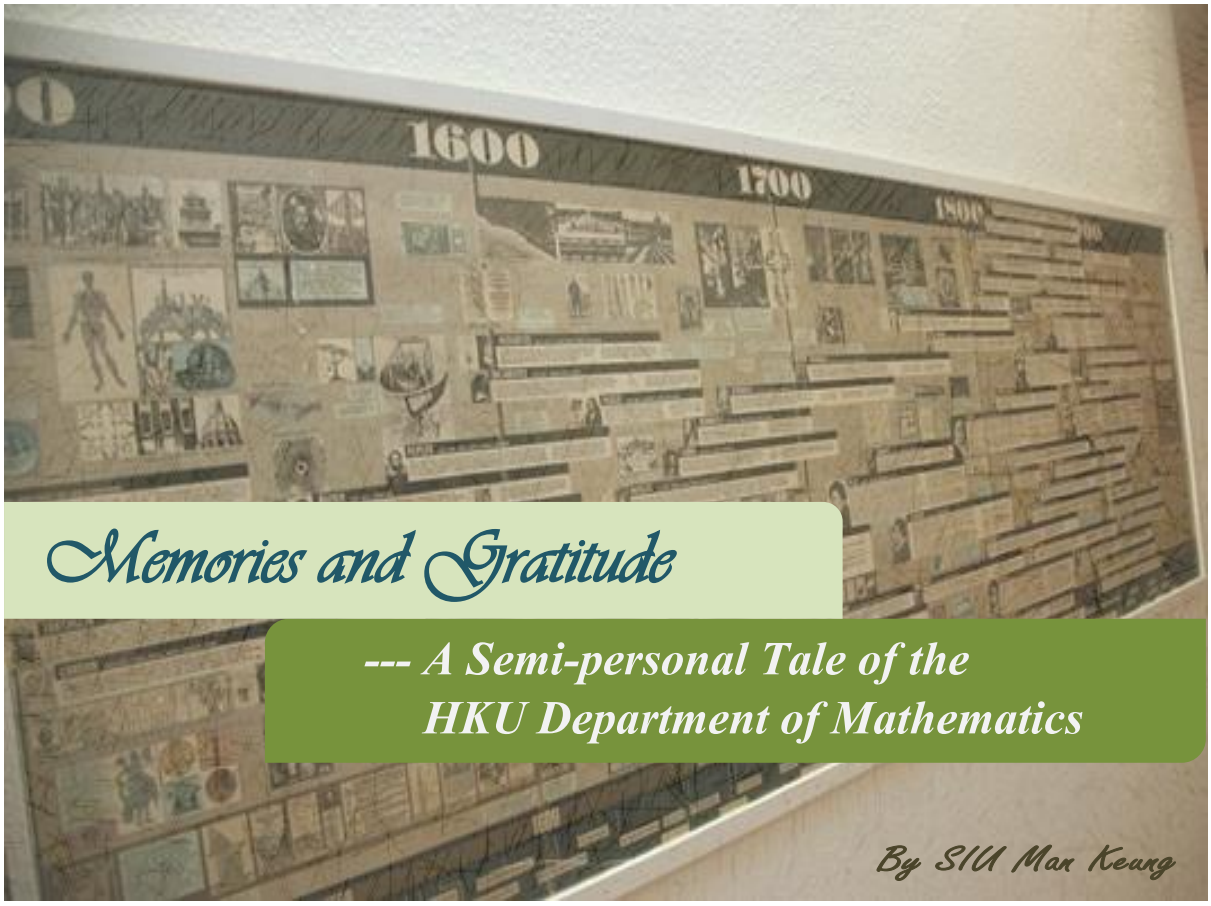

Contents

[This is only the first instalment with four sections. Three more sections in preparation are to follow. It should be a good idea to incorporate relevant photos at suitable spots, a project somebody would need to invest the time to select from a large collection kept (hopefully still kept) by the Department in the Store Room.]

Preamble

This is not to be taken as an official history of the HKU Department of Mathematics. Lacking a professional training of a historian I am not capable of compiling one. This is to be taken rather as a semi-personal tale of the HKU Department of Mathematics in the past ten decades since its beginning. As an undergraduate student of the Department (1963-1967), a teacher of the Department (1975-2005) and an Honorary Professor of the Department after retirement in June of 2005, I try to tell this tale of the Department as I see it in order to leave an anecdotal account in print of the effort and the accomplishment of our graduates and colleagues throughout these many years, as well as to record my indebtedness to the Department for my initial nurture as a mathematician and mathematics teacher.

Thanks to the staff of the HKU Library and the HKU Archives (Gayle Chan, Stacey Lee, Anna McCormick, Hemans Cheng) I spent many enjoyable afternoons in the Library going through boxes of old publications (*University of Hong Kong Calendars*, *Annual Reports*) and correspondence/papers of the late Professor Y. C. Wong. There are a lot more archive materials I wish to go through but do not have sufficient time and leisure for the moment to pursue. One advantage of having this tale put up as online reading on the website of the Department is to allow possible revision/amendment later.

Several books on the long history of HKU written with extensive and careful research are of tremendous help in understanding the general context:

- Brian Harrison (ed.) *University of Hong Kong*: *The First 50 Years 1911-1961*, HKU Press, 1962.
- Bernard Mellor, *The University of Hong Kong*: *An Informal History*, *Volume 1 & 2*, HKU Press, 1980.
- Peter Cunich, *A History of the University of Hong Kong, Volume 1, 1911-1945*, HKU Press, 2012.

In addition I benefit much from reading an article written by a former colleague in Physics on the occasion of the 50th anniversary of the HKU Faculty of Science:

P.K. MacKeown, The Science Faculty 1939-1989, in *Science: A Celebration of 50 Years*, Faculty of Science, Hong Kong University, 1989.

Readers will find the attention paid to different parts of the account uneven, going into certain parts at some length sprinkled with illustrative anecdotal tidbits here and there, while giving a more or less plain chronological record of events in other parts. This explains why the term "semi-personal" is added in the title, not without grounds. In particular, I beg the readers' indulgence in allowing me to spend more time in the fourth section, which will be about an era that included my undergraduate years.

Usually a history of an institution will be accompanied by a list of accomplished members or graduates. Readers will find no such list in this tale, not because there are no such members but because of the following three reasons. First of all, without an exhaustive search my personal account may not do justice to all of those who deserve mentioning. Secondly, this kind of exhibition of a "league table mentality" is not quite to my liking. Thirdly, what is to be termed achievement is rather subjective: some may refer to achievement in the academic community, some in the educational sector, some in the political arena, and some in entrepreneurship. It is gratifying to say that examples in all these aspects are in no dearth among graduates of the HKU Department of Mathematics. Readers will spot the accomplishments of some graduates here and there as illustrative examples in context. Maybe these will inspire personal memoirs from others telling how the Department has contributed to their upbringing and growth, which would

provide some additional interesting and worthwhile online reading. Whenever a graduate of the Department is referred to, the degree and year of graduation (to the best of our knowledge) will be put in parentheses.

This is a right place to recognize the many unsung heroes among the graduates of the Department, namely, the numerous local school teachers nurturing the next generation. The Department is for long held in high regard for its commitment in teaching by its many graduates who become school teachers so that a strong network with a congenial cooperative working relation exists, thus forming a bridge between the Department and the local school community. This is further buttressed by mathematics-related public events organized by the Department for school pupils and teachers, including in particular a series of annual public lectures in mathematics known as "數趣漫話" which has been running from 1994 to this date. In this way the Department continues to contribute to the long term enrichment in local mathematics education with a work force of dedicated school teachers.

The Beginning Years: 1912 - 1945

Formal establishment of the Department of Mathematics began with the founding of the Faculty of Science in 1939. However, the history of the Department should be dated from the very early years when the University was founded.

Towards the latter part of the 19th century China faced what a leading Chinese statesman and diplomat of the late Qing Empire, Li Hong-zhang [李鴻章], described as "an unprecedented great change in more than three thousand years of history [三千餘年一大變局]". Foreign powers were naturally interested in securing strong footholds in education in China amidst the imminent changes in that era, in particular in higher education that would produce future leaders in the Chinese community. The idea of establishing a university in the British colony Hong Kong modelled on the new civic British universities was in the air

since the beginning of the 20th century. The University Committee was formed in 1908 under the strong promotion by the newly arrived Governor of Hong Kong, Sir Frederick Lugard.

In the summer of 1909 the University Committee resolved "that the first two Faculties or Chairs established at the University shall be Medicine and Engineering, and that so soon as the funds of the University admit of the establishment of a Chair or Faculty preference shall be given to an Arts Course; and that in this course due provision shall be made to enable Chinese students to maintain and improve their knowledge of the Chinese language and of the literature of China".

