

Obituary

In Memory of Geoffrey Vernon Parkinson

13.12.1924–22.09.2005



It was with very great sadness that I learnt that Geoff Parkinson had died. Geoff was born on 13 December 1924 in Regina, Saskatchewan. After attending King George High School in Vancouver he went to the University of British Columbia to read Mechanical Engineering. He graduated in 1946 and was then offered a place at Caltech to study aerodynamics. A masters and a Ph.D. followed and in 1951 he accepted an Assistant Professorship back at UBC in the Department of Mechanical Engineering. He remained at UBC for the rest of his working life.

The following contributions from experts in the field of fluid dynamics, and in particular flow-induced vibration, illustrate with what great respect and warm regard this community held Geoff. There is little I can add that hasn't been said already and the picture that emerges is of a man who was a true scholar, a person with broad interests in science and the arts and somebody who very much enjoyed playing tennis and golf. The personal reminiscences capture the man perfectly and I can confirm what a great pleasure it was to be entertained by Geoff and his wife Madeline at their house in Vancouver and to be invited to participate in one of the famous Parkinson musical quizzes. One of Geoff's favourite teases was to invite new Ph.D. students to his house and then announce they were about to be examined.

Less than three years out of my own Ph.D., I met Geoff at a conference on wind effects on buildings and structures held in Loughborough in April 1968. He was 44 and very well established in his field having published his important work on galloping and now turning his attention to vortex-induced vibration. The paper he presented "Mechanisms of vortex-induced oscillation of bluff cylinders" was co-authored with C.C.Feng and N.Ferguson. It predates Feng's famous master's thesis and the paper introduces many of the phenomena that have come to dominate VIV research. In

characteristic modest style the abstract is very brief and ends with the sentence “Some comparison with simple theoretical models is made.” As a newcomer to research I wondered what would entice Geoff to travel half way round the world to a relatively small town in central England. Also why was he never present for the afternoon sessions? The answer was very simple, there was a golf course nearby and Geoff had lined up a whole series of opponents. He would carefully read the proceedings the night before so by the next evening he would know more about the papers than people like me who had remained glued to their seats throughout the whole day.

The JFM Parkinson and Jandali paper that appeared in 1970 is an outstanding piece of work. The basic techniques underlying the wake source model were available to theoreticians in the 19th century but we had to wait for Geoff to come along to show us how they could be put together to predict bluff body pressure distributions. As is so often the case, it is the apparently simplest ideas that require the greatest insight.

Geoff’s first recorded publication appeared in the March 1958 edition of “The BC Professional Engineer” with the cryptic title “Low Speed Wind Tunnel”. Perhaps a surprising topic for a theoretical fluid dynamicist but Geoff retained a lifelong interest in wind tunnel design. He strived to shape the perfect wind tunnel, one that could be used for testing large bluff bodies without introducing errors due to blockage. By replacing the test section walls with a series of aerofoils and enclosing the section in a plenum chamber, he invented the “tolerant wind tunnel”. An aspect that attracted him so much to this design was that he could use his theoretical skills to predict the flow about the aerofoils with a large model in the tunnel.

During the summers of 1982 and 1983 I spent time in Vancouver, together with David Maull and Ian Gartshore, working with Geoff trying to unravel the mystery of how a square section cylinder with low mass-damping could apparently undergo simultaneous galloping and vortex-induced vibration. On seeing the experimental set-up in the wind tunnel at UBC it immediately became clear just how influential Geoff also was in championing good design. There was an impressive air bearing support system, variable damping provided by electromagnets and models with just about the smallest mass ratios that could be expected in air. As might be anticipated, Geoff was the perfect host and I will always remember the enjoyable time spent with him.

Geoff Parkinson was, and continues to be, an inspiration to countless people working in the field of flow-induced vibration. I recommend to everybody starting out in this field to read Geoff’s paper “Mathematical models of flow-induced vibrations of bluff bodies” in the 1972 Karlsruhe Conference on Flow-Induced Structural Vibrations. This and his other review papers have enthused a generation of researchers and his lasting influence is no more strongly felt than in the pages of this journal.

*Peter Bearman*

*Imperial College, London, UK*

I was Geoff’s student from 1982 to 1987. My background was applied mathematics and computer science, and I entered the Mechanical Engineering program in order to learn something about real applications.

