The Hong Kong University of Science and Technology (HKUST) is mandated to become a world class research university with emphasis on technology and business, a heavy component of postgraduate education, and a will to collaborate closely with the private sector.

Such a technological research university treats with equal importance the three functions of higher education:

- **TEACHING** - the dissemination of knowledge
- **RESEARCH** - the creation of knowledge
- **SERVICE** - the application of knowledge

Unlike comprehensive teaching institutions, research and service are given significant weights alongside instruction. Still, a university devotes most of its energy and resource to educating its students. Its reason for existence ceases when learning cannot take place broadly, deeply, rationally, passionately, and freely. Thus, at HKUST we regard teaching as first among equals.

In articles published in previous Newsletters, I wrote longingly about the kind of students we seek. In particular, I said: "We look for highly qualified and motivated men and women who are curious about wide ranges of topics; participants rather than spectators in diverse activities; young people who are compassionate. What do we want to do with them when we get them? Our goal is to engage them in a continuous intellectual dialogue; help them to become competent and innovative professionals, adaptable and versatile generalists, and sensitive and caring citizens. We do not wish to produce ivory tower bookworms or narrowly focused technocrats." The true measure of the University's success will then be the quality of its graduates in the above context, and the contributions they make to Hong Kong and to Humanity.

On teaching and learning the last twenty years has seen a surge of opinions emphasising the importance of methodology. In my way of thinking, more fundamental is the faculty's desire to work with students. Effective teaching cannot be conducted on a one-way street. Whether teaching is engaged in classrooms or through tutoring, there must be dialogue. Students do not learn well by being lectured at. They enjoy being challenged broadly and deeply, thinking on their own, and learning how to learn. As teachers, we want to ensure that their minds are freed of old waves, overcome old waves; that they overcome new waves, causing a reverse flow and the creation of an endless dead puddle at the upper reaches of the collective human mind?

I am happy to report that such conviction comes through every time our Deans and Department Heads meet. True consensus prevails on HKUST's teaching philosophy. When admission criteria are drafted, when core courses are designed, or when general education and extra-curricular activities are discussed, we can sense electricity in the air. The faculty would suddenly turn young and become flushed with excitement, as if they were already amidst the young people with whom they expect to become mentors and friends. Scenes from the Chinese play "萬世師表" come to life. Their dedication to students yet unseen can be most touching.

Of course, dedication alone hardly suffices. Effective teaching programmes are built upon sound professional judgment and painstaking curricular planning. This is why the construction of academic models for the Departments took place among a network of experienced advisors long before a single academic appointee arrived in Hong Kong. Subsequently we reviewed and refined the University's academic profile and student projections many times, taking into account factors ranging from what we learned of Hong Kong's economic needs to the data we collected on secondary school preparation. To ensure that HKUST-produced scientists, engineers, and managers will have not only a thorough grounding in their technical fields, but also a deep understanding of the society in which they live, HKUST will dedicate itself to the holistic development of its students - through incorporating humanities and social sciences in its curriculum and requiring comprehensive communication skills for graduation.

The best of educational concepts cannot be implemented without adequate support. Teaching at HKUST will be backed by the latest in instructional technology: a workstation and optical fiber based computer environment, a fully automated library with a heavily front-end loaded collection, modern language laboratories, an advanced audio-visual facility, and well-equipped workshops. Most important of all, we select administrative and support staff who are service-oriented, and we intend to further enhance their capacity to serve by investing in their professional development.

A unique opportunity for the students arises because HKUST is a research university. Postgraduate students, especially those in Science and Engineering, will actively participate in quality research projects. They will learn well from their mentors who stay at the forefront of high technology. These advanced degree students will be prepared to "hit the ground running" when they leave the University to find their places among the leaders of the Twenty First Century. Opportunities for direct participation in advanced research will also be available to a significant fraction of HKUST's undergraduate students, who will benefit from being educated in an environment where new knowledge and techniques are constantly being developed; where they can observe firsthand, and actually use, state-of-the-art equipment; and where they are taught by faculty who can communicate the excitement of discovery from personal experience. These students will be exceptionally well prepared to face the emerging challenges of industry and commerce.

If our vision comes true, the students at HKUST will be a fortunate lot indeed.

---

**SECOND RESEARCH INSTITUTE FUNDED: INFORMATION TECHNOLOGY**

See Page 5
The fast pace at which the University of Science and Technology is being established demands parallel processing. Ongoing tasks include the following categories:

1. Faculty and staff recruitment
2. Campus design and construction
3. Facility and equipment planning
4. Budget forecasting
5. Resource acquisition and fundraising
6. Procurement
7. Public affairs
8. Participation in the development of a new technological/economic order in Hong Kong

At last count, I found some 400 simultaneous tasks all to be pursued in the next two years before the University opens its door to students in 1991.

