

CHINESE UNIVERSITY BULLETIN

Spring • Summer 2000

IT

The Name of the Game





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Website: <http://www.cuhk.edu.hk/puo/bulletin/index.htm>

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Contents

- 2 IT: The Name of the Game**
From University to Society
- 4 IT in Teaching and Learning
 - 4 Promoting IT Literacy Among Students
 - 6 Introducing Online Teaching
 - 7 Offering New Programmes
 - 8 Promoting the Internet
 - 9 CUHK: The Internet Hub of Hong Kong
 - 10 CUHK: Father of the Hong Kong School Net
 - 12 Research into IT and IT in Research
 - 12 A Glimpse into the Future of IT
 - 14 IT as a Powerful Research Tool
 - 17 Area of Excellence in IT
- 19 A New Research Institute Charged with
The Modernization of Chinese Medicine**
- 24 A Regional Centre of Excellence to Promote
Hospitality and Tourism Industry
The New School of Hotel Management at CUHK**
- 28 Informing Life and Informed by Life
Bioinformatics**
- 32 Research News**
- 33 Save the Brooks, Rivers, and the Seas
Using Biosorption and Biodegradation to Fight Toxic
Dyes
- 36 The 55th Congregation for the Conferment of
Degrees**
- 53 News in Brief**

Information technology (IT) has radically changed the way we work, communicate, and play, and increased our productivity enormously. In the education sector, IT has also become an indispensable tool for learning, teaching, and research.

The Chief Executive of the HKSAR pointed out in his first policy address in 1997 that Hong Kong must aspire to become a leader in information technology in order to maintain its competitive edge. And to achieve this goal, education is the key.

At The Chinese University, an IT Strategy Committee was formed in March 1998 to formulate strategies for these objectives: (1) to ensure CUHK graduates are competent in IT; (2) to promote the use of IT in teaching and research; (3) to achieve quality and efficiency in university administration through the use of IT; and (4) to serve society in those areas of IT where CUHK has unique strengths.

In April 2000, an IT Policy Committee was set up to replace the Strategy Committee. Chaired by Prof. Kenneth Young, pro-vice-chancellor, the new committee determines the long-term priorities for teaching, research, administration, and public service, sets specific targets, decides on the appropriate levels of investment, monitors the progress against objectives, and explores how the University can capitalize on IT to achieve competitive advantage. From 1st July 2000 the Computer Services Centre and the Information Technology Service Unit have also been combined to form the new Information Technology Services Centre to provide better IT services to the University community.

What role has the University been playing in Hong Kong's IT development over the years? What contribution has it made? The answers may be found in the following articles.



The Name of the Game

From University to Society



香港中文大學
The Chinese University of Hong Kong

中國文化管理學院
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中國國際貿易學院

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Nowadays if you are in business, you need to know about e-commerce; if you are an engineer, architect, or designer, you need specific software to help you in your designs and calculations; if you are a policeman, you need the computer to retrieve information about repeated offenders... . From aeronautics, genetic research, to the service industry, all sectors of modern society are increasingly dependent on IT. And universities, as the providers of expertise for society, have to ensure that their students possess adequate IT competence and that their teachers are familiar with web-based teaching. They also have to launch new programmes to meet new societal needs.

IT in Teaching and Learning



Promoting IT Literacy Among Students.....

To help students become IT literate, the University has required that undergraduate students admitted after the 1999–2000 academic year and graduate students admitted after 2000–1 pass an IT proficiency test or attend intensive summer courses before they can graduate.

Ample resources and facilities are made available to those who are weaker in this respect to ensure that they get the training they need during their time here.

A special working group comprising staff and student representatives was set up to design a self-learning software package on basic computer

skills. Students can access the software by going to the IT learning centre or downloading it from the relevant website. Recently the software has been developed into a CD-ROM. The University is in fact considering designing more advanced teaching material and proficiency tests to cater to the different IT requirements of different subject disciplines.

Such measures to raise IT competence have generally been well received. Many students express that they feel better equipped in their learning and their





Don't think that only engineering students know about computers. Many first-year students majoring in other subjects managed to pass the test very quickly.

career development. Some believe that the measures are effective in boosting the University's reputation. In fact a student from Taiwan who stumbled upon this software on the Internet felt it was exactly what she had wanted and requested the University to let her introduce it to her university or link up to the relevant site.

Anthropology major Leung Lap-wai took the test after browsing through the test outline, thinking it would be a piece of cake. However it turned out to be more comprehensive than he had expected and he didn't finish the test on time. He made it on the second go. Leung believes that fundamental IT knowledge is crucial for learning and working.



Biology major Chan Hang-yi had to use the computer very often before becoming a university student. As a volunteer worker she was involved in website production and teaching the elderly to use the computer. She took the test after going through the entire software. Finishing the test within an hour was a challenge but she succeeded. She pointed out that the contents were mostly fundamental and practical material; the test was not particularly difficult but the scope was wide, which made preparation necessary.



Introducing Online Teaching

New Facilities for Teachers

Online teaching is an important feature of the cyber campus. At The Chinese University, a university-wide experimental platform was set up last September which allows teachers to use advanced instructional technologies in web-based teaching. The different templates and functions of the software WebCT, for example, make it easy to upload HTML files such as lecture notes, course outlines, timetables, notices, and to make homework arrangements for students. The software's statistical function will indicate data about the number of visits by students, the number of pages read, and the number of questions raised. Teachers can thus monitor their students' progress and answer their questions through the interactive function of WebCT. This enhances communication between teachers and students, and is especially effective for subjects involving case

discussions.

For users who wish to produce sophisticated webpages, the ITSC provides a personal webpage server. Teachers need only

'By April 2000, some 500 courses ... have gone online, with another 180 preparing to follow suit'

apply for and set up an account, and will be allotted 15 to 18 megabytes of disk space to set up their own webpage.

Some other users will request the ITSC to design for them clever webpages with lots of animation and interactivity, or highly creative multi-media CD-ROMs. These webpages are usually for professional training purposes, such as helping practising doctors to acquire the latest surgical skills.

Maintaining an Extensive and Efficient Campus Network

The University continuously updates its facilities to keep up with the rapid

Prof. Fu Ping-ping of the Department of Management was the first teacher to try out the experimental platform. She had used a similar

teaching tool while teaching in the United States and now uses it to teach the course 'Organizational Behaviour'.

She sees online teaching as an extension of classroom

teaching which enhances communication among students and between teachers and students. Increased exchange of ideas allows students to perform more in-depth analysis of problems and find more solutions to these problems. This virtual classroom is ideal for MBA students whose main mode of learning is discussion.

Prof. Ho Man-koon of the Department of Curriculum and Instruction has designed a webpage on 'Methods of Chinese Teaching' for students of the Postgraduate Diploma in Education programme. He explained that if students come unprepared to class, teachers often have to spend much time lecturing. To make teaching more effective, he uploads data such as course outlines and required readings onto the webpage so that

students can prepare themselves beforehand. There is also an e-mail account for ease of communication with his students. Prof. Ho has also designed other websites to help primary and secondary school teachers with their teaching. These include 'The Young Writer', 'Write More and Read More', and 'Creative Chinese Language Teaching'.



development of online teaching and learning. Since the end of 1997, the campus backbone network has migrated from FDDI to ATM technology, data delivery has been sped up to 622Mb per second, the number of local area networks has increased to cover a larger number of departments and offices. Students and staff of the University can access the campus network or the Internet from the computers in their departments, colleges, hostels, or homes. Recently the University has introduced a series of classroom networks that are linked to the campus backbone network which allow teachers to lecture, students to submit homework, and topical study to be conducted using laptop computers.

New Culture of Teaching

Online teaching is gaining popularity at

the University. According to statistics released by the ITSC, by April 2000, some 500 courses offered by different faculties and departments have gone online, with another 180 preparing to follow suit.

Online teaching should however not replace classroom teaching. The two are expected to complement each other. With the assistance of IT, teachers are not only teachers, but also mediators enabling students to communicate with their peers and cultivating in them the spirit of self-learning. The emphasis of teaching has accordingly shifted from lecturing to the nurturing of analytical skills and independent thinking through in-depth discussion. IT has slowly and unobtrusively changed the culture of teaching on campus.

Offering New Programmes

In response to the increased demand for expertise in IT, the University has also launched a number of new programmes, which have proved extremely popular.

E-Commerce

A Master of Science in E-Commerce (Business Programme) and a Master of Science in E-Commerce (Technologies Programme) have been launched jointly by the Faculty of Business Administration and the Faculty of Engineering. The three briefing sessions for potential applicants held on 12th February saw a full house each time in the 276-seat lecture theatre at the Ho Sin-Hang Engineering Building. A total of over 1,500 applications were received for the 100 odd places offered.

New Media

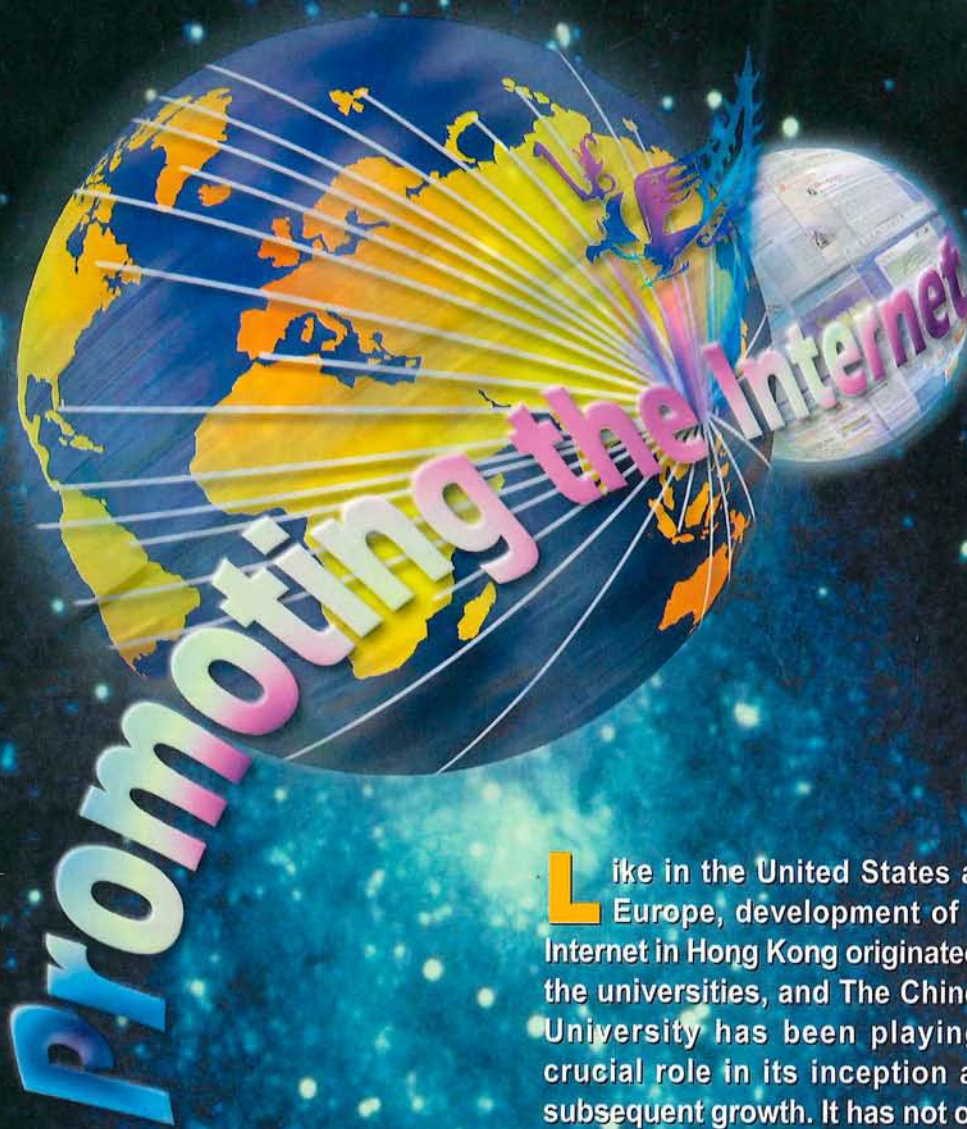
The School of Journalism and Communication is offering a two-year part-time Master of Science Programme in New Media for people wishing to enter the field of new media. The programme's 20 openings attracted 170 applications.

Minor in IT

To help students master IT skills, the Faculty of Engineering launched a Minor Programme in Information Technology for students not majoring in engineering or students who do not have a background in mathematics or science. The programme is also very well-received. ☑

A full-house for the briefing session on the M.Sc. in E-Commerce Programmes





Promoting the Internet

Like in the United States and Europe, development of the Internet in Hong Kong originated in the universities, and The Chinese University has been playing a crucial role in its inception and subsequent growth. It has not only provided technical support for its establishment but also organized different educational activities to introduce the Internet to the Hong Kong public.

CUHK: The Internet Hub of Hong Kong

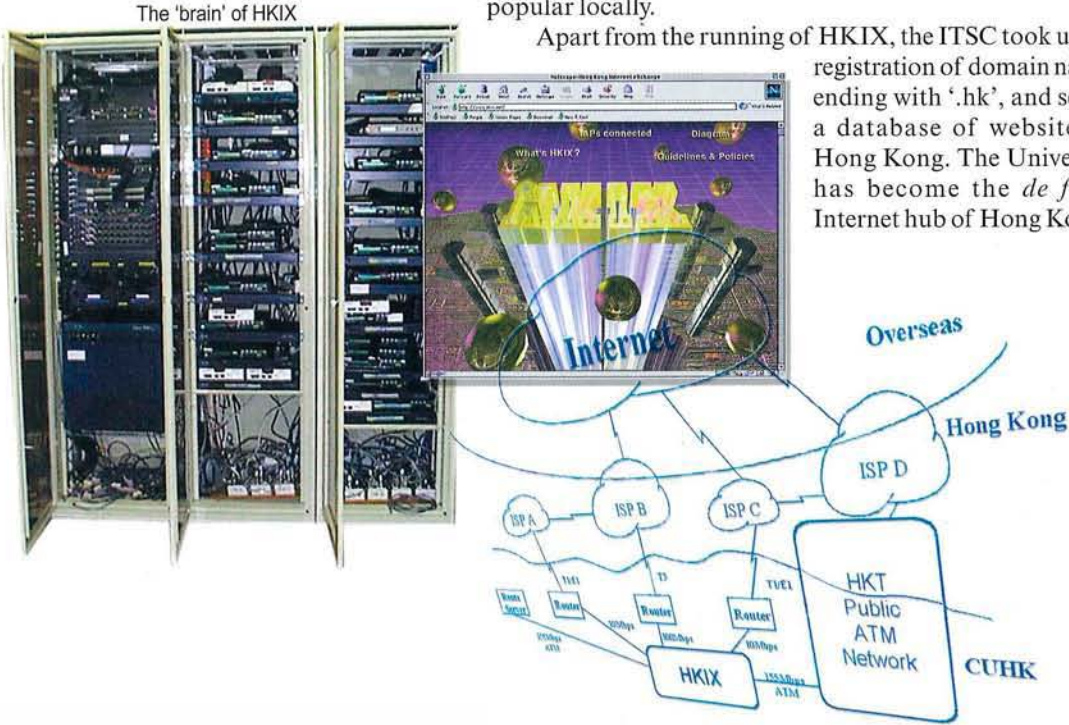
Hong Kong's First Internet Connection

In 1991, the Department of Information Engineering set up the first Internet link in Hong Kong to the National Aeronautics and Space Administration (NASA) in the United States. The link was thereafter open to all tertiary institutions in the territory for Internet connections with the rest of the world.

HKIX — the First Internet Exchange Centre

What followed was the mushrooming of Hong Kong-based Internet service providers (ISP), which made their own linkages to the Internet in the States. However, communication among different ISPs themselves also had to be routed through the States, which was time-consuming and expensive. In 1995, the ITSC of CUHK set up the HKIX to provide an interconnection point for local ISPs as well as the Hong Kong Academic and Research Network (HARNET), whose members are mainly local tertiary institutions. Since then inter-ISP traffic no longer need to be routed outside Hong Kong, which saves a lot of money and reduces the volume of traffic to the States, thereby speeding up data delivery between Hong Kong and the States. This in turn attracts more applicants for Internet connectivity and results in a larger number of ISPs in Hong Kong. At the same time, HKIX helps to speed up data delivery within Hong Kong and between Hong Kong and overseas, as a result of which the use of multimedia applications on the net has become increasingly popular locally.

Apart from the running of HKIX, the ITSC took up the registration of domain names ending with '.hk', and set up a database of websites in Hong Kong. The University has become the *de facto* Internet hub of Hong Kong.



Leader in Asia



Mr. Cheng Che-hoo

According to senior computer officer of the ITSC Mr. Cheng Che-hoo, membership to the HKIX is open. Currently it has about 60 members — all locally registered ISPs. Several large ISPs outside Hong Kong are connected to HKIX through their subsidiaries or partners. They constitute about 10 per cent of the data exchange through HKIX. 'HKIX belongs to the first batch of Internet exchanges of its kind in Asia, and is also the most successful to date, thanks in large part to the efforts of all our colleagues,' Mr. Cheng pointed out. The University frequently receives enquiries from overseas organizations about collaborating with the HKIX, which has the full potential to become the Internet hub of the Asia Pacific region. 'This depends on whether there are sufficient resources to support its development. At present we are exploring ways to step up the facilities and services of HKIX,' Mr. Cheng added.