Geoff took me on as a probationary student, and I enrolled in coursework. The last thing I expected was to have to learn more (and deeper) mathematics! Geoff taught me a lot, however (what amazingly clear diagrams in his lectures!): ideal fluids, conformal mapping, and perturbation theory for differential equations, to name a few; all this as well as a lot about the physics of fluids and engineering applications. Geoff’s supervisory style was to leave me alone to do my work in my own way, with an occasional interested question to see how I was getting on. He started me off on my thesis topic (after I had passed my probationary courses) with four pages of hand calculation he had done (in 3 days, he had said). It took me 6 months to check his work, which of course was correct.

Geoff had a flair for elegant, concise and precise calculation. His talk “Balls”, on the subject of the aerodynamics of golf balls, baseballs, and tennis balls, was a masterpiece of semi-empirical modelling (I have the notes; as far as I know, he never wrote it up as a paper). He preferred using the human intellect over heavy computation: when I showed him how Maple could compute residues, he said “But that takes all the fun out of it!”. He once took marks away from an assignment of mine because I had used a numerical quadrature method, saying “Simpson’s rule is for people who can’t integrate.” He always wanted people to do their work the “intelligent” way; one memorable exam had a problem that could be done in two or three lines, if you thought to orthogonalize; for my two or three page answer, I received the accolade “Brutal, but correct”. Geoff could use numerical computation when appropriate, of course, favouring elegant techniques such as boundary element methods for his “smart” wind tunnel work, for example.

My wife Sumaya and I still remember Geoff and Madeline’s parties, and especially the entertaining (but fiendishly difficult) “Musical Quiz”. One question that I should have got, and still regret not having done so, was matching “Stevie Nicks” to the clue “She came without her Mac, last year”. The quizzes were also my introduction to Flanders and Swan, which I still enjoy!

We threw a party of our own, when I graduated, and invited both of them. It was a dessert party—all my friends were supposed to bring dessert for “a few”. Well, as it turned out, most people brought enough dessert for everybody—the

tables were groaning. But Geoff and Madeline had simply been invited; we hadn't told them to bring anything, and they were surprised at the quantity of desserts—especially after the main courses, which were pastas with three different sauces. Geoff asked (before the desserts were unveiled) if it would be impolite to have a fourth helping of pasta; I said that no, he could if he wanted, but there was going to be plenty of dessert. He replied, “All right, not impolite, but perhaps injudicious!”

Geoff got me started in my career. I learned a lot, quite aside from mathematics and engineering, from him. Handwriting, for example: my p and rho are quite different, because I copied his blackboard style! The best lesson, I think, though, was to give personal attention to your students. I try hard to emulate his style.

*Rob Corless*

*University of Western Ontario, London, Ontario, Canada*

This is a tribute to Geoff Parkinson just like all of the others in this memorial. However, this one is different because I never met Geoff Parkinson. In fact, I don't think that we ever crossed paths. However, I do know of him through his reputation and I have great respect for his work. Among the things that I have worked on during my career is the potential flow modelling of different aspects of flow past a circular cylinder. One of the early references I found especially useful is the Parkinson–Jandali paper dealing with a wake-source model for bluff-body potential flow (JFM, 1970). This wake-source model paper was followed by several similar papers which also included an analysis of the wake of an airfoil. I found that these papers are challenging exercises for students in a course on hydro/aerodynamics.

One area in which Parkinson worked, for which he has not received enough credit, is in flow-induced oscillation. He was one of the first investigators of aeroelastic instability as evidenced by his 1961 paper in the Journal of Applied Mechanics. In fact, the 1968 Master's thesis of one of his students, C.C. Feng, is one of the most referenced publications in the entire vortex-induced vibration field. Unfortunately for Parkinson, the thesis was never published; so only Feng's name is included as an author whenever the paper is referenced. However, the entire VIV community is aware of Parkinson's contributions to Feng's work.

Even though Parkinson had been retired for several years before his death, his legacy at the University of British Columbia and in the fluid dynamics community is well established.

*Charley Dalton*

*University of Houston, Texas, USA*

With the appointment of Geoff Parkinson as a faculty member in 1951, the Department of Mechanical Engineering deliberately added academic research as one of its prime departmental objectives. Geoff's own graduate studies were entirely in theoretical aerodynamics and mathematics, and these remained the passions of his academic life. But immediately upon coming to UBC as a faculty member, Geoff started on the design and construction of a wind tunnel. Throughout his career, Geoff used this tunnel, not only for research, but also to show his often awestruck students, how precisely his theories of aerodynamics applied in practice. His wind tunnel is still in constant use in the department, some 50 years after it was built, and is named after him.

