

**The Institution of Engineers, Australia: Sydney Division  
Engineering Heritage Committee**

**Oral History Program**

**INTERVIEW TAPE LOG**

INTERVIEWEE:	Tom Crowe	TAPE NUMBERS: IEA SYD: JC 1   2
INTERVIEWER	Jennifer Cornwall	NUMBER OF TAPES: 2
PLACE OF INTERVIEW:	Northbridge	
DATE OF INTERVIEW:	28 June 2001	
RESTRICTIONS ON USE:	Nil	
LOG PREPARED USING:	Sanyo Memo-Scriber TRC-8080	

**Tape: IEA SYD: JC1 Side A**

COUNT	SUBJECT	NAMES & KEYWORDS
00.0-5.3	<p>Born in Roseville in 1940. Educated at Cammeray Primary School and later Roseville Public School when moved there. Went on to North Sydney Boys High School. Went to study civil engineering at New South Wales University.</p> <p>One sister. Father was an accountant. Parents encouraged further education. Started school early and finished at 15 – believes too young - caught up with him – failed leaving certificate. Was accepted to university but difficult life due to age. Took him five years to do four year course and did not qualify for Commonwealth scholarship or government cadetships (eg Public Works) although this meant that not indentured after graduated.</p> <p>In those days the public sector employed most engineers which has changed now - with restructuring and outsourcing private sector main employer</p>	
5.3-10.3	<p>Decision to do civil engineering – always interested in building/creating things. Inherited his grandfather's carpentry equipment that wet his appetite for it. No building degrees in those days in 1956 – would have done combined building/architecture degree if offered - opted for civil engineering as was closest equivalent.</p> <p>University days – his year was not most brilliant that university produced. Only a few went on to</p>	

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	start own businesses. Many ended up in general management in construction industry. Some did design.	
10.3-18.9	<p>Degree included work placement requirement - six months at university and other six months working throughout the four years. Had to have a job/have worked this six months before passed each year. Practical component highlight of university training - fostered maturity and experience. Laments absence in today's courses.</p> <p>Discusses first job - in last two years of university worked part-time on Gladesville Bridge - "they were the glorious bridge building days in Sydney" which were to define Sydney's transport system. When had to get a job in third year to qualify worked out where the bridges were to be built because thought would be fascinating - went to Gladesville Bridge and met Backie James, Chief Engineer - previous engineer on Spit Bridge and mentor to him for rest of his life. Was the genius behind putting Gladesville Bridge together.</p> <p>Printed plans re Gladesville Bridge for six months and delivered them around the job - was "brilliant" because got to know about reading, drawings, blueprints, what everyone was doing, etc. Was very fortunate.</p>	Gladesville Bridge; Backie James
18.9-25.8	<p>Discusses Backie James. Worked for him from 1958 until 1968 with Reed and Mallack, the British engineering firm responsible for building Gladesville and other bridges - joint venture with Sydney firm, Stewart Brothers - Backie James was the Chief Engineer. Involvement of overseas engineering firms in Australia cyclical - overlooked that use local personnel.</p> <p>Mark Watley also another brilliant (English) engineer employed by this company who was influential during this period and mentor to him.</p> <p>The 1960s was the beginning of bridge building and high-rise buildings - opportunities for young aspiring civil engineers from England where very competitive.</p> <p>Entered profession at the beginning of a structural revolution. Getting wider and higher; post-tension and pre-tension concrete coming into its own - describes what this is.</p>	<p>Backie James; Mark Watley; Reed &amp; Mallack; Stewart Brothers</p> <p>High rise buildings; post-tension and pre-tension concrete</p>
25.8-32.9	Gladesville Bridge - responsible for casting the 500 concrete blocks that made up the arch - had to be cast within an eighth of an inch which was a nightmare - tapered blocks and hollow -	Gladesville Bridge; Pacific Highway

