Tribute to Sir Harry Raymond Pitt, F.R.S.

Michael Sewell
Department of Mathematics, University of Reading,
Whiteknights, Reading, RG6 6AX.

February 2, 2006

"Nice man ... clever man" was the appealing tribute by Sir David Jason at the end of a televised celebration of the life of the comedian Ronnie Barker, only a month after Sir Harry Pitt died on 8th October 2005 at Brailsford in Derbyshire. Harry Pitt would have been amused to find himself compared with a man of such different skills to his own, but many of his former students and colleagues will agree that Pitt merits that same succinct compliment.

I remember him saying to me in 1961 that he supposed television might be worth having in the home "even if only to watch John Betjeman". Pitt had a penchant for finding the accurate phrase, and one learned to listen out for it. It was one way of expressing his capacity for identifying the very essence of an issue. I was sitting next to him at a lecture being given by a local Headmaster, whom Pitt had invited, to the undergraduate Mathematical Society at Nottingham University in 1957, on the subject of Continued Fractions, into which the speaker had clearly invested some effort. In a pause, Harry Pitt turned to me and said quietly "Rather an acquired taste, don't you think?". After a serious fire at his home in 1955, he was quoted as saying "at least my lecture notes were at the University". Discussions about courses naturally took place from time to time. He was highly amused when, during a coffee-time chat in 1962, someone referred to the Lambeth D.D. as a "soft option" because it required no course at all.

Pitt was born on 3rd June 1914 in West Bromwich, to Harry and Harriet Pitt. His father was an engineer and then an inspector at the Austin Motor Company. The family lived at Wall Heath between 1921 and 1928, and then Kingswinford (near Dudley). *The Times* biographer tells us (19th October 2005) that he was

a clever, hard-working boy who won a scholarship to King Edward IV School at Stourbridge, and then another to Peterhouse, Cambridge; and that he needed these scholarships because his parents could not otherwise support him at School and University.

Pitt obtained a Distinction in Part III of his Cambridge Tripos, for his B.A. He became a member of the London Mathematical Society in 1937.

As a postgraduate he held a Bye-Fellowship at Peterhouse from 1936 to 1939, during which time he spent 1937-38 at Harvard University as a Chaote Memorial Fellow. Cambridge University conferred a Ph.D. on him in 1938, for a thesis on Tauberian Theorems, which are associated with probability theory. Tauberian Theorems eventually became the subject of his first book, with that title, published in 1958 by Oxford University Press, for the Tata Institute of Fundamental Research at Bombay. The subject is a large one, and Pitt limited himself to "the topics and methods which follow most naturally from the work of Hardy, Littlewood and Weiner". In 1939 Pitt went to Aberdeen University as an Assistant Lecturer in Mathematics. In 1970 he was awarded the Honorary Degree of Doctor of Laws by that University, when he was remembered as "a teacher capable of appreciating and solving the difficulties experienced by others".

With his developing analytical skills, Pitt moved to London in 1942 to work at the Air Ministry and the Ministry of Aircraft Production for three years. Within R.A.F. Coastal Command he used probability theory, and the newly developing operational research, to devise methods for attacking German U-boats. *The Times* remarks that Pitt refused a commission because he felt that such status would limit his freedom to influence senior officers. This was an astute decision, typical of his depth of thinking, and it would be interesting to learn more of the activities of Pitt and his colleagues in suggesting ways of deploying military resources during this period.

In 1945, with the War ended, and having practical knowledge of the applications of his subject, Harry Pitt was appointed Professor of Mathematics at Queen's University, Belfast, at the age of 31. By then he was the author of a series of original articles in prominent mathematical journals. In 1981 he was given the Honorary Degree of Doctor of Science at Belfast. The Dean, in his speech on that occasion, pointed out that the Appointments Committee had done their job well to appoint Pitt to the Chair in 1945, because he was still only an Assistant Lecturer then, and he was preferred to some older applicants with more established reputations. Such a jump "with one bound" from the bottom of the

academic ladder to the top is most unusual. But the exceptional promise which the Committee thought they detected proved to be real. Clearly his war-time contribution counted for something.

In 1950 Pitt was appointed Professor of Pure Mathematics at the University of Nottingham. This proved to be a major opportunity, in an expanding University which had achieved its independence from London in 1948, which had a splendid physical location, and which was led from 1948 to 1965 by Bertrand Hallward, a vigorous Vice-Chancellor ambitious to develop the University. Much can be learned about this from the 1995 biography of Hallward written by Derek Winterbottom.

