Harry S. Wragge AM (1929-2023)

A Major Contributor to Australian Telecommunications

Peter Gerrand

Life Member, TelSoc

Abstract: Harry Stewart Wragge (23 November 1929–31 July 2023), Director of the Telecom (later Telstra) Research Laboratories (TRL) in Melbourne from 1985 to 1992, was a leading Australian research engineer. He catalysed the evolution of the public switched telephone network in Australia from its analogue, electromechanical form in the 1950s and 1960s to the digital, computer-controlled circuit-switched network of the 1980s and 1990s. His own research work was famous for his IST (integrated switching and transmission) project, building the first computer-controlled, integrated digital switch in the world to handle commercial telephone traffic (from 1974 to 1978). He also provided major support to telecommunications research at several Australian universities.

His many contributions were recognized by honours from the Australian Government, Melbourne and Monash universities, the Pearcey Foundation, the Telecommunications Society of Australia and the City of Frankston.

Keywords: Obituary, Australian telecommunications history, telecommunications research, University of Melbourne, yachting

The First Editor-in-Chief of ATR, Mr Harry Wragge, AM on the occasion of his receiving the Kernot Medal in 1990.

Figure 1. Harry Wragge in 1990 (Gerrand, 1996, p. 35)

Introduction: Harry's Childhood and Adolescence

Harry Wragge's resourcefulness and sense of responsibility were formed in his character from an early age. At age ten, when his father had gone off to war, Harry became, in the recollection of his younger sister. Anne, the "man of the household", stepping up to help his mother run the family farm, *Carnmallam* ([Hill, 2023](#)).

Harry's father had married Lesley Sweatman in Caulfield, Victoria in September 1928, and their son Harry was born on 23 November in the following year. Harry and his sisters, Anne, Jean and Elizabeth, were brought up on the family farm, where he was home schooled until he was eight. He then went to Devon Meadows Primary School. But in 1940, while his father was away at war, *Carnmallam* burnt down, and his mother moved the family to a new home at Seaford ([Hill, 2023](#)).

Harry was sent to Scotch College, which he attended from 1942 to 1948. Two fellow pupils, Mac Cleland and John Cathcart, who became Harry's lifelong friends, recall that Harry stood out, noting that he had a "beloved, self-restored, vintage car" and, at one time, "a mysterious looking antenna protruding from the ink well on his desk and connected to a crystal set inside the desk". In his first year, Harry was dux of his year ([Cleland, 2023](#)).

In his third year at Scotch, Harry lost the sight of one eye as a result of a chemical explosion at school, leading to his absence from school for several months. But he soon caught up, especially in physics and mathematics, where he excelled. He joined the Signals section of the school cadets, where, Cleland believes, Harry "cemented his ambition to embark upon a career in telephony" ([Cleland, 2023](#)).

Harry completed his matriculation (Year 12) in 1948, and planned to repeat it in the hope of gaining a scholarship to university. But, as his sister Anne recalls, those plans changed when Harry went with a fellow train traveller to the PMG Department in St Kilda Road ([Hill, 2023](#)). He joined the PMG as a clerk, attending evening lectures in mathematics at the University of Melbourne during 1949 to improve his chances of winning a PMG Cadetship, which he achieved at the end of that year. In 1950, he enrolled for a B.Sc. as well as working at the PMG Workshops in South Melbourne. At the beginning of that year his cadetship was varied to enable him to study electrical engineering, which he commenced in 1951 ([Wragge, 2004](#)).

Engineering at Melbourne University in the 1950s

While studying for his BEE, Harry embraced life as an engineering student to the full. In his second year, he performed in the annual Engineers Revue (*[Cranks & Nuts, 1951](#)*) and, in his fourth and final year (Figure 2), he was Chairman of the Melbourne University Engineering

Figure 2. Harry Wragge in the fourth year of his BEE studies (Cranks & Nuts, 1953)

Students Club (MUESC) and the Chairman of Clubs and Societies on the Executive of the University's Student Representative Council (*Cranks & Nuts,* 1953). It was a heavy extra-curricular load.

