

PRESIDENTIAL ADDRESS

The Extraordinary Life of a Geologist

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This address is dedicated to Robert Morison (1930-2002), father, mentor and best friend, who passed away on 12 April 2002.

I am delighted to be delivering the presidential address at this year's Annual General Meeting in Saskatoon to colleagues, mentors, friends, and future leaders. It has been an honour to be your President and it has been an experience that I shall treasure all my life. Of course some experiences I could do without, like leaving my appendix and other unmentionable body parts in St. John's last year. As a result of my experience last year in St. John's, I truly feel connected with GAC headquarters now as a native son that has lost a part of himself in this beautiful part of Canada.

I want to aim my talk today at the students and young geoscientists in the audience to let you know about the extraordinary life you can look forward to as geologists. I also want to recognize today, the enduring and lasting contribution to Canadian geoscience and indeed Canadian society that the more "seasoned" geoscientists have made, and continue to make, each day of their career.

In thinking about what I should

talk about this year, I read a number of previous presidential addresses and was impressed with what past GAC Presidents have discussed. They have provided wonderful presentations about the issues of the day from the heart. For example, last year's presentation by Scott Swinden, "Geoscience in the Dot-Com World – Changing with the Times," was an insightful discussion of the changes facing provincial and territorial geological surveys and how we must adapt to face these changes. Scott's presentation was timely, considering the issue of the future of the British Columbia Geological Survey (BCGS) and the tremendous challenges that face all of our government-funded geological programs in Canada. I have used his presentation to guide me with the BCGS issue and help develop an overall strategy to deal with this difficult situation. Thank you Scott for your leadership and your vision.

Given the challenges we hear and read about, such as government budget cuts, layoffs in the minerals industry, declining memberships in geological societies, declining student enrolment, and others, I thought it might be timely to deliver a simple and clear message this year: "Geologists have an extraordinary life!" This is something we have all felt at some time throughout our careers. For example, I was fortunate, like many others in this room, to work both as a student and as a scientist with the Geological Survey of Canada (GSC) for a number of years in Canada's Arctic. During these early years, I kept asking myself, "Are they actually paying me to do this?" I have felt that sense of wonder throughout my career as a professional geoscientist.

Perhaps collectively, we need to focus on how extraordinary it is to be a trained geoscientist, the remarkable opportunities we have had in the past, and the

exciting developments that the future holds.

When I think of Canada's early geological pioneers, there are a few terms that come to mind:

- Hard work. The incredible dedication and hard work that has served Canadian geologists so well for so long.
- Honour. This is something our predecessors took very seriously. In a world where the concept of honour is becoming increasingly rare, we must find a way to preserve this fundamental truth through our various disciplines.
- Respect for life, colleagues, and the environment.
- Honesty/Integrity always, and in all aspects of our careers.

Although their conditions and work challenges were different from ours, these early geologists kept on going for similar reasons that we do. Geology is a satisfying and exciting way to earn a living.

During the preparation of this talk, I contacted a number of friends and colleagues who have had long and distinguished careers as earth scientists. I asked them to pass on to me what they considered to be a highlight or a particularly satisfying aspect in their career as a geologist. Many of these colleagues professed that this was indeed difficult to articulate, but then did so in wonderful and heartfelt detail. I can only conclude from this that geologists tend to be rather shy, but once you get them going, watch out, it may not stop! I had an overwhelming response to my request and would have included all their comments but space does not permit.

Their comments confirmed my thoughts and my experience; the life of a geologist is deeply satisfying at many levels. These comments have helped me understand how our science has given us extraordinary lives. Consider the following the themes:

Through geology, many of us experience a sense of awe and wonder at the beauty of the world and its elegance and power.

From a colleague who spent his career in the Arctic:

"The highlight in my career occurred when I realized the extraordinary richness I could share with Canadians and the rest of the world. The fantastic diversity and beauty of Canada's landscape is a constant source of marvel that I have shared with audiences across Canada, on cruise ships in the eastern Arctic, and in numerous countries around the world. We are too well-endowed by geology to keep it to ourselves."

From another colleague who also spent many years in the high Arctic:

"To live on the land in a field camp, to get outside and experience the natural environment in all its splendour and dangers, to realize you as a human being are so insignificant in this vast world, and to appreciate what we have and not take it for granted."

From two other colleagues:

"Two particularly satisfying aspects of my career in earth science are 1) working and socializing with a great group of people, and 2) working in beautiful, remote places."

"To visit places in Canada where few have ever been before and in many areas that are inaccessible to most citizens, and get paid to do it."

All those comments express a sense of connection to our physical world, a sense of being one of a few privileged people to step on the land that is remote and beautiful.

For many of us, the attraction of geology resides in the intellectual challenge of discovery.