Pitt succeeded H.T.H. Piaggio, who had been Professor since 1920, in which year he had published a text on Differential Equations which was still in use in the 1950s. By then Piaggio was still to be seen ferreting around in the University Library. Applied Mathematics was coming to the fore in this period as a "must have" subject in many universities, and Pitt persuaded Nottingham University to establish a Chair in that subject. Rodney Hill was appointed to this Chair in 1953. Although only 32, Hill's expertise in the mechanics of solids was already widely known from his book on The Mathematical Theory of Plasticity published in 1950, and his founding Editorship in 1952 of the Journal of Mechanics and Physics of Solids, both of which are still strongly influential today.

So when I joined the Mathematics Department at Nottingham in 1954 as an undergraduate, all the factors had been put in place which provided an excellent mathematical education. With other arrangements which Pitt made, the atmosphere felt as if, provided one worked conscientiously, good values were handed out on a plate. Experienced staff were qualified to teach the major areas of analysis, algebra, geometry, statistics, and the mechanics of rigid and deformable bodies, fluids and electromagnetism. The pleasure in the Department was real when Harry Pitt was elected a Fellow of The Royal Society in 1957, and Rodney Hill likewise in 1961.

Two levels of undergraduate course were available, an Honours degree stream and a Pass degree stream. Demotion of a student from Honours to Pass could be imposed, and expulsion from the Department was another available sanction, in particular after the first Christmas examination. Such was the climate of the time that these penalties were expected to be used, more fiercely than today. But on the other hand it was recognised that the Pass degree course was a properly designed course. Harry Pitt, in particular, regarded it as his duty to give tai-

lored courses himself at this level, and not merely to concentrate on the Honours stream. The result was, over the years, a body of graduates who were grateful for the kindness and attention which he devoted to them.

Gowns were still in fashion. Most staff, Pitt included, habitually wore one when giving lectures. Undergraduates also had gowns, although their use of them was beginning to wane. However, I vividly recall waiting outside Pitt's office in April 1954, wearing my gown, and hoping to catch him for an unarranged interview because I wanted to transfer from the first year of a Mining Engineering course, and start again the next October on a Mathematics course. I must have seemed a rather unlikely prospect, and when I said that I had had no difficulty with the mathematics part of my Engineering course (taught by one of his Lecturers, a stately lady called Dr. Marta Dallas), he was quick to say that her course "did not go very deeply into mathematics". But he accepted my reply that this was the only mathematics that was recently available for me to offer, and he asked me to get a reference from my school. He later accepted me subject to my passing the June examinations. I was left with the impression of having been given fair treatment. Generously, he also pointed out that I could count my Engineering course as the Subsidiary subject to be associated with the first year of my Mathematics course. This reduced my work load in that year, and allowed me to avoid Statistics, which was not to my taste.

Students in the Department ran a Mathematical Society which arranged lectures and an annual dinner. These events were well supported by the Departmental staff, who suggested speakers and came to lectures. Charles Coulson spoke, and also Mary Cartwright, invited for us by Harry Pitt. Such initiatives gave us another dimension, and illustrate the healthy atmosphere which prevailed.

Pitt's own lectures included our first introduction to the ϵ/δ style of analysis, with basic books like Hardy's Pure Mathematics and J.M. Hyslop's Infinite Series to complement it. These lectures made a deep impression, because their style was so different from the mere manipulation of formulae which was part of our previous experience. So when some of the more senior students set out to produce a mathematical magazine, we called it "Epsilon". It was properly type-set, with articles by immediate pre- and post-graduates, and had advertisements, solicited by an Editor and Business Manager respectively. We sent it out for review, and I remember the real buzz in the Department on the morning of 12th December 1957, when *The Times* devoted eleven column inches to a complimentary review in their fifth leader article. Harry Pitt was very pleased and showed it, but in some sense this event was a tribute to him.

Figure 1: Harry Pitt and Mary Cartwright, with postgraduates Michael Sewell and Dorothy Roper, at Nottingham University in 1958.

When I joined the staff I saw another side of him, in the conduct of meetings. Others have seen such more than I. But I recall, for example, an Examiners Meeting when we were on the point of failing a student altogether, with no degree, after three years in the Department. I made the point that perhaps we should have sent the student down earlier, such as in the previous year, rather than allowing him, and those who provided his grant, to wait until this late stage only to find that the time and resources had been wasted. Pitt listened carefully, and I sensed that he was glad the point had been made. The student was given a Pass degree.

