Obituary

William (Bill) Henry Robinson (1938–2011)

Engineer/physicist who developed lead/rubber earthquake dampers

Bill Robinson, world-renowned scientist, earthquake engineer, Antarctic researcher and science manager passed away on 17 August 2011, aged 73. He was suffering from cancer.

WHR, as he was often known, completed an engineering degree at Ardmore, Auckland and then a PhD in Metallurgical Physics at the University of Illinois at Urbana-Champagne under H.K. Birnbaum. He went on to Sussex University investigating ion-channelling in crystals before returning to New Zealand in 1967 when he commenced his career at the Physics & Engineering Laboratory, DSIR, in Lower Hutt. Bill went on to eventually become the Director of PEL and then of DSIR Physical Sciences.

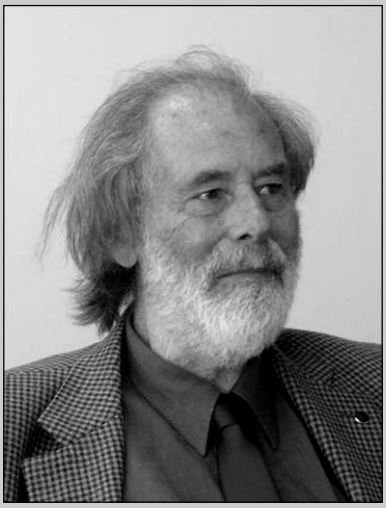
I first met Bill in November of that year, 44 years ago, when I also commenced work at PEL, at that stage as a student 'Professional Trainee'. He was my boss and mentor for the next 25 years and remained a close friend subsequently. I learned a great deal from his research style which combined quirky left-field thinking with a disciplined, practical approach. I guess that came from his training which was a meld of engineering and physics. 'Never go straight into the lab in the morning. Always go to your desk, plan your day and think about what is the best thing to do in the lab. Then you can go to the lab'.

Bill was versatile. He is of course known for his work on earthquake dampers, but he undertook extensive research into the physical and mechanical properties of sea ice in the Antarctic; he dabbled in cosmology, setting up equipment to search for gravitational waves; and he probed the piezoelectric and mechanical properties of materials using ultrasonic oscillators.

Nothing was too difficult for Bill to tackle. If extrusion dampers could be used to protect structures then they could also be deployed in motor vehicles for the same purpose. Bill demonstrated this in a cordoned-off road by the Hutt River by mounting earthquake extrusion shock absorbers on an old Vanguard utility vehicle and propelling it at 45 kph into 30 tonnes of concrete. If single crystals of ice a few cm in length could be investigated in the lab, then, with a bit of instrumentation, hectares of sea ice in the Antarctic could be similarly investigated by flying a Hercules aircraft close to the ice surface. This made the cover page of *Nature* in 1988. For that matter, Bill instrumented out the Erebus Ice Tongue extending many kilometres into McMurdo Sound to measure its vibrational properties, hoping to be able to predict when the glacier-fed ice tongue would break away.

For Bill science was a marvellous adventure, and he was great fun to work with. On one occasion we were testing a Pb-extrusion damper in the drop tower ('Twiggy') at Auckland Engineering School on Symonds Street. A weight was dropped down a column stretching the full length of the 12-storey office tower to smash onto the damper at about 100 km/hr. After the first deafening impact, Bill turned to me and said 'Cor, this is lethal. What's more it's…' and here he searched for the right word, 'dangerous'. Like so many interactions with Bill it was very funny at the time. Actually this experiment confirmed that these Pb-dampers displayed essentially the same behaviour over a million-fold range of strain rates.

As noted, WHR became Director of PEL. In this position he initiated a set of management reforms that, if extended throughout the DSIR, might have saved it from being disestablished in 1992. Before these reforms, we had little idea what it cost internally to carry out any activities. By introducing project systems and project accounting (all very obvious nowadays) it quickly became apparent that some activities were too costly to maintain. And Bill was brave enough to terminate a number of these.



Bill invested heavily in our discovery of high-T_c superconductors, taking the full risk as far as DSIR Head Office was concerned. In the early days he and I trekked around the boardrooms of many of New Zealand's leading companies, giving demonstrations and discussing the commercial opportunities. This led eventually to the formation of partnerships that are still in place more than twenty years later.

Not long after this Bill suffered a brain haemorrhage that left him seriously incapacitated. But his fighting spirit saw him back on campus the following year developing his dampers commercially. He set up Penguin Engineering Ltd (a fond reference to the PEL he once directed) and in 1995 he founded Lower-Hutt-based Robinson Seismic Ltd, which is recognised around the globe as a leading innovator in seismic protection and damping devices.

WHR was awarded the Cooper Medal in 1994 and New Zealand's top science and technology honour, the Rutherford Medal, in 1998. He was also awarded the Mechaelis Medal for Physics, an honorary DSc, and both a Fellowship and Gold Medal for Technology of the Royal Society of New Zealand. In 2007, he was appointed Companion of the Queen's Service Order for services to engineering.

I like to think that Bill Robinson has made New Zealand's greatest technology gift to the world in his lead/rubber base-isolation dampers. As a generic technology, it now sits in more than US$100 billion worth of buildings and structures around the globe. For a period, this type of technology was being incorporated into 70–80% of all new large buildings and structures in California and Japan. These dampers were proved to be highly successful in the 1994 Los Angeles earthquake and 1995 Kobe earthquake in Japan. Most famously in New Zealand his dampers sit under our national Te Papa Museum and were retrofitted into Parliament Buildings. Bill was affectionately known in Japan, China, India, Italy and Turkey both for his technology and his charm, and despite his physical challenges he travelled often in these countries for speaking engagements.

Bill Robinson was a warm, amusing and highly creative scientist, inventor and science manager. He is greatly missed amongst his peers, his family, his friends – and his clients and collaborators, who span the globe.

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