CUHK: Father of the Hong Kong School Net

Only Connect

Built and maintained mainly by The Chinese University, Hong Kong Cyber Campus (<http://www.hkcampus.net/>) is currently Hong Kong's most popular education website. It has its origins in the Hong Kong Education Information Network, developed in 1994 by the Department of Information Engineering. The project recruited a group of secondary school teachers as

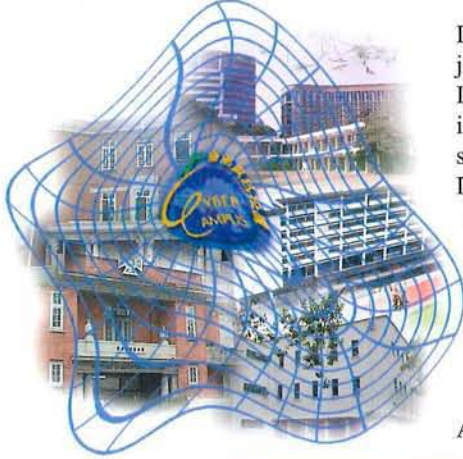


members, introduced to them the Internet, and provided them with Internet connectivity.



In 1996, the department believed the time was ripe to encourage secondary students to use the Internet. It thus entered into collaboration with the Hong Kong Joint School Electronics and Computer Society, and, with the sponsorship of The Chinese University, established the Hong Kong School Net, which subsequently recruited over 2,000 secondary school teachers and students as members.

Receiving the IT Achievement Award



At about the same time, Hong Kong saw the emergence of many ISPs, some of which provided Internet services to students. But the job of the University was far from finished, as the Hong Kong Internet was littered with a lot of trashy websites and irresponsible information. The University believed it had the responsibility to guide students in the proper use of the Internet. Prof. Wong Po-choi of the Department of Information Engineering was then appointed as the coordinator of the Hong Kong School Net to help develop it into a healthy cultural medium for the younger generation. Starting from 1997, a series of programmes were launched to improve the services, provide features such as e-mail and news groups, and promote different inter-school exchange activities. Within a year, the Hong Kong School Net earned a very good reputation and was chosen as the winner of the Hong Kong Information Technology Achievement Award (Education) in 1998.

Building the Hong Kong Cyber Campus



Prof. Wong Po-choi

Prof. Wong said that the Hong Kong School Net does not only offer Internet services like an ordinary ISP. It is also an Educational Service Provider (ESP), while the Hong Kong Cyber Campus, which is under its operation and management, is an Educational Content Provider (ECP).

The Hong Kong Cyber Campus was established in mid-1998 under the joint effort of eight local tertiary institutions and with funding support from the University Grants Committee. Two further grants from the Quality Education Fund enabled it to provide more educational information and news about educational activities,

and to enhance online exchange and academic discussion among teachers and students. Currently over 800 primary, secondary, and special schools are connected to this cyber campus.

The Hong Kong School Net in turn helps the Quality Education Fund to develop an online resource centre (<http://qrc.qef.org.hk/>) to support teachers in the use of multimedia teaching. The centre will collect and categorize online teaching materials for ease of sharing among teachers and to help them manage their own teaching resources.

Starting off as the plaything of teachers and students of computer-related subjects, the Internet has developed into a common tool for information search, and a new mode of teaching and learning. By the year 2000, the Hong Kong Internet has also evolved into a cultural platform on which young people can explore knowledge, publish their works, and solve problems with others in an interactive mode.

Prof. Wong said, 'We encourage schools and teachers to get connected. We are developing quality education websites and designing online teaching applications in the hope that Hong Kong will have its own cyber campus that is stimulating, informative, and interactive.'



Research into IT and IT in Research

The new millennium has begun with the scenario of people using a single mobile phone to converse 'face to face', listen to music, watch TV, play games, surf the net, shop, pay bills, send and receive messages, switch on the rice-cooker... . In the new age of information technology, IT research evolves at lightning speed, and research involving the use of IT is spread across an enormous array of disciplines. The world of science fiction is just a few clicks away.



Prof. Wong Wing-shing

A Glimpse into the Future of IT

Researchers engaged in IT research at The Chinese University come from different disciplines, but are concentrated mainly in the Faculty of Engineering. Professor of Information Engineering Wong Wing-shing summarizes the different types of IT research on campus into six major categories:

(1) Retrieval and Transmission of Multimedia Contents

As the use of multimedia becomes more and more widespread, the demand for better quality and a faster speed of content retrieval is heightened. Researchers at the University are developing a



Chinese search engine which allows users to retrieve audio and visual materials quickly and effectively from various data sources.

At present multimedia contents have to be produced by professionals before they are transmitted to users. However if there are convenient tool kits like PowerPoint, ordinary users can also produce multimedia contents themselves for transmission through the Internet. This will speed up the delivery and exchange of data and save production costs.

CUHK researchers are currently authoring this kind of tool kit. When it becomes available, teachers can use it to produce multimedia teaching materials, and movie-buffs can cut out and transmit extracts from their favourite flicks with their own commentary. They can even produce their own films to share with other enthusiasts.

(2) Internet 2

The Internet currently in use was an experimental network produced two decades ago in the United States. After its commercialization, researchers could no longer perform experiments on it to improve its function. Several years ago, the US National Science Foundation started Internet 2, a project to develop another high-speed experimental Internet backbone. Participants in the project are connected to the backbone network using T3 links (with approximately 45 Mbps capacity). As Hong Kong's links are not up to par, it cannot yet participate in the project. In this respect, it still lags behind Taiwan and Singapore.

In March 1999, the University signed a memorandum with Carnegie-Mellon

University in the United States, South China University of Technology in Guangzhou, and Academia Sinica in Taiwan, whereby the University will be connected to the latter two institutions. This allows traffic from Hong Kong to use the Taiwan-US link for transit.

The Faculty of Engineering is actively upgrading its facilities so that it can establish a direct link to the high-speed experimental Internet backbone and participate in global IT research.

(3) Data Management

In the age of information explosion, a recurrent headache for many people is how to search among the voluminous data on the net and how to manage the information obtained therefrom. Researchers at the University are working on a data-mining technology which allows users to retrieve useful material easily from the vast pool of raw data. They are also developing bilingual and multilingual search engines that can browse multilingual webpages.

Such data-mining and search engine technologies are also intended for application on WAP phones, or Wireless Application Protocol mobile phones. Such phones made their debut early this year. While one of their main functions is Internet connectivity, they have a slower transmission speed and are unable to handle huge amounts of data. And since most webpages are designed for the computer, WAP users can only link up to the specific webpages provided by their own Internet service providers.

CUHK researchers recently developed a portal named Jawap.net, which provides innovative services free-of-charge to WAP phone users,



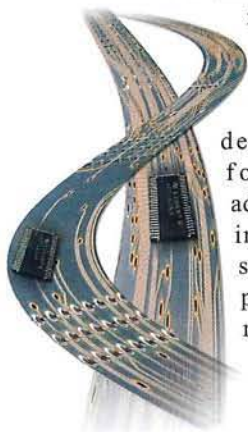
including the world's first real-time HTML to WML conversion, a Chinese search engine, and the sending/receiving of e-mail. Users can also access news and financial information and participate in one-click auctions.

Currently most WAP phone users can only surf some 2,000 webpages authored with the WML code. With Jawap.net, users can now surf millions of HTML webpages.

(4) Networking and Multimedia Technologies

All applications including data transmission, retrieval, delivery, and management, no matter how advanced, need the support of a matching infrastructure.

University researchers are determined to lay a solid foundation for overall advancement in IT by engaging in basic research into high-speed broadband networks, path switching technology, and multimedia technologies such as speech recognition, audio-visual imaging and encoding, and computer graphics.



(5) Wireless Communication Technologies

Wireless communication technologies, consisting mainly in signal processing and network protocols, have a broad range of

applications in walkie-talkies, mobile phones, wireless modems, the third generation of wireless phones, and Bluetooth which is under development.

The third generation of mobile phones use a new mode of wireless communication which enables users to quickly link up to the Internet, and transmits data at the speed of 384k or 2Mb per second. The system is run on a universal broadband system. Bluetooth on the other hand is a short-distance wireless communication standard which is capable of linking up wireless phones, computers, notebook computers, and electrical appliances, and using wireless phones to control electrical appliances. The potential of wireless communication technology is actually enormous, and the subject is a major focus of IT research on the CUHK campus.

(6) E-Commerce

E-commerce is another important research area. Electronic shopping and auction are already very common while electronic brokerage and trading are becoming widespread. Advancement in IT will continue to fuel the development of e-commerce, which in turn gives rise to the issue of security. CUHK researchers are working on the assurance of security and authenticity side by side research into e-commerce technology, so that consumers of the future will be able to shop or engage in commercial activities on the net worry-free.

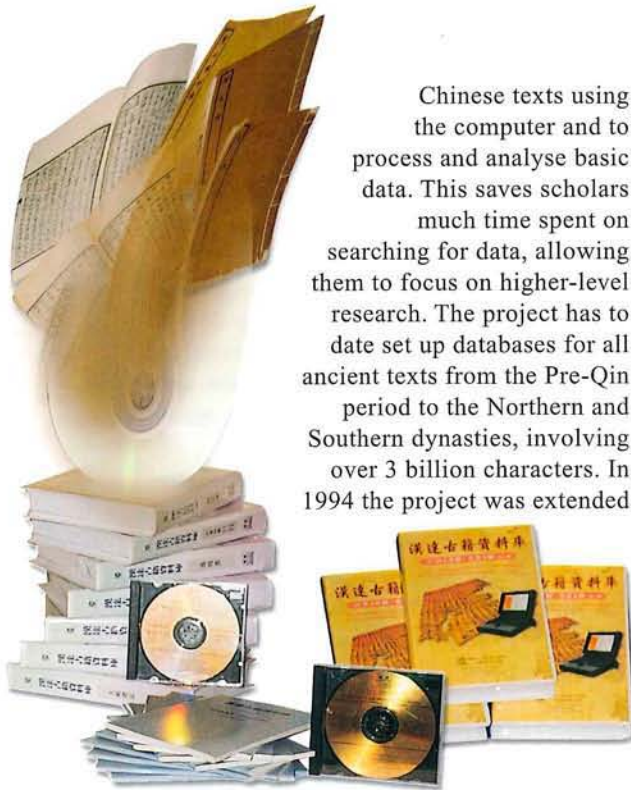
IT as a Powerful Research Tool

Here at The Chinese University, IT has been used in academic fields that are related to itself as well as fields that are traditionally considered quite irrelevant. In both, it has significantly raised the efficiency of research, expanded the applications of research findings, and sped up the dissemination of knowledge. Below are some important examples:

Chinese Culture and the Humanities

A Computerized Database of Classical Chinese Texts

A project for the establishment of a computerized database of the entire body of extant Han (206 BC – AD 220) and pre-Han traditional Chinese texts began in 1988. The aim is to re-record important classical



Chinese texts using the computer and to process and analyse basic data. This saves scholars much time spent on searching for data, allowing them to focus on higher-level research. The project has to date set up databases for all ancient texts from the Pre-Qin period to the Northern and Southern dynasties, involving over 3 billion characters. In 1994 the project was extended

to include data on excavated ancient texts such as inscriptions on oracles, bamboo slips and silk.

The operational and publishing activities of the database have followed the rapid development of information technology. The electronic media (including CD-ROMs) and webpages have been adopted to disseminate and record the fruits of researchers' labour: to date, 60 word-by-word indices and a computer indexing software for 31 kinds of ancient texts have been produced; all data have been put online in stages since June 1999.

To meet the research needs of scholars in the field, experts are currently developing a multi-functional online indexing system and a hyperlink browsing system on the Internet for data on ancient Chinese culture.

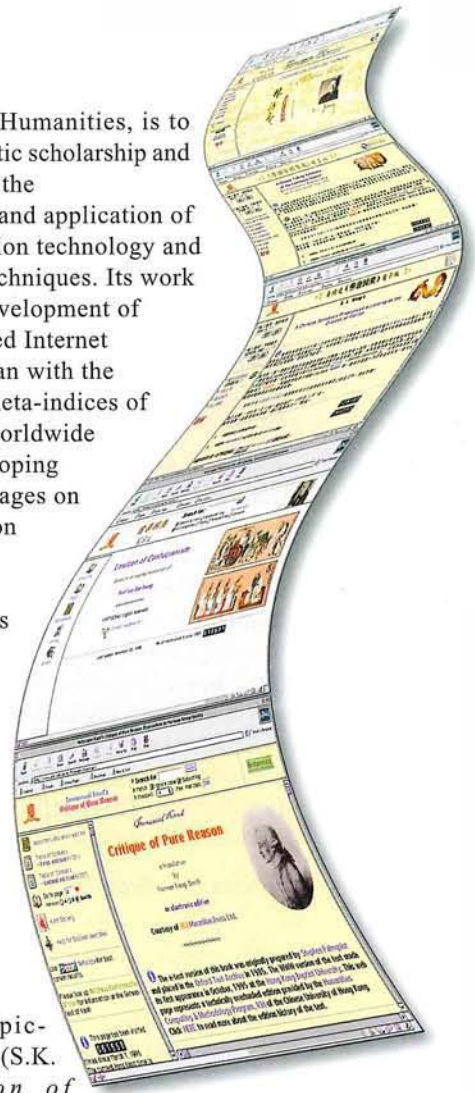
Humanities Computing and Methodology Programme

The objective of the Humanities Computing and Methodology Programme, set up under the auspices of the Research

Institute for the Humanities, is to promote humanistic scholarship and learning through the experimentation and application of various information technology and computational techniques. Its work comprises the development of humanities-related Internet resources. It began with the compilation of meta-indices of such resources worldwide and is now developing humanities webpages on its own, mainly on language and philosophy. Accomplishments over the years include an electronic dictionary (online version of Lin Yu-tang's *Chinese English Dictionary*), a phonetic syllabary (*A Chinese Talking Syllabary of Cantonese*), topic-specific lexicons (S.K. Lao's *Lexicon of Confucianism*), and scholarly editions of humanities classics (Kant's *Critique of Pure Reason*).

Medicine Telemedicine

The Chinese University is the first institution in Hong Kong to use information technology to tackle medical subjects. The Clinical Sciences Building of its teaching hospital, the Prince of Wales Hospital, is the first and only hospital in the territory with every room linked up with the rest by a broadband audio-visual network. Through this network, medical staff can transmit medical images and exchange information





with great efficiency, allowing a much better grasp of the conditions of patients under their care.

The Faculty of Medicine will continue to improve the application of telemedicine in international conferences, long-distance teaching, and consultation. Pilot projects have been launched and the efficacy of teleconsultation will also be tested by random sampling. With the help of the Department of Information Engineering, the faculty will further develop the use of broadband network in telemedicine.

Chinese Medicine Databases

The University has been collaborating with related institutions on the mainland since 1996 to use information technology to develop Chinese medicine databases in Chinese and English. Information about different Chinese medicinal materials such as their shape, smell, colour, chemical properties, and functions have now been recorded in electronic databases for easy reference by the Chinese medicine industry, researchers, and government officials involved in setting regulations related to Chinese medicine. The University is also working with the Beijing University of Traditional Chinese Medicine to develop a multimedia CD-ROM for teaching use.

Surveys and Marketing

Computer-assisted Chinese Open Response Analysis System

Much academic research relies on questionnaire surveys to collect data. There

are commonly three kinds of questionnaires: multiple choice, true or false, and open response. While software for processing the first two kinds of questionnaires is abundant on the market, there has not been any programme designed specifically for processing open response questionnaires. One reason is that such questionnaires do not easily lend themselves to systematic compilation and analysis. And if questions are set in Chinese, the language problem further complicates matters.

To fill this gap, teaching staff from the Faculties of Engineering, Business Administration and Social Science are collaborating in the CORA (Computer-assisted Open Response Analysis System) project to develop programmes for analysing and processing Chinese open response questionnaires. What results will greatly facilitate researchers in their survey studies.

Commercial Application and Data-mining

In business studies, a lot of research is concentrated on devising marketing strategies. The University's researchers are using information technology to develop an advanced system to market banking services.

The Bank Marketing Decision Support with Data Mining project will use data-mining technology to reprocess all customer data in the databases of banks, with marketing needs as a basis. An innovative customer database will then be established, from which the banks can mine and recover all necessary data for the purpose of selling products and services to specific clients.

The project is financially supported by the Industry Department and undertaken by researchers from the Faculties of Business Administration, Engineering, Social Science, and Science. Upon its completion, the banking industry will not only be able to meet their customers' needs more effectively and improve customer relations, but will also be better equipped to move into new business areas such as e-commerce. ☐

Area of Excellence in IT

One of Three
UGC-Supported AoEs
in Hong Kong 1999



Prof. Liew Soung Chang

Area of Excellence in IT', an equal partnership project undertaken by The Chinese University, the University of Hong Kong, and the Hong Kong University of Science and Technology, is one of the first three projects selected by the University Grants Committee in 1999 for funding support under the Area of Excellence (AoE) scheme. The project's mission is to assist the transformation of Hong Kong into an IT society with a strong value-added economy, and it vows to achieve this aim by making Hong Kong one of the top-notch centres of IT research, and by actively promoting IT education, services, and relevant technology transfer. The project will be allocated HK\$51 million over the course of five years, from 2000 to 2005.

