

**Oral History Program: Biographical Notes**

**Thomas Grandin CHAPMAN (1927 - )**

**Civil Engineer**

**Birth & Family:** Born 21 April 1927 in Shanghai. Father an Educational Missionary who taught Science and Maths in a Methodist College. Before his birth, Chapman's parents were forcibly evacuated by British gunboat from Wen Chow and taken to Shanghai due to Chinese Communists coming from south. Shortly after his birth, the family returned to Jersey, where they remained for 4 years. They then went back to China, but Chapman had to return to Jersey due to illness soon after. One brother.

**Education:** After attending the only public school on Jersey, Victoria College, then was accepted into his father's alma mater, Leeds University, in October 1945.

**Qualifications:** BSc (Leeds), PhD (Southampton), Emeritus Professor, University of New South Wales.

**Memberships:** FIEAust; Member, American Geophysical Union; Member, International Water Resources Association; Member, National Ground Water Association, USA; Foundation Member, New Zealand Hydrological Society; Member, Australian Water and Wastewater Association.

**Awards:**

**Work History:** Aware of great opportunities for engineers in Australia, Chapman sought a position with the State Rivers & Water Supply in Victoria. When this fell through, he accepted a position with the Commonwealth Department of Works & Housing and sailed for Australia, arriving on Australia Day 1949.

Chapman was assigned to the Head Office of Works & Housing, in the Aerodromes and Roads Section, working in the laboratory, testing mainly soils and concrete, but later specialised in bituminous materials. Many new airports were being built using techniques designed especially for Australian conditions. He took part in site investigations for West Beach Airport that was built on very marshy land; the test strip done for this project provided the basis for the design of future airports built on areas with very low CBR ratios. Chapman was responsible for building the first bituminous concrete in Australia - the east-west runway at Sydney Airport, which also involved the re-routing of the Cook's River.

In 1953 Chapman and his wife and children returned to England to visit family. Although he had acquired an Associate Membership of IEAust, London consultancy firms did not recognise this qualification. He successfully applied for a lectureship in Hydraulics at Southampton University, which had just become an independent University. As one of three lecturers in the Civil Engineering Department, and being the only lecturer in Hydraulics, he was also responsible for the setting up and design of the hydraulics laboratory. He combined his two interests - soils and hydraulics - in studying the hydraulics of groundwater water flow as the subject of his PhD. During this period, Chapman realised his interests lay more in research than teaching, and having completed his

PhD, he and his wife decided to return to Australia. While still in England, he successfully applied for a position with the CSIRO as a Hydrologist with Land Research and Regional Survey involving field studies in the remote areas of Australia.

In 1957 Chapman and his family returned to Australia, where they were based in Canberra. During 1957-1971 he initiated studies in regional hydrology and took part in fieldwork in Western Australia, Cape York Peninsula, Hunter Valley and Central Australia. Chapman also established a hydrology group that developed equipment for data acquisition and computer processing, undertook field studies, (particularly in low rainfall areas) and developed linear systems and process model approaches to catchment hydrology.

The group achieved recognition by most Australian water authorities in the use of its analogue-digital conversion units and digital field recorders and was selected as the central analysis group for the Australian Representative Basins Program by the Australian Water Resources Council. He was also leader of the Division's natural resources research group of 22 scientists, concerned with the development of techniques for rapid assessment of land potential.

By 1971 Chapman was finding little stimulation in his work with the CSIRO which had become more or less a managerial role, so decided to return to research and accepted the position as Professor of Engineering in the Faculty of Military Studies, University of New South Wales at Duntroon, ACT, at a time when the faculty was moving towards a full 4-year BE degree. A highlight was the field trip on which he accompanied students to Papua New Guinea to do site investigations on soil testing and surveying. He also developed and set up the laboratories at Duntroon during his time there.

Although Chapman enjoyed his time at Duntroon, he took the opportunity to join the main campus in Kensington in 1981 as Chair of Water Engineering, University of New South Wales, where he found that the staff and students were far less motivated than those at Duntroon. He was responsible for the administration of the Department of Water Engineering and later became Head of School, at the same time publishing papers and following his own research interests which included, amongst others, the hydraulics of shallow groundwater systems.

Chapman retired from the University in June 1987, and went to Sweden for three months where he was involved with a UNESCO working group on developing a textbook on Comparative Hydrology which would show the similarities between hydrology in different parts of the world, thereby addressing the problem of water resource projects being set up in inappropriate local situations in under-developed countries, by consultants from developed countries.

On returning to Australia Chapman successfully applied for a position as Engineer, Class 2, Alligator Rivers Region Unit, Department of Mines and Energy in Darwin, Northern Territory, where his main responsibility was the analysis of hydrological data on a range of projects.

Following his remarriage, Chapman and his wife returned to Sydney in 1988; at the time of his oral history interview he was an Emeritus Professor of the University of New South Wales, involved in various research projects.



## **Career Summary - Tom Chapman**

### **Personal details:**

Name: Thomas Grandin Chapman  
Address: P.O. Box 106  
Crows Nest 2065  
Australia

Phone: (02) 9929 7701 or (02) 9385 5015

Fax: (02)99297701 or (02) 9385 6139

Email: tomc@civeng.unsw.edu.au

Date of birth: 21 April 1927

Nationality: Australian

Academic and professional qualifications: BSc(Leeds),  
PhD(Southampton), FIEAust; Emeritus Professor, University of New  
South Wales.

