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Wes and Waterloo

Computer giant built UW's reputation and helped to shape this community
 Friday June 7, 2002
 HELEN REDGWELL HALL
 SPECIAL TO THE RECORD

Although he was considered a visionary, Wes Graham could never have predicted when he arrived at the University of Waterloo in 1959 the impact his work over the next four decades would have on this community.

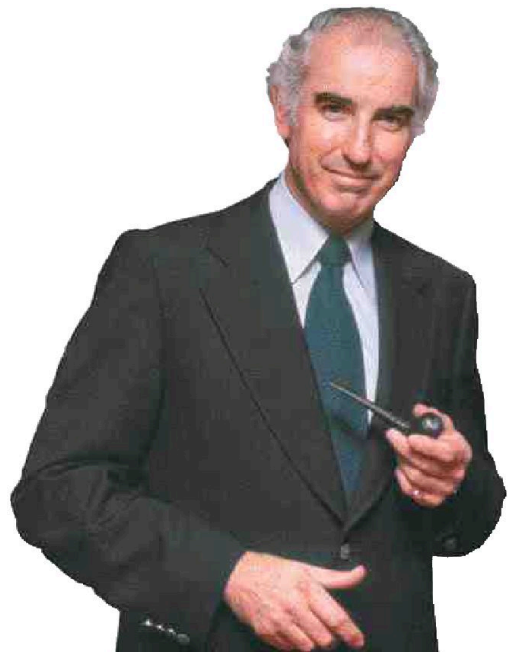
Graham, who has been called "the father of computing" at UW, spent his career finding ways to make computers and information more accessible to the average person.

His successes as an educator and entrepreneur were tidal waves in the computing field and the results of his work continue to make ripples today.

Graham -- his full name was James Wesley Graham -- died of cancer on Aug. 23, 1999 just days after receiving the Order of Canada. He was 67.

In 1959, Waterloo was a city more famous for brewing beer than for being on the cutting edge of technological advances. The University of Waterloo was a small and virtually unknown school with a small two-year-old campus that sat on 235 acres of mostly undeveloped land.

There was no computer science division, no software companies headquartered on nearby Phillip Street and no one had ever heard the words "technology triangle."



Wes Graham (right) in 1982.



1970 -- Inside the University of Waterloo math and computer building. (UW PHOTOS)

A native of Copper Cliff, Ont. who had studied math and physics at the University of Toronto, Graham was 27 years old when he was recruited from IBM that year by math professor Ralph Stanton, who wanted him to teach a statistics course.

With his computing background, Graham quickly became interested in the fledgling computer science program the university was developing.

He joined the president's computing committee, which was looking into acquiring a computer. At the time, there were only about 100 in all of Canada.

The university's first computer arrived in 1960 and over the next few years Graham became heavily involved in the new computing centre, acting as its director.

In that position he brokered a number of deals with private firms that brought newer and faster computers to the campus.

By 1967, the university had an IBM 360/75 the largest computer in Canada. It filled a room the size of a gymnasium and was designated as a backup for NASA's Apollo space missions.

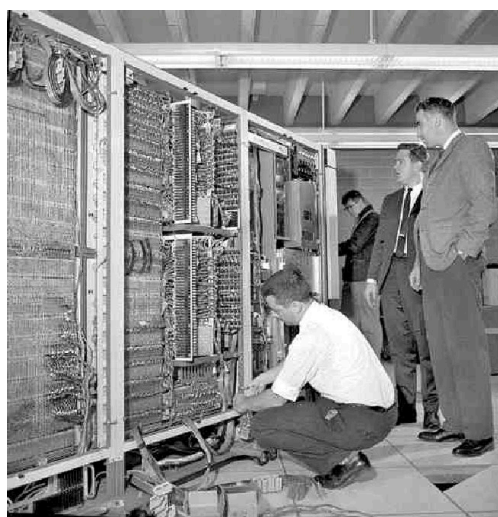
UW's current president, David Johnston, who officially took over his post just months before Graham's death, says he considers Graham to have been one of the pioneers who helped the university gain the international reputation it has today.

"It's rare to see people who have this kind of impact," Johnston said in an interview.

It proves that "individuals do make a difference," he added.

Johnston said Graham's strength was his capacity to "vulgarize," to make complicated things accessible to everyone.

"Wes engaged other people, often quite young people, to do amazing things."



Professor Wes Graham (standing, right) looks on in 1964 as the wiring for a \$1.5-million IBM campus computer system is connected in the University of Waterloo computer centre.
(RECORD STAFF)



"It's rare to see people who have this kind of impact"
David Johnston University of Waterloo president
(RECORD STAFF)



The Grand River Regional Cancer Centre (circled), now under construction at Grand River Hospital on King Street West in Kitchener, will include the J. Wesley Graham Family and Patient Resource Centre, where cancer patients and their families can use books, articles and the Internet to find information about cancer.
(The Parkin Group Architects)

The university's first computers were so large, slow and complicated that undergraduate students did not use them at all.

But in the summer of 1965, Graham worked with four students to create the educational software WATFOR that made the university's computer process jobs faster with fewer mistakes.

WATFOR SOFTWARE

With the new software, students began lining up to run programs through the machine.

Creating WATFOR began a whole new chapter in Graham's life, as well as that of the university. When other educational institutions heard about this software, they began calling. Soon Graham was heading up UW's Computer Systems Group, marketing and selling the software to other educational institutions and businesses around the world.