Three-Track Programme

The project has three main tracks: multimedia technologies, Internet applications, and networking research. The CUHK co-director is Prof. Liew Soung Chang, while the CUHK coordinators for the three tracks are respectively Prof. Jack Lee, Prof. Wong Wing-shing, and Prof. Tony Lee, all from the Faculty of Engineering. There is also an advisory board consisting of members from industry and academia whose role is to ensure that all research conducted is of relevance to industry.

Network is the focus of all three tracks,

with each targeting different aspects. The first track, multimedia, will focus on video: delivery of video-on-demand (VoD), video conferencing, and delivery of applications on the net. The second track, Internet applications, will concentrate on bilingual (Chinese/English) search engines and speech recognition processing, and the delivery of high-end applications on the Internet. The third track, networking research, will focus on low-end applications such as network protocols and network infrastructure.

In the year 2000, 12 projects are funded under the scheme. Many endeavours

supported by other sources of funding are also grouped under the big umbrella of the AoE. The number of CUHK participants involved in the first year comes to around 50.

Prof. Liew said that all projects under the AoE are ongoing. Those directly related to the scheme will be funded for three years, at the end of which they should be considered completed. The purpose of the AoE is to consolidate existing research rather than launch new projects. The focus is on 'proving the concepts in papers' and not 'publishing papers'. And researchers are more concerned with implementation, development, and fostering collaboration with industry. The scheme is expected to support about 20 projects in its entire duration.

Multimedia Technologies Track

One ongoing project in this category is the building of the next-generation video-on-demand system, an essential part of which is a parallel video server architecture which is more cost-effective and reliable in the provision of VoD services. Instead of using one server to transport video, the parallel system allows one server to carry on the job if another server breaks down. AoE sponsorship will enable the system to be implemented as a prototype. Researchers will also develop intelligent multicast and caching technologies to increase the capacity of VoD systems, and explore the use of adaptive video streaming and variable-bit-rate streaming to ensure video quality when there is traffic congestion on the network.

Internet Applications Track

Researchers in this track set out to develop a Chinese WAP search engine based on the Chinese search engine MoLi & ANSeRS. Features will include real-time HTML to WML conversion, Chinese search engine service, news and financial information, e-mail, and one-click auction. From there they will go on to



develop bilingual search engines. Other projects in this stream include the development of a Chinese broadcast news retrieval engine which will deliver Chinese news transcript indexing and Chinese news video processing; Internet-based supply chain management systems which will produce publications and provide consultancy and other services to local industries; and data mining for Chinese Web-based Information Extraction which will include a robot for Chinese web-based information extraction, and a segment tool for Chinese data.

Networking Research Track

Projects grouped under this track include (1) the development of quality of service guarantees in cross-path switches, which aims at minimizing end-to-end delay and packet loss rate in delivery over future high-speed networks; (2) the provision of quality of service routing in Storage Area Networks, which aims at implementing path switching in Fibre Channel Switches to provide quality of service guarantees in Storage Area Networks; (3) IP-voice Multiplexing with Quality of Service and Bandwidth Efficiency, which aims at improving bandwidth and delay; and (4) research and development of efficient algorithms and fast hardware implementation of cryptographic primitives for network security applications.

Bridging Imagination and Reality

The IT revolution has given new dimensions to the way we live and work. When the array of projects under this AoE scheme come to fruition five years from now, everyday life will have moved one step closer towards the world of science fiction; through information technology, some of the wildest of human imaginations will have become reality. 



A New Research Institute

Charged with

The Modernization of Chinese Medicine

The Chinese University has been a pioneer in Chinese medicine research for more than two decades. In January this year, the Institute of Chinese Medicine (ICM) was set up to pool existing expertise from the

Faculties of Medicine, Science, and Engineering to develop evidence-based research.

The institute aims at giving fresh impetus to

Chinese medicine research, and, more importantly, at promoting collaboration between Chinese and Western medicine, with the objective of modernizing traditional Chinese medicine and giving it a favourable place in the international medical scene.



Prof. P.C. Leung

Institute of Chinese Medicine

Management Committee

Chairman: Prof. P.C. Leung
Secretaries: Prof. K.P. Fung
Ms. Vivian Y.Y. Ho

Clinical Trials Section

Co-conveners: Prof. P.C. Leung
Prof. Dennis S.C. Lam

Drug Development Section

Co-conveners: Prof. Moses S.S. Chow
Prof. Walter K.K. Ho

Information Section

Co-conveners: Prof. K.P. Fung
Prof. W.K. Kan

Public and General Education Section

Convener: Prof. Y.C. Kong

Standardization and Safety of Chinese Medicines Section

Co-conveners: Prof. Paul P.H. But
Prof. C.T. Che

Prof. P.C. Leung, chairman of the ICM's management committee, pointed out that Chinese medicine research on campus tended to focus on ingredient analysis and authentication in the past, and insufficient emphasis has been placed on practicality and continuity among different projects. Research from now on will be centred around the collaboration between Chinese and Western medicine.

Identifying Research-worthy Medicines and Techniques

There are a multitude of Chinese medicinal materials and treatment methods currently in use in mainland China, Hong Kong, and Chinese communities the world over. Which of them are really effective and deserving of in-depth study?

Prof. Leung said that the diverse methods and medicinal materials have first to be screened carefully to identify those that are worth authenticating. Clinical trials are essential, with traditional formulae and experience of the older generation of practitioners serving as references only. Even though a certain herb may be believed to cure skin problems or a certain type of body massage to alleviate pain, clinical evidence must be sought before researchers embark on any serious in-depth study.

Clinical Trial, Authentication, and Drug Making

And before a certain material or treatment method can be adopted formally, the clinical collaboration between the doctors of Chinese medicine and of modern medicine is required to observe its effects. Authentication and safety tests have also to be conducted to determine its efficacy at an advanced level. It is only when its efficacy is proven at this level that the material can be promoted or made into quality drugs.

There are different levels of drug-making. At the most primitive level, relevant raw materials are mixed together and



The Hong Kong Institute of Biotechnology (HKIB) on campus recently set up the Process Development Facility for Chinese Medicine for the downstream development of health food and pharmaceutical products.

made into tiny pills. More advanced drug-making involves the extraction and amalgamation of useful components from different kinds of raw materials. At the most sophisticated level, only the active ingredients of medicinal materials are extracted and processed into medicine under strictly controlled conditions and in strictly specified proportions. To produce Chinese drugs in such a way is essentially to westernize or modernize Chinese medicine.

A Pragmatic, Evidence-based Approach

This step-by-step process of identifying the right medicinal materials or treatments for research, studying their effects and properties clinically, then extracting useful ingredients from medicinal materials to manufacture drugs will lead to the modernization of Chinese medicine. It is a pragmatic and evidence-based approach that all should adopt in the research and development of Chinese medicine.

The feasibility of such an approach, however, hinges upon the availability of four kinds of facilities: a comprehensive database of Chinese medicinal materials, a centre for authentication/quality control, a venue for performing clinical trials, and a drug production department. The ICM is adequately equipped with all these facilities.

A Comprehensive Database

Since the early 80s, the University has been building a Chinese medicine database to facilitate herbal research. It has also maintained close links with other Chinese medicine research centres in different parts of the world and integrated their useful data into its own database. To date it has set up databases pertaining to the safety and toxicity of Chinese medicinal materials as well as databases for educational purposes.

The Information Section of the ICM will work towards enhancing the quality and quantity of the existing

databases and will set up a website on Chinese medicine as the focal point of information exchange with the rest of the world.



The Chinese Medicine Museum has over 2,500 samples of Chinese medicinal material.



The Chinese Medicine Library collects relevant journals, books, and other literature, largely from the mainland, through the usual exchange channels as well as by special arrangement.



Proven Authentication Capability

The University has over 20 years of experience authenticating Chinese medicinal materials. It was the earliest institution involved in verifying the chemical properties of medicinal herbs from their appearance and analysis of their ingredients. It was also the earliest to use biotechnology to determine the quality of dry materials, and the earliest to receive a US patent for its technology. In 1998, the first case of counterfeit Chinese medicinal herbs in the territory was reported, and samples in suspected poisoning cases were sent by the police to the University for authentication. In the absence of government control over the import and retail of Chinese medicinal materials, it has been the practice of hospitals, the death tribunal, the police, and even overseas organizations to send problematic samples to the University for testing and assessment.

In the area of quality control, the Laboratory for Quality Control of Chinese Medicines, set up five years ago, has been collaborating with the local Chinese pharmaceutical industry and health food manufacturers in testing over 150 Chinese drugs. The laboratory also assists the industry in monitoring the quality of the products and in obtaining approval for importing medicinal materials. The Standardization and Safety of Chinese Medicines Section of the ICM will now take over the job of the laboratory and offer more services to the industry.

Modern Facilities for Clinical Trials

Based at the Prince of Wales Hospital, the Clinical Trials Section of the ICM is also linked to Kwong Wah Hospital, where it provides consultancy services to practitioners of both Chinese and modern medicine. Currently the section is conducting research into diabetes-induced foot ulcers, and will soon embark on research related to hepatitis, lung cancer, asthma, arthritis, chronic pain and other areas. Although modern medicine has made good use of technology and yielded very successful results, it is still inadequate in many areas, such as viral infections, autoimmune diseases, and chronic pain. Better treatment for these diseases may be sought from within the realm of Chinese medicine.

Guest touring the first drug evaluation laboratory in Hong Kong on 27th January. Its work is to carry out safety studies on drug products and to certify drug efficacy to ensure they meet internationally recognized standards of quality. Its scope will be extended to include Chinese medicine.



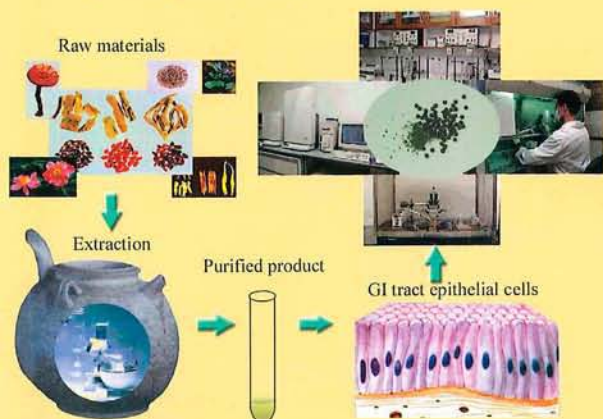
Quality Control Laboratory

The Epithelial Cell Biology Research Centre, set up jointly with the Academy of Military Medical Sciences in mainland China, provides a variety of assay systems for rapid screening of active ingredients of Chinese medicine.

Advanced Drug-development

The Chinese University is the only tertiary institution in Hong Kong with a Department of Pharmacy and drug-making facilities. The production of quality Chinese drugs requires the isolation and testing of active principles from Chinese medicinal herbs, and, more importantly, an understanding of their pharmacology and pharmacokinetics in humans. The University's Department of Pharmacy has the expertise and facilities to do all this, and the Drug Development Section of the ICM will make use of the facilities in the department's drug-making laboratory for the modernization of Chinese herbal drugs.

Rapid Assays for Development of Chinese Medicine



Proactive Public Education

Chinese medicine and medical practices are part of the Chinese cultural heritage. The goal of ICM is not so much to elevate Chinese medicine and medical practices to a level equivalent to their Western counterpart, but rather, to explore the rich potentialities of Chinese medicine so that it can make up for the inadequacies of modern medicine. To reverse the

current situation where modern Western medicine is the mainstream, public education is essential. To achieve this end, the Public and General Education Section of the ICM will organize activities to promote a better understanding of Chinese medicine. This work includes the creation of herb gardens on the University campus and in high schools, advising on museum establishment, and initiating other promotional activities.

A Cultural Mission

To develop Chinese medicine so that it can be recognized internationally is a cultural mission. Prof. P.C. Leung hopes that more research activities will ensue

from the five aspects of ICM's current work. The institute will strengthen coordination among existing programmes, foster cooperation among relevant units, and waste no effort at introducing Chinese medicine into the mainstream medical service. ☒



The University's herbal garden houses over 200 species of local herbs for teaching purposes and to support Chinese medicine research and authentication.



A Regional Centre of Excellence to Promote Hospitality and Tourism Industry

The New School of
Hotel Management at CUHK

Hong Kong, with its unique cultural heritage and geographical position, has traditionally been a must-see on the agenda of many travellers. For this reason, it has a well-developed hospitality industry which has for decades been a source of pride and of revenue for the city. Here, one finds some of the best hotels and services in the world catering to tourists and business people.

The Asian financial crisis in 1998 and the subsequent economic downturn ushered in a two-year spell of sluggish business, but by the turn of the century, both the hotel and service sectors have been showing signs of a comeback. The HKSAR Government is also determined to revive the hospitality and tourism industry by creating the new position of Commissioner for Tourism to oversee the tourism industry, and by announcing in late 1999 the construction of the Disneyland Theme Park on Lantau Island as a major tourist attraction.

New Blood for the Industry

The Chinese University fully realizes it has an important role to play in helping to revive tourism and sustain Hong Kong's competitiveness in the global hospitality and tourism industry. Plans to set up a School of Hotel Management began a few years back in the Faculty of Business Administration, and the school came into being in 1997, with an objective to nurture business-oriented managers well-versed in the contemporary hotel and hospitality industry. It recruited its first class of 50 undergraduate students last September, and, for the 2000–1 academic year, it has received close to 4,000 applications for the 50 places it offers. It is confident that new blood will be injected into the industry in three years' time.

A High-powered Advisory Committee

The school's advisory committee, which held its inaugural meeting on 5th May 2000, comprises leaders and top corporate-level executives of leading organizations or hotel chains, including Ocean Park, The Peninsula Hong Kong, The Regent Hong Kong, Shangri-La Hotels and Resorts, Mandarin Oriental Hotel Group, Arthur Andersen & Co., The Hong Kong Tourist Association, Hong Kong Hotels Association, and the Federation of Hong Kong Hotel Owners. According to Prof. Ko Wang, director of the school, it is the strongest advisory committee any

Students of the School of Hotel Management and their teachers



hospitality-related school has put together in Hong Kong.

An Attractive Internship Programme

An ambitious internship programme, to take place for three months every summer, is designed through negotiation with members of the advisory committee. There will be close to 80 placements in top hospitality-related companies and hotels in Hong Kong (see Table 1). The sound connections with industry enables the school to design its own internship package to allow maximum exposure for the students. The placements began on 15th May.

Partnership with Prestigious Hotel School

The school has also signed a formal student exchange agreement with the School of Hotel Administration at Cornell University, a top hotel school of world renown. Under the programme, four students of the school will go to Cornell for a year (or eight students for a semester), and the same number of students from Cornell will come to CUHK to acquire new perspectives and experiences at the school.

An International Four-star Teaching Hotel

By 2004, an international four-star teaching hotel will stand on the University campus to serve as the centre for hospitality education in Hong Kong and Asia. It will have 700 rooms and 10,000 square metres of conference and training facilities including laboratories, classrooms, and computer centres; it will also house an experimental cyber café and a bookstore run by hospitality students, as well as space for music students to perform, literature students to write poems, and political science students to make their speeches. The project is made possible by the New World Development Company Ltd. which will be responsible for funding



Table 1

Companies and Hotels in the Internship Programme

Hospitality Related Companies

Ecolab Limited
Hong Kong Convention and Exhibition Centre
Hong Kong Tourist Association
Horwath Asia Pacific
Lufthansa SkyChef Airline Catering
Chek Lap Kok Airport
Ocean Park Corporation
PriceWaterhouseCooper
REZsolutions
Star Cruises

Hotels

Grand Hyatt Hong Kong
Grand Stanford InterContinental
Harbour Plaza Resort City Hong Kong
Harbour Plaza North Point
Harbour Plaza Hong Kong
Hotel Miramar
Hotel New Harbour
Hotel Nikko Hong Kong
Island Shangri-La Hong Kong
JW Marriott Hotel Hong Kong
Kowloon Shangri-La
New World Renaissance Hotel, Kowloon
Hyatt Regency Hotel, Kowloon
Renaissance Harbour View Hotel
Repulse Bay Hotel (Managed by Peninsula Hotel Group)
Royal Park Hotel
Royal Plaza Hotel
Sheraton Hong Kong Hotel & Towers
Stanford Hillview Hotel
Stanford Hotel
The Excelsior Hong Kong
The Kowloon Hotel
The Metropole Hotel
The Peninsula
The Regent Hong Kong
The Ritz-Carlton

Hands joined at the press conference to announce the collaboration with the New World Group to build a four-star teaching hotel on CU campus. From left: Prof. Arthur K.C. Li, vice-chancellor of The Chinese University; Dr. Cheng Yu-tung, chairman of the New World Group; Dr. Lee Hon-chiu, chairman of the University Council; and Prof. David Dittman, dean of the School of Hotel Administration, Cornell University.

the entire development cost of the hotel as well as its operating expenses. The ownership of the land and the buildings will reside with the University. In the meantime, the students of the hotel management programme are using the training facilities at the Vocational Training Council in Chai Wan.

An Arm to Support Research and Executive Training

The school has its own research arm, the Centre for Hospitality and Real Estate Research, whose mission is to conduct research relevant to the hospitality and tourism industries, initiate policy discussion, and organize executive training programmes.

The centre will hold a conference entitled 'The International Hospitality Industry Evolution 2001' from 12th to 14th January 2001 at the Grand Hyatt in Hong Kong jointly with the Centre for Hospitality Research at Cornell's School of Hotel Administration. This will be the first hospitality-themed academic conference for both schools, the primary objective of which is to provide a forum for educators, researchers, and executives to exchange information across a spectrum of hospitality and tourism topics, including IT in the hospitality industry, e-commerce, hotel real estate investment decisions, financial management, and social and economic impacts of tourism. It is expected that the conference will attract around a hundred participants from around the world.