The foundation stone of the new building of the University was laid on 16 March 1911 by Sir Frederick Lugard. The University Bill was passed in the Legislative Council to become officially the University Ordinance on 30 March 1911, and the University opened on 11 March 1912. Its illustrious predecessor was the Hong Kong College of Medicine (originally named the Hong Kong College of Medicine for Chinese, established under the leadership of Dr. Patrick Manson in October of 1887, which in turn grew out of the Taipingshan Dispensary for treatment of the poorer Chinese that was started by William Young in association with the London Missionary Society in 1881). The first batch of two graduates of this Hong Kong College of Medicine in 1892 included Dr. Sun Yat-sen (孫逸仙/孫中山), the founding father of the Chinese Republic that was established in 1911.

When the Hong Kong University opened in 1912 there were only two Faculties, Faculty of Medicine and Faculty of Engineering, soon to be joined in 1913 by a third one, Faculty of Arts. The Faculty of Engineering comprised the following subjects: Mathematics, Pure and Applied; Physics; Chemistry; Civil Engineering; Mechanical Engineering; Electrical Engineering. Mathematics was taught in the first two years, with 7 hours per week in the First Year and 3 hours (later added to 5 hours) per week in the Second Year. Mathematics, Chemistry and Physics were included in the programmes offered in the Faculty of Arts with an aim of producing the much needed teachers in science. The curriculum in mathematics in the Faculty of Arts was the same as that in Faculty of Engineering in the First Year and the Second Year, with a series of lectures in the Third Year

and the Fourth Year given by the Professor of Mathematics. It was recorded in the *Calendar* of 1915-1916 that the Professor of Mathematics delivered about 120 lectures in Pure Mathematics in the First Year and about 100 lectures in Pure Mathematics in the Second Year, and about 90 lectures in Applied Mathematics.

By the end of 1913 the Irish mathematician and engineer Dr. T. Stuart came as Lecturer on Mathematics, promoted to Professor of Mathematics in the next year. In 1914 the Scottish mathematician and engineer Walter Brown (1886-1957) joined the Faculty of Engineering as Lecturer on Hydraulics and later, as Lecturer on Civil and Mechanical Engineering. He was promoted to Professor of Mathematics in 1918 to succeed T. Stuart, a post Professor Brown held until his retirement in 1946. As far as what was recorded in the *Calendars*, there was only one teacher in mathematics until Mrs. Jeanne Faid was appointed in 1935 as Lecturer on Mathematics in the Faculty of Engineering, also as a part-time staff in the Faculty of Arts. Mrs. Faid was the wife of Professor William Faid, the Professor of Physics since 1925, who sadly died of injury sustained after a fall from the roof while repairing a leak in the Stanley Internment Camp in 1944 during Japanese occupation of the colony. Professor Faid was much mourned as an "outstanding example of courage and fortitude" and had helped many internees during those difficult times. His widow resumed the post of Lecturer on Mathematics after the War when the University re-opened in 1946 and continued to serve until her retirement in 1950.

Not much is known about Professor Stuart, who taught mathematics in HKU for five years. According to the *University Magazine* of those days, Professor Stuart was in good rapport with students, and joined them in billiard matches in the evenings. It was also reported that he usually defeated all challenges, apparently making use of his knowledge of Euclidean geometry to achieve this feat!

Professor Brown graduated with two Bachelor degrees from Glasgow University, a B.Sc. (Hons) in Mathematics and Physics in 1907 and a B.Sc. in Pure Science in 1910. He also had a Master degree and was elected to the Royal Society of Edinburgh in 1923. During his stay in Hong Kong he was active in a number of organizations. He served as the

President of the Hong Kong Philharmonic Society and was a member of the Hong Kong Sino-British Association. He was seconded from 1928 to 1934 to organize the curricula of the new Technical Institute in Shanghai, which was founded to "primarily set up for the instruction of artisans". (It baffles me how the University managed with the teaching of mathematics during those five years, as Professor Brown was then the only teacher in mathematics.) Professor Brown played an important role in establishing the Faculty of Science in 1939, a fourth Faculty that formed a home for the teaching of mathematics, chemistry, physics and the newly added subject of biology. He took up the post of Dean of Science from October 1939 to December of 1941. Before that he was Dean of Engineering in 1923 and also Dean of Arts in 1921-1922, 1924 and 1936-1939.

As a member of the Royal Naval Volunteer Reserve, Professor Brown was assigned to mine-watching duties in 1941. After the fall of Hong Kong to the Japanese invasion he was captured and put in the Stanley Internment Camp from 1942 to 1945, in which he participated in giving adult education lectures and looking to the medical needs of those interned. He survived the internment but did not resume his post after the War, remaining Professor *emeritus* while going back to Scotland to work as Lecturer on Civil and Mechanical Engineering at the Royal Technical College in Glasgow in 1946-47, and as Lecturer on Mathematics at Glasgow University in 1947-48. He took a real retirement after 1948 and travelled extensively. He passed away on a tour to South Africa and Rhodesia (now Zimbabwe) in April of 1957.

As a tribute to the long and dedicated service of Professor Brown to HKU in general and to the Department of Mathematics in particular the Walter Brown Memorial Prizes were established in 1957 and the awards started in the next year. From thence to this date a Junior Prize is awarded to the student with the best performance in mathematics in the First Year examination in the three Faculties of Arts, Engineering and Science, and a Senior Prize is awarded to the student with the best performance in mathematics in the Final Year examination in the same three Faculties. During the first decade when the prizes were established the Junior Prize was not awarded based on performance in the final examination and not awarded separately in each of the three Faculties, but was awarded to the best performer from among a batch of selected

candidates from all three Faculties who were invited to take a special examination held in the summer vacation, a tradition that was no longer practised since the early 1970s. Because the syllabi of the curriculum in the three Faculties might differ, this special examination was set not so much on specific topics learnt in the First Year courses than on problems requiring mathematical thinking. For instance, in my First Year I was fortunate to be among the batch of selected candidates with four other classmates in Science, two in Engineering and one in Arts. It was the one single examination which I can truly say that I enjoyed working on, because there is absolutely no pressure at all without any stake, and no preparation is needed beforehand as there is no assigned topic to do any revision on! I still recall vividly one of the problems, actually a simplified version of the so-called Frobenius' Coin Problem or Postage Stamp Problem (known to me only many years later) in which one was asked to find the largest postage that cannot be paid with 3-cent and 5-cent stamps. Eleven years later the problem motivated me to write a short paper jointly with my classmate William Y. Sit (Sit Yu 薛瑀 B.A. 1967) that was published in the *Mathematics Magazine* [W.Y. Sit, M.K. Siu, On the sub-semigroups of $\mathcal{N}$, *Mathematics Magazine*, **48** (1975), 225-227].

From the very beginning of the establishment of this new University in the colony the academic objective was to provide instruction that would be equal to that obtainable in British Universities, so its matriculation and degree examinations would have to be maintained at a standard equal to that of British Universities. We can take a glimpse of the mathematics curriculum in those early days by looking at a list of textbooks adopted at the time. In the volumes of *Calendar* of the mid-1910s we read a list comprising Hall and Knight: *Higher Algebra*, Edwards: *Differential and Integral Calculus for Beginners* (later replaced by Blaine: *Calculus*), Smith: *Conic Sections*, Lamb: *Statics*, Greaves: *Hydrostatics* (later removed), Mann: *Practical Mathematics*, and Loney: *Dynamics*. In the Faculty of Arts, in addition to these books the following were added, Hall and Stevens: *Geometry*, Hobson and Jessop: *Elementary Trigonometry*, Loney: *Elements of Statics*, and Loney: *Elements of Dynamics*.

Towards the end of the 1910s we read in the *Calendar* of 1918-1919 a more comprehensive description of the curriculum divided into

several areas. For the Intermediate Examination Part I, the areas were (1) Pure Geometry (Euclid Books I-VI and XI with modern development) with textbook by Hall and Stevens: *School Geometry*, *I – VI*, (2) Co-ordinate Geometry with textbook by Briggs and Bryan: *Co-ordinate Geometry: The Right Line and Circle*, (3) Algebra with textbook by Briggs and Bryan: *Tutorial Algebra (Advanced Course)*, (4) Trigonometry with textbook by Borchardt and Perrott: *New Trigonometry for Schools*, (5) Applied Mathematics with textbooks by Loney: *Elements of Statics* and *Elements of Dynamics*. For the Intermediate Examination Part II, the areas were (1) Algebra with textbook by Hall and Knight: *Higher Algebra*, (2) Trigonometry with textbook by Loney: *Plane Trigonometry (Part II)*, (3) Co-ordinate Geometry with textbook by Grace and Rosenberg: *Co-ordinate Geometry*, *the Conics*, (4) Differential and Integral Calculus with textbook by Lamb: *Infinitesimal Calculus*, (5) Applied Mathematics with textbook by Prescott: *Mechanics of Particles and Rigid Bodies*. In 1925 a textbook on statistics was added, Bowley: *Elementary Manual of Statistics*, *Volume I*. In 1928 the textbook for Calculus became Osborne: *Differential and Integral Calculus*, and in Applied Mathematics there were added the textbooks by Norris and Legge: *Mechanics via the Calculus*, and by Duncan and Starling: *A Textbook of Physics*.