The volume and pace of work should come as no surprise for those who have been involved in start-up situations, since the scope of the HKUST project, in terms of capital and operational costs, equals the start-up of at least a hundred Silicon Valley type companies.

I would like to select just a few areas of work each time to report to you in a systematic manner. For this issue of the HKUST Newsletter, the areas chosen all relate to forecast for Government funding: faculty projections, capital budget forecast, recurrent budget forecast, and specialist faculty and equipment request. In other words, we shall talk about money.

Universities are noble institutions. In olden days scholars would not talk about money. Alas, times have changed. The establishment, existence, and nourishment of every noble institution can no longer rely on the mere inspiration of a prince or the charity of a foundation. "Even the cleverest housewife cannot make a meal without rice." (Sorry about the classics-inspired male chauvinism.) We must indeed seek funds, and ensure that they are expended in a totally accountable manner. It may not be a bad idea for our readers, who include civil servants, community leaders, future academic and administrative staff, students, parents, and potential donors, to appreciate that technological research universities are an expensive enterprise, and to learn along with us how educational budgetary processes work in Hong Kong.

1. FACULTY PROJECTIONS

HKUST staff began with student enrolment parameters set by the University's Council. As is the case with all public universities, overall faculty allocation is based on enrolment projections. Using projected numbers of first-degree and postgraduate students and a course load matrix, we calculated the number of faculty positions "earned" by every Department from 1991 to 2000.

A number of assumptions entered the calculation, including for example an academic model which limits the number of subjects taken by a student in his/her own School to two-thirds of total load, a lower student-faculty ratio for postgraduates, a higher such ratio for service courses (as compared to courses taught to majors), front end loading, etc. The outcome is tabulated below, all in terms of FTE: full time equivalent.

This table supercedes numbers given in earlier Newsletters. They will be further modified when additional factors such as reserves and research critical masses are introduced.

2. CAPITAL BUDGET FORECAST

By capital budget forecast, we refer to the customary practice in Hong Kong of submitting tentative rolling five-year forecasts to Government. In the forecast, the first year figures summarise current budget. Second year figures represent an accurate estimate for upcoming needs in the fiscal year starting next 1 April.

As a start-up institution, our exercise is complicated in four aspects. First, until 1991/92 when UPGC (University and Polytechnic Grants Committee) takes over sponsorship, we remain a subvented organisation of Government. It is often difficult to divide operations which are in reality continuous into discrete segments. Second, capital costs for constructing the campus stay outside this forecast. It is, however, difficult to determine what comes under construction and what comes under furnishing. Third, it is always just as unclear what constitutes furniture and what constitutes equipment. Fourth, usual formulas provide guidelines for topping off capital equipment expenditure when a new building is constructed. But what top-off formulas should Government use when facing a zero base: a campus totally void of inventory?

We define this budget as "entitlement," meaning what must go into empty physical shells to make them into an ordinary tertiary institution. So the capital budget includes furniture of all kinds, classroom and lecture theatre needs, general laboratory equipment, library, audio-visual equipment, other academic support services, student services and amenities, safety and logistical facilities, etc. In other words, what it takes to fully furnish an institution the size of the present University of Hong Kong, all in a short span of five years.

Our forecast has just been submitted. The request runs into hundreds of millions of dollars for the initial five year period.

3. RECURRENT BUDGET FORECAST

By recurrent budget we refer to what is generally considered operational costs. Again, for the same reasons as given earlier, such terms...
ACADEMIC APPOINTMENTS
SCHOOL OF SCIENCE - DEPARTMENT HEADS

**Professor Mu-ming POO** (蒲慕明教授)

Prof Mu-ming POO, Head (designate) of the Department of Biology and Acting Director of the Biotechnology Research Institute, is now Professor of Biological Sciences at Columbia University. Prof POO received a BS in Physics from Taiwan's Tsinghua University and a PhD in Biophysics from the Johns Hopkins University. He has held previous appointments as Professor at the University of California at Irvine and at Yale University.

A renowned experimental biophysicist, Prof POO has made several important contributions in the areas of membrane biophysics, cell biology, and molecular neurobiology. He has published over 50 scientific papers, some of which are now regarded as classics in the field. His current research goal is to understand nerve connections in the brain and how such connections are modified by nervous activity. His important contributions in the areas of membrane biophysics research have been recognized by both organizations. Besides research papers in biological sciences, he has published many articles in Chinese on subjects such as innovative teaching approaches, community college education, and the production and use of telecourses in the United States. Two popular science books published by him twenty years ago as a college student in Taiwan have been reprinted, and he was delighted to find them on the shelf of a local bookstore during a recent trip to Hong Kong.

