Alma Mater

November

-The 4th Homecoming Day, an alumni meeting, took place
About 2,000 alumni enjoyed a variety of events including lectures, concerts, campus tour by student guides, and a football game of university students.

-The 56th Komaba Festival

Traditional firework demonstration.

2006 January to May

February

-Integrated Research System for Sustainability Science: IR3S, 1st International Symposium was held
IR3S aims to create a network-type platform for world-class research and education in the field of sustainability science

March

-Commencement Ceremony

April

-Matriculation Ceremony
Space Shuttle Astronaut Soichi Noguchi who got a masters degree from the Graduate School of Engineering sent a video message to the ceremony.

May

-Secretary-General of the United Nations Kofi Annan was awarded an honorary doctorate: Doctor Honoris Causa

A ceremony took place to award an honorary doctorate to Secretary-General Kofi A. Annan at Yasuda Auditorium. A commemorative lecture by Mr. Annan followed.

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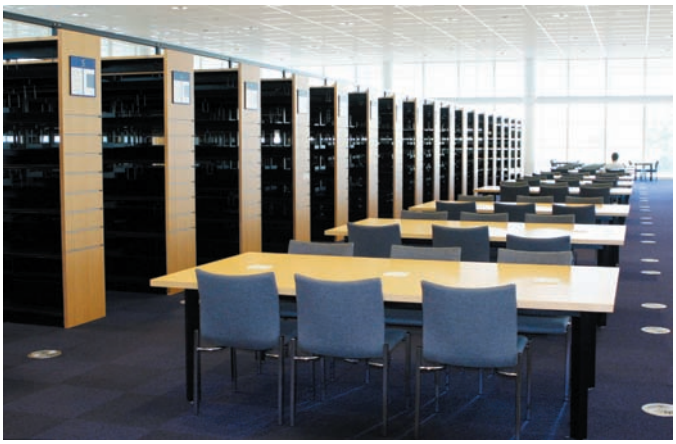

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