A senior executive training programme will also be launched jointly with the Hong Kong Hotels Association in early 2001 targeting at hospitality personnel of general manager level.

Other Ambitious Moves in the Pipeline

In the realm of graduate studies, the school's Ph.D. and M.Phil. programmes have been approved by the University Senate for introduction

Centre for Hospitality and Real Estate Research

According to director of the centre Prof. Lee Kam-hon, the centre will conduct research projects that are relevant to the hotel, restaurant, airline, tourism and related hospitality industries, and take part in policy discussion. It will also disseminate research findings and review frontier knowledge for executives operating in Hong Kong and the Asia Pacific region.



Research projects may initially come from the industry. They may also come from academic researchers. Ongoing projects include star rating systems for hotels in Hong Kong, marketing of Hong Kong to tourists on a one-to-one basis, tourism policy for Hong Kong, and Disneyland in Hong Kong.

in the 2000–1 academic year. The first Ph.D. candidate, a graduate from Peking University, will begin studies at the University in September this year.

On the school's agenda for 2001 is also the establishment of academic linkages with institutions in mainland China. Other plans to be finalized include staff exchange with Cornell University and setting up a recruiting pool for graduates of the school. Meantime the school will continue to promote itself to secondary schools through school visits, information sessions, distribution of brochures and CD-Roms to top secondary students, so as to attract the best students who will one day be the cream of Hong Kong's and perhaps Asia's hospitality industry.

HK: One of Top Ten Cities Every Traveller Should Visit

Hong Kong has recently been selected by the *National Geographic* as one of the top 10 cities in the world that every traveller should visit in a lifetime. To deserve such recognition, Hong Kong must try its utmost to preserve and increase its attractiveness, while the School of Hotel Management at CUHK will strive for excellence in its efforts to train the experts capable of meeting such a challenge. 🗺️



Informing Life and Informed by Life: Bioinformatics

In 1992, experts in the Department of Biochemistry at the University embarked on systematic research into cardiovascular expressed genes. They spent two full years before identifying one gene that is related to cardiovascular growth, and did not expect to find the family members of this gene in the next half year. Then, as fate would have it, they stumbled upon a similar partial gene sequence in an overseas genetic database on the Internet. After a week of computer analysis and processing, the second related gene was found, 20 times faster than expected. This is precisely how bioinformatics comes in useful.

Bioinformatics is a new science which combines DNA sequencing data, computer applications, statistics, and mathematics in the study of the life sciences. It also involves the compilation, handling, analysis, and interpretation of massive DNA sequencing data which are essential to the discovery of new drugs, vaccines, and cures that save lives.



An Area of Excellence at CUHK

Discipline of the 90s

Four decades ago, researchers who wanted to study the causes of a particular disease had to first purify the relevant proteins and observe their effects on cellular activity before deducing their relation to the illness and developing treatments or cures. The process is tedious and expensive.

In the 80s, breakthroughs in genetic engineering allowed researchers to identify DNA base pairs rapidly and to clone large amounts of DNA within a short time span.

In 1992, the US government invited participation from other advanced countries in a Human Genome Project to identify the sequencing of the entire humane genome and those of simpler life forms before 2005. The total gene sequences involved exceed a hundred thousand. The project's progress has been much faster than planned and it is expected to be completed much sooner.

Although the volume of genetic

information gathered over the years has been enormous, the majority has been in the form of incomplete fragments. The number of genes whose functions have been thoroughly understood came to around 6,000, not even a tenth of the total number. Discovering the functions of the rest of the genes would be tantamount to breaking the complete *Encyclopaedia Britannica* into infinite pieces and putting them back together.

Processing such an enormous volume of data requires computers with high computational power, complex mathematical and statistical formulae, and knowledge of bio-genetics. What results is bioinformatics, a new discipline of the 90s.

Hong Kong's First Bioinformatics Centre

A pioneer in the field of genomics in Hong Kong, the University has since the 90s embarked on various genetic research projects.

One such project was the setting up of a database of cardiovascular genes by Profs. C. Y. Lee, K.P. Fung, Mary Waye, and Stephen Tsui of the Department of Biochemistry, which marked the beginning of bioinformatics at the University.

In 1997, the University was allocated HK\$4.98 million from the Industrial Support Fund for the establishment of the Hong Kong Bioinformatics Centre (HKBIC) in collaboration with the Hong Kong University of Science and Technology. The centre serves to coordinate bioinformatics research at the University, and to provide researchers in Hong Kong with the computer hardware and technical expertise for developing molecular biology research. It was officially opened on 27th February 1998.

Bioinformatics was, moreover, designated one of the 24 Areas of Excellence at the University in 1999 as a result of its important implications for the development of biotechnology and Chinese medicine.

Heart Disease and Cancer — Two Important Targets

Since its founding, HKBIC has been contributing significantly to a research project involving the large-scale sequencing of cardiovascular genes conducted by the University's Department of Biochemistry jointly with the Cardiac Gene Unit of the University of Toronto and the China National Centre for Biotechnology Development. With Prof. C.Y. Lee as the CUHK coordinator, the project has established a database with 50,000 partial gene sequences, the functions of 15 of which have been verified. And of this 15, five are related to cardiovascular growth.

'Thanks to experience acquired in the cardiovascular gene project, HKBIC is now embarking simultaneously on research into nasopharyngeal carcinoma, hepatocellular carcinoma, and children's leukaemia,' said Prof. C.Y. Lee. He pointed out that priority has been given to nasopharyngeal carcinoma and hepatocellular carcinoma because they are more prevalent among Chinese than among



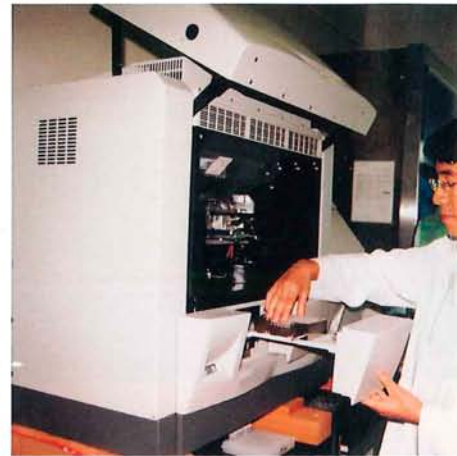
Prof. Mary Waye testing genetic data for the development of a genetic catalogue for liver cancer and mental illness.

Westerners, and very often caused by different factors. As for leukaemia, research will draw on the large amount of genetic samples of young patients that have been put under the charge of the Department of Paediatrics in the Faculty of Medicine.

HKBIC recently acquired a new gene analyser, the fastest in the territory, which could identify the DNA sequences of 96 genes in two hours. Coordinator of the research on hepatocellular carcinoma, Prof. Stephen Tsui said, 'We expect to obtain the sequences of 50,000 genes. With the help of this new machine, we've already done over 10,000.'

Software Development

Highly specialized software is required to analyse large quantities of complex DNA sequences. The centre is collaborating



HKBIC recently acquired a new gene analyser, the fastest in the territory, which could identify the DNA sequences of 96 genes in two hours.

respectively with Prof. Lee Tong of the Department of Electronic Engineering and Prof. Chen Runsheng of the Institute of Biophysics at the Chinese Academy of Sciences to develop software for the analysis of the functions of DNA and protein sequences. In the future, HKBIC will also develop software for pharmaceutical research.

Clinical Trials for New Drugs

In the past, new drugs undergoing clinical trials have to be tested on different types of receptors (human cells), an extremely time-consuming process. Now new technology can simulate the three-dimensional structures of the receptors, and the effects of the different chemical properties of the drugs on the receptors can be analysed on the computer. This saves time and ensures greater accuracy. The centre has recruited an expert from Cambridge University to carry out work in this aspect.

Support for Academia and Industry

The centre has a herbal database and an aromatic database. The former covers data on Chinese medicine for the use of the pharmaceutical industry. Included in the databases are details about the chemical composition of different drugs, their diagrams and fingerprints. These are accessible to members of the biotechnology and pharmaceutical fields and academic researchers free of charge, through the centre's website or its dial-up access service. Such data is very useful for drug development and for getting approval from the International Organization for Standardization (ISO) and for compliance with the Good Manufacturing Practice (GMP). The centre has also developed an online biotechnology dictionary for the convenience of those who need to write and translate labels and instructions, or fill out customs applications.

An Expansive Information Network

For ease of information exchange and



A training course in bioinformatics

sharing, the centre is networked with many academic and research organizations the world over, including the Asia Pacific Bioinformatics Network with a membership of 23 countries, the US National Centre for Biotechnology, and the Centre of Bioinformatics at Peking University. The centre is currently discussing plans for establishing hyperlinks with the Hong Kong Polytechnic University, the University of Hong Kong, Tsing Hua University, as well as bioinformatic centres in Shanghai and the UK. Once the project is completed, local researchers will only have to connect to HKBIC to access the latest research data from these places.

Unlimited Potential

Coordinator of the HKBIC, Prof. K.P. Fung pointed out that as bioinformatics is a relatively new discipline, its functions may not be too well understood by the pharmaceutical industry, not to mention the general public. For this reason, the centre organizes workshops from time to time to introduce its functions and activities. Although advanced bioinformatic knowledge may not be of use to the industry at the moment, it will be increasingly indispensable for the development of biotechnology and Chinese medicine, two major areas that will attract much attention and investment. ☑

Research News

Research Grants Totalling HK\$7.5 million for 29 Projects

Grants totalling some HK\$7.5 million from various local and overseas sponsors for projects undertaken by CUHK researchers were recorded during the period November 1999 to April 2000:

Sponsor	Amount Involved	Number of Projects Supported
Action Committee Against Narcotics	HK\$1,582,410	2
Agriculture, Fisheries and Conservation Department	HK\$340,000	1
AIDS Trust Fund	HK\$678,326	2
Children's Cancer Foundation	HK\$498,000	1
Council for World Mission	£11,000	1
Council for World Mission/Nethersole Fund	HK\$300,000	1
The Croucher Foundation	HK\$600,000	1
France-Hong Kong Joint Research Scheme	HK\$177,300	4
Germany-Hong Kong Joint Research Scheme	HK\$196,600	8
Health Care and Promotion Fund	HK\$1,971,200	3
Health Services Research Fund	HK\$377,200	1
UK-Hong Kong Joint Research Scheme	£10,802.46	3
Utahloy Holdings	HK\$512,000	1

Research Highlights

To generate more interest in the University's research activities, the *Chinese University Bulletin* continues to bring to readers highlights of research projects supported by the Research Grants Council and other research funds.

The *Bulletin* has worked closely with the principal investigator of a project on toxic dyes to explain the research objectives, procedures, and achievements in terms comprehensible to the lay person. The report can be found on pages 33–35.



Save the Brooks, Rivers, and the Seas

Using Biosorption and Biodegradation to

FIGHT Toxic Dyes

Synthetic Dyes a Threat to the Environment

Synthetic dyes are indispensable to the textile and dyeing industries. Fashion would not have so much colour and arouse so much interest were it not for the effects of such dyes. Among all synthetic dyes, azo dyes are the most common, being used up to 90 per cent of the time, because they are versatile and easy to synthesize. Yet many azo dyes are toxic and may cause genetic mutations. And because they are synthetic, the natural environment cannot recognize them or degrade their toxicity. Though man has invented sewage treatment plants to deal with different kinds of man-made sewage, technology as it is now is unable to degrade the toxic components of azo dyes. Even a very low concentration of these dyes in industrial effluents is enough to do great damage to the environment.

More worrying is the fact that current legislation only governs the amount of biochemical oxides in, and the level of alkalinity and acidity of industrial effluents,

but not the dye concentration. If polluted fluids are discharged directly into the aquatic environment, their toxicity will be absorbed by aquatic creatures and will eventually find its way through the food chain into human beings. The crucial thing right now is to find a way to degrade azo dyes and this is precisely what Prof. Wong Po-keung of the Department of Biology has been working at since 1989.

Current Methods of Degradation Less Than Ideal

Prof. Wong said methods of treating azo dyes fall into three broad categories: physical, chemical, and biological.

Physical methods include flocculation, membrane filtration, electrolysis, and electroflotation.

Chemical methods involve adding chemicals into industrial effluents to break up azo dyes into tiny spheres that float or sink, or using ion exchange to enable the dyes to stick to resin. Irradiation and oxidation are also used.

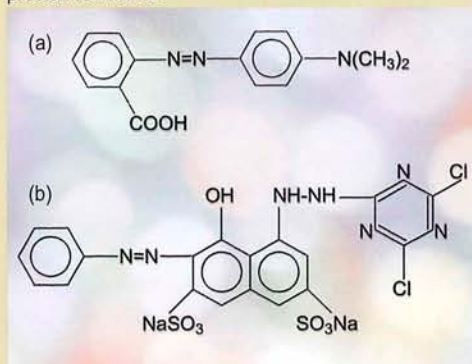
Yet none of these methods is ideal. Physical methods require high energy input, while the effectiveness of chemical methods and whether these processes generate further wastes are still questions that remain unanswered.

Biological methods involve the use of microorganisms such as bacteria to turn pollutants into non-toxic, harmless substances. Prof. Wong pointed out that biodegradation is the most environment friendly as it does not require large amounts of energy and does not generate toxic substances. He has been using biosorption to remove heavy metals from contaminated waste water and biodegradation to treat such metals successfully since the late 1980s. Can the same methods be used for azo dyes?

'The drawback of using biosorption to remove synthetic dyes from industrial effluents is that there is no satisfactory treatment for the microorganisms that have absorbed the dye. It's not practical for treating large volumes of contaminated water,' Prof. Wong said.

He further pointed out that researchers had tried to degrade azo dyes anaerobically using microorganisms. However it only turned the water colourless, and failed to degrade the toxic and mutagenic aromatic amines therein. Some other researchers also discovered that azo dyes could be degraded aerobically using bacteria and fungi, but the method has yet to be improved.

Figure 1 Structure of (a) methyl red (MR) and (b) procion red Mx-5B



Drawing dye-contaminated water samples from a dyeing factory for research

In Search of an Ideal Method

Prof. Wong was determined to overcome these obstacles to find the perfect treatment method. His research project was allocated a total of HK\$1.29 million by the Research Grants Council in 1991 and 1999.

First he contacted some dyeing factories in Hong Kong to request them to supply dye-contaminated water samples for the project. However, as most of them had moved north, he could only lay his hands on a limited number of samples and that, in turn, narrowed down the scope of his research. Among the limited samples, Prof. Wong picked methyl red (MR, see Figure 1a) and procion red MX-5B (PR, see Figure 1b) for his study because their structures are the simplest.

Prof. Wong isolated a bacterium called *Pseudomonas* sp. K-1 (Figure 2) from dye-contaminated sludge and cultured large amounts of it. *Pseudomonas* sp. K-1 could absorb large quantities of MR and PR very quickly, yet it could not degrade the toxic substances in these dyes, not even given time.



Figure 2 Colonies of *Pseudomonas* sp. K-1 stained by procion red MX-5B

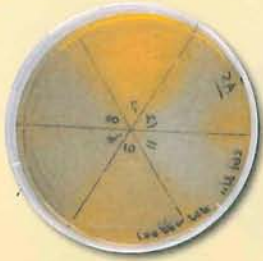


Figure 3 Methyl red decoloured (degraded) by *Klebsiella pneumonia* RS-13

Then he isolated another bacterium, *Klebsiella pneumonia* RS-13 (Figure 3), from the sludge samples, and discovered that this bacterium could decolour MR aerobically through reductive cleavage of the dye into aminobenzoic acid and N,N'-dimethyl-*p*-phenylene diamine (DMPD, Figure 4), a toxic aromatic amine. Moreover, the bacterium could metabolize DMPD into non-toxic compounds. Prof. Wong's experiments showed also that this bacterium could degrade other azo dyes such as PR, procion red H-E3B and procion yellow H-E4R.

Besides bacteria, Prof. Wong isolated a fungus called *Geotrichum candidum* CU-1 (Figure 5) whose extracellular oxidative enzymes could degrade PR and MR in only 12 to 24 hours — much more quickly than *Klebsiella pneumonia* RS-13.

Research to Continue

During his six years on the project, Prof. Wong found several possible solutions without encountering too much technical difficulty. His only regret is that the azo dye samples in the project were not comprehensive enough and hence the findings could not be applied on a large scale in the dyeing industry. He will continue to study other biosorption and biodegradation methods of azo dyes so as to design the most effective integrative treatment system for industrial effluents and to prevent environmental pollution. 🌱

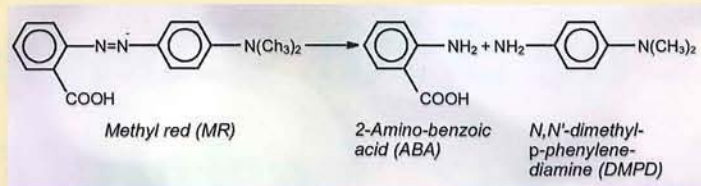
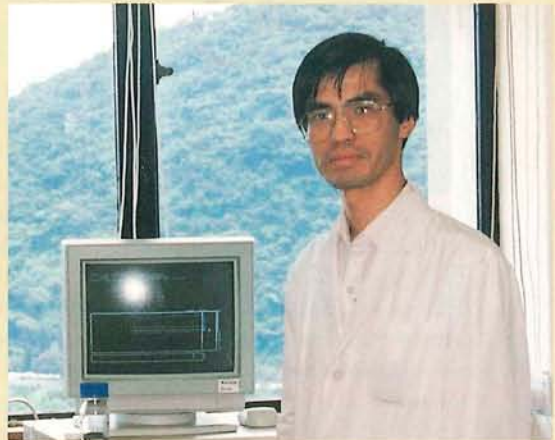


Figure 4 Degradation of methyl red by *Klebsiella pneumonia* RS-13



Prof. Wong Po-keung obtained his B.Sc. and M.Phil. from The Chinese University in 1977 and 1979 respectively, and his Ph.D. from the University of California in 1983. He joined CUHK as lecturer in biology in 1986 and was promoted to senior lecturer rank in 1994. Prof. Wong's research interest is in environmental biotechnology and environmental toxicology. He is concurrently associate director of the University's Centre for Environmental Studies.