Harry's situation attracted the attention of Professor Charles Moorhouse, then Dean of Engineering, as well as Head of Electrical Engineering. Moorhouse felt that Harry's extracurricular activities would detract from his final results, and that he should come back for a year's research and gain a Master of Engineering Science so as to get a good qualification. That started long negotiations with the PMG and the Commonwealth Public Service Board, resulting in the extension of Harry's cadetship to cover a further year's postgraduate research. In fact, the professor's concerns may have been groundless: Harry achieved First Class Honours and top place for his BEE degree (1954). But Moorhouse's efforts were rewarded by Harry obtaining his MEngSc degree in 1955 with Second Class Honours (Wragge, 2004).

Bill Brown, who studied electrical engineering at Melbourne seven years behind Harry, has told me that for Harry's MEngSc research he designed and built one of the first analogue computers in Australia. *Cranks & Nuts* (1954, p. 27) records that, at the 1954 Engineering School Exhibition, attended by an estimated 1,500 guests, "probably the most popular exhibit for the technically minded visitor was the analogue computer in Electrical Research". Bill Brown carried out his own MEngSc research on control systems in 1961 using Harry's computer[1] (Brown, 2023).

For a list of abbreviations used in this manuscript, see Table 1.

Table 1. Glossary of abbreviations

Abbreviation	Meaning
BEE	Bachelor of Electrical Engineering degree
CBD	Central Business District
CCITT	ITU's Consultative Committee(s) for International Telephony and Telegraphy
EEE	Electronic and Electrical Engineering
HKT	Hong Kong Telephone company
IST	Integrated Switching and Transmission project
ITU	International Telecommunication Union
MD	Managing Director
MEngSc	Master of Engineering Science degree
OTC	Overseas Telecommunications Commission of Australia

Abbreviation	Meaning
PABX	Private Automatic Branch Exchange
PCM	Pulse Coded Modulation (of voice or other analogue signals)
PMG	PostMaster General's Department
TRL	Telecom Australia Research Laboratories; later Telstra Research Laboratories
VF	Voice Frequency

Early Research at the PMG Research Labs

Given his academic results and postgraduate degree, Harry had no difficulty being assigned to the PMG Research Laboratories in 1955 after completion of his university research. Within a year (1956), he was promoted to Divisional Engineer, VF Transmission ('Our Contributors', 1967).

The Research Labs, founded in 1922, were headquartered at 59 Little Collins Street in central Melbourne; but the research staff, numbering about 200 when Harry joined them, were accommodated in five buildings nearby in the CBD. Later, when the importance of Harry's work on digital switching and signalling systems warranted creation of a large Switching & Signalling Section, later extended to become a new Branch, the staff were accommodated at new premises at 140 Exhibition Street. In 1972, Harry was appointed Assistant Director (Research), head of the new Switching and Signalling Branch (Coxhill, 2007a).

Figure 3. Harry Wragge at the PMG Research Labs in 1967 ('Our Contributors', 1967)

Early in Harry's career at the Research Labs, he spent time advocating and demonstrating the potential of transistor-based electronics for the PMG's equipment ('Our Contributors', 1967). At that time the PMG's national automatic telephony network was entirely based upon electromechanical step-by-step equipment. Its first technology upgrade, to crossbar switching in the 1960s (Moyal, 1984, p. 225), remained essentially an electromechanical technology.

Harry (Figure 3) began the process of knowledge transfer on the design of transistor circuits through a series of Research Laboratory Reports and papers in the PMG's house journal, the *Telecommunication Journal of Australia* (e.g., Wragge, 1960; Wragge & Wion, 1962). At the same time Harry was reviewing developments in the design of model electronic telephone exchanges in the major research laboratories around the world (Wragge, 1961). His next step was to form a small team to design and implement a 20-line experimental electronic telephone exchange within the Research Labs, completed by 1963. His publication (Wragge, 1963) describes the performance of a hard-

wired electronically controlled and switched PABX, which his team had built and installed at the 10 Lonsdale St Annex of the PMG Research Laboratories. It handled real telephone traffic directed to or from it, from anywhere in the public switched telephone network.

