

Robert “Bob” Lynn Carroll (1938 – 2020)

The ‘academic ancestor’ of Canadian vertebrate palaeontology

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Robert “Bob” Lynn Carroll, friend, mentor and scholar, died on April 7th, 2020, at the age of 81. Bob, who had endured symptoms of dementia for several years, succumbed to complications arising from an infection by the novel coronavirus. We are deeply saddened to write this memorial, and on behalf of Bob, dedicate it to his family (he is survived by his loving wife Anna Di Turi, son David Carroll, and granddaughter Juliette), all of his past students - graduate and undergraduate - his past postdoctoral fellows, his close friends and his numerous colleagues from around the world, and to the members of the academic societies he so loved and cherished, the Canadian Society of Vertebrate Palaeontology, and the Society of Vertebrate Paleontology.

Bob enjoyed a nearly 40-year career as a McGill Professor (1964-2003) – 57 years in total as Professor and Professor Emeritus. For the first 15 years of retirement, he maintained regular work days in his office, split between publishing his science, regaling museum staff with details of his research, and swearing at his email software. The last year of his life was spent in a care center as symptoms of dementia began to overpower him. Even still, he continued to carry around his “big silver book” teaching as many as he could about the wonders of the vertebrate fossil record. He was a wonder to the staff and visitors at the home.

Bob’s passion for science, and more specifically for palaeontology, began, as many such stories do, when he was a small boy growing up on a farm near Lansing, Michigan. From the address Bob gave in 2004 when he was awarded the Romer–Simpson Medal, he was five years old when

his father gave him a small collection of fossils from a high school science kit – the bait was on the hook! This first introduction to palaeontology was followed by his father writing to Edwin Colbert about Bob’s passion and Colbert responding by sending eight year-old Bob an *Allosaurus* femur for a Christmas present. To make sure the hook was well set, Bob and his dad spent several summer holidays fossil hunting in the Green River Formation of Wyoming, and the White River Badlands of South Dakota, all before Bob was twelve years old. By the time he was a teenager, he had a vast fossil collection in the family barn that he had dubbed “The Mason Museum of Natural History.”

After receiving his BSc in Geology at Michigan State University in 1959 he went on to Harvard and the supervision of Al Romer for his PhD (1962) (Fig. 1). Bob was Al’s last student and under Romer’s mentorship, Bob learned to work independently – a mentorship style that deeply influenced his future supervision of his own students. His doctoral dissertation at Harvard examined dissorophid amphibians and so began his lifelong quest to understand the evolution of Palaeozoic amphibians and the origin of extant amphibians. Bob was deeply influenced by Romer and Romer’s contemporaries, including George Simpson and Ned Colbert, to name just a few, and other Harvard luminaries at the Museum of Comparative Zoology (Ernst Mayr and Harry Whittington). But Romer’s influence was no doubt felt most keenly and personally as Bob emulated Romer’s focus on comparative anatomy and vertebrate biology. Bob’s dive into the biological aspects of palaeontology were as he told the story, driven by his irritation with courses in optical mineralogy – that he hated! As his career progressed, he also picked up Romer’s Torch so to speak, and accepted the challenge of writing textbooks. Bob dedicated years of his life to writing his own version of a comprehensive ‘bible’ of vertebrate palaeontology that remains, after more than thirty years, the standard in our

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Figure 1. Bob Carroll through the ages. A young Bob with his advisor, Al Romer, in the early 1960s (photo credit unknown); as a young professor in 1975 (photo by Phil Currie); accepting the Romer-Simpson Medal at the 2004 annual meeting of the Society of Vertebrate Paleontology (photo by Richard Pierce); and in 2019 (photo by Viki Doucette).

field. He is perhaps most famous for this text that everyone knows as Bob's 'big silver book.'

After completing his PhD in 1962, Bob told the story that Professor Romer had suggested to him that a good postdoctoral project might include the Carboniferous-aged tetrapod fossils from Nova Scotia that were housed at the Redpath Museum, McGill University, in Montreal, Canada. And so Bob went to Montreal and spent the first year of his postdoctoral fellowship (1962–1963) at the Redpath; the second year was dedicated to collections at the Natural History Museum in London. He had impressed the Redpath Museum director so much during his year of studies that she invited him to return to Montreal to take up a permanent position in 1964 as a professor and curator of vertebrate palaeontology; as we all know, he remained there for the next 56 years.