### **Previous employment:**

**1949-53.** Commonwealth Department of Works, Aerodromes and Roads section. Responsible for laboratory and field investigations of soils, concrete and bituminous materials, and construction of bituminous wearing courses.

#### **Interesting projects:**

- Subgrade tests on soft marine clays at site of Adelaide airport, 1949.
- Design and construction of soft sand asphalt surface for prototype Jindivik aircraft, Koolymilka, near Woomera, 1950-51.
- Design and testing of experimental jet-resistant pavement surfaces for RAAF, Point Cook, 1951.
- Design and construction of bituminous concrete surface (the first for any airport in Australia) for East-West runway at Sydney airport, 1952-53.

**1953-57.** Southampton University. Lecturer in civil engineering, undertaking research in groundwater hydraulics. My first paper published in the IEAust journal in 1956 arose from my interest in the dewatering systems used for drainage construction at Sydney airport during my time there.

**1957-71.** CSIRO, Division of Land Research. Initiated studies in regional hydrology; field work in Western Australia, Cape York Peninsula, Hunter Valley, and Central Australia. Established a hydrology group, which developed equipment for data acquisition and computer processing, undertook field studies (particularly in low rainfall areas), and developed linear systems and process model approaches to catchment hydrology. Aside from its scientific publications, the group achieved recognition in the use of its analog-digital conversion units and digital field recorders by most Australian water authorities, and its selection by the Australian Water Resources Council as the central analysis group for the Australian Representative Basins Program. From 1967, leader of the Division's natural resources research group of 22 scientists, a broad interdisciplinary team concerned with the development of techniques for rapid assessment of land potential.

**1971-81.** Professor of Engineering, Faculty of Military Studies, University of New South Wales (located at Royal Military College, Duntroon, Australian Capital Territory).

**1981-June 1987.** Professor of Civil Engineering and Head, Department of Water Engineering, University of New South Wales. From 1985, Head, School of Civil Engineering.

**June-October 1988.** Hydrologist, Alligator Rivers Region Unit, Dept. of Mines and Energy, Darwin N.T.

**June 1992-April 1994.** Education Coordinator (half-time) for the CRC on Waste Management and Pollution Control Ltd.

#### **Professional affiliations:**

Fellow, Institution of Engineers, Australia.

Member, American Geophysical Union.

Member, International Water Resources Association.

Member, National Ground Water Association, USA.

Foundation member, New Zealand Hydrological Society.

Member, Australian Water and Wastewater Association.

#### **Committee membership:**

Institution of Engineers, Australia, National Committee on Hydrology 1958-74 (chairman 1971-72).



Australian Academy of Science, National Committee on Hydrology 1972-1987 (chairman 1983-87).

Australian Water Resources Council, Advisory Panel on Operation of the Representative Basins Program 1969-77 (chairman 1973-77); chairman, Catchment Studies Subcommittee 1977-78; and former member of many AWRC standing and ad hoc committees.

UNESCO Working Group on Water Balances 1967-75 (chairman 1970-75).

Australia-UNESCO Committee for the IHD 1971-74.

Australia-UNESCO Committee for the IHP, Chairman 1975-78, member 1978-1983, 1985-1987.

Australian National Commission for UNESCO, Natural Sciences Committee 1973-77.

Water Research Foundation of Australia, Hon. Research Director and Board Member 1981-85.

UNESCO IHP Project 4.9 (preparation of a textbook on comparative hydrology), member of Editorial Board 1984-1988.

CSIRO Centre for Environmental Mechanics, member of Advisory Committee 1985-

## **Editorial**

Associate Editor, Water Resources Research (published by American Geophysical Union) 1990-1994.

## **Consultancies**

Engineering consultant, Australian Development Assistance Agency, program planning mission in South Pacific, October-November 1975.

Special consultant, Snowy Mountains Engineering Corporation, mathematical model of the hydrological regime of the Upper Nile Basin, 1976-77.

Project co-ordinator and report editor for evaluation studies undertaken for the Australian Development Assistance Bureau, Department of Foreign Affairs, 1977-78.

Consultant to the Pacific Regional Team, Australian Development Assistance Bureau, on hydrology and water resources of small islands, 1985-1987.

Consultant to the Alligator Rivers Region Unit, N.T. Department of Mines and Energy, on interactions between surface and subsurface hydrology in the Magela Creek catchment, 1989-1991.

Consultant to Coffey Partners International on estimating seepage into deep beds of fly ash, 1989.

Consultant to the Resource Assessment Commission on the environmental impacts of use of groundwater at the proposed Coronation Hill gold mine in the Northern Territory of Australia, 1991.  
Consultant to Newcrest Mining Ltd on hydrology of the Cadia Hill gold/copper site near Orange, NSW, 1994.  
Member of review committee for CRC on Catchment Hydrology, 1995.

### **Research grant**

Awarded research grant December 1989, under AWRAC Scientific Merit program, for project entitled "Objective determination of catchment loss rates, and comparison of loss models".

### **Publications:**

**As sole author:** 46 papers, including 17 since my retirement in 1987.

**As joint author:** 21 papers, including 6 since my retirement.

**As editor or joint editor:** 4 books.