Post-war Rehabilitation: 1946 – 1950

During the tormented years of war and civic disorder, HKU was forced to be dispersed into four parts: a prisoner-of-war camp in Sham Shui Po on the Kowloon Peninsula, the University estate in Pokfulam, the internment camp in Stanley and the vast unoccupied “free” China. In the Stanley Internment Camp, where most of the senior expatriate HKU staff were located, secret Senate Meetings were held several times. Plans for future development after the War were discussed in earnest, with minutes typed on scraps of whatever available paper, including used cigarette wrappers! Even if this was an attempt by Duncan John Sloss (Vice-Chancellor of HKU from 1937 to 1949) to raise the morale of the interned HKU staff to fight off despair, these development plans did exert important influence on the post-war planning.

When the University re-opened for classes in October of 1946 none of the four Heads of Department in the Faculty of Science continued on with the Faculty. Professor William Faid of Physics and Professor George T. Byrne of Chemistry died in the Stanley Internment Camp in 1944; Professor Walter Brown of Mathematics retired and went back to Scotland; Dr. Geoffrey A. C. Herklots of Biology was appointed by the Hong Kong Government as the Secretary of Development for more urgent tasks in fisheries and agriculture. The dedicated effort of Mrs. Faid was instrumental in holding up the Department of Mathematics for two years until she was joined in 1948 by Professor Y. C. Wong [Wong Yung Chow 黃用諏 1913-2004]. Y. C. Wong was Professor of Mathematics in Sun Yat-sen University (Zhongzhan University) in Canton (Guangzhou) before being appointed as Chair of Mathematics in August of 1948 to succeed Professor Walter Brown.

According to the *Annual Report*, the number of enrollment in Pure and Applied Mathematics in 1946-1947 was as shown below:

	Pure Maths	Applied Maths
Faculty of Engineering	10	10
Faculty of Science	8	-
Faculty of Arts	2	-
External	3	-
Total	23	10

Despite the inadequate supply of books (none in Applied Mathematics and only a few in Pure Mathematics from pre-war stock in the HKU Bookstore) and the temporary location of the Department on the top floor of the School of Surgery (a building demolished since the late 1970s to make way for the Haking Wong Engineering Building), students on the whole performed above average.

Y. C. Wong obtained his B.Sc. from Sun Yat-sen University in 1935 and was already recognized with high acclaim as an undergraduate who assisted his professors in classes. In 1938, because Guangzhou frequently came under air raids by Japanese bombers, HKU was chosen as a venue for the Chinese Government to hold a national examination in the selection of Sino-British Boxer Indemnity Scholars. In that year Y. C. Wong came to HKU to compete in the examination and was selected as one of only twenty-one candidates to go to Britain for doctoral study. As he and the other successful candidates stopped over Hong Kong on their way to Britain for further postgraduate study in September of 1938, they were treated to tea by the then HKU Vice-Chancellor Duncan Sloss. It was quite an amusing coincidence to note that ten years later the same Vice-Chancellor again treated Y. C. Wong to tea as the appointed Chair of Mathematics!

In the correspondence of Professor Wong I read one letter dated 26 July 1948 addressed to Mrs. Faid:

"I wish to thank you for that delightful evening of the 19th. You kindly described to me in detail what you did during the last two years, and gave me the impression that the students who took mathematics were in the hands of a most capable teacher."

He continued to make some helpful suggestions after studying carefully the syllabi and the examination papers in a polite and modest way by saying, "I can find no room for improvement on them, except perhaps two minor points that we discussed on the 19th." The first point was about teaching more calculus so that in the teaching of Applied Mathematics calculus could be made use of as early as possible. The second point was about spending less time on "undue emphasis" on line and circle in the First Year Co-ordinate Geometry with more than 130 pages in the adopted textbook, and instead adopting a better book by Grace and Rosenberg for both the First as well as Second Year Geometry. Finally he discussed with Mrs. Faid about the way of sharing the teaching between the two of them. From this letter we can see how serious Professor Wong was in taking up the task of providing a good education in mathematics for the undergraduates of HKU.

I read in another letter by Professor Wong dated 12 April 1948 addressed to Duncan Sloss, actually a letter of application for the Chair of Mathematics, in which he stated what today would be called by the worn-out term of "vision and missions":

"You may wonder why I wish to join the staff of your university. Your university, in the words of His Excellency the Governor, "in its undergraduate teaching and examining, had successfully maintained British standards, but it had never been in a position to do what ought to have been done in research." No doubt, your university will someday become one of the finest universities in the Far East, famous for its research as well as for its undergraduate training. I find no better place than your university to carry out what I have always wanted to do, that is: to be able to devote my time, without any distractions, to doing research work and to educating young and capable students. I am sure that, if and when I have the privilege of joining the staff of your university, you will find my service valuable."

It turned out to be a blessing for HKU to have attracted somebody like Professor Y. C. Wong to lead the Department at this juncture. What was referred to in the letter mildly as "distraction" was the difficult situation most Chinese were experiencing in the late-1940s on the eve of a great change in mainland China. With inadequate salary and rampant inflation coupled with uncertainty of the political situation life was hard for an academic in China like Professor Wong, who returned home in October of 1947 after spending nine years of study and work in Britain and in the United States, not being able to come back because of the Second World War.

When Professor Wong arrived in Hong Kong to take up the Chair of Mathematics he found only two journals in the Library, *Mathematical Gazette* and *Proceedings of Edinburgh Mathematical Society*. The textbook situation was still a big problem with First Year Applied Mathematics students having to share one book between two. Fifty-one volumes of textbooks were ordered in January of 1949, but only one of these arrived by June of 1949! In the *Annual Report* of 1948-1949 we read that:

“On request from the Department [of Mathematics] the General Library subscribed to 22 journals of mathematics, of which 11 had begun to arrive by June 1949. These journals will be extremely valuable to anyone reading mathematics for keeping up with the new trends and developments in the field of mathematics.”

The number of enrollment in Pure and Applied Mathematics in 1948-1949 was as shown below:

	Pure Maths			Applied Maths	
	Year 1	Year 2	Year 3	Year 1	Year 2
Faculty of Engineering	24	14	-	42	14
Faculty of Science	11	5	5	11	10
Faculty of Arts	3	-	-	-	-
Total	56	19	5	53	24

In 1949 Mr. C. S. Hui [Hui Che Shing 許志誠 B.Sc.Eng. 1937], a HKU Engineering graduate who obtained an M.Sc. from Harvard University, joined the Department as a Tutor, and in June of 1950 Mrs. Faid retired. Professor Wong succeeded in having HK$22,500 earmarked by the Senate for securing some of the most important back numbers of mathematical journals. He explained this decision in the *Annual Report* of 1949-1950: “Lack of back numbers of mathematical journals was one of the many factors seriously handicapping more fruitful research in mathematics by members of the staff of the Department.” Intensive research on theory of surfaces in Euclidean 4-space was reported in the same *Annual Report*, which was the first time, since the establishment of the academic unit nearly forty years ago, research output from the Department of Mathematics appeared. With this auspicious and encouraging start the Department was ready to enter a new phase of development.

The Next Two Decades of Development: 1950 – 1970

In the *Annual Report* of 1950-1952 Professor Wong stated in print his vision of the Department: "A strong Mathematics Department cannot be built up without an adequate collection of mathematical journals in the library and a group of capable mathematicians on the staff. The arrival of some carefully chosen runs of back numbers of the more important mathematical journals, bought with the special grant, provides some facilities for research; the appointment of Dr. K. T. Chen as Lecturer added new blood to the staff. But there are still vacant posts to be filled. It is hoped that the day will not be far off when the Department is sufficiently staffed to provide satisfactory teaching and to carry our more ambitious programmes of research."

When Professor Wong first came to take up the Chair of Mathematics, he already sought advice from his mentors about making improvement on the curriculum of the Department of Mathematics. In a letter dated 5 October 1948 to Professor Davies, his thesis advisor at London University, he wrote, "Finding that the syllabi for undergraduate mathematics unsatisfactory and the textbooks used out–of-date, I am thinking of making some changes. Of course, this cannot be done wisely without first finding out the opinions of the professors of mathematics in the universities in England about this matter. Therefore, I should appreciate it very much if you would kindly give me the detailed syllabi for the courses in mathematics (both pure and applied) in your university and the names of textbooks used for each of the courses. Any other advice and suggestion from you or your colleagues will be greatly appreciated." During his five years at the United States before returning to China in October of 1947 Professor Wong got acquainted with a number of senior mathematicians at Princeton University, Massachusetts Institute of Technology and the University of Pennsylvania. He made similar requests to them too.