Bob's kindness, drive, mentorship, scholarship, and personality, propelled him to the pinnacle of his profession. His influence can be easily assessed by the usual objective measures – he published literally hundreds of peer-reviewed papers. He wrote several books: *Vertebrate Paleontology and Evolution* (1988); *Patterns and Processes of Vertebrate Evolution* (1997); *The Rise of Amphibians: 365 Million years of Evolution* (2009); and co-authored *Paleontology: The Record of Life* (1998) with Colin Stern. He served as the President of the Society of Vertebrate Paleontology, 1982–1983, was appointed as Strathcona Professor of Biology at McGill in 1987, was Director of the Redpath Museum (1985–1991), and Chair of the Department of Biology (1990–1995). He was awarded the Schuchert Award of the Paleontological Society (1978), the Elkanah Billings Medal of the Geological Association of Canada (1991), became a fellow of the Royal Society of Canada (1993), won the Willet G. Miller Medal of the Royal Society of Canada (2001), was made an Honorary Member of the Society of Vertebrate Paleontology (2001), and won the Romer-Simpson Medal from the Society of Vertebrate Paleontology in 2004. His final honor was his appointment to the Order of Canada in 2019 for “...academic leadership and contributions to his field as Canada's pre-eminent vertebrate paleontologist.”

But perhaps most importantly, he served as supervisor, friend, and research mentor to a large and successful group of palaeontologists, and was himself the academic descendant of an august lineage of scholars (see Figure 2, and for a complete list, see below). Through Bob's 57-year career at McGill, perhaps his greatest legacy is that he almost single-handedly created the late 20th and early 21st centuries cohort of Canadian vertebrate palaeontologists. In turn, each of these 'students of Bob' went on to build on his mentorship style and academic legacy by training dozens of other young academics, creating the journal in which

this obituary is published, as well as creating the Canadian Society of Vertebrate Palaeontology.

The stories of Bob the academic, scientist, lecturer, and mentor are legion and thus are too many to tell here. Nevertheless, we have tried to collect a few of them here so as to share the Bob we knew with all of you who might not have known him as we did.

In his way, Bob was a shy person, particularly in his early days as a young professor. Robert Reisz, Bob's first graduate student, remembers Bob's lectures on vertebrate palaeontology – “*When I took his course in 1968, he was beardless, and looked younger than most of the students. He was quite shy at this early stage of his career, he rarely faced the class and tended to face the blackboard and talked to it. He had all his lectures typed out word for word, but did not read them. Instead, I heard him practice his lecture in his office, reading his lecture notes aloud.*” While Bob's lecture style never really changed – he seldom looked directly at his audience of students, he did cease rehearsing his lectures and stepped away from his shy, young, student self. His wife Anna credits her influence, and we all agree. For years she carried around in her purse two photographs – one, the clean cut middle aged Bob who wrote the silver book, what she called, “Bob After Anna”; and the second, a young Bob with a Civil War era beard, or what she called, “Bob Before Anna”. Bob never disagreed on how profound the improvement had been (see Figure 1). Michael Caldwell will never be able to, in fact, is unable to forget, the t-shirt Bob wore round the Redpath Museum, shortly after he and Anna returned from a winter holiday to Central America – a black t-shirt emblazoned with a dozen pairs of colorful poison dart frogs amplexing in various positions, or as the t-shirt was proudly titled, ‘The Kamasutra of Frogs’. From Robert Reisz's shy young professor, to the not so shy senior professor and Fellow of the Royal Society of Canada – Bob Carroll had clearly ‘evolved’.

Bob, closely supported by the skillful and artistic efforts of his longtime technician Pamela Gaskill, emphasized the detailed preparation and illustration of specimens, followed by exacting descriptions of the anatomy of fossil and living vertebrates. He expected no less of his students – his longtime colleague and close friend Don Baird once accused him of running an art school! Daily life in the grad student lab in the basement of the Redpath Museum was marked by numerous visits from Bob...daily visits. And it was always clear when he was on his way as he would come thundering down the 18 stairs to the Redpath basement in literally six pounding jumps – he had no patience for the one stair at a time approach. He would rush into the grad student room, always excited, a new fossil in hand, or perhaps an old one immortalized in red latex, an old paper, a new paper, or a letter (yes, a paper letter!), to engage the students, question them, argue with them, but always to