Figure 5 Decolourization (degradation) of procion red MX-5B by *Geotrichum candidum* CU-1



The 55th Congregation for the Conferment of Degrees

A total of 3,969 degrees were conferred at the University's 55th congregation on Thursday, 9th December 1999 at the University Mall. Prof. Arthur K.C. Li officiated at the ceremony as Vice-Chancellor of the University. The occasion also saw the conferment of degrees on the University's first batch of 11 Master of Clinical Pharmacy graduates.

This year honorary doctorates were awarded to five distinguished persons. The Honourable Donald Tsang Yam-kuen, Financial Secretary of the Hong Kong Special Administrative Region, was conferred the degree of Doctor of Laws, *honoris causa*. Prof. Daniel Chee Tsui, 1998 Nobel laureate in physics and Arthur LeGrand Doty Professor of Electrical Engineering at Princeton University, was awarded the degree of Doctor of Science, *honoris causa*. Prof. Amartya Kumar Sen, 1998 Nobel laureate in economics and Master of Trinity College at University of Cambridge, Prof. Fei Xiaotong, internationally renowned anthropologist and professor of sociology at Peking University, and Mrs. Daisy Li Woo Tze-ha, philanthropist and dedicated leader in voluntary social services, were each awarded the degree of Doctor of Social Science, *honoris causa*.

Their citations were written and delivered by Prof. Andrew Parkin of the Department of English and Prof. Serena Jin of the Department of Translation.

Prof. Amartya Kumar Sen also spoke on behalf of the honorary graduates.

In the afternoon, the four constituent colleges, the Part-time Degree Programmes (for first-degree graduates), and the Graduate School (for master's degree graduates) also held graduation ceremonies for their students.





Degrees Awarded

Honorary Degrees

Doctor of Laws, <i>honoris causa</i>	1
Doctor of Science, <i>honoris causa</i>	1
Doctor of Social Science, <i>honoris causa</i>	3
	<hr/> 5

Doctoral Degrees

Doctor of Medicine	5
Doctor of Philosophy	82
	<hr/> 87

Master's Degrees

Master of Philosophy	310
Master of Arts	51
Master of Divinity	3
Master of Fine Arts	4
Master of Business Administration	216
Master of Education	69
Master of Clinical Pharmacy	11
Master of Nursing	18
Master of Public Health	15
Master of Science	202
Master of Architecture	53
Master of Social Science	6
Master of Social Work	6
	<hr/> 964

First Degrees

Bachelor of Arts	422
Bachelor of Business Administration	491
Bachelor of Education	177
Bachelor of Engineering	392
Bachelor of Medical Sciences	1
Bachelor of Medicine and Surgery	149
Bachelor of Nursing	117
Bachelor of Pharmacy	29
Bachelor of Science	597
Bachelor of Social Science	538
	<hr/> 2,913

Total

3,969



The Honourable Donald Yam-kuen Tsang

JP

A Citation



Aesthetic sense, attention to detail, and pride in a good job well done are qualities needed in a first-rate carpenter. Observation, persistence, careful tracking of evidence and putting it together, courage when needed, and resourcefulness in times of threat, are qualities one can find in a first-rate policeman. Our Financial Secretary seems to draw quite naturally on the legacy of qualities I have mentioned, for his grandfather was a carpenter, his father a policeman. Yet his unexpected love of the elegant bow tie signals his own special kind of creative flair. This very personal flair allows him to arrive at creative solutions to some of the problems that beset his government; his sober, intelligent grasp of practical matters; his stubborn will to succeed; his focused energy; all these have served him and his beloved Hong Kong extremely well. His love for Hong Kong is unconditional. He was homesick for it when he was a year at Harvard.

A third generation Hong Kong person, he was born in 1944, when there was still no end in sight to the war with Japan. He grew up as the eldest of six children in the post-war re-establishment of British rule and has lived to see the demise of the British empire, the difficult birth pangs of the People's Republic of China, the creation of a new kind of market-force socialism, the pragmatic doctrine of one country two systems, and most recently, the magnificence of Beijing's fiftieth anniversary celebrations. In such times individuals cannot but be moved. And senior civil servants with the talents of Mr. Tsang cannot but be aware of a solemn and yet exciting sense of destiny in the unfolding of human history. For him, Hong Kong is a place where many different peoples may bring their talents to keep Hong Kong striving to maintain its free, risk-taking spirit, its internationalism, its dynamic energy, its sense of adventure, and its peoples' entrepreneurial skills. For him, Hong Kong people have now found both an identity that is their own and a great pride of place. Mr. Tsang, like many others, takes great pride in local achievements.

He was educated at Wah Yan College, a local Roman Catholic school, where he maintains strong ties. His religious education by the Jesuits gave him a sense of duty, service, and determination; his teachers were at times excruciatingly demanding. Yet he found time to read widely for pleasure and improvement outside the confines of the curriculum. This method, always advised by the best teachers, including Dr. Samuel Johnson, helped him to deepen his command of English and develop a powerful and independent mind. Now that he is buried almost up to the

bow tie in government documents, he still finds time to read, for pleasure, fascinating, well-written non-fiction. In the days when university places were so few that only a minuscule number of Hong Kong students could get into the one medical school, his father pressured him to become a doctor. It was not to be. Instead he left school for the work force and very soon, in 1967, joined the Hong Kong Government civil service. This gave him the stability and the opportunities to discover, test, and develop his remarkable talents.

It also served him well by sending him off to Harvard, when he was in his mid-thirties, where he gained a Master's degree in Public Administration. Here he had to come to grips with econometrics and modern managerial techniques. He still keeps in touch with some of his professors. At Harvard he found himself in a very carefully selected class of talented and hard-working young people among whom he found many firm and faithful friends from a wide variety of backgrounds. He has kept up these friendships with now influential people in a number of different countries and cultures. They have been part of his inspiration.

During three decades of government service he has held many different positions in the Administration, including being District Officer for Shatin, shortly after his return from Harvard. The most significant of his jobs have been, of course, in finance, trade, and the issues arising from inter-governmental plans for the future of Hong Kong. Between 1985 and 1989 his responsibility was implementation of the Sino-British Joint Declaration. Between 1991 and 1993, he became Director-General of Trade and Chief Trade Negotiator. He was thus responsible for all facets of trade negotiation and administration for Hong Kong. Further responsibility, and promotion, arrived in May 1993 when he became Secretary for the Treasury. This post gave him the heavy responsibility for the overall resource allocation of the Hong Kong Government, its taxation system, and for the cost-effectiveness in the development and implementation of Government's policies and programmes. In September 1995 he was appointed Financial Secretary, being the first non-British civil servant to be appointed to this post in Hong Kong. In the years leading to the change of sovereignty he also tackled the issue of British passports for Hong Kong people. His firm, even relentless pursuit of Westminster about this met with a measure of success. If history always has to run its course, we must yet admire him for his principled stand and what he achieved in the face of greater powers. His gritty, sometimes unpopular determination, has paid off.

As Financial Secretary he has had to contend in the market place with both bulls and bears. He has taken initiatives to build a healthier and a stronger financial system for Hong Kong and the immediate region, doing much to revitalize business and help us out of a recession that, according to some commentators in the alarmist press, could easily have turned into the nightmare of another great depression. It is a significant fact that he retained this position across the hand over, thus serving the outgoing colonial government and the post-colonial SAR government. This is a remarkable testimony to his ability and steadfastness. He is a person on whom many have depended, in a region of government that now has a status somewhere above that of an ordinary province of China.

For his 30 years of long and very faithful service to Hong Kong people under British

administration, he was made a Knight Commander of the Order of the British Empire in June 1997, thus gaining a title. The newspapers *Sing Tao Daily* and *Hong Kong Standard* named him Leader of the Year in 1997.


Collecting a reputation as a trouble-shooter in his various government posts, Sir Donald finds that there is no substitute for a careful study of any problem that arises, looking at it methodically, seeking a solution that has the best chance of working, given the various constraints, rather than following pre-conceived ideas; seeking also an imaginative solution with a chance of lasting, rather than leaping hastily into ill-conceived improvisations. There then needs to be a large dose of determination to carry well-planned actions through to their right conclusions. As a realist, he is keenly aware that some problems, regrettably, are insoluble.

His work with the Harvard University Outreach Programme shows his concern for the good of young adults in an international context. This perhaps follows from his own family and his role as a caring father. He wants to secure our future as well as present prosperity. To secure this future, we need thinking people, creative people, and critical intelligence geared to our needs; we need to be keenly aware of technological change.

This interest in young people is also reflected in his long-standing association with The Chinese University of Hong Kong. He visited United College and met with members of the University back in the days when he was Shatin District Officer. He graciously officiated at the opening of our MBA Programme's Town Centre in 1997. He was guest of honour at the 20th Anniversary Ball of our Federation of Alumni Associations in 1998. Earlier this year, he was guest speaker at our Forum on the 1999–2000 Budget jointly organized by the Faculty of Business Administration and the Department of Economics. This occasion was an extremely useful one for the staff and students because it afforded open and significant discussion of a number of matters such as the Cyberport, taxation and public expenditure, the restructuring of financial institutions, and the introduction of mainland talent into the Hong Kong equation. Mr. Tsang has enjoyed many debates and talks with our students since the early eighties.

Norman Douglas wrote that 'No great man is ever born too soon or too late.' Mr. Tsang emerged just when Hong Kong needed him. He is certainly the man of the moment.

About four hundred years ago Sir Francis Bacon wrote that the four pillars of government are religion, justice, counsel, and treasure. Donald Tsang is a perceptive counsellor, a Financial Secretary who has managed the government's treasure very well, even during recession, and a religious man who values each day his quiet times reserved for prayer in St. Joseph's Church, Garden Road.

A monarch may have ennobled him but his culture, his education, his family, and his own integrity made him what no monarch can create: a gentleman. Because of the daily press we all think we know a good deal about him. Yet, Mr. Vice-Chancellor, he is a gentleman whose worth you know well, for he is an old friend of The Chinese University of Hong Kong. It is now my special privilege to present one of our ablest leaders, The Honourable Donald Yam-kuen Tsang, for the award of the degree of Doctor of Laws, *honoris causa*. 

Daniel Chee Tsui

BA, PhD,
Nobel Laureate in Physics

A Citation



Daniel Chee Tsui was born in 1939 in Henan, China, arrived in Hong Kong in the early 1950s, and spent his secondary school years at Pui Ching Middle School. In this well-known private school, using mother-tongue as language of instruction, he proved to be a very gifted student, winning scholarships that helped to cover the school fees his family would have found it very hard to pay. After he left Pui Ching, he spent one year in the Hong Kong Government's Special Classes Centre, where he enjoyed the English literature classes on poetry and fiction. In 1958 he continued his studies in the United States. Armed with a brilliant Bachelor of Arts degree in Mathematics from Augustana College, Illinois, he went on to graduate work, gaining a Ph.D. in Physics in 1967 from the University of Chicago, where he became a research associate. After a year, he joined the Solid State Electronics Research Laboratory at Bell Laboratories in Murray Hill, New Jersey, where he worked until 1982, when he joined the Department of Electrical Engineering at Princeton University.

Prof. Tsui's research has explored the collective behaviour of electrons in solid state materials, especially those in semiconductors and semiconductor transistors, which are the starting material and the building blocks of our modern-day microelectronics. In an experiment in 1982, he discovered with Prof. Horst Störmer that, at low temperatures and in strong magnetic fields, electrons confined to move along the interface between two different semiconductors can form new kinds of quasi-particles with charges that are only fractions of the normal electron charge.

The physics that this discovery has brought forth is known as the fractional quantum Hall effect or FQH effect. It has been a main subject of study by experimental and theoretical physicists ever since. As Wen Xiao-gang of the Massachusetts Institute of Technology wrote in his contribution to a tribute to Prof. Tsui, 'There have been few discoveries that can stimulate theoretic studies and experimental explorations for such a long time... We are still far away from a complete understanding of FQH systems... We still cannot see the end of the impact of a discovery that happened 17 years ago. This is a sign of truly great discovery.' (*The Joy of the Search for Knowledge*, 148–154) Prof. Tsui's Ph.D. supervisor at Chicago, Prof. Stark, goes to the heart of the matter when, looking back at the work of his student, he reflects: 'That special quality that you have is called scientific integrity.' (Op.cit., 105)

I would like also to recall that in his paper for the Third Asia Pacific Physics Conference held in The Chinese University of Hong Kong in June, 1988, Prof. Tsui noted that '...it is intuitively obvious that in such an ideally pure system the electrons will correlate their motion to minimize

their Coulomb repulsion energy.' I have no understanding of the science referred to here, but I pick up on the fact that the scientific imagination uses *intuition* as well as complex reasoning processes.

The now famous 1982 experiment was explained a year later by Prof. Robert Laughlin's theory that the combination of lower temperature and stronger magnetic field changed the electron gas into a quantum fluid. It was for their amazing work in the FQH effects that Tsui, Störmer, and Laughlin were awarded the Nobel Prize in physics in 1998. The Nobel citation sums it up as the 'discovery of a new form of quantum fluid with fractionally charged excitations'.

Prof. Tsui, a fellow of the American Association for the Advancement of Science, is also a fellow of the American Physical Society, whose Buckley Prize for condensed matter physics he won in 1984. Three years later he was elected to the US National Academy of Sciences. He is also a member of the Academia Sinica in Taipei.

Prof. Tsui is also the recipient of the 1998 Benjamin Franklin Medal in physics. He is the twenty-ninth Nobel laureate associated with Princeton and its eighteenth laureate in physics or, as another Princeton colleague points out, he can be considered the first electrical engineer ever to win the prize! But Hong Kong can be immensely proud too, because he is also the first Hong Kong schoolboy to do so.

Although at school he scored his highest marks in physics, mathematics, and history in his final examinations, his marks in Chinese and English were also outstanding, being in the 80 per cent to 90 per cent range. He thus combined proficiency in the humanities and the sciences. If he had a good grounding in English as a *global* language, allowing him to live and work in the United States, he rapidly mastered also the *universal* language of science itself. His triumph is a triumph for pushing and growing beyond one's origins to become a citizen of the world and a human explorer of the powerful universal laws that govern life, matter and space time itself.

John Ruskin thought that 'Great nations write their autobiographies in three manuscripts — the book of their deeds, the book of their words, and the book of their art.' From our end of millennium perspective, many of us would add that these are the books which have become books belonging to humanity rather than to nations; and most of us would add a fourth book of humanity, that of science. Prof. Tsui has co-authored a striking chapter in that book of amazing changes.

He has not neglected his origins, though, for he has fond memories of Hong Kong and relatives still living here. Nor has he forgotten the university that did not exist here when he was a schoolboy but has now achieved a very solid state full of highly charged excitations: he honoured us some years ago as one of the Plenary Speakers at the Third Asia Pacific Physics Conference organized by The Chinese University of Hong Kong in June 1988.

And so, because of these things, Mr. Vice-Chancellor, we are here today to pay our homage to an honourable schoolboy, in the truest sense of the word, who was celebrated in student verses at Pui Ching as not only clever but 'Best beloved of the class', who is recognized by colleagues as a true gentleman and scholar in the Confucian sense, and who has become one of the most extraordinary physicists of his century. He is so well liked by those who know him, because he is as modest as he is brilliant, as humorous as he is reserved. I am both privileged and deeply moved to present an honourable man and a great scientist, Prof. Daniel Chee Tsui, for the award of the degree of Doctor of Science, *honoris causa*. ☞

Amartya Kumar Sen

PhD, DLitt, DSc, LLD,
Nobel Laureate in Economics

A Citation



Prof. Amartya Sen is a man who has taken the pulse of modern economic life and understands many of the implications of its alarmingly irregular beat. So profound and persuasive are his diagnoses of the economics of inequality, poverty and deprivation among the peoples of the world, that last year he was awarded an overdue, according to some, Nobel Prize in economics.

Amartya Sen was born in November 1933 into an academic family in Santiniketan, India. His father was professor of chemistry and his grandfather professor of Sanskrit. Prof. Sen's writings demonstrate the combination of literary humanism and scientific method, with its patient classification, mathematical formulae, and rigorous technical analyses. His work is informed by compassion for the victims of economic forces that ensure the sufferings of the world's poor but escape their understanding.

Let us recall G.B. Shaw's words from his play *Major Barbara*: 'The greatest of evils and the worst of crimes is poverty.' We can then understand some of Prof. Sen's motivation for trying to reveal the causes and mechanisms of poverty and for making its study a great part of his life's work.