	<p>got one wrong out of 500. After this went to a bridge at Harword Island which is across the Clarence River at Grafton - was replacing the last ferry on the Pacific Highway which was a four lane road under construction then. Was site engineer on that project responsible for precasting the headstocks and erecting them. About 23-24 years old at that stage. Drain away from engineering professions to other roles and therefore always opportunities for those remaining in the profession. Discusses need to be able to get along with labourers and other workers involved in construction projects, often living in close proximity.</p> <p>Returned Sydney and got married. Worked on the Aston Street Bridge at Parramatta - unremarkable structurally. His first project management role - responsible for whole bridge. Recalls putting in a pile a metre out of position - boss not amused - had to be replaced.</p>	Aston Street Bridge, Parramatta
32.9-39.8	c1966 Reed and Mallack decided to withdraw from Australia. Tom decided to go to Vancouver, Canada to work. Looked for work re dam building to acquire experience but these jobs in isolated locations. Started working for IBM and put through degree in computer science - unrelated to civil engineering. To his initial horror became a salesman.	IBM
<b>End Side A, tape 1</b>		

Tape: IEA SYD: JC1 Side B		
COUNT	SUBJECT	NAMES & KEYWORDS
00.0-5.4	<p>Sales an eye-opener - taught him a lot. Top salesman in first year - huge demand for computers. Government computing main source of revenue for IBM then. IBM had two centres of excellence in engineering in computers - Washington and Vancouver. Experience stood by him for rest of professional life as elements of computing have not changed.</p> <p>Started lecturing in critical path method at the University of British Colombia. Critical path planning one of the main applications of computers - in demand to go out as IBM representatives to teach it. Describes what CPP is.</p>	critical path method/planning
5.4-12.5	Returned to Australia for family reasons in 1970 - had always wanted to be a	Sir Walter Scott; development of management



	<p>management consultant. In university days had met Sir Walter Scott who was an elder at Tom's church and founder of W D Scott and Co, one of the first management consultants in the world – not generally known that M/C was developed substantially in Australia. Had approached Scott and asked him for a job when he finished university – told him need management experience. Has reflected on those words ever since.</p> <p>On returning to Australia, got in touch with Scott – told that they didn't do anything in engineering. Faced with dilemma of once again moving outside engineering profession. Went to P A Management Consultants, the only other M/C in Australia – had a group dedicated to construction. Entered into new professional era – put him through training program equivalent to an MBA. Included production control which he hated, but was a turning point. Had already acquired marketing skills in Canada as well as understanding of computers.</p> <p>Discusses what is involved re management consultancy in civil engineering/construction/building context</p>	<p>consultancy in Australia</p> <p>P A Management Consultants</p>
12.5-16.8	<p>Discuss changing technologies in engineering from 1970s. Describes some of these: surveying, structural designs. Emergence of all these new experts created a need for someone to manage them.</p> <p>During time at P A involved in programming of variety of things, including Opera House (early 1970s). Describes concept/method of project programming – determining how are to assemble a particular building or bridge – putting down a sequence of all these events. Increased complexity of construction.</p>	<p>project programming</p>
16.8-30.0	<p>In 1973 left and formed a company in partnership with Alex McLaughlin (a colleague from PA) called McLoughlin and Crowe for ten years. First stand-alone management consultant in project management in Australia. In early 1980s Tom worked on AMP's Collins Place – believes first consultant project manager on a major project in Australia – a turning point in career – 38 years old and managing billion dollar building. Confronted with resistance in some quarters. Interesting time as era when science of project management emerging but still in its infancy re application to building/civil engineering. Describes what project management is.</p>	<p>McLoughlin &amp; Crowe</p> <p>Collins Place; project management</p>

	Recalls sacking of quantity surveyor due to incompetence, Rider Hunt, leading QS practice in Australia – forecasting was misleading. Describes fallout from this for Tom politically.	quantity surveying
30.0-end	<p>Discusses when computer technology began to play significant part in project management. Used Wang word processor on Collins Street project in 1980 – put it on site to process costs and put a 'mathpack on it'. Was early application of computers. Wang had word processing market back then.</p> <p>Bought some microcomputers – in days before Windows that came out in 1985. At this stage a project manager on another AMP building, the National Australia Bank House, next to Qantas Centre in George Street, Sydney. By this time Tom and Alex McLoughlin had gone separate ways after ten years. Tom formed T W Crowe &amp; Associates in 1983.</p> <p>Installed micro-computers that were interlinked between the whole project team and developed software – convergent technology had come out – won an engineering excellence award for this - another aspect of developing project management. Remembers trying getting Telstra to interconnect them but was going to cost too much – bought a dish from an army disposal store and 'pointed it at each other' and transmitted data to each other around the city which was highly illegal. Only able to do this because of what learnt from IBM. Spent \$7 million on software which was wiped out with release of Windows and MacIntosh and people wanted more user-friendly ways of working on computers. Had chosen conversion technology because was user-friendly, but not like Windows, etc. Problem was didn't operate under DOS which was operating system at the time. Wiped them out. Computer technology introduced was innovative but industry not ready for it - highly unsuccessful in selling it. Remains today – slow uptake of computer technology in industry.</p>	<p>Wang; Computer technology</p> <p>National Australia Bank House, Sydney</p> <p>formation of T W Crowe and Associates</p> <p>project management</p>
<b>End Side B, tape 1</b>		