Prof POO sees the establishment of HKUST as "a monumental event" in higher education in Hong Kong as well as the entire Pacific region and has committed himself to the challenge of building a top-rated research university in this part of the world. According to Prof POO, scholarly pursuits in his Department at HKUST will cover three areas in the frontier of biological sciences: molecular biology, developmental cell biology, and neurobiology. In addition, a marine biology laboratory will be set up to study marine ecology and the impact of pollution on marine environment. While establishing a solid base of fundamental research, his Department also will work closely with the newly established Biotechnology Research Institute (BRI) and the Technology Transfer Center to assist in creating and stimulating the growth of a biotechnology industry in the territory.

"Biotechnology is a high-tech industry of the future. Hong Kong must secure a stronghold in the field to compete in the world economy of the 21st century," said Prof POO. "The future of biotechnology in Hong Kong is bright. Biotechnology is labour (brain power) intensive. It requires ingenuity, skillfulness and discipline that characterise the Hong Kong labour force. It is not an overstatement that the backbone of biotechnology industry in the United States is supported to a large extent by Asian researchers and technicians. Hong Kong can, indeed, establish a competitive industry quickly if a few niches are identified. The responsibilities of the BRI are to find these niches, to develop techniques and products for commercial application, and to train biotechnologists for the industry." He notes that the recent HK$130 million donation to the Biotechnology Research Institute at HKUST, made by the Royal Hong Kong Jockey Club, reflects Hong Kong's growing commitment to research. This kind of support, he believes, will help attract top scholars in the field from all over the world.

Prof POO was born in Nanjing, China. He is married with two children. He is an enthusiast for down-hill skiing, one thing he will certainly miss by moving to Hong Kong. When asked about his other hobbies, he said he enjoys music and literature, and claimed to be a poor violin player but a reasonably good poetry writer.

**Professor Nai-Teng YU** (尤乃亭教授)

After spending 19 years teaching and doing research at the Georgia Institute of Technology, Prof Nai-Teng YU has decided to accept the post of Head of the Chemistry Department at HKUST.

"I spent half of my life in the United States; it is only natural for me to have a desire to return and contribute to Chinese culture. Organizing a first-rate Chemistry Department in Hong Kong is a very exciting and challenging idea. The founding members of HKUST are of the highest calibre and have excellent visions for the University. The establishment of a world-class university in Hong Kong is a history-making event critically important for the future of Hong Kong's economic growth and prosperity. I am very pleased to have the opportunity to come to Hong Kong," said Prof YU.

Prof YU is a biophysical chemist. His present research interests include biological applications of Raman spectroscopy, cataract/vision diseases, hemoprotein structures and function, as well as the charge-transfer complex formation between DNA and carcinogens. He has published around 90 scientific papers and is at present supported by research grants totalling over US$2 million. His research on clinical instrumentation in detecting cataract at early stages has recently received extensive media coverage.

Prof YU earned a BS in Chemical Engineering from National Taiwan University, a MS in Physical Chemistry from New Mexico Highlands University, and a PhD in Biophysical Chemistry from the Massachusetts Institute of Technology. He joined the School of Chemistry at the Georgia Institute of Technology as an Assistant Professor in 1970, after spending a year as a Postdoctoral Fellow at MIT and at Harvard. He has been in Georgia Tech ever since and was promoted to Professorship in 1980. He has also served as Clinical Professor of Ophthalmology at the Emory University Medical School since 1985.

As for the Chemistry Department at HKUST, Prof YU wants to operate in "application oriented basic research." Among the areas he wishes to develop are: innovative methods in organic/inorganic synthesis of advanced materials, laser-based molecular spectroscopy and imaging, novel techniques for chemical analysis/surface science, and rational design of drugs related to Chinese medicine. He also intends to develop chemistry-based multidisciplinary educational and research programmes for both undergraduate and graduate students, and establish educational cooperation and research collaborative programmes with other world-class Chemistry Departments. To help accomplish these goals, he will actively recruit young and promising scientists to join his Department.

Prof YU was born in Ping-tung, Taiwan. He is married with two children. His wife of 23 years, Julia, is an executive secretary for law firms. Prof YU is very active in Chinese community services. He is a founding member of the Atlanta Chinese Community Center and a member of the Southeastern United States Chinese Scholars Association. When asked about his hobbies, Prof YU proudly proclaimed: "Chemistry is my profession and also my hobby." He then confessed to a love also for Chinese calligraphy and that he enjoys photography, classical music and travel.