To these ends, Examples Classes, in which homework assignment problems were discussed, were strengthened in 1950 to help students have a better grasp of the topics learnt. A tutorial system for all students taking mathematics was introduced in 1953. Once a week small groups of three or four students met for one class time with an assigned Lecturer or

Tutor to discuss any learning difficulty or hard problems the students might come across in their study. Even questions involving mathematics not necessarily taught in the courses were encouraged. In 1954 Professor Wong introduced into the University the system of External Examiner in order to maintain a higher standard of the teaching programme. The syllabi and examination papers were submitted to the External Examiner for comments and advice instead of to the Education Department of the Hong Kong Government as in the former practice. Professor E. T. Davies, the thesis advisor of Professor Wong, served as the first External Examiner.

By 1950 the staff consisted of five members. Dr. K. T. Chen [Chen Kuo Tsai 陳國才], who obtained a Ph.D. from Columbia University in 1950 and spent one year as an Instructor at Princeton University, joined the Department as a Lecturer in 1952. At the same time Mr. G. Tsiang with an M.A. from Edinburgh University joined as a Lecturer (part-time), but left the next year. Other than C. S. Hui there was one more Tutor, Mr. S. T. Tsou [Tsou Shou Town 周紹棠], who obtained a B.Sc. from Sun Yat-sen University.

In the first year of teaching at HKU Dr. K. T. Chen, who was better known to his students as Chester Chen, had in his class a charming Second Year female student, Julia T. Y. Fong [Fong Tse Yee 方資嫻 B.Sc. 1955], who became his wife the next year. It was written in a biography by Chen's doctoral students in 2000 that "[H]is very strict sense of duty did not allow him to give his preferred student special help, which occasionally made her very mad at him"! K. T. Chen left HKU in 1958 and went on with a very accomplished academic life, settling down as a Professor in the University of Illinois in 1967 after some short teaching years at the *Instituto Technologico de Aeronautica* in Brazil, Rutgers University and the State University of New York in Buffalo in the United States, and remained in that post until his passing in 1987. K. T. Chen is best known to the mathematical community for his work on iterated integrals and power series connections in conjunction with his research on the cohomology of loop spaces.

Two new members joined the Department in 1953; Dr. K. V. Leung who obtained an *Ingenieur-Docteur* from the University of Paris was appointed Lecturer; Miss Doris L. C. Kwok [Kwok Lai Chue 郭麗珠] with a

B.Sc. from Sun Yat-Sen University and an M.Sc. from London University was appointed Assistant Lecturer. Doris Kwok became Dr. Doris L. C. Chen in 1956 when she got married to Mr. S. L. Chen [Chen Shou Lum 陳壽霖]. She was awarded a doctorate by London University in the same year, becoming the first woman in Hong Kong to hold a doctorate in mathematics. In 1955 Mr. W. F. Maunder, after obtaining a B.Sc. in Economics from London University (and awarded the Ph.D. degree the following year), was appointed Lecturer and specialized in statistical mathematics. Mr. K. C. Cheng was appointed as a Tutor in the same year but left after one year. After S.T. Tsou was awarded a Ph.D. by the University of Liverpool in 1956, he was promoted to Assistant Lecturer, then Lecturer, but resigned in September of 1963 to take up a Senior Lectureship at the newly founded Chinese University of Hong Kong, while still serving as a Part-time Lecturer at HKU for the year 1963-1964. He became an instrumental figure in building up the Department of Mathematics of the CUHK in its early days.

Another instrumental figure in the founding of the Chinese University of Hong Kong was Professor Y. C. Wong, who served for many years as the Chairman on the Post-secondary Grant Colleges Joint Diploma Board, and saw to it that time was ripe for the three colleges — Chung Chi College, New Asia College and United College — to combine as the second university in the colony. Professor Wong became a Council Member of the newly established Chinese University of Hong Kong and served in that capacity from 1964 to 1991. It was widely rumoured at the time that he was a candidate for the Vice-Chancellor of the new University to take the helm. It was the fortune of the Department that this did not turn out to be the case!

In 1956 the first graduate in the (four-year) Honours Course of Mathematics, Mr. H. M. Chan [Chan Hong Mo 陳匡武 B.Sc. 1954, B.Sc. (Hons) 1955], was appointed Temporary Tutor. H. M. Chan soon left for doctoral study and after earning a Ph.D. from the University of Birmingham returned to serve as an Assistant Lecturer from 1960 to 1962. He left the Department in 1962 and went to Britain to lead a successful academic career. His wife S. T. Tsou [Tsou Sheung Tsun 周尚真 B.Sc. 1964], a daughter of S.T. Tsou with the same initials as her father, also

leads a successful academic life in Britain, working in the same area of mathematical physics as her husband.

The stories of Dr. S. T. Tsou, Dr. D. Chen (née Kwok) and Dr. H. M. Chan shared a common feature. They were all at the time junior members on the teaching staff, starting as young graduates working in the Department as Tutors. Then, under the encouragement, support and good advice from Professor Wong, they continued to pursue a higher degree in mathematics and returned to the Department as teachers. From its very early days the Department amply and genuinely implemented what in today's parlance might be called "staff professional development". In fact, several more colleagues from the mid-1960s to the 1970s progressed on a similar path as this practice was quite common in the Department. Among them were Mr. Y. H. Au-Yeung [Au-Yeung Yik Hoi 歐陽亦藹 M.Sc. 1966, Ph.D. 1970] and Mr. Y. M. Wong [Wong Yim Ming 黃炎明 M.Sc. 1966, Ph.D. 1970]. Both joined the Department in 1962 with a B.Sc. from the Sun Yat-sen University, and while working as Demonstrators both studied under the joint supervision of Professor Y. C. Wong and Dr. K. T. Leung [Leung Kam Tim 梁鑑添] for their doctoral degrees and became Lecturers in 1967. Y. H. Au-Yeung was promoted to Senior Lecturer, then Reader, in the 1980s.

Mr. C. P. Chang [Chang Chao Ping 張潮彬], who obtained a B.Sc. from St. John's University in Shanghai and joined the Department as a Tutor (Temporary) in 1957, wrote later, "I joined the department as a Tutor in 1957. During the time I received immense help, both academic and personal, from Professor Wong, which enabled me to pursue postgraduate study in the United States two years later." He went to study at Chicago University, earned his M.Sc. and Ph.D. and returned to the Department first as an Assistant Lecturer in 1964, and then as a Lecturer in 1966.

Mr. M. C. Liu [Liu Ming Chit 廖明哲 B.Sc. (Special) 1966, M.Sc. 1971, Ph.D. 1974] joined the Department as a Demonstrator in 1966 and studied under the supervision of Professor Y. M. Chen of the Department for his doctoral degree. M. C. Liu was appointed Assistant Lecturer after obtaining his M.Sc., then became a Lecturer in 1973 and rose through the ranks to a Reader in 1982 and took up a Personal Chair in 1992. On the

occasion of a symposium held to celebrate the 90th birthday of Professor Y. C. Wong on 31 May 2003 he sent a note (from Los Angles where he stays after retirement) that said, “What a special occasion and opportunity for me to express my deep appreciation to Professor Y. C. Wong. It was an afternoon in June 38 years ago when Professor Wong, then Head of the Department of Mathematics, interviewed and later admitted me to be a B.Sc. (Special) student in HKU. Since then, my life has changed. I have had the most enjoyable, fulfilling 35 years of academic life in the University of Hong Kong. Professor Wong is always there to support me, to provide me with academic freedom and independence. He has greatly, positively influenced my life. I am thankful for this opportunity to express my gratitude.”

Another graduate and my old friend and classmate, T. L. Lai [Lai Tze Leung 黎子良 B.A. 1967], sent a note on the same occasion that said, “I must thank Professor Wong for preparing me for my academic career during my three undergraduate years at HKU and the fourth year in the department as a demonstrator. The pro-seminar course which he introduced to the programme and which he attended every time was really great training and eye-opening for a novice like me in those days. It also gave me an early head-start in giving lectures and “thinking on my feet” when asked by him (who always had incisive comments and good advice) and other members of the audience. When I look back on my career, I feel extremely fortunate in having several great teachers and mentors, and Professor Wong is one of them. In fact I never thought of going into academia when I received my B.A. from HKU, but Professor Wong changed my mind as he offered me a demonstrator position in the department and encouraged me to pursue advanced studies. Through him I saw happiness and excitement in a career in teaching and research.” With this fortuitous turn of events T. L. Lai, who originally considered becoming a civil servant after graduation, went on to earn his Ph.D. at Columbia University in 1971 and spent the next sixteen years as a faculty there in the Department of Statistics before moving to Stanford University. He has been a professor in Stanford University since 1987, and is a giant in mathematical statistics with diverse contributions in medicine and finance and many other related fields. He was elected in 1994 as a member of the Academia Sinica in Taiwan.

