THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY:
WORKING TOWARD OCTOBER 1991

The School of Business and Management faces the herculean task of screening 6,000 applicants for 150 places. Through information forums and individual interviews good progress is being made.

HKUST’s temporary offices swell with faculty, administrative staff, and paperwork. Each day online computers announce the countdown of weeks before classes begin.

While waiting for school to start and for their research laboratories to be ready, faculty keep pace with developments in their disciplines through symposia and seminars.
A las, life is not all roses.

Issue after issue, we have been feeding you, the readers of our Newsletter, mainly good news and optimistic prospects. Yet reality can be cruel once in a while. For HKUST we have just received our first setback: Our recurrent budget allocation for the fiscal year 91/92 has been given a significant reduction relative to the request.

During the planning years, the University has been funded directly by Government. As we open, UPGC takes over. UPGC, the University and Polytechnic Grants Committee, is an advisory body appointed by Government to fund all of Hong Kong’s seven tertiary institutions. So, on 1 July 1991, as HKUST is handed over by Government to UPGC, we will stop being the only begotten to become just one among a brood of seven. It should come as no surprise that the treatment we receive can undergo an abrupt change.

In fact, we have been warned all along by UPGC that it would not be committed to funding the new University at the same level as Government.

Does this mean, then, all of a sudden we are to be given equal funding per student as the other institutions? No, far from it. UPGC does take into consideration our start-up needs. Despite a 91/92 cash limit imposed by Government on the funding of tertiary institutions, UPGC grants us far more money per student than the two established universities. However, an interesting question can be raised: While student enrolment is a reasonable norm to be used for funding mature institutions, is it an appropriate yardstick for measuring the financial needs of a start-up? In particular, we are talking about the start-up of a technological university with missions that go far beyond teaching and academic research.

The bulk of our 91/92 so-called “recurrent” budget is really for start-up administrative tasks. We are to take over the operation of a large campus under construction, recruit hundreds of academic and administrative staff, procure hundreds of millions of dollars of equipment - from knives and forks to sophisticated computer networks and research facilities, develop administrative policies and user-specific computing systems, organise and stock up a new library, establish a dozen centralised academic support services, screen more than 20,000 applications for admission, ... and carry out numerous other tasks which bear little relation to the initial enrolment figure of 700. All these tasks are pressed together in a fast-track parallel process to build a full-size university in five years, in accordance with Government’s mandate.

The University and UPGC have been engaged in a constructive dialogue to seek a common understanding of the problem and an agreeable solution. In the meantime, how will we cope with the budget reduction which is even now upon us?

Let me begin by assuring our readers that, at a recurrent budget of HK$298.5 million, the University is in no danger of having to compromise on the quality of the teaching and research programmes which are fundamental to our academic mission.

There is no free lunch, of course. So, where and how severe will the impact of the cuts be? In trying to design a viable spending strategy, we base our decisions on the principle that certain vital functions of the University must be protected. Other functions will be reduced in scope, or deferred.

We will allow no cutback on either the quality or the quantity of the University’s teaching programmes. There will be no change in the format in which undergraduate instructions are to be provided. For postgraduate instructions, where classes are too small to be economical, a direct supervision type of instruction will be adopted. Also, we are likely to admit more students for research degrees (MPhil and PhD) than taught degrees.

We will allow no compromise on the quality of research programmes deemed fundamental to our academic mission. However, the academic staff will have to be very selective in the scope and nature of their work. Certain specialities may have to be deferred; they include areas which are academically less fundamental or urgent, but important to the new University’s service mission: specialities which would contribute directly to the Territory’s economic and technological infrastructure, and help Hong Kong advance herself rapidly from a labour-intensive to a technology-based economy.

The University’s Phase I physical facilities, constructed under the direction of The Royal Hong Kong Jockey Club’s dedicated project management team, is expected to be delivered in good order and on time. As is the case for all new constructions, there will be urgent needs for secondary fitting out, “debugging”, and preventive maintenance. We expect to implement all the work projects deemed absolutely un-deferrable; but there will be delays and reductions of scope for many other projects.