Integrating Switching and Transmission

In the PMG's engineering organization, going back to its roots at Federation, the very different technologies required for 'switching', meaning the telephone exchanges of that era, and 'transmission', meaning the cables or radio links within the network, led to long-standing organizational separations between switching and transmission engineers in both the States and especially in Head Office. It is significant for Harry's subsequent success in integrating the two disciplines, at least within telephone exchanges, that he began his career at the PMG Research Laboratories working on the potential of electronic solutions for Voice Frequency transmission. Of these, Pulse Coded Modulation (PCM) systems were holding the greatest promise for supporting a large number of voice channels over a single transmission link.

Harry worked with Switching Planning engineer Blair Feenaghty in the late 1960s to ensure that the PMG (later Telecom Australia) adopted the European 32-channel standard for PCM systems rather than the North American 24-channel standard.

Blair Feenaghty:

> "That was quite a feat, as the transmission side of the business was very firmly wedded to the American standard. Indeed, the transmission engineers were very put out by the decision — how *dare* two switching engineers go against the wisdom of the transmission branch? But I was better at the economic analysis and Harry better at the technology, and so we won, to the ongoing benefit of Telecom and Australia" (Feenaghty, 2023).

Harry attended the second International Conference of Electronic Switching, held in Paris in 1966, followed by visits to Japanese research laboratories to check first hand on their progress with electronic telephone switches ('Our Contributors', 1967; Wragge, 1967). What he learned from this trip clearly influenced his 1968 design study, which proposed the funding of a new R&D project, the IST (integrated switching and transmission) project (Wragge, 1968). Its ultimate aim was to boost in-house expertise in preparation for the PMG's network planning, manpower planning and equipment purchasing, perhaps eight to ten years out. The key mechanism for acquiring in-depth engineering expertise would be to design and build a next-generation entirely electronic, stored program controlled, digital switch and install it in a live local telephone network, to demonstrate its viability.

The IST project was to become the single project most heavily identified with Harry, not just within the PMG and (from 1 July 1975) its successor Telecom Australia, but with its peer groups internationally. He recruited very capable engineers to design the hardware (Andy

Domjan, Norm McLeod, Norman Gale, Michael Hunter) and specify the software (Fred Symons, Mel Ward, David King, Peter Gerrand) for this 'stored program controlled' (i.e., computer controlled) digital switch. He also recruited experienced PMG engineers from outside the Laboratories with knowledge of the current network (Greg Crew, Jim Vizard) to ensure that the model IST exchange and new signalling systems would meet operational needs when inserted as a transit switch between local telephone exchanges.

Some quotes from participants:

> "This was an extremely ambitious project, aimed at designing one of the world's first computer-controlled telephone exchanges, using digital technology. There were no textbooks available to help the designers" (Gerrand, 2007).

> "Our engineers and techs designed and built the system from the ground up, manufacturing circuit boards, racks and cabinets" (Crew, 2023).

> "The IST project was in competition with similar projects at Bell Labs in the US and the top telecommunications labs in Japan, Italy, France, Canada, Germany and the UK. And the Australian team was the first in the world to produce a computer-controlled digital switch that successfully handled live telephone traffic" (Gerrand, 2007).

The IST project was to have several outcomes. Firstly, by 1974 it achieved its objective of carrying live transit telephone calls in a local Melbourne suburban network, and stayed in situ until 1978 (Coxhill, 2007b). Secondly, working on the IST project provided several engineers with the expertise to accelerate their careers outside the laboratories into Telecom's mainstream network engineering department, and sometimes thence to very senior management positions (e.g., Mel Ward becoming Managing Director of Telecom Australia; and Greg Crew and Bill Craig reaching the senior ranks of Hong Kong Telecom). Harry's pioneering work with both the 1970s' IST project ("a notable 'first' for Australia") and its 1960 predecessor, Harry's experimental, all electronic PABX, were acknowledged when he was inducted to the Pearcey Hall of Fame (Pearcey Foundation, 2009).