More new faces appeared in the Department after 1956. Mr. A. D. Tso with a B.Sc. and M.Sc. from St. John's University in Shanghai was appointed Assistant Lecturer (Temporary) and C. P. Chang, whom we have referred to in the paragraph above, came as a Tutor from the same school. Mr. Y. M. Chen [Chen Yung Ming 陳永明] with a BSc from Chiao-Tung University in Shanghai came from Singapore and joined as a Tutor in 1959. Y.M. Chen, affectionately known by the name of "Chubby Chen [肥陳]" was a jovial and likable member who added much colour to the Department. He was a mathematician very dedicated to his research and more or less studied on his own after getting his first degree. He was known to have the habit of studying outdoor under a tree rather than between four walls in an office. He once told me how he learnt to read Russian all by himself by taking a short but very intensive "Blitzkrieg" of self-study, spending several occupied mornings in the attic of a quiet Hong-Kong-style restaurant (now known as a "cha chan tang [茶餐廳] ", then as a "bing sut [冰室] ") in Tai Po where he resided in. (He generously gave me the copy of the book he learnt Russian from!) He was well-known to be an outdoor swimmer who swam everyday throughout the year irrespective of the weather condition. The story went that a colleague at the Department, with the best intention, tried to arrange for him to get acquainted with a young lady. The first act of dating Y. M. Chen did was, naturally enough, an invitation to go together for a morning swim in the sea on a freezing winter day! One can imagine the consequence, so "Chubby Chen" remained single all his life, devoting all his time to doing mathematics and taking care of his aging mother. Another story may demonstrate his likable naivety. By ingenious means the resourceful Technician of the Department, Mr. K. W. Ho [Ho Kwok Wah 何國華], put together a self-made copying machine, an uncommon 'high-tech' device in Hong Kong in the mid-1960s. Y. T. Chen was known to be quite interested in machines such as assembling radio sets, so this self-made machine caught his fancy. He took a copy produced by the machine and said, "Let me now proofread this copy to see if there is any typo."

Although Y. M. Chen carried out good research in mathematics his lectures were not clear, and could even be confusing sometimes. When I was studying in the B.Sc. (Special) Year only three or four of us together

with a few more students in the B.A. Third Year were in his course on Analysis. We could not really get much from his lectures. One day we summed up the courage to suggest to him that perhaps it would be good training for us to present in turn the content of *Trigonometric Series* by Antoni Zygmund under his guidance. Being an expert on Fourier series he gladly agreed to the arrangement, and we learnt a lot more by studying the book by ourselves. What I actually learnt and benefited from his teaching came from his dedication and diligence, and a passion for academic pursuit. He seemed to realize his own "weakness" and used to say his famous lines with a sigh that carried with it a tinge of musing sorrow, "Life with chalk and board is but a dream; it is not my intention to lead youngsters astray on their academic pursuit [白粉生涯原是夢, 誤人子弟本無心]." One mischievous colleague interchanged the order of two words in the second line to make it become one with quite an opposite meaning, "Without any conscience I lead youngsters astray on their academic pursuit [誤人子弟無[冇]本心]"!

Y. M. Chen was promoted to Assistant Lecturer in 1961 followed by the award of a D.Sc. by the University of Hokkaido for his outstanding research work on Fourier series. (According to what he told me in the mid-1970s he was not at all aware that he would receive such an award! He also told me, not without pride, that once at a conference he was dubbed "the log log man" for his good estimate by the famed Cambridge mathematician John Edensor Littlewood, whom he regarded as his mentor.) Y. M. Chen became a Lecturer in 1964, a Reader in 1969 and took up a Personal Chair in 1975. I became his colleague since 1975, and he was very kind to me. He frequently stopped by my office in the morning to ask me how my lessons were going, and many times offered to order books for me because he could obtain a discount as a member of the London Mathematical Society. He retired in 1984 and continued to teach part-time in 1984-85, but sadly died of a sudden stroke the next year. On that fateful morning when the bad news that he collapsed at home reached the Department, I immediately went to the hospital only to find an unconscious Professor Chen. He did not regain consciousness ever since. I did not have the chance to tell him how much I am indebted to his kindness.

In 1959 besides Y. M. Chen several Tutors were appointed. Among these were Mr. S. H. Young [Young Szu Hsun 楊森茂 M.Sc. 1966] with a B.Sc. from Fukien Christian University, Mr. L. O. Tse with a B.Sc. from Sun Yat-sen University and an M.Sc. from Fudan University, and Miss S. K. Leung [Leung Shau King 梁秀瓊 B.Sc. 1957, B.Sc. (Hons) 1958]. S. H. Young obtained his M.Sc. under the supervision of Dr. K. T. Leung. K. T. Leung joined the Department as a Senior Lecturer in 1960 with a D.Phil. from *Universität Zürich*, where he was supervised by the famed Dutch algebraist B. L. van der Waerden. The appointment of this fairly young Chinese mathematician to such a senior teaching post in HKU made the news in the leading local Chinese newspaper *Wah Kiu Yat Pao* [華僑日報] at the time! The significance of this news report is better appreciated with a short digression into the appointment policy at HKU. Throughout the first years of its establishment the University remained determined to hire only expatriate academic staff despite the obvious recruitment problems this biased policy entailed. It was quite rare that Dr. C. Y. Wang [Wang Chung Yik 王寵益], a graduate of the Hong Kong College of Medicine and Edinburgh University, was appointed to the Chair of Pathology in 1919. Even after 1920 Chinese academics were normally not appointed to senior teaching posts and most remained at the level of Tutors. After the Second World War this situation changed, but it was not until 1948 that two other Chinese were appointed to a Chair (after a hiatus of twenty-nine years), when Professor Y. C. Wong took up the Chair of Mathematics and Professor P. C. Hou [Hou Pao-chang 侯寶璋] took up the Chair of Pathology. The appointment of K. T. Leung to a Senior Lectureship in 1960 was indeed quite newsworthy!

During the next ten years the teaching staff of the Department expanded slightly in size. Young staff became “veterans” and some “new blood” came in. H. M. Chan came back as a Lecturer for two years (1960-1962) while S. T. Tsou left for the CUHK in 1963, as mentioned before. Mr. B. Y. Tong [Tong Bok Yin 唐博賢 B.Sc. 1957] with a M.L.S in Library Science from University of California joined as an Assistant lecturer in 1961, was promoted to a Lecturer in 1966 and left in 1968 to go abroad for further study in mathematics. Mr. T. H. Yao [Yao Te Hwai 姚德懷 B.Sc. 1957] with a Dip.Math. from *Universität Göttingen* was appointed Assistant Lecturer in 1962 and promoted to Lecturer in 1966. In 1964 Mr. E.R. Chang with a

B.Sc. in Economics from London University and an M.A. from Yale University was appointed Lecturer to replace Dr. W. F. Maunder who taught statistics and left the Department as a Senior Lecturer. Subsequently a Statistics Unit within the Department was formed with E. R. Chang and C. S Hui as members, later joined by Mr. W. K. Chiu [Chiu Wing Kin 趙永堅 B.A. 1961, B.Sc. (Special) 1962, M.A. 1967]. W. K. Chiu joined the Department as a Demonstrator in 1963 and obtained his M.A. under the supervision of Dr. K. T. Leung, then left three years later to pursue a doctorate in statistics in Britain. Meanwhile, the Statistics Unit moved out from the Department to become a teaching unit in the new Faculty of Social Sciences that was founded in 1967, and became the Department of Statistics in 1968. Dr. W. K. Chiu returned to join it as Lecturer after obtaining his doctorate from Bath University. The Department of Statistics was renamed Department of Statistics and Actuarial Science in 1998.

From 1963 to 1966 Professor Wong was appointed by the University as a Pro-Vice-Chancellor. In 1967 Dr. K. Y. Chan [Chan Kai Yuen 陳啟元 B.Sc. 1959, B.Sc. (Special) 1960] joined the Department as Lecturer and was promoted to Senior Lecturer in 1972. K. Y. Chan first served the Department as Demonstrator in 1960, and after a year left for his doctoral study and obtained a Ph.D. in mathematical physics from the University of Birmingham. Soon after he became a Senior Lecturer he was recommended to become the Head of Department in 1973 by Professor Y. C. Wong, who wished to be relieved from the Headship while continued to take up the Chair. K. Y. Chan served as the Head of Department until 1981 when Professor Alan John Ellis came from Britain to take up the Chair left vacant since 1976 when Professor Wong retired in that year. Unfortunately Professor Ellis fell seriously ill in 1991 and had to return to Britain, where he passed away one year later. From 1991 onwards K.Y. Chan again took up the Headship until he retired in December of 1999. K. Y. Chan had also served as the Secretary and later the President of the Hong Kong Mathematical Society, and was a pivotal figure of the Society during the 1980s and 1990s. The Hong Kong Mathematical Society was founded in 1979 at the strong promotion of Professor Wong, who became its Honorary President for Life.