It was Geoff's teaching that first aroused my interest in fluid mechanics, and I was completely converted when, as a summer student in 1956, I worked for Geoff on the design and construction of his wind tunnel. Geoff was a splendid teacher, both in and out of the classroom. His passion for his subject, his sense of humour and his love of good conversation (and of music, food and martinis!) quickly sparkled out to all who broke through his shy, but occasionally intimidating exterior.

Geoff played a remarkable game of tennis, placing well in city tournaments in his early years and, despite the addition of a few extra pounds in later years, soundly trouncing many of us who were decades his junior. Golf too was a game which Geoff enjoyed immensely and intensely throughout his life.

As a brilliant academic and a wise colleague, Geoff left his mark on the department he served so well for some 38 years. Geoff's intellectual rigor, his wisdom and his friendship have added immensely to the lives of those who were fortunate enough to know him.

Geoffrey Parkinson, 1924–2005. “We shall not look upon his like again”.

*Ian Gartshore*

*University of British Columbia, Vancouver, Canada*



This is the signature of Geoffrey Vernon Parkinson, a person of many talents that life, as a privilege, put in my path during my graduate studies (1969–1973). As a mentor, Professor Parkinson has stimulated my interest for the

observation of complicated fluid–structures interactions and for the discovery of explanations for such phenomena. To work under the umbrella of Geoff Parkinson gave the impression that nothing could go wrong and that all difficulties could be resolved. The confidence that he entrusted to the students under his supervision was remarkable. Thirty five years later, my research goes on, and I hope that, through me, a few more graduate students will have benefited from Geoff's legacy.

In addition to being a rigorous aerodynamicist and to the dismay of many younger players, Geoff was also a keen tennis and golf player. He could also sing arias from several operas. At tennis, for example, I remember vividly that students brash enough to want to compete with him in doubles, had to rework their strategies so as to exploit the weaknesses of Geoff's partner rather than tackle him directly.

On the scientific front, his rigorous approach in analytical modeling permeated his famous graduate course, ME 581, dealing with Ideal Fluids; this course grew in size as new models were proposed by him and other researchers. His objectives were to acquaint the students to the level of the state of the art.

The researchers in the field of bluff body aerodynamics owe him several classic analytical contributions such as a non-linear oscillator model of the phenomenon of aeroelastic galloping (Parkinson and Smith, 1964; Corless and Parkinson, 1988) and wake source models for bluff body potential flow (Parkinson and Jandali, 1970; Yeung and Parkinson, 1997) and airfoils with separated flow (Parkinson and Yeung, 1987). The validity of his non-linear oscillator model was verified in the cases of turbulent flows (Laneville and Parkinson, 1971) and an explanation of the effects of turbulence on galloping was proposed (Laneville et al., 1975). On the subject of vortex-induced vibrations, the contribution of Feng (1968), one of the most cited M.A.Sc. Theses, has been achieved under his supervision. Geoff also presented several general lectures and reviews that are still much valued (Parkinson, 1989 for example).

A concept proposed by Geoff to assist the experimentalists was that of a passive low-correction wind tunnel test section. Using airfoil-slatted boundaries, this concept was first tested in the 1970s in a configuration for airfoil testing (Williams and Parkinson, 1975), in the 1990s in configurations for 2-D bluff body testing (Parkinson and Hameury, 1990) and for 3-D axisymmetric testing (Parkinson et al., 1992). This concept of a "tolerant tunnel" occupied the centre of his post-retirement research activities and will be relayed to new researchers.

On a more mundane tone, each year at Christmas time, graduate students and colleagues were invited with their spouse at Madeleine and Geoff's place. In addition to the requirements of being disguised in costumes related to fluid mechanics or music, the guests formed unrelated teams to answer a musical quiz. As in a real exam, a sheet for the team's answers was provided. The music ranged from Amerindian songs to classical music; fortunately, clues were given. The collected sheets were then corrected and commented upon by Geoff. A loosely defined concept of positive and negative handicap was then applied in the correction so that the team composed of the most expert persons never won. The final mark was without appeal. These parties are very well remembered, and, with time, the stresses involved, mostly amongst the students I imagine, have been taken over by memories of pleasure and laughter.

We were to visit him next July. My wife and I would have told him how he stayed in our memories, the very good ones.