Greg Crew:

> "They were happy and productive times, and Harry used all his many political skills to ensure the IST project was well supported, despite some opposition from the Engineering Department. [….] The IST switch was eventually moved to Windsor exchange and linked into the telephone network. By then I had joined HK Tel. and some years later Bill Craig also joined HKT. Eventually the IST switch was de-commissioned, around 1990, and the final phone connection was to Bill and me in Hong Kong, so we could join the celebration" (Crew, 2023).

Harry's expertise on future digital networks was enhanced by his participation from 1969 to 1981 in CCITT Special Study Group D meetings in Geneva. The CCITT Study Groups were then, as now, meetings of technical experts from the ITU's members: in that era largely PTT (government-owned postal, telegraph and telephone) administrations and monopoly private

carriers, such as AT&T in the USA, together with experts from the major telecommunications manufacturers.

The CCITT Special Study Group D, for which Harry was Vice Chairman in 1976–1980, was a forum for sharing expertise on digital transmission, switching and signalling technologies. It provided him with the ability to gain an authoritative knowledge of world developments to take back to Telecom Australia, as well as providing inputs to Telecom Research Labs' (TRL's) own research. His visits to peer laboratories enabled him to build friendships with research directors in major organizations across Europe, Japan and North America (Wragge, Wragge & Wragge, 2023).

Promoting Australian Telecommunications Research

Meanwhile Harry was active in promoting Australian telecommunications research, as founding Editor-in-Chief (1967–1981) of a new journal, *Australian Telecommunications Research*, abbreviated to ATR. An initiative of the PMG Research Labs' fifth Director, Rollo Brett, ATR was established to promote Australian telecommunications research in general. Unlike other 'house journals', ATR was actively inclusive, inviting papers from universities, the CSIRO and manufacturing laboratories in Australia – and sometimes overseas. Volume 1 of ATR included papers by young researchers Mel Ward (later Managing Director of Telecom Australia) and J. L. (Jonathan) Parapak (later Secretary General of the Indonesian PTT). ATR folded in 1995, after the effects of industry competition within Australia in the early 1990s, together with career pressure on Australian academic researchers to publish in international journals, dried up the source of research papers for the journal (Gerrand, 1996).

The Analogue versus Digital Switching Controversy in the 1970s

In 1974, the PMG had installed its first SPC (stored program controlled) exchange, the Metaconta 10C exchange from BTM (Moyal, 1984, p. 318). This was carefully chosen to be installed deep within the network, as a trunk (transit) exchange in Sydney, to avoid any downside for customers if teething troubles arose. Once the 10C exchange had proven its value, the planners were keen to exploit the versatility and cost savings of both SPC and electronic switching across the network, beginning with local exchanges. The question was, should they make a small step by employing SPC analogue switching, or a bigger step by using SPC with digital switching, for which integrated circuits were proving a boon through miniaturisation of components?

Needless to say, Harry, having proven some of the advantages of SPC digital switching with his experimental IST exchange, and being well across world trends, was active with

submissions and talks to Head Office network engineering staff, advocating the move to digital. In particular, he stressed the advantages of greater reliability and smaller bulk, leading to significant reduced accommodation, asset and operational costs. But, unlike the earlier success over the choice of European 32-channel PCM systems, he found his ideas blocked by a very conservative General Manager, Engineering, whom I shall call Mr X.

Mr X went so far as to cancel Harry's attendance at one of the International Switching Symposiums, at which he had been invited to give a keynote address. To the stupefaction of many of the delegates, Mr X used the keynote address to assure the conference that he foresaw no need for digital switching in the foreseeable future. For some years after this event, Telecom delegates to CCITT meetings were asked by amused representatives from Bell Labs and elsewhere as to whether Mr X had changed his mind.