In 1981, Phillip Street became home to its first software company when Graham and three of his former students started a company called WATCOM to develop and market other educational software.

Graham worked to establish a business model with a suitable relationship between the company and the university that allowed the company to retain ownership of its research and intellectual property.

This arrangement was rare at the time. Typically, a university retained the ownership of any innovations that were developed in its laboratories or classrooms. Even today, Johnston said, only two or three per cent of North American universities have intellectual property policies that encourage their professors and students to market their own creations.

UW and the community have been richly rewarded for the university's decision to take a different path.

The university's Technology Transfer and Licensing Office has identified 106 different companies (including Waterloo Maple, Dalsa and Open Text) as private ventures that began as spinoffs from UW, making it the leading university in Canada for creating additional economic wealth through the transfer of technological resources.

A Regional Economics Benefits Study commissioned by the university and released last fall by PricewaterhouseCoopers LLP indicated that the University of Waterloo has a \$1.1-billion impact annually on Waterloo Region, which includes the cities of Kitchener, Waterloo and Cambridge, plus four surrounding townships.

The report said one out of every 20 people in the region has a job that can be attributed in some way to the university.

And the study's researchers said business people and economic development representatives commonly credit UW as being the "impetus for the development and growth of the region's technology cluster."

"This is the spirit of entrepreneurship and innovation that Wes symbolized," Johnston said.

Former Waterloo mayor Marjorie Carroll remembers being at the grand opening of WATCOM and following many of Graham's accomplishments during his career.

"He was directly and indirectly responsible for much of the success that Waterloo has had," Carroll said.

"He's a big piece of this city."

FUNDRAISING EFFORTS

Carroll worked with Graham in 1996 when she was chairperson of Campaign KW, a fundraising drive that raised \$21-million for Grand River Hospital in Kitchener at a time when many hospitals in the province were being restructured.

Graham was recruited to help solicit donations from high-tech companies and he could be very persuasive, Carroll said.

"He was so passionate about it that by the time he finished talking (to potential donors), we often came away with more than we were originally asking for."

Carroll said Graham led by example and was a regular contributor himself to the hospital's fundraising campaigns.

"With all the successes he had, he was very humble. He was just doing his thing for the community," she said.

"He had no pretenses. Nothing went to his head."

PATIENT RESOURCE CENTRE

After Graham's death, the Grand River Hospital Foundation received an anonymous \$500,000 donation to the Grand River Regional Cancer Centre, which as a result, will include the J. Wesley Graham Family and Patient Resource Centre when it opens this fall.

In keeping with Graham's desire to make information more accessible, the centre will offer patients and their families information about cancer through books, articles and the Internet. It will also have brochures to connect cancer patients to a variety of valuable social services in the region, such as HopeSpring, Project Lift and Meals On Wheels.

While at the University of Waterloo, Graham was involved in many decisions that changed the way computer science was taught and changed the way computers were used to educate students in many other subjects.

In the 1970s, in an effort to ensure that arriving students would be prepared to study computer science, Graham helped to design the first computer studies curriculum for Ontario high schools. He is also believed to be the first person to string a group of personal computers together as a local area network, something that's now common in schools and offices.

LIBRARY COLLECTION

A notorious packrat, Graham held on to all papers and books relating to his work and activities. After his death, they were donated to the university and today form the basis of the J. Wesley Graham History of Computing Collection, which is housed at UW's Dana Porter Library.

Susan Saunders Bellingham, head of special collections at the library, said that Graham's personal and professional papers provide important historical evidence about UW's early years, specifically in the area of computer science and the university's link to the emergence of high-tech companies in Waterloo.

The collection includes Graham's personal library of books, texts and early computer manuals.

Bellingham said that as future scholars research the history of computing, it will be important for them to see what Graham read and studied as he was making his contributions to the field.

Archives operations manager Jane Britton worked on and off for more than a year to catalogue roughly 105 boxes of Graham's papers, which are labelled and stored in acid-free file folders. She compared the cataloguing of this part of the collection to working on a giant jigsaw puzzle.

RARE BOOKS

A third part of the collection is a group of rare books that was purchased after Graham's death by the university library with financial assistance from his family, friends and colleagues.

The books enhance the history of computing collection, outlining society's desire for faster methods of computation. One of the earliest volumes is a fifth edition of John Graunt's *Natural and Political Observations Made upon the Bills of Mortality*, published in 1676. Among the more recent works are Douglas Hartree's *Numerical Analysis* from 1952.

Graham first became interested in the books in 1993 when they were put up for sale in England. He travelled there to assess their value and make a purchase, but the negotiations fell through. Later, when the books came up for sale individually, the university purchased selected items at an auction.

Graham's work, meanwhile, continues at the university.

Last January, the J.W. Graham Information Technology Trust was established with \$5-million in pledges that honour his leadership and innovation in education and technology.

The trust will fund research and education in information technology at the high school and university level, as well as research into health informatics.

Health informatics is a relatively new and evolving field of study that relates to the collection, storage, retrieval and communication of health-related data.

In July 2001, the first recipients of teaching innovation awards, worth \$25,000 each, were presented from the trust fund. Biology

professor Colin Mayfield and German and Slavic Language and Literature professor David John received the awards to continue their work on providing their students with online courses and materials.

This summer, the university plans to use some of the Graham trust money to host a week-long course for Canadian high school students interested in pursuing careers in computer science.



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160 King Street East,
Kitchener, Ontario, Canada, N2G 4E5
519-894-2231