We have sufficient funds to hire and maintain only a minimum core of administrative and support staff to cover all the non-academic workloads. The service they provide will be good; but volume and variety will suffer. Faculty and students may have to expect less, tolerate more, and become rather self-reliant. Given the dedication and enthusiasm the University community has demonstrated so far, I have no doubt that we will endure and overcome.

With the support of UPGC and the community, we shall strive for budget improvements in the coming years. In the meantime, we permit ourselves no compromise in the University’s academic vision. Our tasks will continue to be performed in a manner that would bring pride to Hong Kong and to any world-class technological university.

The University is in no danger of having to compromise on the quality of the teaching and research programmes which are fundamental to our academic mission.
ACADEMIC APPOINTMENTS

DEAN
SCHOOL OF SCIENCE

Professor Shain-dow KUNG
(孔憲鐸教授)

HKUST's new Dean of the School of Science is Professor Shain-dow KUNG, Professor of Botany at the University of Maryland College Park and, concurrently, a Provost of the Maryland Biotechnology Institute of the University of Maryland System.

Professor Kung’s successful career is based on academic brilliance, hard work, and the desire to contribute his talents to society. His inclusion in ten prominent directories—from Who’s Who in Frontier Science and Technology and Directory of Distinguished Americans to Who’s Who in the World—are evidence of his exceptional achievements and the international respect he enjoys.

The focus of Professor Kung’s research and expertise is biotechnology and genetic engineering in plants. He has organised and delivered papers at symposia all over the world; he is a consultant to private and governmental organisations in the US and China. He has published more than 100 papers, co-authored/co-edited eight books, and serves on editorial boards for three scientific journals and publishing organisations. In addition, he is an Honourary Professor at six tertiary educational institutions in China, and serves on an advisory board concerning biotechnology and higher education in China.

Born in Shandong, China, and resident in Hong Kong from 1950-54, Professor Kung earned a BS at Chung Hsing University, an MSc at the University of Guelph, and a PhD at the University of Toronto. Since 1974 he has worked at the University of Maryland in various capacities from Professor to Associate Dean of Arts and Sciences.

HEAD
DEPARTMENT OF CIVIL AND STRUCTURAL ENGINEERING

Professor Chih-Kang SHEN
(沈智剛教授)

Professor Chih-Kang SHEN, Chairman of the Department of Civil Engineering at the University of California, Davis (UC, Davis), will join HKUST as its first Head of the Department of Civil and Structural Engineering.

Professor Shen earned his first degree at National Taiwan University, his master's at the University of New Hampshire, and his PhD at the University of California, Berkeley. After two years as Assistant Professor of Civil Engineering at Loyola University, he moved to UC Davis. There he has worked in various capacities, including Professor of Geotechnical Engineering and Acting Associate Dean of Research & Development.

During a career spanning three decades, Professor Shen has made significant contributions to his field of interest, soil. In particular, he studies the dynamic properties and field behaviour of natural and man-made soils under such diverse conditions as earthquakes, embankment dams, oil storage tank foundations, and racetracks. He delivers papers at international conferences on geological and geomechanical topics, particularly concerning earthquake engineering. More than 60 of his papers have appeared in a wide range of professional journals.

In addition to his academic work, Professor Shen serves as a consultant to the US Army and Navy, to the Electric Power Research Institute of Palo Alto, and to industry through a number of private consulting firms. He belongs to professional societies including the American Society of Civil Engineers (ASCE) and the International Society of Soil Mechanics and Foundation Engineering.

ASSOCIATE PRO-VICE-CHANCELLOR
FOR ACADEMIC AFFAIRS and
PROFESSOR
DEPARTMENT OF ELECTRICAL
AND ELECTRONIC ENGINEERING

Professor Donald A. GEORGE
(唐唐諾教授)

Professor Donald A. GEORGE joins HKUST as the University's second Associate Pro-Vice-Chancellor for Academic Affairs and as Professor of Electrical and Electronic Engineering.

Born in Canada, Professor George earned a BEng from McGill University, an MS from Stanford, and an ScD from MIT. Both latter degrees were in Electrical Engineering, and are the foundation of his life-long focus in communications science and technology. After graduation he taught briefly at the University of New Brunswick, then some twenty years at Carleton University. During his six years as Dean of Engineering there, the postgraduate programme in electrical engineering grew to become one of the largest in Canada, while all undergraduate and postgraduate engineering programmes consistently received high ratings.