Prof. Sen gained his Bachelor of Arts degree in 1953 at Presidency College in Calcutta, took a second Bachelor of Arts degree at Trinity College, Cambridge two years later, having won the Adam Smith Prize and a Wrenbury Scholarship. Armed with the Stevenson Prize of 1956, he went on to get his Cambridge Ph.D. in 1959. His brilliance was of course rewarded by his own college's prizes, including a Prize Fellowship in 1957, and, most recently, Trinity's welcoming him back as Master. Yet he has not confined himself to Cambridge: he has been Professor of economics at Jadavpur University in Calcutta (1956–58), and at the University of Delhi's Delhi School of Economics (1963–71); he has been professor of economics at the London School of Economics (1971–77); he has had visiting professorships at the Massachusetts Institute of Technology (1960–61), Stanford (1961), Berkeley (1964–65), Harvard (1968–69), and was Andrew D. White Professor-at-Large in Cornell (1978–84). Again extending his reach across the Atlantic to the American Cambridge, he became Lamont University professor and professor of economics and philosophy at Harvard University (1987–98), and a Senior Fellow of the Harvard Society of

Fellows (1989–98). His work still takes him far away from one Cambridge to another, for the Master of Trinity is also now at the Center for Population and Development Study at Harvard. Yet some might say that he strayed furthest from Cambridge when becoming professor of economics at Oxford and a Fellow of Nuffield College (1977–80). As if this were not enough, he spent the next eight years as Drummond Professor of Political Economy at Oxford and a Fellow of All Souls (1980–88). He is now back on track in the two Cambridges; yet two Cambridges do not cancel out an Oxford. In fact, some Oxonians might even imagine that one Oxford equals two Cambridges.

Happily, such petty rivalries are left far behind by Prof. Sen's impressive list of accolades from so many major scholarly institutions. His honorary degrees are too numerous to list here but they come from leading universities in India, Europe, and North America. A Fellow of the British Academy, Fellow (and President in 1984) of the Econometric Society, and Foreign Honorary Member of the American Academy of Arts and Sciences, he is a Member of the Accademia Nazionale dei Lincei and of the American Philosophical Association. He has also served as President of the Indian (1989), the International (1986–89), and the American Economic Associations (1994).

Such awards signal the respect accorded to his thought and publications by his colleagues throughout that global society of intellectuals and researchers known as academia; this recognition eloquently attests to the very significant contribution he has made to the more general understanding of economics as an intellectual discipline with far-reaching human and societal consequences that should not be ignored. His work in fact has implications for philosophy, sociology, and the history of ideas.

Following the pioneering work of Kenneth Arrow in particular, Prof. Sen has developed social choice theory, providing a general approach to evaluating and choosing between different social possibilities. This involves arriving at fuller understanding than was previously available of inequality, poverty, and welfare issues. As Prof. Sen points out in his enthralling Nobel lecture of last December (1998), 'The reach and relevance of social choice theory can be very extensive indeed.' Enthralling may be a term used primarily of fiction rather than lectures in economics, the so-called dismal science. His technique, however, is to lead us to a series of questions, each one being a moment of suspense, such as 'When would *majority rule* yield unambiguous and consistent decisions?...How can we accommodate *rights and liberties* of persons while giving adequate recognition to their preferences?...How do we appraise social valuations of public goods such as the *natural environment*, or *epidemiological security*?' We want to know the answers to his questions, in much the same way that we want to know what happens next in a plot. He does not ignore the questions that might destroy his own theories. He asks himself and us '...whether the pessimism associated with Arrovian structures in social choice theory must be seen to be devastating for welfare economics as a discipline.' He faces such questions and gives his answers. In short, Prof. Sen is a *writer* as well as an economist.

Through his 'capability approach' his analyses take into account not only income or gross

domestic product but also quality of life and the capacity for a society to offer people what they need, such as education and health care. His influence can be seen in a range of things from social choice theory, the more informed measurement of poverty and inequality, to the Human Development Report. His work complements that of other economists with ethical as well as purely technical interests.

His work has helped us at The Chinese University of Hong Kong by providing colleagues and students with insights for considering the welfare of our own society.

The reasons for this respect and recognition may be found in his many publications, such as *On Economic Inequality* (1977; 1973) and *Poverty and Famines: An Essay on Entitlement and Deprivation* (1982; 1981). The first book, based on the Radcliffe Lectures he gave at Warwick almost 30 years ago, combined analytical and mathematical thinking with intuitive interpretation, in the basic belief that the significance of the research and its results consist in what Prof. Sen points out with incisive clarity: their 'relevance to normal communication and to things that people argue about and fight for.' In the preface to the second book I mentioned, he invokes Shakespeare's dramatization of 'poor naked wretches' in *King Lear*, and faces the fact that some might be 'impatient' with the academic anatomy of poverty. Poverty is horrifying but it is complex and its causes little understood. The questions raised by enquiries into poverty in developing countries are extremely difficult to answer. Prof. Sen's focus is on causes of starvation and famine. He is thus involved in the analysis of complex 'entitlement systems' in economies. The questions on poverty indexes and the causes of specific famines that he raises and the answers he gives go to the heart — in every sense of the word — of economies and societies, combining methodology from economics with philosophical rigour and considered ethical concerns. His work is distinguished, then, by key contributions to social choice theory and welfare economics.

According to other leading economists, Prof. Sen's work has opened up new fields and perfected the earlier results of others, besides inspiring new endeavours by his colleagues. Theories of social choice, individual preference, and welfare, together with measurements of poverty and real income, constitute the wide range of issues his work has tackled so impressively.

Here is a third generation academic who has lived his life in universities, yet has never been trapped in an ivory tower; one who amid all the thinking, writing, abstractions and distractions of academic life, has never lost touch with the realities of deprivation. The urgent need to understand the economic factors behind the misery that still abounds in the world is his fundamental motivation.

Mr. Vice-Chancellor, Amartya Sen, Master of Trinity College, Cambridge, is the first Asian to be named Nobel laureate in economics. He has shown us how to understand more clearly the complexities of poverty and given us a better chance of helping the poorest of the poor at a time when common perception has it that the rich are getting richer, while the poor are getting poorer. His work is as compelling academically as it is urgent in its need for practical application. I thus present Prof. Amartya Kumar Sen, Nobel Laureate, for the award of the degree of Doctor of Social Science, *honoris causa*. 🍷

Fei Xiaotong

BA, MA, PhD

A Citation



Prof. Fei Xiaotong is a sociologist and anthropologist of international renown and a pioneer and champion in China for the two disciplines he professes. He is a native of Wujiang in Jiangsu province. His father, Mr. Fei Puan, once served as the Provincial Inspector of Schools of Jiangsu, and established secondary schools on modern lines in his home town. Madam Yang Renlan, Prof. Fei's mother, was an early advocate of women's rights and had shelters built for women and young girls in distress. With such learned and progressive-minded parents the young Fei Xiaotong had the foundation for his academic calling laid early. He grew up to be a scholar of the first order, admired and esteemed by all in academe and beyond.

Prof. Fei Xiaotong attended the Dongwu University, Yenching University, and the Graduate School of Tsinghua University. In 1935 Prof. Fei, at the request of the provincial authorities in Guangxi, undertook research on the special ethnic groups at Dayaoshan, and the findings were published as *The Social Structure of the People of Flower Basket Yao* which he co-authored with Wang Tonghui. In 1936 he went to Britain for further studies, and became a student under Malinowski. On the findings of his research at the Kai Xiangong Village on the southeast bank of Lake Taihu he wrote a dissertation which, when published, was widely known under its title, *Peasant Life in China*. Prof. Fei received his Ph.D. from the University of London in 1938, and returned to China immediately afterwards to become professor of sociology at the University of Yunnan. He set up a sociology research workshop with colleagues at Yenching University where he, leading a group of young scholars of promise, engaged in fieldwork on specific social entities such as rural communities, factories, and ethnic minorities. Their research often proceeded in the harshest conditions, and yet Prof. Fei did not allow himself to be distracted by material discomfort. He concentrated on the work he was engaged in and this yielded fruit: *Earthbound China* was published in 1990 and remains an invaluable source of information on the subject.

In 1943, Prof. Fei made his first visit to the United States, at the invitation of President Roosevelt. He returned to China and resumed his academic duties in 1944, and his two masterpieces, *From the Soil, The Foundations of Chinese Society* and *Family Planning System*, date from this period. While *From the Soil* reviews a profound subject in layman's terms and is therefore admired by both the specialist and the general reader, *Family Planning System* contains significant viewpoints of long-lasting effect. Both books have been popular since they were first

published, and are still essential reading for those interested in Chinese economics, society and culture. From 1950 Prof. Fei concentrated on the study of the ethnic minorities in China, and became deputy president and professor of anthropology of the Institute of Central Nationalities in 1952. In 1957 he re-visited the region near Kai Xiangong Village, and repeated his views that industries in the rural setting were an important complement to agriculture. Such views were to exercise tremendous influence in the economic development of New China, and provided a highly workable blueprint for the country's reconstruction.

In 1978, when the Cultural Revolution came to an end, Prof. Fei was appointed deputy director of the Institute of Nationalities of the Chinese Academy of Social Sciences. In 1979 he became the president of the Chinese Sociological Association and was appointed professor of sociology at Peking University. In 1980, Prof. Fei became the director of the Institute of Sociology of the Chinese Academy of Social Sciences, and devoted all his time and energy to the rebuilding of Chinese sociological research. He visited the United States again in 1980 and received, at Denver, the Malinowski Prize of the International Applied Anthropology Association. Numerous honours have been bestowed on him, including the Huxley Memorial Medal of the Royal Anthropological Association of Great Britain and Ireland, the Encyclopaedia Britannica Prize of the United States, the Asian Cultural Prize of Fukuoka, Japan, the Henry Fok Prize, and the special honour of the National Foundation for the Social Sciences. He holds an honorary degree of Doctor of Letters from the University of Hong Kong and an honorary degree of Doctor of Social Science from the University of East Asia, Macau, and is a Fellow of the London School of Economics and Political Science. His contribution to sociology and anthropology is universally recognized, and the accolades he has received during his long academic career speak well for the great esteem in which he is held in the world of higher learning.

Prof. Fei has a lifelong dedication to the well-being of the people. His colourful and fruitful academic career spanned over 60 years, during which he produced research covering a broad range of subjects. Since his pioneer work on the people of Flower Basket Yao, he has spared no effort in promoting industries, in villages and small towns. His research took him from farming communities to small towns, from small towns to medium sized cities, and from that on to economic entities centred in large cities. On another plane he specializes in the study of ethnic minorities and champions ethnic minorities in a unified country, a striking characteristic of the Chinese nation. A practical person who never loses sight of the whole, he advocates co-existence and co-prosperity among different races and different nations and, on such a premise, delineates an optimistic picture of Universal Harmony for the world in the 21st century.

At the age of 17, Prof. Fei made a promise to himself that he would record anything worth being written down for as long as he would live, and that for the benefit of those who would come after him. Now Prof. Fei has celebrated his 90th birthday, and he has indeed lived up to his early promise of committing his knowledge and experience to writing. Over the years he has travelled far and wide, and his writings are commensurate with his peregrinations. There is much in his large corpus of works that is inspired by his travels. It can also be said of Prof. Fei's literary and scholastic output that, whether it is a light-hearted piece written as his mood directs him, or a learned work in which some exalted theories are propounded, there is always flair, style, and wit.

He makes no secret of how he can achieve such distinction: academic research is never a dull thing, and originality is all important in writing. Indeed Prof. Fei writes with a natural elegance, and his vivid style is very close to that of the Song Dynasty scholar and poet Su Shi.

Prof. Fei is much loved for his sincerity and affable manners. A grand old man in national affairs and full of years and honours, he has held many important appointments. He was vice-president of the Chinese People's Political Consultative Conference, vice-chairman of the Standing Committee of the National People's Congress, and vice-chairman of the Drafting Committee for the Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China. At present he is the honorary chairman of the Central Committee of the China Democratic League. Yet he is a modest, approachable person, who claims that his learning has come from the grass-roots and the soil. All his life he has sought to contribute to the motherland by offering his utmost in 'passion, wisdom, responsibility, and diligence'. His aim is prosperity for the country and its people. With neither reproach nor regret he makes a lifelong journey towards that lofty goal. While he started on an uneasy path, the way has gradually become smooth for him, one that eventually leads on to a broad highway of success.

What really distinguishes Prof. Fei from ordinary men is his vitality and creativity which, like a living fountain, flows abundantly. It is his opinion that everyone must set his goal in life and strive vigorously for its attainment. Otherwise, one would be wasting one's life. It is with this disposition that Prof. Fei pursues his studies. He has a genuine love for truth and seeks it diligently and courageously. His relentless effort in dedicating his wisdom and knowledge to the cause of national prosperity is much admired by all who know him. Prof. Fei, acknowledging that life is limited but culture is everlasting, puts it succinctly in his *New Words at Ninety*. He says that new thoughts and ideas should be encouraged and that a new orientation must be found for our cultural development.

Prof. Fei has a long association with The Chinese University of Hong Kong. He has visited the University many times since the 1980s to preside at seminars and to take part in other events for cultural exchange. In 1983, he spoke at the Conference on Modernization and Chinese Culture which marked the University's 20th anniversary. Then in 1988, when the University celebrated its 25th anniversary, he gave a public lecture in the Tanner Series. In 1994, Prof. Fei came to Shaw College as the Sir Run Run Shaw Distinguished Visiting Scholar of the year. In 1998, at the invitation of Chung Chi College and the Sociology Department, he gave lectures on campus as a visiting scholar to the college sponsored by the K.C. Wong Foundation. In all these years Prof. Fei has been a tower of strength helping to advance the study of sociology and anthropology at this university. Mr. Vice-Chancellor, Prof. Fei Xiaotong has travelled the globe, the benefit of his writings has been felt throughout the academic world, and the purity of his heart illuminates the hearts of multitudes of lesser mortals. He is a pillar of our society, a great scholar, and one whose achievements contribute tremendously to the common good. May I therefore present Prof. Fei Xiaotong to you, Mr. Vice-Chancellor, for the award of the degree of Doctor of Social Science, *honoris causa*. 📖

Daisy Li Woo Tse-ha

MBE

A Citation



Mrs. Daisy Li Woo Tse-ha is a leading philanthropist in Hong Kong and an outstanding figure in voluntary social service. A native of Sanshui in Guangdong, Mrs. Li was born into a family which placed great importance on charity work as well as on the education of the children. Mr. Woo Hei-tong, her father, was a man of unblemished virtue and broad vision, and insisted that his children should be given the best opportunities that education could offer. The young Daisy Woo attended St. Stephen's Girls' College, and then proceeded to the University of Hong Kong where she read sociology. There the foundation of her life-long commitment to service for the community was laid.

While at university she met her future husband, Mr. Li Fook-shu, who was a couple of years her senior. The marriage joining the two illustrious families was a happy event that invited the attention and blessing of the whole town. After their marriage, Mr. and Mrs. Li have gone through blessings and vicissitudes of life for many a happy year.

It would be a fair comment to make that, with such remarkable family background, most ordinary women would easily have indulged in the life of a lady of leisure. Mrs. Li, however, proved an exception. Since her marriage she has devoted herself to giving her husband support in his work and in bringing up their four children. She was firm in instilling moral precepts in her children from an early age, and gave them the best education in both the East and the West. Thus they were all sent to England while still in their teens, and Mrs. Li went with them, leaving behind the busy social life of Hong Kong. While in England she not only took care of her children in their daily life but also ensured that their Chinese education was not neglected by employing the best private tutors. In the event her eldest daughter became a consultant radiologist and her younger daughter became a teacher. One of the two Li boys grew up to be an elder statesman in high finance, while the other became a dependable leader in the medical profession and in higher education. That they serve the community well, contributing significantly to society in their respective roles, much is due to their mother's foresight and hard work. There can be little doubt that the achievements of her children, and the worthy services they have rendered to the community, are, to Mrs. Li, her greatest pride and joy.

When her children had come of age, Mrs. Li took up full time volunteer social service. Since 1961 she has been an active member of the Hong Kong Red Cross, having served as its deputy director and then director, and in 1976 she became an adviser to that organization. The Red Cross is an international charity that was founded in 1919, while the Hong Kong branch came into being in 1950. It is founded with the objectives of maintaining and protecting human life and dignity, delivering impartial quality care and providing individuals with opportunities to help others and to help themselves, with a view to realizing its ultimate humanistic goals. Red Cross activities comprise both local and international relief work, such as tracing lost persons, blood transfusion services, care for the sick, and library services. In Hong Kong, the Red Cross organization runs hospital schools, special schools, and Shun Lee Hostel, serving the old and the infirm as well as providing first-aid training and rehabilitation services. All these enterprises make a heavy demand for volunteers, and Mrs. Li, since her first day with the Red Cross, has given herself entirely to its services and programmes. Some years ago, when Hong Kong experienced a specially ferocious typhoon, Mrs. Li personally took charge of relief work in the field, ignoring the torrential rain and strong winds around her. In recent years she took an active part in large-scale service programmes in China such as Project Hope, through which she hopes to contribute to the country's efforts in educating the young.

Apart from Red Cross activities, Mrs. Li was for many years a member of the Executive Committee of the St. James' Settlement. She is a founding member of the Spastics Association of Hong Kong, and was the supervisor of the YWCA Hioe Tjo Yoeng College for many years. From 1988 to 1996 she was the president of the Young Women's Christian Association in Hong Kong. Since then, she has remained on the board as a director and is also the supervisor of the YWCA Athena Kindergarten. Mrs. Li has been commended many times for her active participation in social welfare services: she was awarded badges of honour by the Hong Kong Red Cross thrice, in 1983, 1987 and 1991, and was made a Member of the Most Excellent Order of the British Empire in 1993. In 1998, the University of Hong Kong made her an Honorary University Fellow.

