

Charting New Heights: The Legacy of Roger Tomlinson

It's 1962 and the new head of the Canada Land Inventory, Lee Pratt, is sitting on a plane with a lot on his mind. He needs to create a multilayer land-use map of roughly one million square miles of uninhabited but productive land in Canada, in part to help struggling Canadian farmers. In short, he has to make one very big, complex map. It's never been done before and he's looking for creative ideas. As luck would have it, Mr. Pratt ends up sitting beside an acquaintance on the flight. Originally from England, the tall man with a red beard is a geographer by profession and has lots of questions about Mr. Pratt's project.

After the flight and a long discussion, Mr. Pratt goes home and crunches some numbers. He doesn't like the math he sees. The manual approach he has in mind will cost approximately \$8 million and will take roughly 356 cartographic technicians three years to complete. He rings up the geographer he'd met on the plane, who mentioned another idea involving computers. The two men pick up their discussion and soon the geographer—who'd recently created the first digitized map of Canada—pitches Mr. Pratt something called the Canadian Geographic Information System (CGIS). He says his method of using digital maps and a geodatabase organizing Canadian census data will do the job in a few weeks for less than \$2 million. Mr. Pratt likes the idea and gives it the green light, setting the wheels in motion for the development of the world's first GIS.

The name of this persuasive, innovative geographer is Dr. Roger Tomlinson—the father of GIS.

This past February, Dr. Tomlinson passed away at the age of 80 in Mexico, leaving an indelible mark on the science of geography and information management. Beginning with the CGIS—the system that coined the phrase "GIS"—Dr. Tomlinson's invention spawned the entire GIS industry, which continues to thrive and is expected to grow in value to \$10.6 billion in 2015.

"He pioneered the use of mapping to address many of the world's complex problems and advanced GIS as a profession, art and science," noted Alex Miller, president and founder, Esri Canada. "Through his remarkable work, which spans more than five decades, he leaves a tremendous legacy of innovation that will have a lasting impact on geographers and the world's mapping community."

Shaping Esri's Development

Dr. Tomlinson had a significant impact on the growth and development of Esri Canada. As a mentor and close personal friend to Mr. Miller, Dr. Tomlinson was an invaluable source of advice and encouragement.

"I first met Roger in 1983 when I hired him to help me develop a GIS strategy," recalled Mr. Miller. "I picked him up at the airport in my little VW Rabbit and he had to recline his seat almost flat to fit his 6'8" frame into the car. Then he lit up his pipe and wouldn't let me open the windows, so we drove to the office in a cloud of smoke. That day we developed a plan and he helped me win approval to start up a GIS division at the engineering firm that I worked for at the time. That was the beginning of a 31-year business partnership and friendship."



After serving in the British Royal Air Force from 1951-54, Dr. Tomlinson began a career in surveying before switching to mapping and GIS. In 1956, he led a surveying expedition to a Norwegian ice cap (pictured far right).

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Esri Canada

When Mr. Miller became the exclusive distributor for Esri GIS software in Canada roughly one year later, he used the basic concepts of Dr. Tomlinson's GIS consulting methods as the foundation for his approach to addressing customer needs.

"Roger's big insight was not to focus on technology, but on the information products people needed to make decisions, be it maps or reports," explained Mr. Miller. "Roger was extremely disciplined in his approach to understanding customer needs. He would document them and write detailed specifications for a system he felt would fulfill clearly stated needs. It sounds simple, but it's amazing how many people fail to recognize the importance of this critical step."

Dr. Tomlinson's influence on Esri's product development is significant. Stretching back to Esri's early beginnings, Dr. Tomlinson provided insight into the development of its GIS technology. Each spring he met with senior Esri executives for product and new release briefings and advised them how ArcGIS could be improved to benefit its users. Right up until his death, Dr. Tomlinson kept pace with emerging trends in GIS technology and remained one of its guiding forces.