In 1969 two more new members, Dr. C. L. Chan [Chan Choi Lai 陳載澧 B.Sc. 1963, B.Sc. (Special) 1964] and Dr. Christopher B. Spencer, joined the Department. C. L. Chan went to the University of British Columbia after leaving HKU to study for his Ph.D. in mathematical physics and came back to take up a Lectureship. C. B. Spencer joined the Department as an Assistant Lecturer and was promoted to Lecturer the next year when he got his Ph.D. in topology from the University of Liverpool. He went back to Britain in 1980, and the story went that he fulfilled his dream of operating an English pub!

During those ten years a number of young men joined the Department as Demonstrators, usually for a short time before going abroad for further study. At about more or less the same time K.Y. Chan worked as a Demonstrator, there were K. Y. Lam [Lam Kee Yuen 林己玄 B.A. 1961], P. C. Yuen [Yuen Ping Cheong 阮炳昌 B.Sc. 1959, B.Sc. (Special) 1960] and C. S. Hsu with a B.Sc. from the National Taiwan University. Demonstrators whom I knew well when I was studying as an undergraduate in the Department included Y. H. Au-Yeung, W. K. Chiu, M. C. Liu, Y. M. Wong, S. H. Young, all of whom we have alluded to before, and L. S. Ko [Ko Lo Suen 高勞孫 B.A. 1961, M.A. 1966], C. S. Wong [Wong Chin Sze 黃薦時 B.A. 1963] , H. F. Lai [Lai Hon Fei 黎翰飛 B.Sc. 1964, B.Sc. (Special) 1965], C. K. Poon [Poon Chung Kong 潘重剛 B.A. 1964, B.Sc. (Special) 1965], K. Y. Woo [Woo Kai Yuen 胡開源 B.A. 1965], and C. H. Liu with a B.Sc. from the Beijing Normal University.

K. Y. Lam is the eldest of the legendary “Lam Brothers”, all three being graduates of the Department. After leaving the Department K. Y. Lam went to obtain a PhD from Princeton University and after spending one year at the Courant Institute in New York took up a post at the University of British Columbia where he stays and is still active as its retired professor. His younger brother T. Y. Lam [Lam Tsit Yuen 林節玄 B.A. 1963] went to pursue graduate study at Columbia University, spent a couple of years at the University of Chicago before taking up a post at the University of California in Berkeley, stayed there until retirement but is still active as its retired professor. The youngest of the three, K. Lam [Lam Kin 林建 B.A. 1967] is my classmate and good friend. K. Lam obtained his PhD from the University of Wisconsin, switched his field from functional

analysis to probability and statistics when he joined the newly established Department of Statistics in HKU in the mid-1970s, moved to take up a Professorship at the Hong Kong Baptist University in 1995, and built up its Department of Finance and Decision Sciences. Through Kin I knew about the academic pursuit of his two brothers in the United States even though I had not met them yet. It was the knowledge about Tsit Yuen's study at Columbia University that made me decide to apply for graduate study there, actually ultimately to study under the supervision of the same thesis advisor, Professor Hyman Bass, as he. Kee Yuen was teaching in New York in the first year I arrived at Columbia, and he was kind to me, inviting me home for dinner one evening. The next morning somebody knocked on the door of my room in the university dormitory. When I opened the door and saw Kee Yuen standing there, I asked in great surprise why he came so soon to see me, only to find out that the man was not Kee Yuen but Tsit Yuen, who came all the way from Chicago to New York, taking this opportunity to pay me a surprise visit!

In the same class as T. Y. Lam there was another legendary figure of the Department that we heard a lot about as an extremely brilliant undergraduate in mathematics, Y. T. Siu [Siu Yum Tong 蕭蔭堂 B.A. 1963], who went to Princeton University for his doctoral study. He earned the admiration of all of us in our time, but I did not get to know him in person until we met on 10 April 1971 on the road to join a rally held in Washington D.C. during the Defend Diaoyutai Movement [保釣運動]. He was at the time a young professor at Yale University, and later moved to Stanford University and finally to Harvard University where he is now teaching in and continues to be very active in research. He is a member of the American Academy of Arts & Sciences (elected 1998), the National Academy of Sciences (elected 2002); a member of Academia Sinica in Taiwan (elected 2004); a foreign member of the Chinese Academy of Sciences (elected 2004); and a Corresponding Member of the Göttingen Academy of Sciences (elected 1993).

Unlike many of his classmates P. C. Yuen did not pursue graduate study in Britain nor North America but in France, at the University of Paris. He was too senior for me to know him in person at the time, but I got to know him by correspondence through a school teacher of mine who is his undergraduate classmate at HKU. When I was in my Third Year, he kindly

sent me from Paris a note with a list of mathematical books that he advised me to consult. Many of these books are in French, which at the time prevented me from benefiting adequately from his recommendations. However, I felt grateful for his enthusiastic and generous help in advising a younger friend. I finally got to meet him when he returned to teach at the Polytechnic University of Hong Kong and from thence we met in many events held by the Hong Kong Mathematical Society. It was sad to see him pass away in his prime.

In the latter part of the 1960s after I left HKU for further study at Columbia University, more young people joined the Department as Demonstrators in a similar fashion. These included, besides T.L. Lai whom I mentioned before, C. B. Lam [Lam Che Bor 林子波 B.A. 1966], C. K. Leung [Leung Chi Kwan 梁志昆 B.Sc. (Special) 1966], W. C. Lee [Lee Wung Chung 李宏鐘 B.A. 1967], K. P. Lee [Lee Kwok Pun 李國斌 B.A. 1968], Claire K. Y. Law [Law Kwan Yuk 羅君鈺 B.Sc. 1967, B.Sc. (Special) 1968], Y. S. Tsang [Tsang Yok Sing 曾鈺成 B.A. 1968], Y. T. Woo [Woo Yam Ting 胡蔭亭 B.A. 1968], T. G. Yung [Yung Tin Gun 容天根 B.A. 1968], H. C. Hung [Hung Hin Chung 孔憲中 B.Sc. 1961, B.Sc. (Special) 1962], S. W. Ho [Ho Shiu Wing 何兆榮 B.Sc. 1968, B. Sc (Special) 1969], W. H. Liu [Liu Wai Hung 廖偉熊 B.A. 1969], K. P. Mok [Mok Kam Ping 莫錦屏 B.A. 1968, M.Phil. 1972, Ph.D. 1976], T. K. Yuen [Yuen Tai Kwok 袁泰國 B.Sc. (Special) 1970, M.Phil. 1973], and H. S. Luk [Luk Hing Sun 陸慶燊 B.A. 1971].

While writing this tale I seem to have travelled back in time and lived in those good old days when the mood of the tertiary community was so pleasant and congenial that made for an environment conducive to learning and intellectual pursuit. Allow me to indulge further in some accounts of what went on in my undergraduate days in the Department.

The Department in those days occupied two wings of the top floor of the Main Building, which was joined by a staircase leading up to the current Library Building. We handed in our weekly homework assignments by depositing them in a file, one for each student marked with his or her name, that were placed on a shelf by the entrance of one wing, which housed the offices of Professor Y. C. Wong, Dr. K. T. Leung, Dr. Doris Chen and Dr. S. T. Tsou. All other teaching staff members were

housed in the other wing, where a departmental library, a workshop for a technician and a tutorial room were located. By the entrance of this other wing a long table was set in the corner, making it some sort of a "tea room" where tea was served for the teaching staff everyday regularly. In a presentation given on the occasion of the 90th birthday of Professor Y. C. Wong on 31 May 2003, K. Y. Chan reminisced about this very British tradition, "At about 10 in the morning and 3: 30 in the afternoon, Ah Hin would go around the department, knocking at the office doors for the teaching staff telling them that tea was ready. Professor Wong usually had his tea in his own office, but the rest of the teaching staff would go to the tea room. There we sat around a table and chatted freely. The Mathematics Department has been known for its unity and strong sense of belonging. In this, the tea breaks probably have an important role to play!" The chap "Ah Hin" refers to H. Lee [Lee Hin 李憲], who was at the time one of the two office attendants, both loyal staff of the Department. I already knew H. Lee when I was an undergraduate, and he was still working in the Department when I returned as a teacher in 1975, by then affectionately known by the name of "Uncle Hin [憲叔]" and continued to serve cheerfully and reliably until he retired in 1999. He must be arguably the longest serving member of the Department with a record of over forty years, perhaps next to or on a par with Annie M. L. Ip [Ip Mei Lai 葉美麗], who served the Department first as a typist from the early 1970s to 1988 then as the Departmental Secretary from 1989 until she retired in 2016. The Department is fortunate in always having a team of friendly and helpful clerical/technical staff who carry out their duties cheerfully, efficiently and reliably, many of whom working in their posts for a long period of time.