In the mid 1970's Professor George's interests shifted to the application of communication systems in education. He joined national and province-wide committees, served as a consultant on engineering education, and eventually took up a post at Simon Fraser University where he headed the planning of a new engineering programme. He was subsequently appointed both Dean of the new Faculty of Applied Sciences and Director of the School of Engineering Science, positions he held until joining HKUST.

Throughout his career, Professor George has been active in research, with one patent and more than 50 publications to his credit. He is a member of the Institute of Electrical and Electronic Engineers, and recipient of the Engineering Institute of Canada's Ross Medal for pioneering work in communications technology.
Professor Wu-Chung HSIANG
(項武忠教授)

After nearly twenty years of teaching and research as a full professor at Princeton, Professor Wu-Chung HSIANG has accepted a post at HKUST as Professor in the Department of Mathematics.

Professor Hsiang was born in Chekiang, China. He earned his BA at National Taiwan University and his PhD at Princeton. Upon graduation he joined the faculty of Yale; in 1972 he returned to HKUST as Professor in the Department of Mathematics. He became Chairman of Princeton's Mathematics Department from 1982 to 1985.

Professor Hsiang has held several prestigious Fellowships (Sloan Fellow, 1967-69; Senior National Science Foundation (NSF) Fellow, 1971-72; Guggenheim Fellow, 1975-76), published more than 70 papers, and delivered many major addresses at professional meetings. He has been Visiting Professor at the University of Amsterdam, the University of Bonn, the University of California, Berkeley, and Stanford. Professor Hsiang also serves on the Editorial Board of the Annals of Mathematics, and is a member of the Academia Sinica and of the American Academy of Arts and Sciences.

Professor Frederick H. LOCHOVSKY
(樂創基教授)

Professor Frederick H. LOCHOVSKY, formerly Professor of Computer Science and of Management at the University of Toronto, has been appointed Professor in HKUST's Department of Computer Science.

With expertise in the design of database and information management systems, Professor Lochovsky is active in both teaching and research. He has developed and taught a range of undergraduate, postgraduate, and MBA courses, and has served continuously on university curriculum development committees.

Both public and private organisations, including the United Nations and NATO, seek Professor Lochovsky as a consultant on office information systems. He belongs to a number of professional associations, serves in editorial positions on three publications, and is Editor-in-Chief of the IEEE Society's periodical Office Knowledge Engineering. More than 50 of his papers and reports have appeared in scholarly publications.

Born in West Germany, Professor Lochovsky studied at the University of Toronto. After earning a BSc in Engineering, and an MSc and PhD, both in Computer Science, he took up concurrent posts there in the Department of Computer Science and Faculty of Management.

Professor Grafton W.H. HUI
(許為厚教授)

Professor Grafton W.H. HUI, distinguished mathematician in the field of fluid dynamics, comes to HKUST as Professor in the Department of Mathematics from the University of Waterloo.

Professor Hui was born in China and graduated from Pui Ching Secondary School in Canton. He earned a BSc at Beijing University and a PhD in Aeronautics and Astronautics at the University of Southampton, where he was also awarded an honorary DSc for his original research in fluid dynamics. After five years with the University of Southampton, in 1974 he left for the University of Waterloo where he became Professor of Applied Mathematics and Mechanical Engineering in 1979.

Vigorous research and dedication to teaching have been the cornerstones of Professor Hui's career. He publishes regularly in professional journals, has taught as a Visiting Professor at various institutions, and has been a consultant on high speed aerodynamics and flight mechanics to the NASA Ames Research Center, and on water waves to the Canada Center for Inland Waters for more than a decade.

Amelia FONG LOCHOVSKY
(方柱華博士)

1977 PhD
Princeton University (Electrical Engineering & Computer Science)

1988-90
Assoc. Professor of Computer & Information Science, University of Guelph

Research Interests:
Design, analysis and applications of image processing and machine vision algorithms; artificial intelligence.