I have heard it said that Pitt conducted meetings in such a way that the participants only realised afterwards that the conclusions reached were what Harry Pitt had wanted to happen all along.

How did Harry Pitt do it? By being clear-minded and firm.

During this later Nottingham period Pitt was writing his short book on Integration, Measure and Probability, which was published in 1963. For the 1962-63 session he took leave as a Visiting Professor at Yale University. Perhaps he was

now beginning to feel that he had achieved what was achievable at Nottingham. He had served as Dean of the Faculty of Pure Science, and as Deputy Vice-Chancellor from 1959 to 1962. At least four of his undergraduates there subsequently occupied Chairs, namely Robin Knops at Heriot-Watt, myself at Reading, Jeffrey Harrison at Warwick, and Clive Granger in California. (I apologise to others who I may have omitted by ignorance). Granger has recently received a Nobel Prize in Economics (the Nobel curriculum does not include Mathematics), and a knighthood. Harry Pitt had a long-term interest in economics; he once described the economy to me as operating like a leaky old steam engine with plenty of slack (and therefore requiring inequalities to describe it). In 1970 Nottingham University conferred the Honorary Degree of Doctor of Laws upon him.

The news came in 1964 that Harry Pitt had been appointed Vice-Chancellor of Reading University. It was a relatively small institution, with only 2000 students, but a fast-moving one which trebled in size by the time he retired fifteen years later. It was in the process of launching a major expansion, from a rather full Edwardian site on the main London Road, onto a large parkland setting at Whiteknights on the lip of the Thames Valley, at the southern boundary of Reading. So for a new Vice-Chancellor there were many opportunities, and associated duties. He had the skills and diplomacy that were needed.

In Holt's book (1977, p.289) it is remarked that Pitt's "arrival was marked by an act, small enough in itself, which at Reading was revolutionary, almost sacrilegious, in its implications". To the delight of the Common Room Senior Steward, Pitt requested that the Vice-Chancellor's chair be removed from the dining room. This "throne ... was jettisoned. That was symbolic. Pitt's authority was to be without artificial aids. He deliberately set out to be *primus inter pares* ... he sought a consensus". This was done without compromising his natural sense of reserve. The new regime "re-fashioned the University as a self-governing community".

A Faculty of Letters building was already in place on the new site, having been initiated in 1954 by a former Vice-Chancellor, Sir Frank Stenton, who turned the first sod after a speech which began "Unaccustomed as I am to public digging ...". Some new science buildings were also in use, but the main adminstration was still working from the Old Red Building on London Road. The centre of gravity was shifting, however, and in due course Pitt was able say "We are trying to stop calling it [London Road] the Main Site", having moved himself to a new administration block at Whiteknights House. After Pitt's retirement a new "Harry Pitt Building" came, which he opened on 4th November 1992, on the Earley Gate side

of Whiteknights Park, to house, very appropriately in view of his technical interests, the School of Applied Statistics. This School had long occupied one of the original old houses on the Park.

In the meantime, fifteen years of tactful guiding of the University, through some student disturbances and national financial cutbacks, revealed Sir Harry's skill and wisdom, and his courteous mode of action. Some student activists and " just bully boys" harassed an academic procession led by the then Chancellor, Lord Bridges, and Pitt told me afterwards that "what was very clear was that he [Bridges] was enjoying it enormously". Many colleagues noticed that, at this time, the registration plate of Pitt's car began with the letters WOE.

The University came out strongly from this period, and a healthy expansion has grown from it. New buildings completed on Whiteknights Park during Pitt's stewardship include Halls of student residence, a Plant Sciences Laboratory, the Palmer Building of lecture rooms and theatre, and the so-called Lego building (having an apparently peg-like mode of construction) for the new Faculty of Urban and Regional Studies. Photographs can be seen in the 100-year pictorial record of the University compiled by Smith and Bott (1992), including two of Pitt. Further information is provided by Holt (1977). Sir Harry Pitt was invested with his knighthood in 1978.