**Professor Din-Yu HSIEH** (謝定裕教授)

When asked regarding his plans for the Department of Mathematics, Prof Din-Yu HSIEH, the designated Head, said, "The Department will consist loosely of two groups: Pure and Applied Mathematics (PAM), and Mathematical Sciences and Application (MSA). Somewhat more emphasis will be placed on the latter group. I plan to work closely with other Departments on both supportive instruction and collabora-
tive projects. Through the interdisciplinary MSA group, the Department will play an exciting and challenging role in various aspects of scientific and engineering research. The Department also will take the lead in setting up the Institute of Scientific Computation. In addition, it will guard diligently rigorous academic standards and integrity, and maintain a level of excellence in pure and applicable mathematics."

Hsieh is currently Professor of Applied Mathematics at Brown University. He received a BS from National Taiwan University, a MSc from Brown University, and a PhD from the California Institute of Technology. He taught at the California Institute of Technology and has held visiting appointments in many educational and research institutions, including MIT and the University of Cambridge.

Prof Hsieh's research activity covers a wide area of Applied Mathematics, ranging from experimental solid mechanics to theoretical fluid mechanics, perturbation methods, nonlinear waves and stability, and chaos. He has made important contributions towards the development of the variational-averaging method and on interfacial problems. He is also a world authority on bubble dynamics.

An interest in the advancement of science and technology in China has taken Prof Hsieh to China many times. He spent his last two sabbatical leaves there and has lectured in almost all the leading Chinese universities. He authored three technical books in Chinese, published both in Taiwan and on the mainland. He has been an Advisor to the new Ningbo University since its establishment three years ago. He is the current President of the New York based EDUCATION AND SCIENCE SOCIETY that, among other activities, helped establish the interdisciplinary Chinese journal Science and Technology Review.

Prof Hsieh is married with two sons.

---

**Professor Nelson CUE (陳顯邦教授)**

Prof Nelson CUE, Chairman of the Department of Physics at the State University of New York (SUNY) at Albany, has been appointed Head (designate) of the Physics Department at HKUST. Prof Cue helped introduce new degree programmes in Applied Physics and Physics/Engineering and assisted in establishing the SUNY/Albany - Rensselaer Polytechnic Institute Joint Laboratory on Advanced Materials.

Prof Cue received a BS in Physics from Feati University of Manila, Philippines and a PhD from the University of Washington. He joined SUNY/Albany in 1970 after spending 2 years at SUNY/Stone Brook. He has also held visiting appointments with institutions all over the world including ALS/Saclay, Argonne, Brookhaven, CERN/Geneva, INP/Lyon, INST/Sichuan, LBL/Berkeley and SLAC/Sanford. He was a Professeur Associe at Universite Lyon I in 1978-79 and again in 1987-88, as well as a UNDP/TOKTEN Consultant for China in 1986. He has been an Honorary Professor of Physics at Sichuan University since 1984.

Prof Cue is an experimental physicist. He has published over 70 scientific papers in fields ranging from nuclear, atomic and molecular, to solid state physics and has given invited talks at many conferences and workshops. His current research interests include quantum electrodynamical processes in strong external fields, the unconventional excitation of a nucleus by capturing a target electron into an atomic orbit; ion implantation; and charge collection ion microscopy. The last is a novel non-destructive technique he helped develop recently for imaging electrical defects in semiconductors. He has co-directed a NATO summer school and co-organised the 11th International Conference on Atomic Collisions in Solids, a conference series in which he still serves as a member of the International Committee.

Prof Cue views the establishment of HKUST as a milestone for Hong Kong. He regards his appointment as a unique opportunity to contribute to a visionary enterprise. According to Prof Cue, his Department at HKUST will place emphasis on condensed matter physics. "Of all the branches of physics, it is commonly accepted that condensed matter has the greatest impact on our daily lives since it has been a source of such extraordinary innovations as transistors, superconducting magnets, solid-state lasers and highly sensitive detectors of radiant energy." He also plans to work closely with other Departments to help advance electronics, communications, information and other associated industries in Hong Kong.

Born in Cavite, Philippines of Chinese descent, Prof Cue speaks Putonghua and the dialects of Guangzhou, Taishan and Xiamen, as well as a little Tagalog and French. He is married to Lily Mei and they have two children. Prof Cue is active in Chinese-American affairs in the United States and is a founding member of the Chinese American Alliance of the Capital District of New York. In his leisure time, he plays racquetball and a little squash. If he finds time, he would like to take up sailing after he moves to Hong Kong.

---

**ACADEMIC ADMINISTRATION**

**ASSOCIATE PRO-VICE-CHANCELLOR**

Dr Henry H T Liu (劉信德博士)

Dr Henry H T Liu, an experienced academic administrator, has been appointed Associate Pro-Vice-Chancellor for Academic Affairs. Dr Liu earned his BA from the University of California at Berkeley, and his MA and PhD in Physics from the University of California at Davis. He later received a Master's degree in Public Administration from the Golden Gate University.