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*André Laneville*

*University of Sherbrooke, Sherbrooke, Canada*

“Is that Dr. Parkinson?” I first witnessed Dr. Parkinson at a banquet of a certain international conference, more than 30 years ago. He was, elegantly dancing with his wife and shaking his huge body with great verve. He really had a healthy complexion. I could clearly remember that scene till now. When I was a graduate student at Kyoto University, my studies were on the galloping instability of bluff bodies. Dr. Parkinson’s paper on galloping by means of a non-linear analysis based upon the Krylov-Bogoliubov method opened my eyes to the innumerable and deeply interesting aspects of bluff body aerodynamics. Dr. Parkinson had published many interesting papers in this field, and also on the turbulence characteristics generated by a grid in a wind tunnel, a proposal for a slotted wall to avoid the blockage effect, the interference of Karman vortex shedding and galloping instability, and so on.

He had always navigated young researchers involved in aero/hydrodynamic studies and harvested numerous fruits. It is really a pity for me not to have been personally acquainted with Dr. Parkinson, but Dr. Parkinson is surely my research father in my research work. Finally, I would like to express my most deep condolences to Dr. Parkinson’s family.

*Masaru Matsumoto*

*Kyoto University, Kyoto, Japan*

Recently, I have been waiting to get rid of my flu, at least to the extent that I would be able to commemorate with a clear head the unforgettable encounters with Geoff at the two Flow-Induced Vibration Symposia, held in 1972 and 1979, in Karlsruhe. I am now recovered and grateful to find that Don Rockwell has done this in a way that does justice, not only to Geoff’s outstanding scientific contributions, but also to his most likeable and fun-loving personality.

I will always remember Geoff as one of our most respected and well-liked colleagues.

*Ed Naudascher*

*University of Karlsruhe, Karlsruhe, Germany*

Anyone who started work on fluid–structure interactions in the mid-1960s in Canada, as I did, had to be aware of Geoff Parkinson—most definitely a role-model for all of us.

I had by then read a couple of his papers and was very impressed by the rigour, style and the economy of expression, again something of an example for us all. However, I did not get to know him until the 1972 IUTAM/IAHR Symposium on Flow-Induced Structural Vibrations, organized by Eduard Naudascher in Karlsruhe, where he presented a superb General Lecture on “Mathematical models of flow-induced vibrations of bluff bodies”, his forte. Professor A.G. Davenport, who introduced him, referred to him as “the biggest bluff body of them all”, or words to that effect! And, indeed, Geoff was rather bluff in aspect, but, more to the point, he was the man of stature when it came to bluff-body fluid–structure interactions. His work on galloping remains unequalled to this day.

Geoff was not an effusive character; rather understated, but definitely a man of substance. So, when he paid me a compliment for my invited talk at the 1979 Karlsruhe conference, this I considered as a very major accolade. We also attended together the International Symposium on Separated Flow around Marine Structures in Trondheim, in 1985. During his talk, he recommended to those who had flown there from Oslo to cancel their return ticket and go back by train, which I promptly did, to my great delight. This illustrated the unconventionality and complexity of his approach to life and science alike. Another facet of the same was his uncompromising outlook on some things: if a paper was presented in conference proceedings, he had no interest in publishing it in a journal. I suspect that the work of C.C. Feng was never published beyond the M.A.Sc. thesis mainly because the student left right after; Geoff was not the type to pursue him towards a joint publication, though I am sure he contributed heavily to that excellent research.

When JFS was founded in 1987, there was no question but that Geoff Parkinson ought to be on the Editorial Board. Indeed, he graciously accepted and was one of the founding Editors of the journal. He served the journal with great

distinction till the end of 1999. In this, as in his research, he was meticulous, well organized, and demanded the highest of standards; yet, he showed compassion and understanding, when it was deserved.

Geoff, though rather reserved, was very likable. He had an immense sense of *joie de vivre* and a superb, tinder-dry sense of humour. I missed him when he decided to withdraw from JFS (I did not succeed in dissuading him), for his advice, his wise counsel, his support and his sense of humour. Still, we knew he was there, somewhere on the Pacific rim; now, we shall miss him all the more. A great pillar in the FSI edifice is gone, but his legacy remains.

*Michael P. Paidoussis*

*McGill University, Montreal, Canada*

During the mid-1970s, I was studying the proceedings of the IUTAM-IAHR Symposium on Flow-Induced Structural Vibrations, held at the University of Karlsruhe in 1972, and organized so effectively by Eduard Naudascher. I came across the General Lecture by Geoff Parkinson entitled “Mathematical Models of Flow-Induced Vibrations of Bluff Bodies”. Such a clear and authoritative overview of not only nonlinear oscillator modelling of vortex-induced vibrations, but also galloping phenomena, has been a challenge to match in the intervening years. He wrote with such clarity and precision, and not until several years later, did I appreciate that such a likeable and spirited colleague was behind that document.