Man-Chi PONG
(龐民治博士)

1985 PhD
University of Kent at Canterbury (Computer Science)

1990-91
Project Manager, Technology, Citibank, Hong Kong

Research Interests:
Programming environment; software engineering; distributed computing.
Council member Mr Kwok Wai-kai is the Secretary for Works in the Government Secretariat, where he supervises and co-ordinates the work of seven departments: the Architectural Services Department, Civil Engineering Services Department, Drainage Services Department, Electrical and Mechanical Services Department, Highways Department, Territory Development Department, and Water Supplies Department. He is also the overall project co-ordinator for Hong Kong's Port and Airport Development.

Mr Kwok graduated from the University of Hong Kong with a Bachelor of Science degree in engineering. He is a Chartered Engineer, Fellow of the Institution of Civil Engineers, Fellow of the Institution of Highways and Transport, Fellow of Hong Kong Institution of Engineers, Fellow of the Institute of Transportation of Engineers, and Member of the British Institute of Management.

He started his career in 1955 with an engineering consulting firm working on the development of the Hong Kong Kai Tak International Airport. Following the opening of the new airport, he joined the Hong Kong Government as an engineer in April 1960. He then progressed from Director of Territory Development to Secretary for Works in the Government Secretariat.

HKUST IN ACTION

- Prof. H.K. Chang, Dean of the School of Engineering, has been appointed by the Governor to serve on the Council of the City Polytechnic of Hong Kong for a term of three years commencing 1 January 1991.

- Vice-Chancellor and President Prof. Chia-Wei Woo attended the Conference of Executive Heads of Commonwealth Universities in New Delhi, India, 14-18 January 1991.

- A group of ten HKUST senior academic staff, including the Vice-Chancellor, Pro-Vice-Chancellors, School Deans, and Department Heads, visited Hong Kong's Agriculture & Fisheries Department (AFD) on 25 January. Meeting with top administrators, they learned of progress in AFD's many projects.

- The Information Forum for Undergraduate Applicants to the School of Business and Management, comprising four sessions and involving 1200 shortlisted applicants to the School, was held 29-30 January. Vice-Chancellor and President Prof. Chia-Wei Woo, Pro-Dean of the School Dr Ernest J. Scalberg, Prof. Nai-fu Chen, Prof. Yuk-Shee Chan, and Dr Danny Wong, spoke at all the sessions and answered questions about the School's programmes.

- Jointly sponsored by the Mechanical Engineering Dept (HKUST) and the Council on Aeronautical Research of the British Commonwealth, the Specialist Workshop on Simulation through Scientific Computation was held at HKUST 17-18 January. Prof. Pin Tong, Head of Mechanical Engineering, was both an organiser of and speaker at the event.

- The Academic Senate met for the first time on 1 March. This body takes over the roles and duties of the Council's Academic Planning and Development Committee (APDC) in accordance with Council directives.

- The School of Business and Management held MBA Information Sessions for all those interested in the full-time and part-time MBA programmes. Pro-Dean of the School Dr Ernest J. Scalberg hosted nine evening sessions in February, March, and April.
BUILDING THE UNIVERSITY

The Role of The Royal Hong Kong Jockey Club

by W. J. Greig

Project Controller of Hong Kong University of Science and Technology Project,
The Royal Hong Kong Jockey Club

The Royal Hong Kong Jockey Club is renowned internationally for its great financial and practical contributions, other than racing, to life in Hong Kong. It has helped build Hong Kong’s major parks, the Jubilee Sports Centre, the Jockey Club International College and the Academy for Performing Arts, to name only a few of the larger projects. The Hong Kong University of Science and Technology (HKUST) is by far the largest civic project tackled by the Jockey Club.

What has been done in just over three years is little short of miraculous, particularly when one considers that the original plan was for the first student intake to be in 1994, not 1991.

In three months we are scheduled to hand over to the University the structures of the campus’s first phase—over 106,000 sq m of academic floor space plus many ancillary structures amounting to over 50,000 sq m. Included are the imposing main entrance, the seven-storey-high atrium, sports facilities, multi-storey car parking, multi-level library, administration areas and limited laboratory facilities, staff quarters plus hostel accommodation for 670 students.