When Dr Liu heard about HKUST, he arranged to spend his sabbatical in Hong Kong assisting in start-up planning and preparations. After working hard for a summer in the St John's Building offices, Dr Liu accepted an invitation to join HKUST staff.

Dr Liu was a student at the Kowloon Wah Yan College before pursuing his higher education in California. He has lived there for many years and has been active in the community, serving on the Employment and Training Council and the Planning Committee of the Private Industry Council of the City and County of San Francisco. On the State level, he served on the California Community Colleges Chancellor's Advisory Committee on Bilingual Cross-cultural Education for several years. He was President of the Chinese Chapter of the California Alumni Association in 1984 and 1986 and served as a member of the Board of Trustees of Chinese for Affirmative Action from 1974 to 1976. Recently, he was appointed to the Board of Directors of the University of California, Berkeley California Alumni Association.

Dr Liu has worked for the San Francisco Community College District since 1971 and has been involved in all aspects of college administration. His latest post there was as Vice President of Instructional Services of the Centers Division (equivalent to Vice President of Academic Affairs) and is responsible for all curriculum and instructional programmes. He believes his most valuable experience was in areas of finance budgeting and academic instruction. These skills have proved important to him as a high level college administrator.

Dr Liu said, "The opportunity to work at HKUST is an exciting challenge. I can participate in establishing a system and make good use of my administrative skills. How often does one get an opportunity to work for a project of this kind from ground up?" He then added, "Hong Kong is a unique city. It is exciting, fast-paced and dynamic. To Hong Kong's people, nothing is impossible. I am glad to be home."

Dr Liu is a Taishanese, born in Shanghai. His wife, Alice, is a...
PROFILES OF COUNCIL MEMBERS

We thank the Hon Graham BARNES, Secretary for Environment and Lands, for his service on the Council since April, 1988. We welcome in his place, Hon K W K Kwok, Secretary for Works

Dr Kenneth CHAN Nai Keong (陳乃強博士)

Dr CHAN Nai Keong, known to his friends as Nicky, was appointed to the Council in April at the incorporation of the University. A member of the Standing Committee, Dr Chan currently chairs the Committee on Campus Planning and Estates Management.

A graduate of the Loughborough College of Technology in the United Kingdom and at Yale University in the United States, Dr Chan began his career in government in 1952 in the Public Works Department as a Pupil Engineer. After a series of promotions he became the Head of Highway Office in 1978, the Civil Engineering Office in 1979, and was appointed the Director of Engineering Development in 1980. He was appointed Secretary for Lands and Works in 1983.

Dr Chan has recently retired from his position as Managing Director of the Hong Kong Electric Holdings Ltd and the Managing Director of Cavendish International Holdings Ltd; a position he has held since 1986. Dr Chan is a Fellow of the Fellowship of Engineers and of the International Road Federation. Among the honours and awards he has received are CBE, FHKIE, FICE, FIHE, and JP. He is a member of the Royal HK Jockey Club, Royal HK Golf Club, Chinese Club, and the Chinese Recreation Club. His hobbies are golf and swimming.

Nicky and his wife Loretta have two sons and a daughter.

Mrs CHAN is Secretary for Economic Services. Born in Shanghai, China, she moved with her family to Hong Kong in 1948. She received her education at Sacred Heart Canossian College and the University of Hong Kong and holds a BA degree with honours in English and English Literature.

Mrs Chan was among the earliest recruits of female Administrative Officers into the Civil Service. She started her Government career in 1962 and was attached to the Urban Services Department. She has since held many administrative posts in various government departments including the Economic and Finance Branch of the Government Secretariat, the Agriculture and Fisheries Department, the Trade, Industry and Customs Department, the New Territories Administration, the Social Services Branch and the Social Welfare Department.

Mrs Chan rose through the ranks to become the first woman head of department in 1984. She held the post of Director of Social Welfare until March 1987 when she was appointed Secretary for Economic Services. She was promoted substantively to Secretary rank in April 1988, and was made a JP in 1975. She was recently appointed a member of the Legislative Assembly.

Mrs Chan is married to Mr. Archibald CHAN Tai Wing, a Director of Caltex Oil (HK) Ltd and Commandant of the Hong Kong Royal Auxiliary Police Force. They have a daughter and a son. Mrs. Chan's hobbies are music and cooking and she is active in civic and community work. She has played a leading role in promoting equal treatment of female civil servants.