Let me now offer a sketch of the curriculum in Mathematics in the First Year during the 1960s. In an article written on the occasion of the 70th anniversary of the HKU Faculty of Science in 2009 I talked about my first day of class at HKU in October of 1963: "The second class of that first day was a lecture on mathematics, which was also held in the same lecture theatre [in the old Chemistry Building, which had long been demolished to make way for the Kadoorie Biological Sciences Building built on the same site]. […] Again we waited in excitement to see who would come to teach us. Right on the dot a lady dressed in an elegant

Chinese “cheung-sam” entered the lecture theatre. She marched down the aisle to the front, flanked by two young teaching assistants. This time I knew better not to stand up to salute the teacher but waited in silence for her to begin. She looked around with a smile and began lecturing and writing on the blackboard. She was Dr. Doris Chen, who took an early retirement in 1985, and the two young assistants were Mr. Ko Lo Suen, who later left HKU for Education Department (now renamed Education Bureau) of the HK Government and subsequently served as the Head of the Department of Mathematics of Northcote College of Education for many years, and Mr. Au-Yeung Yik Hoi, who remained in the Department of Mathematics, rising through the ranks to a professor and retired in 1998. ”

Dr. Doris Chen, who passed away in June of 2012, was emblematic of elegance and culture, and was also a person full of warmth and kindness. To many female students she was held as a role model, being the only woman mathematician on the faculty in those years. She was a dedicated and caring teacher who always delivered clear and well-prepared lectures, writing beautifully and swiftly on the blackboard but pausing at strategic moments to let the class chew over what was just explained. Many students will remember fondly the characteristic smile she wore on her face whenever these moments came up. Some would recall, half-jokingly years later, that this was a moment of anxiety and apprehension but at the same time admit that it was also a moment they realized they should pay attention to and treasured it even after graduation.

Dr. Chen taught us Fundamental Concepts in Mathematics and Linear Algebra. We were provided with carefully written lecture notes that were typed and printed as mimeographed notes on foolscap paper by the Technician K. W. Ho (with his initial “kwh” appearing on every set of lecture notes --- he must be working very hard day and night to prepare all these sets of lecture notes for all courses!) In time these two sets of lecture notes became two books produced by the HKU Press --- *Elementary Set Theory*, *Parts I & II* by K. T. Leung and D. L. C. Chen (1967), and *Linear Algebra and Geometry* by K. T. Leung. (1974). Professor Wong wrote a foreword in October of 1964 for the first book, which captures very well the rationale and objective in the design of this curriculum:

"The most striking characteristic of modern mathematics is its great unity and generality. In modern mathematics, the boundaries between different areas have become obscured; very often, what used to be separate and unrelated disciplines are now special cases of a single one; and amid these far-reaching changes, there have emerged certain basic concepts, notations and terminologies that are of considerable importance and frequent use in a large portion of mathematics.

"By 1959, I felt the time was ripe for the University to introduce into its first-year mathematics course the most fundamental and the most elementary of these basic concepts, notations and terminologies (which we call 'Fundamental Concepts') to serve as a foundation on which much of the undergraduate mathematics rests. The fundamental concepts we first introduced were set theory and some basic operations of algebra. Outline notes for all these were written by Dr. S. T. Tsou, who is now with the Chinese University of Hong Kong. These notes were later revised and expanded by Dr. D. Chen to include elements of symbolic logic. In 1961, we further reorganized the contents of the first-year mathematics course by bringing the basic operations of algebra into the more general framework of linear algebra, and Dr. K. T. Leung, who joined this University in 1960, wrote detailed lecture notes for it. Thus, the main topics now taught in our first-year mathematics course are fundamental concepts, linear algebra and calculus. For us, these are new experiments in the teaching of mathematics to undergraduates, but we believe in the correctness of our approach and are greatly heartened by the very encouraging results so far obtained."

After having this solid preparation in the First Year we received in the next two years a wholesome diet of courses on Analysis (Real and Complex Analysis), Algebra (Abstract Algebra), Geometry (Topology and Differential Geometry), and a choice between either Mechanics (Classical Mechanics) or Statistics (Probability and Mathematical statistics). This diet was for students in the B.Sc. Programme, who would take one more subject besides Mathematics, either Physics or Chemistry, to complete a programme amounting to what is today known as a double major. Students in the B.A. Programme offered by the Faculty of Arts would take in addition in the First Year a course on History of Mathematics. In the

next two years, B.A. students took courses like their classmates in the B.Sc. Programme but in addition took a course called Pro-seminar in which selected papers or chapters of books were studied and discussed, as well as some courses also open to students in the (fourth) B.Sc. (Special) Year on further advanced topics. This programme was known as the 9-paper option for those who wished to focus on the study of Mathematics. Some B.A. students could choose a 3-paper or 6-paper option in which they combined the study of Mathematics with that of other subjects offered by the Faculty of Arts, for instance, Chinese Language and History, Economics and Political Science, English Literature, Geography, History or Philosophy. Since the Department of Mathematics offered major degree-granting programmes in both Faculty of Arts and Faculty of Science it was for many years the only Department in the University belonging to two separate Faculties. This tradition went on until the University structure changed in the 1990s when each Department must belong to one and only one Faculty. The Department of Mathematics opted to stay with the Faculty of Science.

One does not only learn from lectures in organized courses. In my undergraduate days the Department provided us with other means of learning. During the summer vacation after my First Year Dr. K. T. Leung and Dr. Doris Chen arranged a weekly study group for those First Year students who liked to read more mathematics. That summer we read *Lectures on Boolean Algebra* by Paul Halmos (1963), which was a new book at the time. During the summer vacation after my Second Year the Department arranged for those interested Second Year students a model-making class with the Technician K. W. Ho as instructor. We consulted the book *Mathematical Models* by H. M. Cundy and A. P. Rollett (1951) and got down to making three models --- a polyhedron made out of cardboard, a ruled surface using strings, and a wired surface to illustrate a non-Euclidean geometry.

The Department possesses a beautiful collection of models which were either purchased from Italy and Germany in the 1950s or made by K. W. Ho or by students under his guidance. During the moving of the Department from the Knowles Building to the current site of the Runrun Shaw Building in the early 1980s, a few models were somehow lost and with the passing of time some were in such bad shape that they had to be

disposed of. Still, quite a number of items have been kept in good shape and are now put in glass display cases on the corridor for any interested party to look at. New additions are produced today using a modern 3-D printer.

In some courses I did make use of some of these models for illustration. For example, in 1976 there was a first year seminar course for B.A. students, jointly conducted by me and T. G. Yung, who just returned to join the Department as Lecturer in 1976. Since only two students, Y. M. Chan [Chan Yiu Man 陳耀文 B.A. 1979] and N. K. Tsing [Tsing Nam Kiu 丁南僑 B.A. 1979, Ph.D. 1984], were in the course, we held class in my office. Once, we toyed with some wired figures and a pail of soap solution while studying a paper on the Plateau's Problem [J. Nitsche, Plateau's problems and their modern ramifications, *American Mathematical Monthly*, 81 (1974), 945-968]. This set of wired figures was pitifully lost during the move.

N. K. Tsing became my colleague years later when he returned to the Department as a Lecturer in 1992 after obtaining his second Ph.D. in Control Theory from the University of Maryland. Recently in a friendly chat he told me what left him with the deepest impression about that first year seminar were not the soap bubbles but was another theorem we discussed. It was the 2-dimensional version of Helly's Theorem (or sometimes nicknamed the "Picture Gallery Problem") on the intersection of a family of convex sets: Given a family of more than two convex subsets in the plane, if any three subsets intersect, then the whole family has a non-empty intersection. (For his first doctoral study N. K. Tsing investigated the numerical range of star-shaped regions under the supervision of Dr. Y.H. Au-Yeung of the Department. I wonder whether star-shaped figures already caught his fancy when he looked at Helly's Theorem back in 1976!)

One such model of a ruled surface has been my favourite ever since my undergraduate days. When the HKUSU Science Society held its Silver Jubilee Exhibition in December of 1965, I helped with the mathematics section and wanted very much to borrow that model for display. I was in a hurry to get it because it was the Saturday before the opening of the Exhibition on the following Monday. I summed up my courage, and that

of my classmate K. Lam, to go together to the Department. Professor Wong was not in, so we spoke to his secretary Ms. Lina Wei. I mumbled something about borrowing the model and mumbled in an even more devious manner something equivalent to a "yes" when she asked whether Professor Wong had given his approval. Alas, I did not know Professor Wong lived so near to the Main Building where the department was then located. The dutiful secretary called up Professor Wong at home. He would come back right away. You can imagine the hard time we had, standing before Professor Wong to face the music — *young man, this is not the proper way to do things, … you should first discuss the matter with me,* … and all that. But when I pointed out the very interesting feature of the model which made me want to get it in earnest for the Exhibition, apparently that touched a right mathematical chord with Professor Wong. His stern countenance quickly softened to a beaming smile, and he went into details of the making of the model and its underlying geometry. We left his office with the model snuggly in my hands.