Consider this quote:

"Ultimately, of course, the science of geology is about deciphering the history of our planet, or rather, some spatially and temporally tiny snippet of the history of our planet and the processes that shaped it. New ideas, new interpretations of course bring great satisfaction. Presenting them, discussing them, arguing about them with your colleagues at meetings like GAC/MAC helps to temper them,

constrain them, and extend them, and brings even more satisfaction."

From another colleague:

"The practice of geology centres on observations, thousands of painstaking observations, and measurements. Many of these lack context when you make them; they may even be disconcertingly baffling or seemingly contradictory. But who cannot cherish the thrill that engulfs you when the data are collated, perhaps plotted on a map, and a pattern reveals itself in blazing logic."

From a colleague who has spent his career working in coastal areas:

"None of us is immune to the satisfaction of seeing one's ideas and interpretations put to practical use for societal benefit. But for me the real delight is in geoscientific discovery: direct, personal or team discovery, or facilitating the discovery success of co-workers."

"To be able to watch processes modify the earth and marine areas, and document features and processes which have not been described before. This is the innovative and discovery side of geology."

From another colleague:

"Some mineral types might say it's finding the mother lode that is what it is all about but I suspect it is the reward of discovery that is more important than the money for many prospectors."

For some of us this intellectual quest, the solving of the puzzle, is like a long sedimentary accumulation: the results of lengthy research and analysis. For others it is more like a catastrophic idea that brings brilliant insight and the resolution of a problem. For all of us such moments are deeply satisfying and rewarding.

The need to share what we love and to foster the careers of others in the field of geology.

Consider this from a colleague at the GSC:

"An aspect of my career, which has given me probably the greatest satisfaction, is mentoring young earth scientists. I have had many wonderful field assistants and I have tried to encourage them and give them opportunities to pursue post-graduate studies by

integrating their work into my GSC projects. Several have gone on to become university professors, GSC and provincial government geologists, and consultants. I have great satisfaction in knowing that I have played a role, even a small one, in their success."

From another senior colleague:

"The reward of assisting students in the field who go on to much better jobs and success than yourself, knowing you have played a small part in their development."

From a respected university professor:

"The greatest thing about geology is that it is such a fascinating subject, it is fantastically easy to get and hold the attention of an audience, be it students or the general public."

From another colleague for the teachers in the audience:

"I'm sure it comes as no surprise that one of the highlights of my career is working with teachers! There is tremendous satisfaction in seeing teachers become so excited about geology and to see "the light go on" when, given the benefit of hands-on activities and clear explanations by dynamic presenters, they begin to understand something that has puzzled them."

From a respected academic who gets great joy from working closely with communities:

"My learning is called 'research,' but along with the creation of knowledge comes responsibility to disseminate it, and this constitutes learning for the community. The research effort would be wasted if it were inaccessible to the community. We are humbled each year by the warm welcome we receive by the community in which we work, which signals to us that our efforts are valued and appreciated by the people to whom, ultimately, they will mean the most."

From another colleague:

"While I love geology itself, every rock, every landscape, every mountain is a puzzle for anyone who chooses to stop and gaze and wonder how it came to be. I think that the most satisfying aspect of my career as a geologist has to be that it has afforded me the chance to meet and work with some incredible people."

As scientists, we love to share our understanding and our excitement with students, communities, the general public, and friends. We enjoy helping them understand the intricate world in which we live and how everything fits into a grand picture. At a professional mentoring level, we take great care in developing careers. An example is giving credit in research papers reports and maps to field assistants and all contributors through authorship.

For some of us, geology is an accepted way to remain unconventional. Geologists have a strong desire to remain as explorers and to lead unique lives.

Consider this from a highly respected geological consultant:

"Geologists are very mobile people.

The nature of their work takes them to the backwoods of the world, spots not normally visited by other folk. They are able to see and fit into different cultures of the world as they go about their geoscience work. This provides an extraordinary opportunity to see the world through the eyes of different cultures and to observe some of the truly amazing sites of nature."

From a colleague who is a noted mineral deposits geologist:

"Off the top, I would say that the most extraordinary experience that I have had is to dive to around 4000 m in the Gorda Ridge, or to 2500 m in the Endeavour, Explorer and Juan de Fuca Ridge, to the high-temperature vents. There's nothing to compare with being at the frontiers of the planet, and the deep ocean environment has to be one of the greatest natural laboratories in the world. The biological diversity and geological uniqueness is a bit overwhelming!"

Geologists cherish their experiences in the bush. Life in camp provides endless material for tall tales: bear stories, helicopters and helicopter pilots, storms, and others. Stories to be told and re-told (with the accompanying embellishment each time) in the warmth of a friend's house or a pub. The other side of camp life and fieldwork is the strong bond that develops between team workers. It is unconventional to brush your teeth side by side with your boss by a creek, see him or her

before their first cup of coffee in the morning, or to watch him or her wash their socks in a pan. Imagine that in a bank or a legal firm. These bonds are created in unconventional conditions and foster a spirit of co-operation and open communication so important to the progress of geology.