SECOND RESEARCH INSTITUTE FUNDED: INFORMATION TECHNOLOGY

Interdisciplinary research institutes are central to HKUST's academic plans and funding strategy. They serve as a bridge between the University's academic endeavours and its collaboration with the private sector.

In our last Newsletter, we announced the seeding of the University's Biototechnology Research Institute by the Royal Hong Kong Jockey Club.

Hong Kong Telecommunications Ltd has recently announced the establishment of an educational foundation. The first action taken by the foundation is to fund an interdisciplinary research institute for HKUST, to be known as the HONG KONG TELECOM INSTITUTE OF INFORMATION TECHNOLOGY. A seeding grant to meet start-up needs and operating supplement for this Institute has been set up at a sum of $100 million for the first five years (1989-94).

The Institute will concentrate on areas crucial to the development of information technology in Hong Kong. The range of research topics includes: the capabilities of real-time telecommunication, circuits and systems, electronic devices and materials, cognitive science and artificial intelligence, and satellite and space communications. Coupled to the research will be the training of manpower urgently needed by Hong Kong's rapidly expanding information technology industry.

The University wishes to express its gratitude to Hong Kong Telecom for the very generous donation and for setting an example for Hong Kong's many local and multinational corporations.
BUILDING A UNIVERSITY: COMPUTER CENTRE

W Max Ivey, Director of Computing Services & Telecommunications

For HKUST to be a major institution of science and technology, its computer system must support advanced teaching and research applications in science, engineering, and business and management. The most modern and effective approaches in information systems will be used. We will establishing a multi-lingual (English, Chinese, and possibly others) system.

The computing environment will consist of a network of microprocessors (microcomputers and scientific workstations) connecting all campus buildings. In addition, a few large minicomputers and/or mainframe computers will supply some central resources and network services. A very high speed "backbone" network with many distributed wiring closets from which various local area networks emanate will be employed. These will, in turn, connect directly to various microcomputers. The "backbone" network we are considering is the Fibre Distributed Data Interface (FDDI) that operates at 100 million bits/second. This new protocol will be the major high speed data transfer protocol of the 1990's.

The nucleus of our administrative systems development is a comprehensive software package and contains modules to cover most of our major administrative processing tasks such as admissions, student registration and academic records, auditing, billing, accounting, financial reporting and control, and payroll. At present, it does not include a management information system and estates office (inventory management, etc) system.

We hope to have multi-lingual processing in:
- office correspondence systems (word processing, etc),
- library automation system,
- central administrative systems (student records, etc),
- academic computing.

We have found some support for Chinese language processing especially in the first three areas. Commercial Chinese language word processing and library automation systems exist. Unfortunately, they do not use the same method for inputting Chinese characters and may not utilise the same internal storage codes. Our goal is to fit these disparate parts in a way that the users are unaware of the nonuniformity. We will, therefore, use only a few common input methods for Chinese characters on the various systems. We plan to use a network monitor with Chinese and English capabilities, and possibly common internal codes among the various data systems.

continued from p 2 ........... PROGRESS REPORT

cannot be defined unambiguously for a start-up institution. The recurrent budget exercise is even more complex since academic personnel requirements are developed and modified as new Deans and Department Heads appear, as recruitment outcome is strongly affected by market conditions and world events, and as experience builds up and reshapes our preliminary assumptions. Small adjustments in a couple of input parameters can do havoc to the output. For instance, the 1990/91 request determined in the summer of 1989, after a number of academic and administrative leaders have been appointed, differs significantly from the request submitted to Government in the summer of 1988, before the very first academic - namely myself - arrived on the scene.

This makes life difficult for Government, whose procedures have been designed on the basis of accommodating incremental changes in a fundamentally stable bureaucratic structure. It makes life even more difficult for us if, as a result, resource allocations fall short of what it takes to implement the fast-paced task of establishing a major university to which we have been charged.

Our latest five year recurrent budget forecast went to Government in July. Each fiscal year entails hundreds of millions of dollars, and the budget increases rapidly from year to year.

4. START-UP FACILITY AND EQUIPMENT REQUEST

"Entitlement," as described above in relation to the capital budget, would give us an ordinary comprehensive institution. Additional capital and operational investments are mandatory to support the faculty's endeavour to turn such an institution into a major technological research university. These investments are represented by a request for start-up facilities and equipment from Government and seeding funds for research institutes, the latter mainly from the private sector. Here we focus on the former.

In summer 1988, a broadstroke forecast was submitted to Government. Detailed analytical work and a series of meetings among academics ensued, culminating in a more sharply defined proposal in the spring of 1989, complete with sample equipment lists for model Departments and individual researchers. The proposal states both a minimum level and an "adequate" level of support.