The Background

The Jockey Club became involved with the HKUST project in 1987. After the Government’s Planning Committee chose Tai Po Tsai as the campus site, it asked the Club to help finance and manage the project’s first stages. Under the chairmanship of Sir Oswald Cheung, the Club’s Stewards agreed to provide $1,200 million plus a further $300 million to meet inflation. Government was to provide all additional funds.

It was also agreed that the Club manage the design and construction of the building and report to the Campus Project Management Committee (CPMC) of the University Council, chaired by Mr Gordon M. Macwhinnie, the Club’s current chairman.

To do the enormous job, the Club set up a team—now totalling 70 people—under the direct control of the Club’s Chief Executive, Major General Guy H. Watkins, who is also a member of the CPMC.

The basic requirements were to plan and produce a modern, energy-efficient university oriented towards science, technology and business studies, supported by a general education centre (now School of Humanities and Social Science), to be built in three phases. Phase III is still to be authorised for construction. Phase I design could not begin until the total academic space was agreed upon in late January 1988.

The Challenge

While the Planning Committee and CPMC recognised the building schedule was inordinately tight, they were not fully aware of the consequences of this.

Overcoming Problems

Programme stringency has dictated a radical approach to the project’s development. “Fast-track” construction is a popular phrase today but it can be misunderstood. It usually refers to accelerated design and construction, both proceeding concurrently, with design keeping one step ahead. With an organised approach it can be more effective and less costly than the conventional approach of construction following completion of design.

The success of fast-track construction depends, however, on the building’s owner, designer and constructor knowing the eventual user’s objectives and needs. We lacked the essential ingredient of the users—the many people who will eventually decide what is to be done, where and how—in an institution unprecedented in Hong Kong. We lacked sufficient of these users well into 1989.

At the outset detailed information on projected school and departmental growth, generated through the Planning Committee, was qualified by the caveat that all academic data beyond Phase I were subject to change. This posed a major problem for the designers but was overcome by the stratagem of designing flexible space that could be altered to suit new requirements, which meant higher capital costs.

Under the Simon Kwan/Percy Thomas Partnership joint venture, design work, detailed planning and construction have been going on concurrently to accomplish the goal set out — to complete a three-stage design for a technically sophisticated facility for 10,000 students within three and a half years. Also to be completed within the same time frame was the construction of fully operative space, encompassing public and administration and sports areas for 2,000 students. And only 17 months later, space to accommodate 5,000 new students would have to be handed over.

Simply put, all of Phase I academic buildings must be ready by October 1991, allowing the University to furnish and fit out for the opening.

While much remains to be done, the construction team is working steadily toward the target date.
But to produce a flexible design, architects still needed to know departments’ size and location as well as precise information on countless other matters such as headroom, power demands and vital environmental conditions. Few people know of the immense amount of work done by the Vice-Chancellor-to-be, his wife and his consultants in the US, to answer architects’ questions throughout 1988. Without his overnight return fax service on the many queries raised, the designers’ task would have been impossible.

When finalising the Master Plan in mid-1988, designers faced another problem when the Council requested changes. It asked designers to move the transport hub and to plan housing for 72% of the student population instead of the original 30%. The Council also wanted extra staff units and extensive car parking facilities.

The spectacular Port Shelter site had already been formed and provided with roads and services to accommodate an army depot for about 3,000 soldiers. While most of the site was adopted, some changes had to be made. To accommodate an ultimate population of 12,000 to 15,000, curve radii have been expanded, roads widened and utility services and drains have either been replaced or reinforced.

**Construction**

Under these circumstances and before all revisions to the Master Plan were approved, we proceeded to let the first contract on 6 October, 1988, for major site formation and foundation works, using the sketch designs still being developed. Another contract for roads, drains and marine works was awarded five months later—again on designs which were in a state of flux.

Energy efficiency has been a basic design concept. The building envelope was organised to limit solar gain, but some heat build-up is inevitable. Provision has been made for dealing with high equipment-generated heat loads in research labs and also for non-recirculation of cooled air in spaces with hazardous environments.

Fundamental to the consultants’ design was utilisation of sea water to remove heat from the academic building. Because of the high capital costs involved, this choice was subjected to close, independent scrutiny before adoption. It was deemed the most economic long-term solution under the conditions predicated.