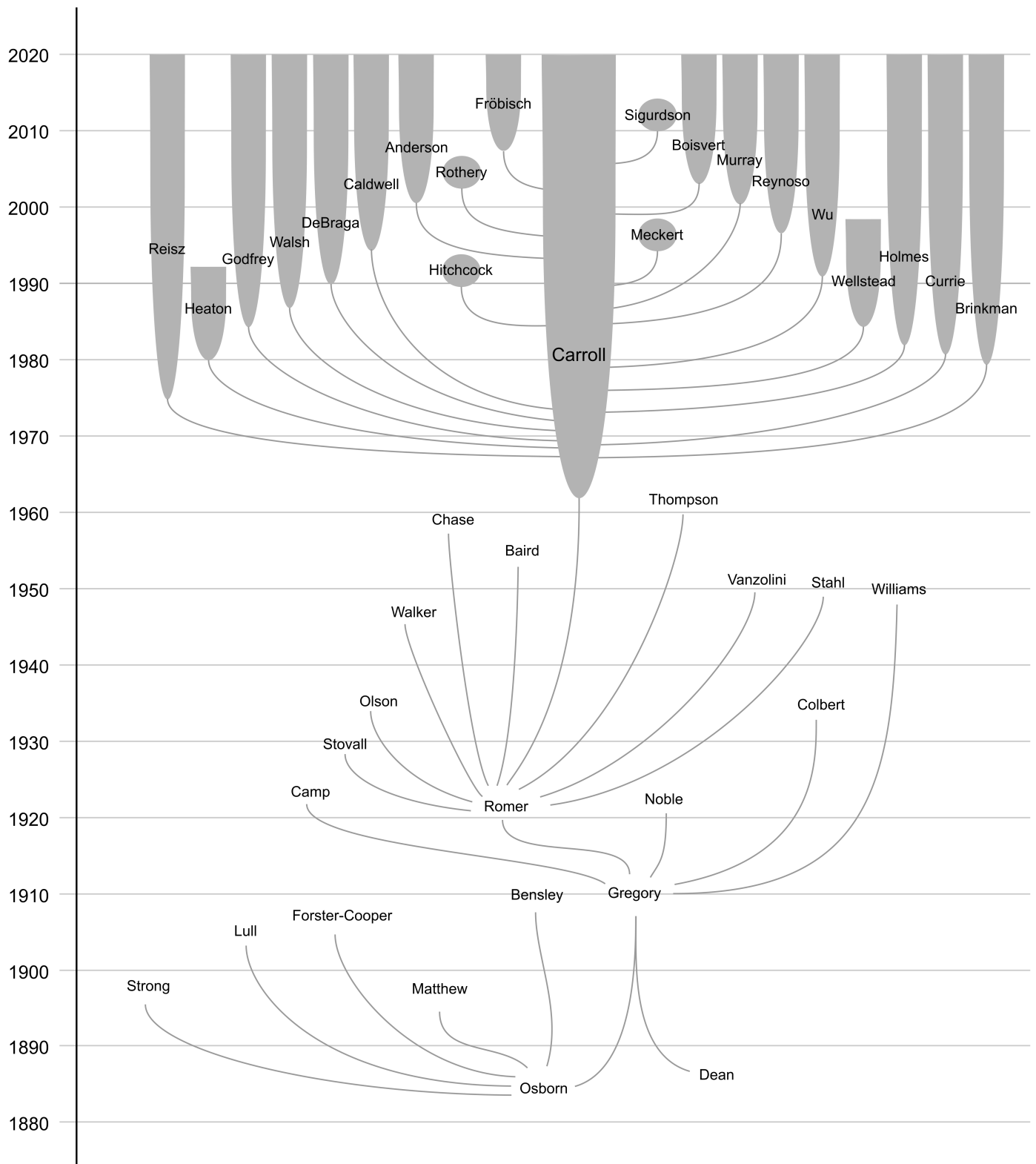


Figure 2. A Romerogram of Bob Carroll’s academic genealogy. The academic ancestry and descendants of Bob are illustrated in a method introduced by Al Romer to depict phylogenies through time and Bob’s preferred method to illustrate evolution in the fossil record. Note the comparably large academic radiation Bob founded. Academic ancestral names are listed at the times of their doctorate graduations and descendants with ranges spanning from their doctoral graduation to their academic productivity.

learn from and with them. Bob never once demanded that the students agree with him, only that each and every one of them could defend their point of view to the best of the data and method at their disposal, whatever that might be. He read your submitted work quickly, was a keen editor, and loved his red pens and pencils, and in the early days, his coloured draft paper. Rob Holmes still has the marked first draft, on pale yellow paper, of his very first manuscript, covered in Bob's scribbles as together they began the process of revisions. He would read your work again and again until it was ready for submission. Michael Caldwell fondly recalls Bob's comments at his Ph.D. defense, "*Michael was an excellent student who could not write the English language when he arrived at McGill. I read and edited an inordinate number of drafts of his first published paper, Chapter 2 in his thesis - I believe it was 11.*"