The budget request comes in four components: Central Facilities, Departmental Start-up, Individual Faculty Start-up, and Operational Costs. The items under Central Facilities include
- Engineering Core Courses
- Computing and Telecommunications Network
- Electronics Support Shop and Loan Pool
- Machine Shop
- Glass Blowing Shop
- Materials Characterisation and Preparation Laboratory
- Microelectronics Fabrication Centre and VLSI Facilities
- Clean Rooms
- CAD/CAM Laboratory
- Warehouse and General Store

The request consists of a backbone network with distributed services, a "backbone" network we are considering is the Fibre Distributed Data Interface (FDDI) that operates at 100 million bits/second. This new protocol will be the major high speed data transfer protocol of the 1990's.
BUILDING A UNIVERSITY: FACILITIES FOR STUDENTS

Mike Hudson, Director of Estates Management

In developing the master plan for the design of the campus emphasis has been placed on providing a wide variety of facilities for student use. The desirability of providing residential accommodation has been acknowledged and current financial provisions make it possible to provide on-campus housing for 30% of full-time students. Current planning provides for this percentage to be increased when additional funding becomes available; suitable sites have already been earmarked. The construction programme for Phase I includes the provision of accommodation for 120 postgraduates in an eight storey hall of residence, with 554 undergraduates being housed in an adjacent residential hall. Undergraduate study/bedrooms will generally be shared by two students, whilst postgraduates will be housed in single rooms. The completion of all these residences is planned to coincide with the commencement of the University’s academic activities and it will be possible to provide accommodation in excess of the planned percentage during the first two years of operation. In anticipation of the occupants of each floor forming their own social unit, a lounge area with adjoining pantry is provided. Other facilities include a resident’s laundry and a snack room where guests can be met and entertained.

Phase II of the development includes the construction of another 1400 student residences and these are being designed as four interconnected buildings, each of which is expected to flourish as a social entity. In order to take the opportunity of maximising the development potential of the Phase II sites, the University is actively seeking private donations to permit the construction of an additional 238 residential places.

As the University’s student population grows, so will its sporting and amenity facilities. A range of indoor sports will be catered for in Phase I of the development with the construction of a large multipurpose sports hall, with 1600 sq m of floor area. Badminton, volleyball, basketball, tennis and indoor soccer will all be accommodated in this venue, whilst physical fitness, table tennis, fencing, martial arts, aerobic dance and the like will be provided for in temporary space within the complex. A major outdoor complex will be constructed in Phase II, at the lower end of the site, and provision is being made for an all-weather running track and sports field with adjoining spectator and changing facilities. The needs of swimmers will be catered for with the provision of a 50m pool near the main outdoor sports complex, whilst tennis players can look forward to the construction of all-weather courts. Enhancement of the indoor sporting facilities is also planned in Phase II but this is largely dependent upon the acquisition of private funding.

Student amenity areas will provide accommodation for workshops and studios, music and T.V. rooms, as well as student common rooms, meeting rooms and games rooms. They are considered important to enhance the feeling of belonging of those students not living on campus. In addition, non-residential halls will be established to cater for their needs. The formation of a Students’ Union is anticipated and accommodation provision has been made in addition to that required by the numerous student societies and affiliated clubs that are expected to emerge. Commercial amenities will include a post-office, a bookstore, a bank and a supermarket.

Administrative offices will be provided for the Office of Student Affairs whose staff will offer a wide range of student services. It is anticipated that a general counselling unit will be established which will help students resolve personal or study problems, and an appointments section will provide career development advice. Finally, the health needs of students will be provided for in a purpose built health centre. Out-patient medical services will be made available to students, to-gether with dental and physiotherapy treatment. Health education will form an important part of the programme.

All were costed out in detail.

For Departmental and Individual Faculty Start-up, models for specific Departments and research programmes were designed. For each such model, sample equipment lists were drawn and painstakingly costed out by specialists from our network of academic advisors. High-cost items were further checked for consistency against estimates solicited from independent consulting firms. For operational costs, in particular initial costs such as freight, installation, mandatory maintenance contracts, training, spare parts and components, minimum inventory of supplies, etc. were estimated by rules of thumb.

This start-up proposal at well over a billion dollars is basically a "one-shot" request. However, for certain items, the quantity to be procured at any one time is proportional to the size of the staff, e.g. computer workstations and individual faculty start-up equipment. So, by acting on this proposal, Government and HKUST would commit themselves to a course of action which would require further, though limited, funding.