Mrs. Li has a warm disposition and a generous mind. A practising Christian all her life, she believes that Providence will help those who help themselves. She is convinced that a tolerant attitude, not bothered by gain or loss, and fairness to all will help us overcome hardship and achieve success, and to be unperturbed in mind even when we are beset by difficulties.

Mr. Vice-Chancellor, Mrs. Daisy Li has had a long and close association with this university, since her late husband, the Honourable Li Fook-shu, was appointed to the University Council in the early 1960s. In more recent years Mrs. Li has given much appreciated support to capital projects on campus, including the construction of a student hostel at New Asia College, and various student activity schemes. Mr. Vice-Chancellor, today we honour a lady for her public and private virtues, for her dedication to social welfare, and for the role model she has set for the modern woman in keeping an impartial balance between services to the community and devotion to the family. May I now present Mrs. Daisy Li Woo Tse-ha for the award of the degree of Doctor of Social Science, *honoris causa*. ☞

An Address

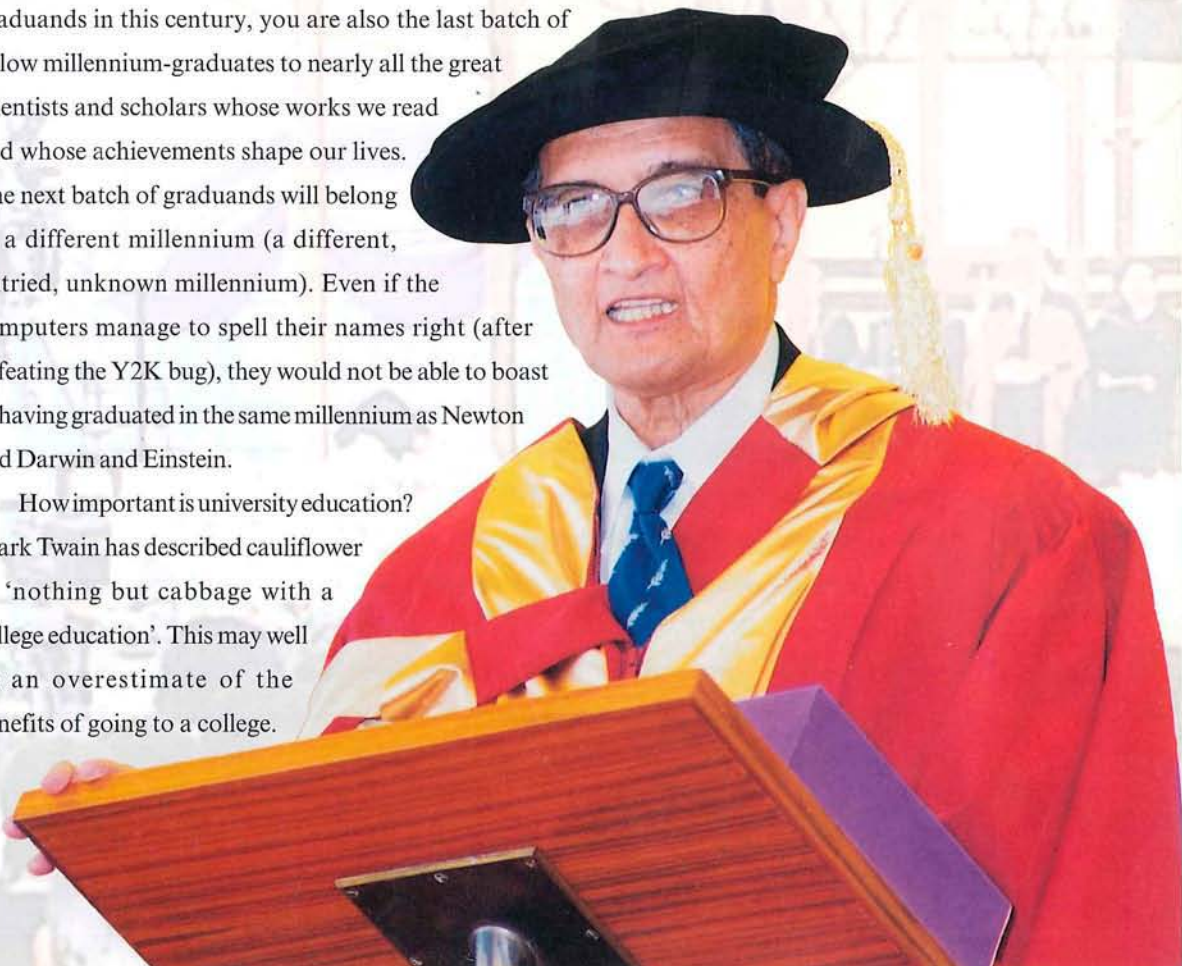
by Prof. Amartya Kumar Sen

On behalf of all the honorary graduates, I would like to thank The Chinese University of Hong Kong for the wonderful honour you have so kindly bestowed on us. We greatly value, Vice-Chancellor, our association with this distinguished university resulting from this conferment. We are most grateful.

It is also a privilege to join the non-honorary graduands — the ‘real’ graduands — on this wonderful occasion. Let me congratulate you all for not only getting your respective degrees, but more importantly, for the work that you have successfully completed for which the degrees are just rewards. It is a magic moment, when the hard work of study and learning is all done, and the reward is solidly in your hand.

Let me also point out that you have managed to get your degree in this millennium — just in the nick of time. One month later and you would have missed it! You are not only the last batch of graduands in this century, you are also the last batch of fellow millennium-graduates to nearly all the great scientists and scholars whose works we read and whose achievements shape our lives. The next batch of graduands will belong to a different millennium (a different, untried, unknown millennium). Even if the computers manage to spell their names right (after defeating the Y2K bug), they would not be able to boast of having graduated in the same millennium as Newton and Darwin and Einstein.

How important is university education? Mark Twain has described cauliflower as ‘nothing but cabbage with a college education’. This may well be an overestimate of the benefits of going to a college.



Many of our finest cauliflowers — from Shakespeare to Charles Dickens — overcame cabbageness without the benefit of college education.

Yet there can be little doubt that good college education can make a dramatic difference to human abilities and achievements. Indeed, not only can it transform individual lives, its role in social change can be quite crucial. Our primary image of Mahatma Gandhi may not be that of a student bent over books on law and jurisprudence, or of Karl Marx as a graduate student in classical philosophy, diligently writing a Ph.D. dissertation on Greek philosophers Epicurus and Democritus, but that is exactly what they did. And the university education of these and a great many other leaders of practical thought has had quite an impact on the real world in which we live. The same can be said of the college education of Martin Luther King, or of Nelson Mandela, or of Aung San Suu Kyi (the courageous Burmese leader), or Mikhail Gorbachev (who was, in fact, the first university-trained leader of the Soviet Communist Party since Lenin). The world of ground-level practice has constantly drawn on the world of higher education.

This is not to deny that the academia can be a limiting influence too, and the pejorative meaning of the term ‘academic’ is not entirely undeserved. It is typically not high praise to be told that one’s argument is ‘academic’. The dictionaries give the meaning of the word as: ‘theoretical’, or ‘conjectural’, or ‘unpractical’. All this is quite understandable. And yet the real world does need the theories, the conjectures, the unpractical demands, to re-examine what it has got and to decide where to go from there. Consensus beliefs that influence our understanding of the world can be very misleading, and yet remain unchallenged, except from the distance of the conjectural tradition of the academia (as a graduate of the University of Padua, called Galileo, did).

Indeed, it is not absurd to claim that being able to doubt is one of the things that make us human beings, rather than unquestioning animals. I remember with some warmth and amusement a Bengali poem of early nineteenth century, by Raja Ram Mohan Ray. This is, in fact, meant to be quite a serious (and I suppose, sad) poem about death — how terrible death is. But when I encountered it first as a boy of 10 I remember being impressed by the poet’s view of what makes life worth living. The poem goes like this: ‘Just imagine how terrible the day of your death will be; others will go on speaking, and you will not be able to contradict.’ There is perhaps some plausibility in that characterization of the central feature of life and death. Indeed the old slogan, articulated by Descartes, *cogito ergo sum* (I think, therefore I am) may be rivalled by the competing claim: *dubito ergo sum* (I doubt, therefore I am).

Questioning and doubting are among the principal tasks of university education. I don’t doubt that in your later life you will not only put to excellent use the knowledge and skills you have acquired here, but also the spirit of questioning that comes from good university education. So please join us in expressing gratitude to this wonderful university. It’s a great privilege to be with you all at this magical moment. 📖



University Members Honoured

- Prof. Arthur K.C. Li, vice-chancellor of the University, was conferred an honorary doctorate by Soka University in Japan on 20th December 1999. On the same day, he was presented the Certificate of Soka Friendship by the student union of Soka University.

Prof. Li was also awarded the honorary degree of Doctor of Letters by the Hong Kong University of Science and Technology on 12th November 1999.

- Prof. Charles Kao, honorary professor of engineering, has been selected by *Asiaweek* magazine as one of the five most influential people in Asia in the 20th century. The selection was made by a team of editors from *Asiaweek*. Prof. Kao, the only surviving candidate, tops the 'Science and Technology' category. The four other influential people are Deng Xiaoping (Politics and Government), Akio Morita, co-founder of Sony (Business and Economics), Akira Kurosawa (Arts, Literature, and Culture), and Mohandas K. Gandhi (Moral and Spiritual Leadership).
- Prof. Henry N.C. Wong, professor of chemistry, has been elected Member of the Chinese Academy of Sciences.
- Prof. Dennis Lam, professor in the Department of Ophthalmology and Visual Sciences, was selected as one of the 100 Global Leaders for Tomorrow for the year 2000 by the World Economic Forum in Switzerland.

Vice-Chancellor Re-elected VP of AUPC

Prof. Arthur K.C. Li was re-elected the vice-president of the Association of University Presidents of China (AUPC) for another two-year term by the Council of the AUPC at its third meeting on 5th December 1999. The other vice-president is Prof. Wang Shenghong of Fudan University and the new president is Prof. Wang Dazhong of Tsinghua University.

Outstanding Achievements of CUHK Students

Honours for Engineering Students

A team of students from the Department of Computer Science and Engineering won eighth place among 60 finalist teams in the 24th Association for Computing Machinery (ACM) International Collegiate Programming Contest World Finals held in Orlando from 15th to 19th March 1999. This marks the first time that a team from Hong Kong has ranked among the top 10 at the ACM World Finals, commonly held as the top programming competition for university students of computing.

The 60 finalist teams were selected from over 2,400 teams which participated in the preliminaries. This year's contest contained eight difficult problems in graph theory, geometry, combinatorics, constraint satisfaction, and simulations. Each team had five hours to solve as many problems as

possible on a single computer. The team which solved the most problems with the fewest penalties was declared champion.

The members of the CUHK team are Kwok Chi-leong (*left*), Wong Ho-yin (*middle*), and Lau Lap-chi (*right*). They outperformed teams from such famous universities as MIT, Harvard, and the California Institute of Technology.



Two other students from the Department of Computer Science and Engineering, Chris L.C. Wong and Raymond K.W. Chan, were awarded the gold prize in the open category of the Mobile Multimedia Communications Design Contest 1999–2000 for their design of Location-based Information Browsing Using Mobile Positioning and WAP Technology. The contest was organized by the Hong Kong Institution of Engineers (HKIE), supported by the Information Technology and Broadcast Bureau and the Information Technology Entrepreneurs Association, and sponsored by Nokia and Cable & Wireless HKT.

More Laurels for BBA Students

The University's BBA team beat five other teams from overseas universities to win the Harold Crookell International Case Competition for the second time in two years.

Organized by the Richard Ivey School of the University of Western Ontario in Canada in mid-March, the competition, now in its eleventh year, brought the world's future business leaders together with Canada's business community to examine the potential of global interaction. This year, six teams were invited to take part in the event: CUHK, the University of the West-Indies (Trinidad),



Members of the CU team (from right) Regina Kan, Maggie Cheung, Heidi Tang, Esther Mai, and the judges

Instituto Tecnológico Autonomo de Mexico (ITAM), Queen's University at Kingston, Escola de Administracao de Empresas de Sao Paulo (Brazil), and the University of Economics in Prague.

During the competition, the participants were given about 14 hours to work out a strategy for a Canadian water purification company to enter the China market.

The same team consisting of Heidi Tang, Esther Mai, Regina Kan, and Maggie Cheung had also won the Business Administration Paper of the Year 1999 in the Business Strategy Competition held in Hong Kong in February 2000.

Professorial Appointments

Professor of Electronic Engineering



Prof. Ching Pak-chung has been appointed professor of electronic engineering from 1st October 1999.

Prof. Ching obtained his B.Eng. and Ph.D. from the University of Liverpool in 1977 and 1981 respectively.

He was lecturer in the Department of

Electronic Engineering of the Hong Kong Polytechnic from 1982 to 1984. He joined the Department of Electronics of The Chinese University as lecturer in 1984, was promoted to senior lecturer rank in 1990, and reader in 1994. He was elected Dean of Engineering in 1998.

Prof. Ching's research interests include automatic speech recognition for Cantonese, adaptive digital signal processing for time delay estimation, geolocation by satellites, and blind signal estimation using high order statistics.

Professor of English

Prof. David Heywood Parker has been appointed professor of English from 28th February 2000.



Prof. Parker obtained his BA from the University of Adelaide (1966) and Flinders University of South Australia (1970), his Dip.Ed. from the University of Adelaide (1969), and

his D.Phil. from the University of Oxford (1974).

He has experience teaching in Australia, England, and the US. He joined Australian National University (ANU) as lecturer in English in 1974, becoming senior lecturer in 1985, and reader in 1993. From 1995 to 1996, he was professor of English and rector of the Signadou Campus of Australian Catholic University on secondment from ANU. Before joining The Chinese University, he was head of the Department of English and Theatre Studies at ANU.

Prof. Parker has published numerous books, book chapters, short stories, articles, and reviews. His research interests include British literature of the modern period, ethics and literary theory, Australian fiction, and autobiography.

Emeritus Professor of Philosophy

Prof. Liu Shu-hsien was awarded the title of Emeritus Professor of Philosophy by the University on 6th January 2000 in recognition of his outstanding academic achievements and distinguished service to the University.



Prof. Liu received his philosophical training at Taiwan University and furthered his studies in the US where he obtained his Ph.D. from Southern Illinois University in 1966. He then taught at Southern Illinois University, first as assistant professor, then associate professor and professor, for the next 15 years or so.

In 1981, he resigned from Southern Illinois University and joined The Chinese University of Hong Kong as chair professor of philosophy. He also served concurrently as chairman of the Philosophy Department (until 1993) and director of the Research Institute for the Humanities (1991 to 1996). Prof. Liu retired in 1999.

C.N. Yang Archive Set Up

The C.N. Yang Archive was formally set up at the University on 8th December 1999. The first Chinese to have won the Nobel prize, Prof. Yang Chen-ning has been Distinguished Professor-at-Large of the University since 1986.

The archive is a valuable collection of the many prestigious medals Prof. Yang has won in his long and distinguished career, the important research manuscripts he has written, the personal letters he has received from friends, students, and fellow scientists, and photographs catching him in special and



Prof. Daniel Tsui (left) congratulating fellow Nobel laureate, Prof. Yang Chen-ning

important moments of his life. All manifest his remarkable contribution to the study of physics, to science education and technological development in China, and to cultural exchange between China and the West.

At the opening ceremony of the archive, Prof. Yang presented the manuscripts of two of his most important papers to Prof. Arthur K.C. Li, vice-chancellor of the University. They were 'Conservation of Isotopic Spin and Isotopic Gauge Invariance' (1954) and 'Question of Parity Conservation in Weak Interactions' (1956). Officiating at the ceremony was also Dr. David Sin Wai-kin, member of the University Council. Prof. Daniel Tsui, Nobel laureate in physics 1998, was among the guests attending the ceremony.

New Scholarship to Oxford

The Esther Yewpick Lee Millennium Scholarship was established in February 2000 to provide CU students with opportunities to further their studies at the University of Oxford. Funded by the estate of Dr. Esther Yewpick Lee, the scholarship scheme marks the Lee family's strong connection with The Chinese University and the University of Oxford and will strengthen the ties between the two universities. Dr. Esther Yewpick Lee's

husband, Dr. R.C. Lee, was an Oxford alumnus and a founding member of The Chinese University who had served as vice-chairman of the University Council for two decades. Her daughter, Dr. Deanna Lee Rudgard, also graduated from Oxford and is a current member of The Chinese University Council.

Attending the foundation ceremony of the scholarship on 28th February were Prof. Arthur K.C. Li, vice-chancellor, and Dr. Deanna Lee Rudgard, representing the Lee family.



