

University of Tokyo set for major reform

- Graduate schools to get more influence
- Other universities may follow suit

Tokyo

AFTER years of discussion, the University of Tokyo, Japan's leading national university, seems set to undergo radical reform designed to strengthen graduate level research in the university. If successful, the changes at Tokyo are expected to trigger similar reforms throughout the whole of Japan's national university research system.

Over the past few months, Tokyo University officials have been drafting detailed plans for the reform, which the Ministry of Education, Science and Culture will submit to the Ministry of Finance in August in the education ministry's budget proposal for next fiscal year. Next year's changes — if approved — will be made in the university's faculty of science, various laboratories and research institutes affiliated with the university, the faculty of engineering, and the college of arts and sciences, which together embrace thousands of graduate students. They follow similar changes in the faculty of law this year, which only affected a very small number of graduate students.

Under the present system, all the power (and most of the budget) of Japanese national universities is concentrated in undergraduate education. The graduate schools are treated just like extra appendages, and in the present environment of government fiscal restraint they are consequently starved of funds. This situation is particularly odd for science graduate students at Tokyo University because their number (1,172), including those at affiliated research institutes, is nearly twice that of science undergraduates (660). The university's faculty of science has been pushing for reform on and off for thirty years, but only recently has its voice been heard (*Nature* 338, 99; 1989).

The proposed reforms are designed to turn the present system on its head by concentrating power and funds in the graduate schools. Each member of faculty will cease to hold a position in the undergraduate school and will instead be assigned a position in one of the university's graduate schools, where their prime responsibility will be to supervise graduate level research. Most faculty members will continue to teach undergraduates, but some will be engaged purely in research and research supervision (a situation that already exists in the university's affiliated research institutes).

A new graduate school of sciences will be created in Tokyo University by drawing several hundred faculty members from the faculty of science, college of arts and sciences, and various laboratories and research

institutes affiliated with the university. A new graduate school of mathematical sciences will also be formed with staff from various faculties. The faculty of engineering will have its own reformed graduate school.

Another key change in the graduate school of sciences will be the introduction of large multidisciplinary research groups. In general, the Japanese university research system is based on small independent research groups (or *koza*) typically comprised of one professor, one associate professor, two research assistants, and a small troop of graduate students.

Young researchers usually become closely tied to a particular *koza* in their undergraduate years and tend to stay with that *koza* throughout their research careers. This creates a very rigid in-bred research system where professors reign supreme over tiny research groups that have very narrow research interests. There is very little interaction and exchange of researchers between *koza*, even in closely related fields. The system is perpetuated by the ministry of education, which hands out tiny fixed budgets in piecemeal lots to each and every *koza*, regardless of performance.

The university's plan calls for five multidisciplinary research groups in the new graduate school of sciences, covering computational science, earth and planetary science, artificial materials, superparallel computer systems, and molecular biology.

Each group will have approximately fifteen to twenty faculty members but only

about four will be permanently assigned to a group. Professor Ikuo Kushiro, dean of the science faculty, says he and other reformers hope that the multidisciplinary *koza* will offer greater choice and flexibility for young researchers joining the system.

The reform should bring in extra research funds for the *koza*. When the faculty of law underwent reform this year, *koza* funds for faculty members engaged in teaching and research were increased by about 25 per cent, and other faculties are hoping for a similar boost. But the increase requires the support of the ministry of education and the approval of the ministry of finance and a decision is not expected until the end of this year.

The ultimate aim of the reform, says Kushiro, is to turn Tokyo University into an international centre of excellence, such as the US Massachusetts Institute of Technology or the University of Cambridge in the United Kingdom, by making it an attractive research environment for non-Japanese.

"This is a wonderful idea, in principle," says Robert Geller of the university's geophysics department, who is one of only a handful of non-Japanese faculties to obtain tenure in the university. But, although he is sure that the reformers are sincere in what they say, he wonders whether the majority of faculty members are committed to opening up the university to non-Japanese faculties.

Many observers both within and outside the university suspect that the prime motivation for reform is the desire to get more money. But if money were everything, Geller says, "Saudi Arabia would have the best universities in the world".

Whatever the case, the changes at Tokyo University are being watched very carefully by all the other major national universities. If the reform succeeds, others are bound to follow suit with their own proposals for change.

David Swinbanks

The trials of young researchers

Tokyo

In an unusual move to back up calls for reform of Japan's national universities, deans of the science faculties of ten major national universities released a report in March that details the problems confronting Japan's young university researchers.

The report charges that the creative talents of young university researchers are stifled by the lack of technicians, the lack of laboratory space, the lack of research funds, and by a rigid research system that prevents them from freely pursuing the research of their choice. This may not be new, but it is unprecedented for such a large group of powerful senior academics to admit the problems so publicly and so frankly. The committee consisted of science deans from the universities of Tokyo, Kyoto, Nagoya, Osaka, Tsukuba, Hokkaido,

Hiroshima, Kyushu, Tohoku, and the Tokyo Institute of Technology.

The deans are blunt in recommending solutions. Graduate students should be allowed to apply for their own research grants (at present they cannot), they should be provided fellowships (there are very few fellowships currently available at the graduate level), and the ministry of education should introduce a formal system of teaching assistantships in line with recent moves in this direction by some of the universities.

The deans also call for re-examination of the *koza* system, the small research groups that form the very framework of the university research system (see above). And they suggest that the lowly research assistants on these teams should be given greater freedom by, for example, allowing them to teach graduate courses.

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