Obituary: Paul Joyce (1958 – 2016)

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Paul Joyce was born in 1958 in Butte, Montana, and grew up there. Many of the qualities that defined Paul in life were apparent in childhood. The sixth of 12 children, he was the youngest of the big kids but adopted by the younger ones—he was the bridge in his family and he served as a bridge throughout much of his career. His later generosity was foreshadowed in his childhood; when his younger sister was despondent at Christmas because Santa was no longer coming, Paul made sure she had an extra gift. His sense of humour was also apparent early. When a little girl from across the street announced, ‘My mom said you can have me for lunch’, Paul remarked ‘Well, we don’t usually eat little girls for lunch, but if it’s ok with your mom...’ and opened the oven door. Even his love affair with mathematics and his penchant for blackboards was evident early. When a local school closed, his mother procured a large blackboard and had it installed in his bedroom. He wrote self-assigned maths problems on the board and spent the evenings pacing around the house, as he would throughout his career, stopping on occasion to triumphantly write the solution. As whiteboards and smartboards replaced blackboards at the university, he held on to the real slate board in his office. When he became Dean of the College of Science, he went so far as to stipulate in his contract that the blackboard must go with him to his new office and to leave with him when he left that office.

He was devoted to his family, Janalyn Steed Joyce, his wife of almost 28 years, and his son Andrew. Paul and Jana met when he was a graduate student at the University of Utah and she worked in the office of the Department of Mathematics. Paul spent a lot of time hanging around the water cooler near Jana’s desk and finally said he would pay her $500 if she would type his thesis in TeX. He never did pay her—he married her instead. Jana understood how Paul worked and was happiest when he was in ‘maths mode’, a mental state in which he sat or paced, oblivious to everything around him.

Paul loved poker. When Andrew was a teenager, Paul would play poker with him and his friends, explaining bits of probability and game theory, loaning $5 to those without. Paul would frequently win all the money at the table only to take the boys out to spend it on them. But Andrew’s favourite memories of his father were of their many long conversations filled with science, politics, philosophy and humour. In them, Andrew described himself as an interlocutor who was expected to hold his own. Remarkingly on how his father interacted with both him and his friends, Andrew said, ‘[we were] treated, not as children, but as contemporaries’.

Paul got his BS and MS degrees in Mathematics at Montana State University and his PhD at the University of Utah in 1988 under Simon Tavaré. He came to the University of Idaho in 1991 where he remained for the rest of his career. He was a...
professor of mathematics and statistics and a founder, professor and later the director of an interdisciplinary graduate programme in bioinformatics and computational biology. He was also among the founding faculty of what is now the Institute for Bioinformatics and Evolutionary Studies (IBEST). Since 2012, he was Dean of the College of Science, and in 2016 was promoted to the rank of Distinguished Professor. He was an enthusiastic and much-valued member of the Editorial Board of *Biology Letters*, not only handling and reviewing manuscripts but also providing expert advice on the use of statistics to authors. His work was funded nearly continuously by grants from the National Science Foundation and the National Institutes of Health. At the time of his death he held research grants from both agencies and was also a co-principal investigator on a grant to fund undergraduate research at the interface of mathematics and biology. He trained 25 Masters students, five PhD students, and three post doctorates, and published with many students of his colleagues too. Paul enjoyed collaborating broadly; his last solo publication was in 1999.

For all of his success, Paul was unimaginably humble. He was always more interested in elevating and celebrating the success of those around him than in his own accomplishments. As Dean, he nominated his faculty for awards on every possible occasion and then bragged unabashedly about the awards they received. Paul was a friend and collaborator of many top people in his field and he regularly convinced them to come to the University of Idaho. As a former student, José Ponciano, remarked about those visitors, ‘He sat us [down] to chat with them, as if they were any regular dude. At the time, I simply didn’t realize the magnitude of what he was doing, as he was introducing us to the best of the best!’ It is telling that at Paul’s funeral, his brother Bill confessed that despite spending time with Paul each year at a family retreat, ‘we had no idea how accomplished he was’.

Paul’s scientific legacy is both diverse and significant. He did important, innovative work on coalescent theory, population genetics, phylogenetic inference, Bayesian estimation in evolutionary problems, genotype error detection, microbial dynamics and models of adaptive evolution. Several things made him exceptional. He moved fluently between mathematics and statistics, seeing them as two sides of the same coin. He was both gifted at abstracting complex biological problems into mathematical models and totally unselfish with those ideas; he gave them away freely and often deflected credit to those around him. He looked past the shortcomings in others and drew out their strengths, allowing collaborators to interact in unexpected and nonlinear ways. When he worked on problems—that is to say, when he entered into maths mode—a childlike delight would emerge; that joy was contagious. To borrow one of his favourite concepts, he generated synergistic epistasis among his collaborators.

His most recent and extensive body of work is in the field of adaptive evolution where he worked closely with empiricists. Paul loved the real world of messy data. He never demanded more data; rather he relished in the challenge of squeezing all of the information out of the data at hand, issuing an honest appraisal of the remaining uncertainty and brainstorming about the best way to conduct the next set of experiments. Thus, as his friend Thomas Ballyلون observed, Paul was instrumental in inspiring many others to create research programmes where mathematically rigorous models and experimental work cross-fertilized each other.

Paul was well known for his wit and sense of humour. He liked to tell the math jokes, even if only three people in the room understood them. He said that any joke beginning with ‘An infinite number of mathematicians go into a bar…’ has got to be funny. But his favourite was about the gregarious mathematician—that’s the one at a party looking at the other guy’s shoes. By that definition, Paul was beyond gregarious. He could look you in the eye, shake your hand, bring out your best and make you laugh.