New Programmes of Study

The University Senate has approved the introduction of the following academic programmes from end of 1999 to 2001:

- Doctor of Philosophy Programme and Master of Philosophy Programme in Business Administration (School of Hotel Management)
- Minor Programme in Information Technology (Faculty of Engineering)

Self-financed Programmes

- Master of Chinese Medicine Programme
- Master of Science (Chinese Medicine) Programme
- Master of Science Programme in Clinical Gerontology
- Master of Arts Programme in Linguistics
- Master of Arts Programme in Intercultural Studies

- Master of Science Programme in E-Commerce (Business Programme)
- Master of Science Programme in E-Commerce (Technologies Programme)
- Master of Science Programme in Marketing
- Master of Science Programme in New Media
- Master of Business Administration Programme in Finance
- Advanced Postgraduate Diploma Programme in Education
- Postgraduate Diploma Programme in Social Work
- Certificate Programme in Using Putonghua as a Medium of Instruction
- Certificate Programme in Business Communication
- Diploma Programme in Business Communication for Executives
- Certificate Programme in English Writing and IT Skills for the Workplace
- Certificate Programme in English Communication and IT Skills for the Office
- Certificate Programme in Business Communication and Office IT Skills
- Diploma Programme in Business Communication and Office IT Skills for Executives
- Certificate Programme in Computer and Internet Security
- Certificate Programme for Database Administrators
- Certificate Programme for Solution Developers
- Certificate Programme in Web Administration
- Diploma Programme in Chinese Ink Painting
- Diploma Programme in Drama Training for In-Service Teachers
- Diploma Programme in Internet Commercial Applications and Security
- Diploma Programme in Web Administration and Development

School of Continuing Studies Programmes

- Certificate Programme in General Counselling
- Certificate Programme in Professional Accountancy
- Professional Certificate Programme in Disciplinary Forces Administration (Distance Education)
- Professional Diploma Programme in Disciplinary Forces Administration — Human Resources (Distance Education)
- Certificate Programme in Basic Chinese Writing Skills and Putonghua for the Office
- Certificate Programme in Disciplinary Forces/Security Operations (Distance Education)
- Diploma Programme in Chinese Communication in Business and Administration
- Certificate Programme in Basic General English
- Certificate Programme in General English
- Certificate Programme in English Grammar
- Certificate Programme in English Speaking Skills for the Workplace
- Certificate Programme in English Writing Skills for the Workplace
- Certificate Programme in English Communication Skills for the Office

Conferences/Workshops/Seminars

- The 20th Asian Conference on Remote Sensing, 22nd to 25th November 1999, by Joint Laboratory for Geoinformation Science and Chinese Academy of Sciences, on behalf of the Chinese Association for Science and Technology and the Ministry of Science and Technology;
- International Conference on Gendered Mobilities in Asia, 26th and 27th November 1999, by Gender Research Programme of the Hong Kong Institute of Asia-Pacific Studies and International Geographical Union of the Gender and Geography Commission,

- Australia;
- Conference on 'Love, Sexuality, Culture', 1st and 2nd December 1999, by Department of Modern Languages and Intercultural Studies and Office of General Education;
 - Conference on 'Charitable Services and Social Forces in History', 6th to 8th December 1999, by Department of History and New Asia College;
 - International Language in Education Conference 99, 17th to 19th December 1999, by the University;
 - Symposium on 'Cervical Cancer Screening in the New Millennium', 15th January 2000, by Department of Anatomical and Cellular Pathology;
 - Symposium on 'Malaria — Problems and Potential Solutions', 8th February 2000, by Division of Clinical Pharmacology of the Department of Medicine and Therapeutics;
 - International Symposium on Chinese seals, 9th to 11th March 2000, by Art Museum;
 - The 32nd Asia Pacific Academic Consortium for Public Health Conference on Public Health Education in the 21st Century, 22nd to 24th March 2000, sponsored by Chung Chi College;
 - The 17th Meeting of the International Academy of Tumour Marker Oncology and the Fifth Annual Scientific Symposium of the Hong Kong Cancer Institute, 23rd and 24th March 2000, by Department of Clinical Oncology and Department of Biology of the Hong Kong University of Science and Technology.
- and Research Unit of Philosophy and Social Sciences of the University of Paris-Sorbonne (Paris IV) delivered a lecture entitled 'Multiculturalism and Value Relativism' on 7th November 1999.
- Prof. Ian Roger Gough, professor of social policy from the Department of Social and Policy Sciences at the University of Bath in the UK, delivered a lecture entitled 'The Needs of Capital and the Needs of People: Can the Welfare State Reconcile the Two?' on 19th November 1999.
 - Prof. James R. Morrow Jr., professor and chair of the Department of Kinesiology, Health Promotion and Recreation of the University of North Texas in the US, delivered a lecture entitled 'Physical Activity: Increasing Quality of Life Through Lifestyle Behaviours and Preventive Medicine' on 10th March 2000.
 - Prof. Tien Chang-lin, university professor and NEC Distinguished Professor of Engineering at the University of Berkeley, and former chairman of the Chief Executive's Commission on Innovation and Technology of the HKSAR, delivered a lecture on 'The Synergy and Development of Knowledge-based Economy in Greater China' on 21st March 2000.
 - Prof. William David Marslen-Wilson, director of the Cognition and Brain Sciences Unit of the Medical Research Council at Cambridge, delivered a lecture on 'Words in the Mind: A View Across Languages' on 31st March 2000.

Lectures

Wei Lun Lectures

- Prof. John R. Mallea, president emeritus of Brandon University in Canada, delivered a lecture entitled 'Globalization, Trade Liberalization, and Higher Education in North America' on 26th October 1999.
- Prof. Raymond Boudon from the Teaching

Professorial Inaugural Lectures

- Prof. J.A.J.H. Critchley, professor of clinical pharmacology, delivered his inaugural lecture entitled 'Clinical Pharmacologists: The Jacks of All Trades' on 9th November 1999.
- Prof. James Arthur Dickinson, professor of family medicine, delivered his inaugural lecture entitled 'Developing Primary Medical Care in the New Millennium' on 14th January 2000.

Visiting Scholars

- Prof. Robert P.H. Chang, director of the Materials Research Center at Northwestern University in the US, visited Chung Chi College as its Siu Lien Ling Wong Visiting Fellow 1999–2000 from 16th to 28th January 2000. During his visit, Prof. Chang addressed students and staff, and participated in Chung Chi's annual education conference.
- Prof. Elmar Holenstein, professor of philosophy at the Swiss Federal Institute of Technology in Zurich, visited the Department of Philosophy from 8th to 15th February 2000 under the Ming Yu Visiting Scholars Programme of New Asia College. Prof. Holenstein delivered two lectures on 'The Cultural History of Humanity: The Conception of Hegel (1831), of Jaspers (1949), and the Contemporary Conception (2000)' and the philosophical significance of Sigmund Freud.
- Prof. Tom McArthur of Exeter University in the UK visited the University under the 1999–2000 Distinguished Humanities Professorship Scheme and gave a public lecture on 'Describing the World of English' on 18th February 2000.
- Prof. Ferid Murad, 1998 Nobel laureate in physiology and medicine, delivered a lecture entitled 'Cellular Signaling with Nitric Oxide and Cyclic GMP' on 15th March 2000.

CUHK Chapter of Beta Gamma Sigma Installed

The Chinese University of Hong Kong Chapter of Beta Gamma Sigma was installed on 18th March 2000.

Beta Gamma Sigma is an international honour society based in the US that recognizes outstanding academic achievements of students enrolled in collegiate business and management programmes accredited by the American Assembly of Collegiate Schools of



Chapter honorees and officers at the inauguration ceremony

Business — International Association for Management Education (AACSB-IAME). Its mission is to honour academic achievement in the study of business, and personal and professional excellence in the practice of business, to foster an enduring commitment to the principles and values of honour and integrity, to encourage the pursuit of wisdom, earnestness, and lifelong learning, and to support the advancement of business thought. Its current membership of 400,000 comprises the brightest and best of business leaders.

At the installation ceremony of the chapter, Mr. Allen Lee Peng-fei, chairman of Pacific Dimensions Consultants Ltd., and Mr. Gilbert Y. Chow, director of Customer Service for Asia, Northwest Airlines, were made chapter honorees. And Prof. Michael Hui, associate dean (undergraduate studies) of the Faculty of Business Administration, and Ms. Carmen Yip, BBA student at the University, were inducted respectively as president and vice-president of the CUHK Chapter of Beta Gamma Sigma, the first chapter outside North America. A total of 131 student candidates and 13 faculty members were also inducted into its membership.

Centre for the Advancement of E-Commerce Technologies Opens

The Centre for the Advancement of E-Commerce Technologies (AECT) was

officially set up on campus by the Faculty of Engineering on 4th November 1999.

With state-of-the-art facilities and expertise from the Faculty of Engineering, AECT will assume a crucial role in the advancement of e-commerce technologies and applications. It will conduct basic and applied research in major areas of e-commerce technologies, which include the Internet and information systems technologies, and enterprise solutions technologies.

The centre was made possible by the generous sponsorship of various business corporations including Oracle Systems Hong Kong Limited and Sun Microsystems of California Limited.

Medical News

New Treatments

New Achievements in Heart and Lung Surgery

The Faculty of Medicine has pioneered the development of minimal access cardiothoracic surgery which greatly reduces the pain arising from surgery and markedly shortens recovery. It also has a profound effect on healthcare economics by shortening hospital stay and allowing patients to return to work earlier.

The new method allows the operation to be performed through a few small incisions. Major muscles do not need to be cut and ribs not spread. Postoperative pain is substantially less, and patients can go home a few days following surgery.

The Faculty of Medicine has performed over 1,500 minimal invasive thoracic surgical procedures for a variety of chest conditions. These procedures can also be applied in aortic valve replacement, aortic root replacement, and coronary artery bypass grafting.

Pioneering Treatment for Parkinson's Disease

At present there is no cure for Parkinson's

disease. While the majority of patients respond to drug therapy, a significant proportion may suffer from severe side-effects. This latter group may benefit from surgical treatment, which includes destruction of deep brain nuclei by radiosurgery, the implantation of foetal or genetically-engineered neuronal cells into the deep brain nuclei, or deep brain stimulation of the thalamic and subthalamic nuclei.

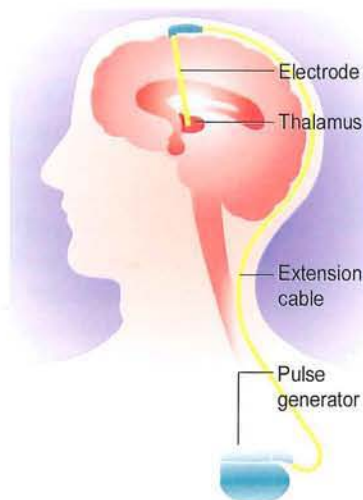
The Faculty of Medicine has been developing the first deep brain stimulation programme in Asia since 1996-97, and by the end of 1999, has implanted the deep brain stimulation system in five patients with good results. Deep brain stimulation has the advantage of not destroying the deep brain nuclei, and avoiding the ethical issues over foetal cell transplantation.

In deep brain stimulation, an electrode connected to a pulse generator is placed inside the brain to stimulate the thalamus and the subthalamus in order to treat tremors, rigidity of limbs, and slowness of movements.

Surgical Advance Brings Hope to the Hearing Impaired

Two ground-breaking Auditory Brainstem Implant (ABI) operations were performed at the Prince of Wales Hospital by the Divisions of Otorhinolaryngology and Neurosurgery of the Department of Surgery to restore hearing in patients with bilateral nerve and sensory deafness.

In October 1999, two young women with tumours on both hearing nerves had their tumours removed and were implanted with 24-



Deep Brain Stimulation System

channel ABI devices — the first time such implantations were conducted in Asia following their successful initial trial in Europe. The devices were switched on in late November. The Prince of Wales Hospital is one of only two centres in Asia capable of performing ABI surgery.

The ABI is a device that is surgically positioned into a patient's brainstem to partially restore hearing. The surgery was performed by ear specialists and neuro-surgeons. The tumour was first removed, then the device was positioned in the brainstem with the help of a sophisticated monitoring system. The implanted electrodes were linked to an external speech processor through an antenna whereby electrically stimulated signals are transmitted to the brain. Intensive monitoring of the patients is essential to the success of the surgery as the brainstem is one of the most important parts of the brain controlling breathing and heart-beat. Programming of the device and rehabilitation of the patients are undertaken by audiologists and speech therapists.

A press conference to introduce ABI surgery



New Research Centres

Centre for Gerontology and Geriatrics

A Centre for Gerontology and Geriatrics was set up at the Prince of Wales Hospital to carry out comprehensive research into the various aspects of the ageing process, the implication of ageing for the Hong Kong population, and



Prof. Jean Woo (left 3), coordinator, and other key members of the centre.

the measures to deal with the consequences. The multidisciplinary centre draws on the expertise of the departments of Medicine and Therapeutics, Community and Family Medicine, Psychiatry, Orthopaedics and Traumatology, Nursing, Sociology, Social Work, and Psychology.

Studies currently being conducted by the centre include chronic disease, functional disability, and their economic consequences for Hong Kong; a longitudinal study of the factors for successful ageing; exercise and health; the psychiatric issues of the elderly; and the training of carers.

Centre for the Study of Cerebrovascular Disease in Chinese

The incidence of stroke in China is higher than in almost any other country in the world, except Russia and Finland. In Hong Kong, over 10,000 people are killed or disabled every year by stroke. Medical research has proven that stroke types among the Chinese are different from those among Westerners.

The Centre for the Study of Cerebrovascular Disease in Chinese was set up by the Department of Medicine and Therapeutics jointly with the Department of Neurology of Peking Union Medical College Hospital and the Institute of Neurology of Shanghai Medical University. The centre will promote the study of the epidemiology and pathophysiology of cerebrovascular diseases in Chinese

communities and conduct clinical studies on their prevention and treatment.

Hong Kong-China Brain Tumour Research Centre

A Hong Kong-China Brain Tumour Research Centre has been set up by the Neurosurgical Unit of the Department of Surgery with an anonymous donation. The centre will be jointly administered by the unit and the Department of Anatomical and Cellular Pathology.

The centre, located at the Prince of Wales Hospital, will capitalize on the clinical and scientific materials and expertise of the University, Tian Tan Hospital in Beijing, and Shanghai Hua Shan Hospital to conduct research focussing on the genetics of brain tumour formation. Knowledge generated from such research will enable early diagnosis and prognosis and the development of technology targeted at genetic changes which will result in malignant tumours.

HK's First Drug Evaluation Lab

The first drug evaluation laboratory in the territory was established by the Department of Pharmacy to carry out safety studies on drug products and to certify drug efficacy. Established with a grant from the Industrial Support Fund, the laboratory will help ensure drug products meet internationally recognized standards of quality and conduct pharmacokinetic studies to gain better knowledge of drug therapy in different diseases.

As the only tertiary institution in Hong Kong with a pharmacy department staffed by experts in all aspects of drug evaluation, the University believes that the Drug Evaluation Laboratory will boost the local pharmaceutical industry by helping them to establish the credibility of their products. It will also help improve patient care in Hong Kong and benefit the development of new drugs from traditional Chinese medicine.

Chinese Opera Information Centre Opens

The Chinese Opera Information Centre, managed by the Cantonese Opera Research Programme of the Department of Music, was officially opened on 1st March 2000. Set up with an allocation of HK\$300,000 from the Hong Kong Arts Development Council, the centre houses a large amount of Chinese opera research materials, most of which are related to Cantonese opera, including musical instruments, programme notes, leaflets, posters, scripts, scores, books, newspaper clippings, videotapes, audio cassette tapes, compact disks, photographs, slides, and artefacts. The centre is initially open to the public by appointment.

China Hope Project Personnel Receive Training on CU Campus

The University's Department of Social Work offered an intensive professional training course to senior executives of the China Hope Project from March to April 2000. The first of its kind for social work personnel from mainland China, the course was jointly organized with the China Youth Development Foundation and was sponsored by The Asia Foundation.



There were lectures, agency visits, and field placements, through which senior administrators of the China Hope Project may acquire knowledge and skills in welfare service management and the administration of charitable organizations.

The China Hope Project has since 1989 built over 7,000 primary schools on the mainland and helped more than two million school-aged children resume their studies.

First APEC Study Centre in HKSAR Set Up at CUHK

The first official APEC Study Centre of the HKSAR was established at the Institute of Asia-Pacific Studies (HKIAPS) in early November 1999. Prof. Yeung Yue-man, director of HKIAPS, was appointed the chief coordinator of the new centre.

Through the centre the University will help strengthen the international consortium of APEC study centres in the Asia-Pacific region and foster research collaboration between institutions of higher learning in Hong Kong and the Asia-Pacific region.

The centre will also help the HKSAR government conduct studies and research on areas that may facilitate Hong Kong's socio-economic linkage with other APEC economies, participate in activities organized by the international APEC Study Centre consortium, initiate local research, engage in joint projects of a sub-regional nature, and serve as an information and resource centre for scholars, policy makers, and the general public.

Art Museum Exhibitions

- Sparkling Splendours — The Art of Ancient Chinese Carvings on Rock Crystal and Agate (The Taoshi Zhai Collection) took place at the East Wing Galleries of the Art

Museum from 22nd January to 26th March 2000.

Over 200 pieces of rock crystals and agates from the Neolithic period to the Ming dynasty, all from the Taoshi Zhai Collection, were featured in the exhibition.



Rock crystal belt hook, Western Han (206 BC–AD 8)



Rock crystal and agate jewellery, Warring States period (475 BC–221 BC)

- The Art of Chinese Seals Through the Ages Exhibition ran from 10th March to 7th May 2000 at the West Wing Galleries of the Art Museum, with the Zhejiang Provincial Museum in Hangzhou as co-organizer.



Shoushan stone seal carved by Zhao Zhiqian (1829–1884)

Exhibits in this exhibition date from the Warring States period (475 BC–221 BC) to the Qing Dynasty (1644–1911), and include official seals, private seals, pictographic seals, and signature seals. ☞



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