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IMWA INSIGHTS

# Paul Lawrence Younger 1962–2018

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## Family and Early Education

Paul was born in north-east England, in Hebburn, on the south bank of the River Tyne. He moved over the river to attend the University of Newcastle, receiving a first class honours B.Sc. Geology in 1984. He then crossed the Atlantic, to Oklahoma State University, USA, where he completed his M.S. Geology as a Harkness Fellow, specialising in hydrogeology (Fig. 1).

Paul returned to Newcastle in 1986 to carry out a PhD on river aquifer interaction in the Thames Valley. For those working at Thames Water, Paul's appearance as a CASE student was nothing short of a whirlwind of fresh air. We'd been happily carrying out pumping tests and noting, in passing, how strange it was that some Thames riverside Chalk aquifers were super-permeable groundwater motorways (Gatehampton, near Goring on Thames), while others (Marlow) were really "tight". Paul, however, got us thinking why this should be. And could the Devensian periglacial history of southern England have a bearing on this (Younger 1989)? And could there have been permafrost and taliks in the Chalk? For us, lightbulbs were going off in our hydrogeological lobes like never before. This experience left us realising that the best academic stories could have real relevance for water supply to urban populations.

## Paul as a Scientist

Paul gained early industrial experience in contrasting settings: at Yorkshire Water and the National Rivers Authority in the UK, and as a groundwater engineer for Centro Yunta, Bolivia, where he worked on practical groundwater issues amongst Andean *campesinos*. Paul took a lectureship at Newcastle University in 1992, where his career as an academic flourished over the subsequent 20 years. He became internationally renowned for his work on mine water pollution, pioneering hydrogeological models of abandoned mine systems and design-engineering the first large-scale 'passive' treatment systems for acidic mine drainage in Europe. Notably, Paul led the group which won Newcastle University's first Queen's Anniversary Prize for Higher and Further Education 2005, for the team's work on 'Remedies for mine water pollution worldwide'. He was further elected to Fellow of the Royal Academy of Engineering (FREng) in 2007. But Paul always liked new challenges, and in 2008 he accepted the role of Pro Vice Chancellor for Engagement on the University's Executive Board—a highly appropriate position for a research scientist and engineer who invested far more time engaging with industry, government and the public than most others.

In 2012, Paul and his wife Louise moved to Glasgow, where Paul had accepted the prestigious Rankine Chair of Engineering at Glasgow University. Returning somewhat to his hydrogeological roots, Paul's attention at Glasgow focussed on energy engineering, especially geothermal and other elements of renewable energy. As always, Paul's enthusiasm and intellect resulted in a rise to prominence in the field, and in 2016 he was elected a Fellow of the Royal Society of Edinburgh.

Paul was never a reclusive "ivory towers" academic; he chose to put his money where his mouth was. He was involved in initiating several business enterprises as a director, in the fields of underground coal gasification, dewatering technology, and geothermal energy. He was routinely engaged by industry and government to provide technical advice, but he would never compromise on his principles of wanting to make the environment a better place and to help improve peoples' lives. Throughout his career, Paul would stand up for these principles, and quite publicly so at need.

Paul loved geology, rocks, and energy—and it's absolutely right that an obituary such as this should recall his enthusiasm and professional achievements in these fields.

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**Fig. 1** Prof Paul Younger (Newcastle University, UK, 2001)

There was, of course, more to Paul the man than merely Paul the geologist. Paul revelled in language—he spoke fluent Gaelic and Spanish—and was Newcastle University's Public Orator from 2007 to 2010. His engaging sense of humour, both professionally and socially, enriched the lives of countless students, academics and industrialists across the world. He also loved music: his inaugural lecture at Glasgow University opened with a beautiful rendition of a Gaelic ballad, "Ben Cruachan", subtly tweaked to sing the praises of the hydroelectric pumped storage scheme hidden within the bowels of that mountain. You can watch and hear Paul singing it at http://bitly.com/ProfPaulYounger.

## The Private Paul

Visitors to the Younger household might be serenaded by Northumbrian folk songs, sensitive renditions of the greatest hits of The Clash, or (if they were really unfortunate) a bagpipe solo at five paces in a confined room.

Paul was a man of deep faith, as a committed follower of the Ignatian contemplative tradition of Christianity; this was not something he forced on his friends and colleagues, but was something he kept close to his heart. Paul's last writings were not scientific papers, they were reflective articles on the challenges of faith that were personal to him: his experience of illness (Younger 2017), and the reconciliation of faith with science (Younger 2018). Paul loved his family deeply: this may seem a commonplace thing to say, but if any one of us can rely on a tenth of the care and support that Paul received from his family during his final months, then we can count ourselves blessed. It must have struck many as perverse that a loving God should see fit to allow Paul to be stricken with an aggressive brain cancer that would inevitably affect his speech and his language abilities. At Paul's funeral, Father Jim addressed this head-on: Paul, we learned, did not regard himself as being "robbed" of these talents. His scientific prowess, his oratory, his languages were merely gifts, loaned to him for a short while. During his final months, Paul spent time consciously returning them to his creator. The reading chosen for Paul's funeral could not have been more fitting:

> … as for prophecies, they will pass away;
> as for tongues, they will cease;
> as for knowledge, it will pass away…
> … So faith, hope, love abide, these three; but the greatest of these is love.

The memory of Paul—his music, compassion, wit and knowledge—lives on in the hearts of his wife, Louise, and their lads, Callum, Thomas and Dominic.

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