In July 1989, Government invited four independent consultants from UK and US to meet with us. The three-day meeting covered a wide range of subjects including our academic philosophy and models, which form the background of all equipment requests; progress-to-date and prospects on faculty recruitment; specific teaching and research directions; and detailed justifications on sample items. At the end of the meeting, the Government consultants commented favourably on, and seemed genuinely supportive, of our proposal.

continued from p 4 . . . . . . . . . ACADEMIC ADMINISTRATION

successful real estate broker in the San Francisco area and is giving up a lucrative business to move to Hong Kong with her husband. They have two sons. Their younger, 14 years old, will be moving with them. Although they are apprehensive about their son's adjustment to a new living and studying situation, they hope all will go well. "My family has always been adventurous and open-minded. We love to travel and get to know the people and cultures we visit. I hope my son will extend his love to travel to adjusting to life in Hong Kong. Perhaps it also will give him a better appreciation of his roots."
SIR S Y CHUNG RECEIVES HONOURARY DEGREE

Chairman of the Council, Sir Sze-Yuen Chung, was honoured at the First Congregation of Honourary Degrees at the Hong Kong Polytechnic on 29 June, 1989.

On receiving this honour, Sir S Y spoke on the Past, Present and Future of Technical Education in Hong Kong. Using the establishment of HKUST to illustrate his points, Sir S Y spoke on the importance of a balanced approach of Teaching, Research, and Service at universities. Teaching, to train needed technical personnel for Hong Kong’s professions and industries; research, to provide innovation for new products and processes; and service, for the transfer of technology from research to industry.

Commenting that while government and tertiary institutions have stressed teaching, Hong Kong has not, until currently, put enough stress on research. ”In recent years there has been a growing awareness that Hong Kong should put more resources into research and development in order to help the territory shift from labour-intensive to technology-intensive or research-based industries.” He further stated that, ”If the new University of Science and Technology is going to fulfills its objectives, greater resources are needed for research.”

Sir S Y ended his address by saying that supporting research “is a new challenge for Hong Kong as a whole and for the tertiary educational institutions in particular. It is hoped that Hong Kong will be able to meet this challenge so that it will continue to progress and prosper to 1997 and beyond.”

COMMUNITY COMMENTS

Mr HO Chak Kin - Headmaster of Pui Ching Middle School (何澤乾校長)

Unquestionably the founding of the Hong Kong University of Science and Technology provides more educational opportunities for local secondary school students. From the viewpoint of investment in human resources we hope university education can supply the kinds of talents we need in our community.

The relationship between Hong Kong and China will become much closer than before in the 1990's. On the one hand, Hong Kong will continue to play its role as a stepping stone for foreign investors in China Trade. On the other, as a key character in securing the latest business technological information for China. In this stage of evolution, Hong Kong needs a great number of managers and administrators, equipped with modern technological knowledge. The graduates from the Hong Kong University of Science and Technology will fill this gap just in time.

As a Chinese middle school, Pui Ching earnestly hopes that the Hong Kong University of Science and Technology could take better care of students from Chinese schools. Chinese school students have laid a firm foundation in the subjects of Mathematics and Sciences, using Chinese as the medium of learning. I am sure they can ably learn these in English. With the assistance of the University's remedial English programme, I know they will be very successful. My confidence is based on the distinguished achievements of Chinese middle school graduates in science and technology, both locally and overseas.

The Honourable David CHEUNG Chi Kong, JP, Headmaster and Legislative Councillor (張子江校長)

In Hong Kong, competition for a place in tertiary education has always been keen resulting in the sixth form curriculum and examinations being "quite impossible." I am glad the government has plans to expand the tertiary sector. Before the University of Science and Technology commences its operation, I wish to share some thoughts with the university administration, controversial they may be.

First, the University of Science and Technology needs not worry about the quality of the students. So far, less than 8% of the school age population have the opportunity to advance into the tertiary sector. Not many universities in the world have the privilege of admitting only the top 10% of the school population.

Second, I wish that the University of Science and Technology would become what I call "the people’s university" and not stay aloof up in the ivory tower but come down to the level of the people. The people in the community should genuinely feel that the University is part of them and they are proud of the University, not only of her academic success but also of her warmth and openness.

My next point is the University must be seen to be leading the community in as many ways as possible. In the years to come, there are bound to be issues and problems, some political, some controversial, which need to be studied, tacked and resolved. The University should assume the leadership role as far as possible.

Fourthly, I would urge the University to ensure that the quality of teaching in her classrooms is valid. For too long, the quality of classroom teaching at universities has been ignored. Students need to be stimulated to think, to research, to reach beyond superficiality and to develop sharp perceptions.

Last but not least, I do hope that the University of Science and Technology also would pay more attention to the character development of the students. University students should be given greater freedom than secondary school students. Nevertheless, sound advice and judicious guidance should be given to students to help groom good characters so that the end products become more "marketable."

I would like to take this opportunity to wish the administration, the faculty, and the future students of the University of Science and Technology great success in their launching and continued operation.