In the meantime, Telecom Australia decided to invite tenders for an SPC switch for its local and tandem networks. Mr X's subordinates persuaded him to include in the specification an option to offer either digital or analogue switching after the first purchase. Ericsson's AXE exchange was selected. But the first exchange installed, required by Mr X's specification to be analogue, ended up a lonely orphan in the Telecom network. Fortunately, the flexible tender specification enabled Telecom to buy all subsequent AXE exchanges from Ericsson as digital switches. Harry was on the right side of history.

Researching Customer Needs

From 1979 to 1981, Harry moved sideways to head the Customer Systems and Facilities branch at TRL. This branch was unusual in employing psychologists and a geographer, as well as the usual mix of research engineers and scientists, with supporting technicians. It also provided Harry with another opportunity to collaborate with Blair Feenaghty, then head of Product Management in Head Office. They agreed that it was time to conduct some field experiments to establish the feasibility of providing a greatly increased suite of services for Telecom's customers, and to test their attractiveness in reality, as opposed to the results of customer surveys.

Feenaghty:

> "Hence the project known as FINCS: Field Investigation of New Customer Services. And so we became the 'Head Fincs' — Harry must have been an aficionado of The Wizard of Id! It was a good project, which provided some useful early information on what services would be possible and desirable" (Feenaghty, 2023).

Responding to the Davidson Inquiry on Telecom's Future

From the 1970s, political pressure had built within the USA to break up the private sector monopoly of AT&T, which included both the long-distance networks and the regional local telephone companies. In 1984, AT&T divested itself of the Regional Bell Operating Companies. Inevitably, similar pressures arose in Australia, spearheaded by media mogul Kerry Packer (Moyal, 1984, pp. 338–339, 352, 379), as well as lobbying of the federal government by merchant bankers looking for the profits flowing from privatisation.

In response, the then Fraser Government set up a Commission of Inquiry, known as the Davidson Inquiry (1981–1982), to make recommendations on the extent to which the private sector could be more widely involved in telecommunications services in Australia — and hence the future of Telecom (Moyal, 1984, p. 380). Telecom put together a team of two experienced executives, George Hams[2] and Harry Wragge, together with a younger executive, Ken Loughnan, from Corporate Strategy, to produce Telecom's submissions and serve as the prime interface with the Davidson Inquiry.

Ken Loughnan:

"[I] have fond memories of working closely with both Harry and George Hams as the team in developing the Telecom response to the Davidson Inquiry in 1981–1982. Harry almost always had an alternate view, although I suspect that was partly his way of encouraging a 'young buck' to get to the bottom of an argument — his favourite phrase — always calmly delivered — 'well that's not necessarily so'. I learnt a lot from Harry…" (Loughnan, 2023).

The election of the ALP Hawke government in 1983 effectively killed off the Davidson recommendations.[3] However, Telecom's senior management had good reason to believe that increased competition and perhaps eventual privatization of the organization had only been deferred. Hence, much effort was expended by Telecom's senior management from 1985 onwards in preparing the organization for the introduction of competition.

Harry continued in Corporate Strategy as Assistant Director, Business Development until May 1985, when he returned to TRL as its new director, following Ed Sandbach's retirement.

Director of the Telecom Research Labs (1985–1992)

TRL under Harry, as under his predecessors, served the larger organization through both problem-solving and the transfer of expertise on new technologies. During Harry's time as director, technology transfer took place on the key technologies of optical fibre transmission, terrestrial and satellite radio technologies, ISDN switching, the Digital Radio Concentrator

System (invented at TRL and deployed widely in the outback), geographical information systems, directory systems and packet switching, amongst others.

Sometimes the technology transfer took the form of TRL staff. Ian Campbell, Executive General Manager of Special Business Products in the mid-1980s, writes:

> "As Director, Research, Harry was a strong supporter within Telecom to me in Special Business Products, for the development, launch and deployment of mobile services. I knew nothing about the technologies and Harry was a valued sounding board. He donated radio systems expert, Dr Reg Coutts, then Head of Radio and Satellite Networks at TRL, from TRL to Mobiles in 1989" (Campbell, 2023).