Geoff was asked to return to Karlsruhe for another Invited Lecture at the 1979 sequel to the 1972 symposium. I recall how our colleagues at the Institute of Hydromechanics looked forward not only to hearing what he had to say from a scientific standpoint, but to his fun-loving presence as well. In fact, he lived up to all expectations. As it turned out, David Maull, another wonderful colleague, gave a well received talk immediately preceding Geoff’s. David’s presentation was very much on time, but as soon as Geoff took the podium, he indicated “I will not take as much time as David did”, as a means of injecting timely humour, which captured the subconscious yearning of the typical academic in the audience—more time at the lectern.

I wish I could have had more frequent contact with Geoff over the years since then, but I had to settle for admiring his published scientific contributions, and service as an Associate Editor of the *Journal of Fluids and Structures*. We will always remember him as setting a high scientific standard, while remaining one of the most well-liked members of our community.

*Don Rockwell*

*Lehigh University, Bethlehem, USA*

My recollections of Geoff go back to 1947–1951 when we were graduate students in Aeronautics at Caltech, he from Vancouver and I from Alberta. It was a period of great interest in high-speed flight. I had come a year earlier and had started on experimental research, with H. W. Liepmann, on shockwave-boundary layer interaction while his work was theoretical, with H.J. Stewart, on linearized unsteady supersonic aerodynamics. His Ph.D. thesis was entitled “Unit-step motion of a wide delta wing”. With these different initial and boundary conditions our course work and research did not overlap much and we interacted mainly as fellow Canadians. What I remember best from those days is that discussing things with him was always delightful. Always unruffled, he would listen patiently with what seemed a twinkle in his eye, and his response would be hesitant, deceptively, because it would always be enthusiastic and to the point.

That personality was still there in later years when bluff bodies and flow-induced vibrations brought us together again at various places. I learned much from Geoff’s contributions to those areas and we incorporated his theoretical and experimental findings in courses on bluff-body aerodynamics and FIV, which I and Tony Leonard taught at Caltech. A seminal contribution which, I believe, was published only as a UBC M.A.Sc. thesis but was a touchstone for many of us venturing into FIV, is the work by his student C.C. Feng on the amplitude- and frequency response of a freely vibrating cylinder. One of the innovations in Feng’s experiment was the introduction of variable, controllable damping by means of an electromagnetic eddy-current damper that had been designed by J.D. Smith, another of Geoff’s students. In recent work at Caltech, that neat idea was put to good use by J. Klamo, in an extensive investigation of damping effects; this was recently reported in JFS. I think it is an example of how Geoff’s ideas and contributions will be helping us for a long time more!

*Anatol Roshko*

*Caltech, Pasadena, USA*

Things that we remember about Dr. Parkinson:

1. Famous sayings: If a student isn’t capable of choosing his/her own research topic, they should not be attempting a Ph.D.

2. **Thinking:** Often when we went to his office we would look through the open door wondering whether we should bother him or not. Sometimes he would appear to be asleep in his chair or perhaps dreaming. But in reality he was thinking, thinking about how to say something, how to explain something, how to write a sentence or paragraph. Our conclusion was that he would think through the construction of a whole paragraph before he would write the sentences on his pad of paper.
3. **Technical contributions:** His legacy continues in the field of VIV (vortex-induced vibrations); for example his state-of-the-art review in 1989 is still cited in current publications. I referred to a paper that was published just recently which referred to his 1989 summary “Phenomena and modelling of flow-induced vibrations of bluff bodies” so it continues to have an impact on young researchers.
4. **Social occasions:** His parties always required a costume that would match the stated theme. Often the theme was related to music, since he had a wonderful voice and at one time considered pursuing a career in opera. Part of the event was to guess what each person represented. I recall one occasion when the theme was “The Environment”; he wore a black turtleneck and baggy black pants and a black bonnet; no one guessed that he was a “lump of coal” but those of you who attended his parties will appreciate the sense of humour involved.
5. **Nicknames:** Among the graduate students we always referred to him as “Parky”. When writing notes we always referred to him as “GVP”. I don’t think that any of us ever addressed him as anything other than “Dr. Parkinson”.

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