Bob pushed evolution in everything he taught and in everything he wrote. Evolution was at the center of every excited conversation ever held with his students. He was not a "cladist" as he put it, and never agreed that reducing anatomy to characters assessed by computer algorithms got you anywhere at all. He never pushed his perspectives in print, but yet was always quick to argue his point at great length in conversation with his graduate students, all the while knowing full well that cladograms would appear in our theses and publications. Alison Murray recalls how Bob reacted with glee to the tree statistics in her thesis, delighted that they showed how *poorly supported* the relationships were, and excited at the thought that he could use similar statistics to show lack of support in published trees of early amphibians. Jason Anderson cherishes his copy of the Lepospondyl volume of the Handbook of Paleoherpitology that Bob signed to him with the statement, "In the hopes for the perfect cladogram!" As Rob Holmes recalls, he once overheard him say that "*...if you believe in evolution, you have to believe in ancestors, and I'm going to keep looking for them until I drop.*"

Bob was always eager to dive into emerging fields and weave them into his view of evolutionary biology. His *Patterns and Processes of Vertebrate Evolution* book was his call to see evolution as not simply changes to 0's and 1's in a large matrix, but rather how large biotic and abiotic factors influence evolutionary change. His early entry into evolutionary developmental biology in the 1990's kept him immersed in multiple fields. He had a talent for weaving together seemingly disparate disciplines to create a comprehensive view of an evolutionary problem. Hans Larsson will never forget how Bob found a way to link, in a single conversation, everything from *Hylonomus* to the rising tides of the Bay of Fundy. In Bob's mind, these were all equally tied together. He loved to live in his scientific world.

As a student, it was impossible to really ask for more in a supervisor. Bob's support was endless, as was his expectation that you would work independently. Phil Currie completed both an MSc and Ph.D. under Bob's supervision, though he only spent one year of his Ph.D. on McGill Campus as he went to Alberta for his first palaeo job at the Provincial Museum of Alberta. When asked about Phil's absence from the second required year of residency, Bob simply said "*I trust that he will finish okay.*" Four decades on, Phil seems to have turned out "okay" and still seems to be doing alright working independently. Bob was right.

Bob was always available for discussion and advice, but never forced his viewpoint on his students. He always questioned differences in perspectives and hypotheses, but never demanded that the results and conclusions be identical to the ones he thought logical. He was a great scholar and student of science, but also a great champion of the arts and literature, and life outside of the academy. Martin Brazeau will always cherish the Christmas card and gift he got from Bob, a coffee table book on Monet, signed "*Martin, not all life is fossils, Happy New Year, Bob.*"

If immortality can be achieved, it is secured by the things we say, write, and do that remain when we are gone. Surely Bob's access to immortality is guaranteed by the scholars he trained and those they have and will train, who will proudly claim to future generations of scholars, that they are a direct descendant of Robert Lynn Carroll - that he is their "academic ancestor".

LIST OF ACADEMIC OFFSPRING

Graduate Students

Robert Reisz (MSc, 1971; PhD, 1975)
 †Malcolm Heaton (MSc, 1975; PhD, 1978)
 Don Brinkman (PhD, 1979)
 Phil Currie (MSc, 1975; PhD, 1981)
 Robert Holmes (MSc, 1975; PhD, 1982)
 Stephen Godfrey (PhD, 1984)
 †Carl Wellstead (PhD, 1985)
 Denis Walsh (PhD, 1987)
 Xiao-chun Wu (PhD, 1991)
 Lin Kebang (PhD, 1992)
 Michael Caldwell (PhD, 1995)
 Dirk Meckert (PhD, 1996)
 Victor Hugo-Reynoso (PhD, 1997)
 Jason Andersen (PhD, 2001)
 Alison Murray (PhD, 2001)
 Tamsin Rothery (PhD, 2005)
 Nadia Fröbisch (PhD, 2008)
 Trond Sigurdson (PhD, 2010)
 Michael DeBraga (MSc, 1990)
 Ed Hitchcock (MSc, 1991)
 Catherine Boisvert (MSc, 2004)

Undergraduate students

Countless undergraduates were supervised by Bob for independent studies projects, but those that continued in the field of palaeontology, comparative morphology, and evolutionary biology include:

Michel Laurin (summer 1986, 1987)

Hans Larsson (BSc, 1994)

Corwin Sullivan (Young Canada Works, summer 1997)

Campbell Rolian (BSc Honours, 2000)

Susanne Cote (BSc Honours, 2001)

Martin Brazeau (BSc, 2004)

Postdoctoral Fellows and Visiting Students

Hans-Dieter Sues (PDF, 1984–86)

Pierre-Yves Gagnier (PDF, 1992–94)

Gary Bernacsek (late 1970's)

Josef Klembara (late 1970's)

Olivier Rieppel (1975–76)

Tim Smithson (early 1980's)

David Dilkes (mid 1990's)