Reg's first job was to advise on which new digital radio technology Telecom should recommend to the regulator for implementation, for the introduction of mobile competition in 1991 (Gerrand, 2021).

In 1989, Harry was made a Member of the Order of Australia for his services to telecommunications technology. His significant contributions to telecommunications research in Australian universities will be discussed below.

In 1991, the Australian Government merged Telecom with the Sydney-based Overseas Telecommunications Commission (OTC) as the Australian and Overseas Telecommunications Corporation (AOTC) in preparation for the introduction, in 1991, of competition in the long distance and mobile markets. The smaller OTC was the clear winner in this merger, with its Chairman, David Hoare, becoming chair of the combined entity AOTC, and many of OTC's senior executives appointed to head some of the former Telecom's major business units. In 1992, an American from AT&T, Frank Blount, was appointed to head AOTC. He rapidly appointed some of his former colleagues to fill the top marketing and information systems positions. AOTC traded within Australia as Telecom Australia and later became Telstra. On his retirement from Telstra, Blount boasted at having replaced Telecom's entire senior management team[4] (Ries, 1999).

Telecom's Managing Director, Mel Ward,[5] and Head of Corporate Strategy, Terry Cutler,[6] had seen the writing on the wall, and left the company before the merger. The days of the rest of Telecom's top management team, including Harry, were numbered. Often, a senior executive was moved sideways before being 'let go'.

As part of this chess game, Harry found himself transferred to Corporate Centre as Chief Technical Adviser to the CEO. It was, in this author's opinion, a face-saver for Harry but a job with little influence. Harry undoubtedly thought the same, because he decided to retire from Telstra in early 1993, aged only 63.

But further honours were to flow to him in retirement: an Honorary Doctor of Engineering degree from Monash University in 2000; and a Centenary Medal from the Australian Government in 2001. In 2009, he was inducted into the Pearcey Foundation's Hall of Fame (Figure 4), in recognition of his outstanding services to the ICT (information and communication technology) sector (Pearcey, 2009).

Harry Wragge with Senator Stephen Conroy

Figure 4. Harry Wragge inducted into the Pearcey Hall of Fame by Senator Stephen Conroy (Pearcey, 2009)

Assistance to Australian Universities

Ever since graduating, Harry had maintained close ties to his alma mater, the University of Melbourne. He had lectured part-time in electronics there in 1965 (Packer, 1997, p. 35), and served as an external member of various advisory boards for over twenty years, including being President of Convocation in 1990–1991. In addition, he played a valuable occasional role in the accreditation of engineering courses around Australia as a member of the Institution of Engineers Australia's Accreditation Board – although conflict-of-interest protocols prevented him from reviewing the courses within the State of Victoria.

In 1987, the Williams Commission Report into engineering education in Australia was published. It provided a devastating critique of the Department of Electrical and Electronic Engineering (EEE) at the University of Melbourne, being critical of the department's poor performance in research and teaching, and the poor progression rates of students, given the quality of the intake of first-year students. In 1988, the new Vice Chancellor, Professor David Penington, intervened. He set up a Review Committee with an independent chair, two professors of Electrical Engineering from universities in NSW, two professors from faculties

other than engineering, and two industry representatives. One of these was Harry Wragge, then head of TRL (Packer, 1997, pp. 34–35).

The final recommendations "sent shock waves through the rest of the University". One of the two EEE professors was sacked, and the other, perhaps unfairly, was required to spend at least half his time outside the department on industry consultancy (Packer, 1997, p. 35). However, in 1988, the Engineering Faculty learned that Rod Tucker, leading a research group in the new field of photonics at Bell Laboratories, was keen to return to Australia. With the help of Harry Wragge, David Penington was successful in attracting Tucker to head up the EEE department "with the promise of sufficient funding to set up a world class photonics laboratory" (Packer, 1997, p. 38).