Tape: IEA SYD: JC01/2 Side A		
COUNT	SUBJECT	NAMES & KEYWORDS
00.00-5.6	Discusses how theory and practice of project programming arrived in Australia. Developed in Australia through handful of practitioners of the science in 1970s. Concentration initially on techniques such as planning, cost, concrete. Too much focus on technique/productivity control – now realise lost sight of behavioural science aspects.	project programming



	<p>Tom has a reputation of being on 'cutting edge' of project programming - T W Crowe did a lot of work in the area - prided themselves on doing things differently and challenging the norm - took on industry which didn't do them any good. Civil and Civic perceived him as a rival but never had any such intention - believes was hopeless business manager - reason for split with Alex McLoughlin.</p>	Civil & Civic
5.6-17.6	<p>Talks about business split with Alex McLoughlin - formed T W Crowe in 1983 after found himself without a job. Started managing AMP project and somehow became big, including offshore projects.</p> <p>Discusses his PhD currently completing - examining achieving excellence and strategies for project deliveries - case studies lead to conclusion that doing many things wrong in the industry. Should have had business manager at T W Crowe &amp; Associates so he could have been released to be the 'mad inventor'. Initiated a lot of new ideas and products and would apply to projects. He could never find anyone to be his business partner to manage ongoing role of producing these products. Ideas eventually taken up by other people in the industry. Discusses his various innovations such as scientific refurbishment technique which was applied to city buildings. To become a major product with Lend Lease who was one of many that adopted it.</p> <p>Discusses scheduling techniques, another innovation of T W Crowe. Concept of communicating planning in accessible form through use of graphics and computers c1984. Significant financial outlay. Again, reluctance of industry to adopt it. Critical of industry's unwillingness to promote excellence, lack of client focus, etc. Too much focus on money</p>	<p>scientific refurbishment technique</p> <p>scheduling techniques</p>
17.6-22.7	<p>Discusses overseas projects involved in. Malaysia, Hong Kong, Singapore, Indonesia in 1980s - while acknowledged needed Australian skills, attitude one of disdain for Australians. Established a TAFE College in Malaysia in 1990s on a major job there to train construction workers.</p> <p>Eventually sold out overseas operation - difficult life to lead and financially unstable.</p>	Off-shore projects
22.7-27.2	<p>Discusses changing business environment has observed over the years. Business conducted differently now - no staff loyalty that he enjoyed - competitive. Reasons for this include economic rationalism. Focus on money not</p>	

	producing quality. Clients cannot discern between services – go simply on price. Very disillusioning as a professional.	
27.2-30.8	<p>Discusses highlights of his career – Collins Place project, National Australia Bank project. Also involvement in 1990s developing best practice/total quality management and introducing into construction industry – has driven him for last ten years in trying to reform it – feels has been his major contribution.</p> <p>Discusses his PhD – drivers of excellence on projects has formed basis of his doctorate. Believes these projects have made a difference. Hoping that will contribute to effecting change in focus of industry from profit to people and customers.</p>	Total quality management
30.8-36.2	<p>Discusses his entry into the academy. Has been teaching at NSW University, UTS, Sydney and Deakin University in project management skills over the last four years in engineering/architecture/building faculty. Teaching important part of his commitment to effecting change.</p> <p>Discusses concept of information management – published on this in 1990. Have moved on since then to focus on leadership, behavioural science aspects.</p>	Information management
36.2-38.3	Discusses what he is doing now – semi-retired. Teaching, researching and 'trying to get his handicap in golf down'. No longer working on projects- is a 'burnt-out' project manager.	
<b>End Side A, tape 2</b>		