When he retired in December 1978, to live in a house "just a cricket ball's throw from the campus" [Lord Sherfield, then the Chancellor], the University of Reading conferred upon him the Honorary Degree of Doctor of Science. The Deputy Vice-Chancellor, in his speech on that occasion, referred to Pitt's work at national level outside the University. Pitt was Chairman of the Universities Central Council for Admissions for the three years 1975-8. He had been a member, and then from 1975 Chairman, of the Standing Conference on University Entrance. He served for six years on the University Authorities Panel (which negotiated academic salaries), and of course on the Committee of Vice-Chancellors and Principals. He belonged to the Southern Universities Joint Board for School Examinations. He also served on committees of The Royal Society and of The Institute of Mathematics and its Applications. He was President of the latter in 1984 and 1985, and his Presidential Address can be read in their 1985 Bulletin.

As if all this were not enough, Sir Harry also involved himself at local level. He became Chairman of the Governing Body of Reading School in 1964, he was a Governor of the Abbey School and Bulmershe College, and a member of the Berkshire Education Committee. He was a Vice-President of the Reading YMCA,

Figure 2: Painting of Sir Harry Pitt, F.R.S. by Norman Blamey, R.A., 1978. Published in Tribute to Sir Harry Raymond Pitt F.R.S. 1914 - 2005 by Michael Sewell, Mathematics Today, **42**, 10 - 13, 2006.

the Reading and District Marriage Guidance Council, and the Berkshire Archeological Society. He was President of the Reading Civic Society and the Reading Romilly Association, and a member of the Waterways Trust.

After his retirement Pitt once again had time to exercise his ability to write mathematics with a clarity beneficial to others, and in 1985 he published his third book, "... for Use", as the unusual title ended. The Preface remarks on "... the conviction implicit in what follows that the Lebesgue theory is not only more complete and satisfying in itself than the classical Riemann approach, but is also easier to use, and that its practical usefulness more than repays the effort of learning it".

During this period he also chaired a committee of The Royal Society which reported in 1982 on science education in England and Wales.

In 1992 Pitt, with a family of four sons and "ten grandchildren in four families" at that time (as he told me the last time I spoke to him) left Reading, no doubt to enjoy their company. In early August of nearly forty years before, family holidays were heralded by the appearance in the Trent Building car park at Nottingham of, instead of a bicycle, "the Daimler" with luggage trailer hitched to the back.

Pitt's wife of 64 years, Catherine (née Jacoby), died eighteen months before him.

Figure 1 was taken at the Annual Dinner of The University of Nottingham Mathematical Society. The photograph in Figure 2 shows a painting which is in the possession of The University of Reading. The copyright of this painting is held by the son of the artist, Dr. Stephen Blamey of St. Edmund Hall, Oxford, and his permission to reproduce it is acknowledged here.

References

Hardy, G.H. A Course of Pure Mathematics, Tenth Edition. Cambridge University Press, 1952.

Hill, R. The Mathematical Theory of Plasticity. Clarendon Press, Oxford, 1950.

Holt, J.C. The University of Reading: the first fifty years. Reading University Press, 1977.

Hopkins, H.G. and Sewell, M.J. Rodney Hill: Biographical Note. Pp. ix - xiv of Mechanics of Solids, The Rodney Hill 60th Anniversary Volume, edited by H.G. Hopkins and M.J. Sewell, Pergamon Press, 1982.

Hyslop, J.M. Infinite Series, Fourth Edition. Oliver and Boyd, 1950.

Piaggio, H.T.H. An Elementary Treatise on Differential Equations and their Applications. G. Bell and Sons Ltd., London, 1952.

Pitt, H.R. Tauberian Theorems. Oxford University Press, 1958.

Pitt, H.R. Integration, Measure and Probability. Oliver and Boyd, London, 1963.

Pitt, H.R. Presidential Address: The Place of Mathematics. Bulletin of the Institute of Mathematics and its Applications, **21**, 61 - 65, 1985.

Pitt, H.R. Measure and Integration for Use. Clarendon Press, Oxford, 1985.

Pitt, H.R. (Chairman) and Malvern, D.D. (Research Officer and Editor). Science Education 11 - 18 in England and Wales: the report of a Study Group. The Royal Society, ISBN 014571, 1982.

Pitt, H.R. John Charles Burkill, Biographical Memoirs of Fellows of the Royal Society, **40**, 43 - 59, 1994.

Smith, S. and Bott, M. A Pictorial History 1892 - 1992, One Hundred Years of University Education in Reading. University of Reading, 1992.

Winterbottom, Derek. Bertrand Hallward, A Biography. The University of Nottingham, 1995.

Published by The Institute of Mathematics and its Applications in Mathematics Today, **42**, 10 - 13, February 2006.