Preparation work on the Silver Jubilee Science Exhibition in 1965 affords a good instance of showing how the caring teaching of the Department instilled into us a genuine and intrinsic interest in mathematics, an enthusiasm in the quest for learning, and a comradeship among fellow students. At the time I was a member of the Mathematics Subcommittee entrusted with the task of designing and preparing a series of exhibits that would let the public see what mathematics is about. It turned out to be a very worthwhile educational experience, prompting us to read up a lot of books, to think about a lot of problems, and to engage in a lot of discussion.

I remember fondly one particular exhibit, which I thought up and actually prepared it on show. It is the first-ever "water-computer" made in Hong Kong ---- first-ever simply because it is useless so that nobody would think of making another one! The device is based on the principle of syphon, consisting of three glass cylinders placed at three different levels connected through syphon glass tubes, which aimed at illustrating the working of the binary representation of a given whole number and the addition of two small whole numbers by pouring water into the glass cylinders. After designing such an exhibit I went to a senior classmate O.

W. Lau [Lau Oi Wah 柳愛華 B.Sc. 1964, BSc. (Special) 1965, Ph.D. 1970] for help in making it. (O. W. Lau joined the Department of Chemistry at the Chinese University of Hong Kong in 1968 and served for thirty-five years, at one time as Dean of Science, and sadly passed away in 2004 just after her retirement.) She immediately introduced me to "Master Lan"[藍師傅], a technician in the HKU Department of Chemistry well-known for his expertise in making glass instruments. "Master Lan" kindly worked out a beautiful set of glass cylinders and syphon tubes to measure for me. Much as a school pupil of today would regard this device as a childish toy, in the mid-1960s when even an undergraduate did not have the fortune to set eyes on an electronic pocket calculator and when the binary system was foreign to many in the public, this exhibit did attract quite an audience. My classmate Y. Sit borrowed pegs in a resistance box from the Physics Laboratory and built an electro-mechanical exhibit for the game of *Nim*. The optimal strategy for a player against an opponent is based on the binary representation of numbers. With light bulbs blinking on and off, the gadget illustrated visually what the next best move should be. In today's parlance that would be activities labelled under the catchword STEM, except that we waved no such kind of banner in those days!

As an undergraduate student I also benefited from interaction with my teachers in the Department inside or outside the classroom. A good teacher will broaden the knowledge as well as the vista of a student through such interaction. Let me recount several anecdotes in this respect.

Once I went to seek advice from Dr. Doris Chen on further study in mathematics. Knowing that she worked in algebraic geometry I asked her what the subject was about. She patiently explained to me; at the end she said, with her characteristic smile on the face, "Do you know there is also geometric algebra?" As an ignorant undergraduate I did not know, but in my callow naïvety I bemusedly asked myself, "What's the difference --- algebraic geometry, geometric algebra? Aren't the two terms commutative?" She then showed me the 1957 classic *Geometric Algebra* written by Emil Artin. That was my first introduction to the book. I went home and read it, of course only the beginning part of it. But already I learnt a lot and it served me in good stead in my subsequent

study at graduate school and further on in my teaching many years later. I still remember vividly to this date the emphasis Artin paid to Section 4 of Chapter One, which is on the concept of a dual space. He regarded the concept so important that he added a long exercise as Section 6 to work out the analogue in the case of a finite abelian group.

I mentioned earlier the tutorial system instituted in the Department since 1953. Once the tutorial session fell on Chinese New Year's Eve (yes, in that era classes went on as usual on that day because it was not a public holiday!) and not everybody turned up. I seized an opportunity of having a prolonged one-on-one session with the teacher on that day, who happened to be Y. M. Wong. I forgot what specific questions I put to him on that day, but one thing he said stuck in my mind and it still rings in my ears to this date. He told me that the most satisfying thing in doing mathematics is to try to understand something you at first did not understand, and having struggled to understand it, be able to explain it to somebody else in a clearer and simpler way.

In those years classes went on as usual during the Chinese New Year period with only the New Year Day plus the next day off. However, it had become some sort of tradition that a lecture held on the third or fourth day would be basically cancelled. At our urge, the Lecturer would invite us to have class in the Student Union Canteen. We would have a pleasant chat, perhaps similar to those at tea breaks in the Department. With large classes as we have today this kind of interaction is perhaps hard to imagine.

Professor Wong showed his continual interest in and concern for all his students, even after they graduated and left the Department. He once replied to a letter I wrote to him, in which I told him about how some other graduates of the Department and I were doing at Columbia University. In his letter (dated 17 October 1969) he wrote, "Thank you very much indeed for your most interesting and informative letter of October 11, 1969. […] I appreciate very much your taking the trouble to write us such a long letter. It must have taken you two or three hours of your valuable time. Perhaps you should arrange among yourselves to take turn to do this." That was a piece of kind and considerate advice,

but he did not know that I wrote long letters as a kind of therapy, whenever I had no progress with my mathematical pursuit!

In the autumn of 1967 I went to Columbia University for graduate study. That year three from HKU got fellowships from Columbia — C. K. Poon, Y. Sit and I. That is quite a record for applicants from one single university, considering that the Department of Mathematics at Columbia University in those days admitted only ten to fifteen first year graduate students from all over the world each year. Very likely Professor Wong had given us a strong helping hand in this. Before us T. Y. Lam and C. K. Wong [Wong Chak Kuen 黃澤權 B.A. 1965] studied at Columbia. The following year T. L. Lai came to join us but in the Department of Statistics. Soon after us H. S. Luk and C. W. Sit [Sit Cho Wei 薛祖惟 B.A. 1972] came. The Department of Physics of Columbia University, with Lee Tsung-Dao [李政道] and Wu Chien-Shiung [吳健雄] on the faculty, was in those days an attractive place for Chinese students in physics. Many graduates of the Department who majored in both mathematics and physics chose to come to join the graduate of school of physics there, with W. Y. Chau [Chau Wai Yin 周威彥 B.Sc. 1961, B.Sc. (Special) 1962], S. K. Wong [Wong Seung Kai 王襄佳 B.Sc. 1963, BSc. (Special) 1964], L. Lam [Lam Lui 林磊 B.Sc. 1965] coming before us, T. P. Pun [Pun Ting Pong 潘定邦 B.Sc. 1966, B.Sc. (Special) 1967] in the same year as us, and C. K. Au [Au Chi Kwan 區志均 B.Sc. 1968] and C. Tam [Tam Ching 譚正 B.Sc. 1967, B.Sc. (Special) 1968, M.Sc. 1970] soon after us. The crop of graduates in my own year bred a particularly large number of physicists, many of whom later told me how much they had learnt from their study in mathematics which helped them immensely in their further pursuit in physics. Among these are, besides T. P. Pun also L. P. Ng [Ng Lung Pak 伍龍柏 B.Sc. 1966, B.Sc. (Special) 1967], C. L. Sam [Sam Chung Lam 沈鍾嵐 B.Sc. 1966, B.Sc. (Special) 1967], K. S. Tsui [Tsui Kar Sing 崔家聲 B.Sc. 1966, Ph.D. 1975], C. H. Woo[胡仲豪 B.Sc. 1966, B.Sc. (Special) 1967], Peter Y. Yu [Yu Yound 于鑫 B.Sc. 1966, B.Sc. (Special) 1967], C. L. Yue [Yue Chung Leung 俞宗亮 B.Sc. 1966, B.Sc. (Special) 1967] and M. L. Yu [Yu Ming Lun 余明倫 B.Sc. 1966, B.Sc. (Special) 1967].

From what have been recounted above one may have a feel for the intellectual mood in the post-secondary community of that era, which

was free of things like ranking, citation index, impact factor, research assessment exercise, professional development indicator and the like, which, notwithstanding their original well-meaning intention of maintaining the standard, tend in time to distort the ecology of the post-secondary community and undermine scholarship which a university should value. I feel fortunate to have spent my undergraduate years and at least half of my professional career within that era. Our teachers are still remembered with gratitude in our hearts half a century later not because they had received how many research grants or written how many papers published in so-called threshold journals, but because they taught us, showed us what a scholar and academic is like, and exerted influence upon us to serve the next generation.

Further Development from the Seventies into the Mid-Nineties

(writing in preparation)

Into the Twenty-first century: From 1995 Onwards.

(writing in preparation)

Epilogue

(writing in preparation)