Rod Tucker took up the positions of Professor and Head of EEE at the beginning of 1990. He redesigned the course, with strong support from industry leaders, reorganized the department, and started setting up the new photonics laboratory and recruiting new research and teaching staff, with funds from both the Vice Chancellor and Telecom Australia (Packer, 1997, pp. 41–42). Tucker and his fellow professors were able to transform the research and teaching calibre of the department to an outstanding level that has continued to the present day. Without Harry's crucial funding support back in 1990, Tucker "would not have returned to Australia and the University of Melbourne" (Tucker, 2023), and the revival of the EEE department would not have happened so quickly or so brilliantly.

It was fitting that the University of Melbourne's top engineering honour, the Kernot Medal, awarded annually since 1926 for "Distinguished Engineering Achievement in Australia", was conferred on Harry Wragge (Figure 1) in 1990 ('Champion of the cause', 1990).

Harry provided significant support to other Australian universities. From March 1987, he signed a five-year major research contract to establish the Teletraffic Research Centre at the University of Adelaide ('Teletraffic Research Centre', 1987). The Centre's commercial relationship with Telstra has continued through to the present ('Telstra', 2021).

From 1987, he provided seed funding via a research contract, and assistance from expert TRL staff, to Professor John Hullett's research team at Curtin University to take their QPSX queued packet-switching patent through to an industry prototype stage, and persuaded Telstra's investment arm to invest in it (Roberts, 1991). QPSX was floated on the Australian Stock exchange in December 2000 (Bolt, 2000).

As Director of TRL, co-located close to Monash University, he took initiatives to encourage closer cooperation. These included providing interim funding for Dr Fred Symons from TRL to take up a professorial role in telecommunications engineering in Monash's Department of Electrical and Computer Engineering from 1989 until Fred's retirement in 1996 (Gerrand,

2007). Monash University awarded Harry an Honorary Doctor of Engineering in 2000 for his services to telecommunications research and education.

Harry as Family Man and Sailor

Harry married Shirley Ogilvie in 1957 at Scotch College Chapel. They bought land in Seaford and decided to build their own home there.
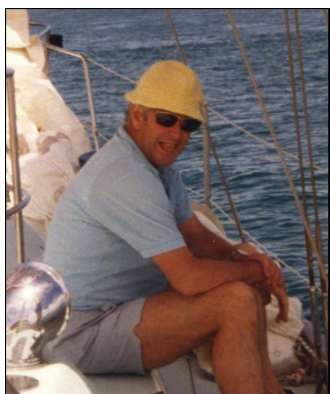

Figure 5. Harry Wragge yachting in the 1980s (courtesy of the Wragge family)

According to Harry's daughters, Sue, Jennie and Kate:

"The achievements that were most important to Dad were building the house, camping trips, and building our dinghies. Dad built the house with Mum, and they moved in with planks on floor joists, noggins as shelves in the kitchen and finished the house together. Together they created a place Mum never wanted to leave.

"One of the biggest things Dad did was get us involved in sailing. Our first season as a Family Member of Frankston Yacht Club was 1970-71. Dad built a Puffin Pacer from a plywood kit, and after Sunday morning cadets at Frankston he headed to Carrum where *he* sailed in the afternoon. The next winter Dad and some other fathers got together to build six Sabot dinghies at our place. *Inside* the house." (Wragge, Wragge & Wragge, 2023)

Harry was a member of the Frankston Yacht Club for fifty years. He was elected Commodore from 1978 to 1981, and later made a Life Member. The annual Open Harry Wragge Trophy Handicap race is named in his honour. In 2009, Harry was inducted into the City of Frankston's Hall of Fame as a local hero.

The Kindness of the Man

Blair Feenaghty:

"[P]erhaps my most enduring memory of Harry is of the moral support he provided me several times over my career. When I arrived in Melbourne as a very green young engineer to pursue research for an MEngSc degree, he was welcoming and supportive beyond expectation.