To meet the Phase I handover deadline, the first building contract was awarded on 21 August 1989, to Hip Hing Construction Ltd. A week later the contract for Phase I residential buildings was awarded to Sung Foo Kee Ltd.

Subsequently the designers worked unceasingly, attending to detail and subcontracts for Phase I while progressing on the design of the sophisticated lab areas comprising the major part of the Phase II academic buildings. This culminated on 6 September 1990, when the contract for all Phase II academic buildings plus swimming pool, sports grounds, and some student housing was awarded to Hsin Chong Construction Co. Ltd. A month later the Phase II housing contract was awarded to Sanfield Construction Co. Ltd.

This contract brings accommodation on the main Campus and on the Erskine Site to a total of 350 staff quarters and housing for 2,100 students.

Despite labour shortages, brain drain, and other problems, which have affected both consultants and contractors alike, progress has been encouraging. We are confident we will meet the July deadline, thanks to the unremitting efforts of many people from all disciplines. Soon we will pass what we have built into the hands of the staff and student body. We trust they will find it a sound foundation on which to build a reputation for excellence.

Perhaps in the future, a Hong Kong student, with his head in the clouds of technological excellence, will pause to think of the designers and builders who helped make his dream and Hong Kong’s dream come true.
COMMUNITY COMMENTS

Patricia Fung-Yee Hong (康鳳儀)
Careers Mistress
Maryknoll Convent School

“A new university? What is it like? What is its quality of education?” As careers teachers, we were often besieged with questions from students when they learned that a new option of tertiary education was open to them as the Hong Kong University of Science and Technology would start to admit students in 1991.

It was to our great delight that HKUST offered school visits from their faculty members so that students could obtain first-hand information from the University staff. Such a visit to our school in February 1991 proved to be highly useful.

Dr Ernest J. Scalberg, Pro-Dean of the School of Business and Management, gave an interesting and informative talk on HKUST, and the students gained more insight into the University. Dr Scalberg was lively and sincere, speaking at the right level of the students. The slides were clear and the content made the University attractive to our students.

Choy Bing-Ling (蔡炳麟)
Careers Master
Shung Tak Catholic English College

We were very happy to welcome Dr Danny Wong, Reader in the Accounting Department of HKUST, to visit our school and deliver a talk to our students in the afternoon of 10 January this year. Sixty S.6 and S.7 students attended. The talk lasted for more than one hour and was highly valued by the students.

With the help of a slide show, Dr Wong explained the general admission procedures, and described the different study programmes offered by the University, and the type of students the University is looking for.

Students found it very impressive to hear that HKUST’s teaching method is to let students learn by themselves. They are treated as individuals, not as a class, so that it may help enhance students’ self-confidence in study. Moreover, students may take initiative to communicate with lecturers while seeking academic knowledge.

The modern information system now being installed at HKUST interested the students very much. The system, consisting of a network of microprocessors connecting all campus buildings, can keep students informed of all activities going on in the University, can be used for academic computing associated with teaching and research programmes, and can be used by staff for administrative purposes.

The spectacular view over the whole campus, which is sited on the scenic Clear Water Bay Peninsula overlooking Port Shelter, undoubtedly impressed the students greatly.

HKUST's visits to secondary schools can give students a clear picture of what the University is all about, its recent developments, and entrance requirements. This will sharpen students' wits when preparing for entry into the University. At the same time, HKUST can gain a better understanding of the present situation of secondary school students and may then make suitable adjustments to entrance requirements or future policy.

From HKUST Newsletters one can see that HKUST has every determination to become a university comparable to those already world-famous. In view of the rapid growth of her economy, Hong Kong does need the help of many talented scientists, technologists and administrators. We trust that the Hong Kong University of Science and Technology, with its modern facilities, dynamic and distinguished scholars and experienced administrators, can well accomplish its mission.

In October 1990, HKUST distributed a letter at the Annual General Meeting of the Hong Kong Association of Careers Masters and Guidance Masters asking the career masters and mistresses whether they would be interested in having a member of the HKUST faculty visit their schools. If so, they were also asked to indicate their areas of interest and their preferred language of presentation. Many school responded positively, and since then various staff of the University have visited about 30 schools.

Above are comments from teachers at two of the schools which hosted a visit from HKUST faculty.