His methods, keen interest in teaching and sharp sense of humour made him a sought after speaker in the GIS community. Throughout his career, his seminars and keynote addresses were well-attended, and he garnered an almost celebrity status at GIS events. Spontaneous photo-ops of Dr. Tomlinson towering beside giddy GIS professionals were a common sight at Esri User Conferences.

An Agent of Change

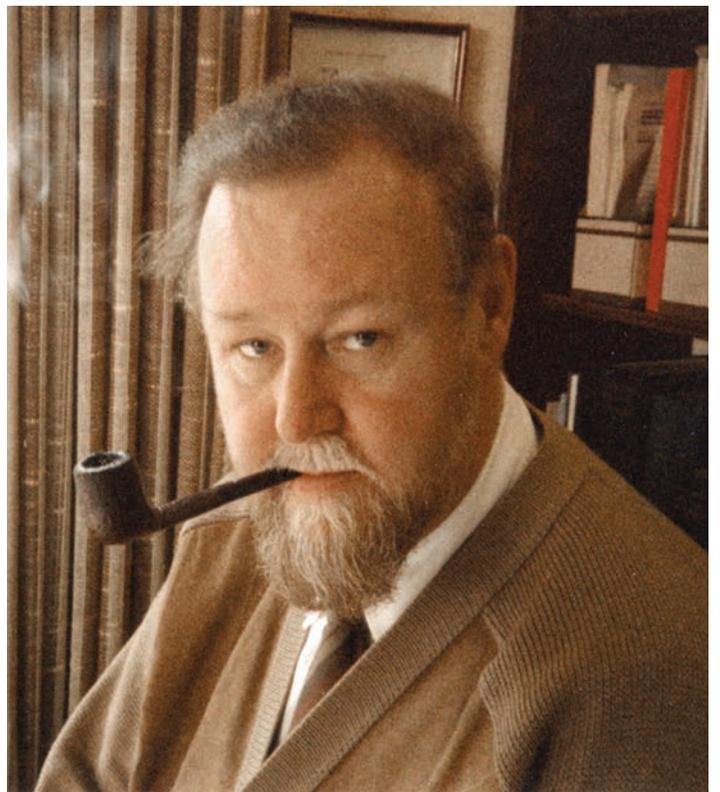
The longevity of both the respect he garnered in the GIS community and his impact on industry trends was rooted in his ability to continuously adapt to changes in technology and customer needs—no easy feat for a man whose career began when computers were rarely used and spanned five decades. And what made Dr. Tomlinson so adaptable? It might have been his inherent intellectual curiosity that led him to ask questions, seek answers and also pursue many interests outside of his professional life. These included photography, painting, acting (he played King Lear in a local Ottawa production of Shakespeare's play) and environmental causes. Dr. Tomlinson also helped the people of the Rio Laja watershed in the State of Guanajuato, Mexico restore their land after it was clear cut and lost much of its soil. Or it could have been his passionate belief that GIS technology—when designed and implemented to solve clearly established needs—truly can help people to better understand the changing world around them.

"GIS means change—a new GIS implementation... is a change agent," Dr. Tomlinson wrote in his book *Thinking About GIS: Geographic Information Planning for Managers*. "But once in place GIS capabilities can be used to help an organization adjust to change, forecast changes, and take advantage of the opportunities incumbent with change."

Perhaps the world wasn't quite ready for the disruptive change that Dr. Tomlinson had in mind during that impromptu needs assessment he conducted on that plane all those years ago. In fact, the world is still trying to wrap its collective mind around the opportunities his invention offers us: the possibilities are that far-reaching. But someday we'll catch up, and eventually we'll reach the heights this towering giant allowed us to imagine.



Dr. Tomlinson (right) oversees the first demo of the Canadian Geographic Information System (CGIS) in 1967.



Dr. Tomlinson, pictured in 1986 in his Ottawa office, smoking his beloved pipe.