"He was quick to recruit people to support his professional interests. At his urging I agreed to become Secretary of the Electrical Branch of the Victorian Division of Engineers Australia, and later Chairman, something it would have been rather unlikely for me to do without his encouragement and support.

"Later, on my first visit to Geneva with the Australian delegation, Harry took me under his wing to demonstrate the marvels of the Swiss railway system, how to secure a bed in Zermatt, and the glories of the Matterhorn. [...]

"I am delighted that even in the last years of his life, when I met him at Shirley's funeral, Harry remembered that day in 1961 when we first met. A great and good man whose

memory will live with those of us lucky enough to have had him as part of our lives" ([Feenaghty, 2023](#)).

And, as the author of this obituary, I have been motivated to research it and write it, not just to record Harry's considerable accomplishments, but also to return a favour to someone who was very helpful to my own career. In the 1970s when he headed Switching and Signalling Branch, he gave two promising young engineers the opportunity to gain broader industrial and overseas experience by taking two years' leave without pay from the PMG, with our jobs guaranteed on our return. David King and I were able to spend two years working in the R&D laboratories of major manufacturing companies: David in Paris; and myself in Madrid. We not only gained valuable industrial experience, but also the long-lasting value of cultural immersion and second-language acquisition, which have enriched the lives of ourselves and our partners.

Conclusions

Harry Wragge was both a leading Australian research engineer and a major catalyst for the conversion of Australia's analogue, electromechanical telephony network of the 1950s and 1960s to the cheaper, more reliable and more versatile digital circuit-switched networks of the 1980s and 1990s. He was one of the most influential research leaders within Telecom Research Laboratories, both before and during his time as the Director of TRL (1985–1992).

He also played a vital role in supporting telecommunications research in several Australian universities. A first instance was his funding (initially with OTC) of the Teletraffic Research Centre at the University of Adelaide from 1986. A second was his key role in the revival of the EEE department at the University of Melbourne in 1989, enabling it through strategic funding support to become an eminent centre for phonics research under Professor Rod Tucker's leadership. A third was his strategic support for the QPSX project at Curtin University via a research grant in the late 1980s, helping it on its way to its float on the ASX in 2000.

In addition to being a beloved family man and a local hero at the Frankston Yachting Club, Harry's death this year at the ripe old age of 93 has evoked many testimonials from former colleagues, relating his kindnesses as a mentor and friend.

Acknowledgements

at the University of Melbourne; and to my former MEngSc (Monash) supervisor, Dr W. A. (Bill) Brown; and equally to Emeritus Professor Rod Tucker AM for his recollections of Harry's key role in supporting the University of Melbourne's EEE department in 1989 and beyond.

On Harry's career at the PMG, Telecom and Telstra, I am grateful to have had my own first-hand knowledge extended by Harry's colleagues Ian Campbell, Greg Crew, Blair Feenaghty, Dr Jim Holmes, Ray Liggett and Ken Loughnan AO.

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Endnotes

[1] Some decades later, when Bill Brown was a Professor at Monash University, he joined Harry in the accreditation of engineering courses in interstate universities on behalf of the Institution of Engineers.

[2] George Hams' obituary can be found at Black (2023).

[3] The previous Coalition government was unable to implement the Davison recommendations. Despite the Liberal Party's enthusiasm for privatisation, its Coalition ally, the National Country Party, also rejected the Davidson Inquiry's recommendations for introducing competition to Telecom (Moyal, 1984, p. 383)

[4] The sole exception was a Canadian, Doug Campbell, who had joined Telecom only 18 months before as Deputy Managing Director and was not seen as part of the former Telecom culture.

[5] Mel Ward's impressive career, including references to both his participation in the IST project at TRL and to his resistance, as MD, to a potential 'carve up of Telecom', is summarised in Jellie (2010).

[6] Dr Terry Cutler's brilliant career is well described by Burry, Healy & Spurling (2020).