For some of us, geology is a tool for philosophical or even spiritual growth.

Consider this quote:

"My life as a geologist has taught me to be philosophical about life experiences, to extract the good, and minimize the not-so-good in everything I do. When you can learn to focus your excitement about the geological features in an outcrop in the face of the onslaught of a million boreal biting insects, or stop to really enjoy the beauty of a stream, lake, or vista at the weary end of a 15-mile traverse while forgetting the pain in every muscle and the weight of 40 pounds of rocks on your back, then you have developed a skill really worth having."

From a colleague with many years experience in the field:

"Studying and working at geology eventually gives one a deep understanding of how the earth works. Everything we see that is connected to the earth has meaning that is many levels deeper than almost everyone else's. Tourists can appreciate scenic vistas on one level, and geologists can too, but we also see the same vistas on a completely different level, with understanding of how they formed, and what they tell us about the planet on which we live. I think this gives our lives an added richness."

From another colleague:

"They (Geologists) stand in the present, trained and equipped to observe all of the features of nature that surround them. And then because of their training, are able to uncover the past, and act as natural historians, unlocking the fascinating history of our planet and the life that lived and now lives on Earth. Then, using this information, they are able to peer into the future and become predictors of future events. Hence the warnings of global warming. What other profession

not only trains its people, but also allows them to practice their skills on a daily basis, almost 24 hours a day, 365 days a year for a lifetime. An extraordinary gift given to all geoscientists to use on a continuing basis."

Consider this perspective on the human challenges around the world and geoscience:

"Ideologies in a post-modern world (and post September 11) must be informed by geoscience to explain why some of the inequalities and inequities in human circumstances are not primarily the result of race, religion or culture, but of fortuitous natural phenomena such as mountain chains, deserts, continental axes, islands, and climate. In this way, geoscience can help breed understanding and better social harmony."

A challenge from a colleague:

"In the same vein, geoscientists have a cosmopolitan view of Earth and are suited for progressive political leadership. Assume the responsibility!"

Geologists think of events in terms of time. This is unique. This understanding of time gives us a different and arguably unique perspective on world events. Geologists are also able to inter-relate processes from the subatomic level, to the regional scale, and even the planetary scale. This unique ability demonstrates the intrinsic scientific insight of our discipline.

Clearly, from these themes and quotes it is obvious that we geologists love our work.

Geologists provide society with an essential function. We understand Earth, its past, present, and future in a manner that no other profession can match. However, Canadian geologists have a relatively new role in society. By using our set of geological skills, geologists can assess, approve, and monitor industrial developments, expansion of Canadian cities and other infrastructure, and provide pragmatic solutions for national and international issues. We are in an ideal position to guide policy makers in the wise and sustainable use of our natural resources and urban expansions. What could be more extraordinary!

In the book *The Map that Changed the World* by Simon Winchester,

he eloquently describes the life and times of William Smith and the birth of modern geology. In 1815, William Smith produced the first true geological map of England, Wales, and part of Scotland. This map was a true piece of art. It was hand painted and was some eight feet tall and six feet wide. As the father of modern geology, William Smith's map had an entirely appropriate title: "Delineation of the Strata of England and Wales with Part of Scotland - Exhibiting The Collieries and Mines, the Marshes and Fen Lands Originally Overflowed by the Sea and the Varieties of Soil - According to the Variations in the Substrata, Illustrated by the Most Descriptive Names."

This is perhaps one of the most descriptive and informative titles on a geological map that I have ever seen. It summarizes beautifully what a geology map can do. William Smith certainly started an extraordinary contribution that has lasted to this day.

In the Prologue of Winchester's book (p. xvi), the work by William Smith is described as: "a map that heralded the beginnings of a whole new science. It is a document that laid the groundwork for the making of great fortunes — in oil, in iron, in coal, and in other countries in diamonds, tin, platinum, and silver — that were won by explorers who used such maps. It is a map that laid the foundations of a field of study that culminated in the work of Charles Darwin. It is a map whose making signified the beginnings of an era not yet over, that has been marked ever since by the excitement and astonishment of scientific discovery that allowed human beings to start at last to stagger out from the fogs of religious dogma, and to come to understand something certain about their own origins, and those of the planet they inhabit. It is a map that had an importance, symbolic and real, for the development of one of the great fundamental fields of study — geology — which, arguably like physics and mathematics, is a field of learning and endeavor that underpins all knowledge, all understanding."

What a tribute to the father of modern geology. Given that this is our collective beginning to the field of geology, how can we not feel proud and privileged to be part of a fraternity that has such a long and honoured past.

The future is bright for Canadian geoscience.

Perhaps this series of short quotes from a good friend and respected colleague helps put it in perspective:

"Civilization as we know and want it, is predicated on our science flourishing";

"Natural resource exploitation is fundamental to both our status quo and our progress. Mining is not a sunset industry..."

"Human pursuit for improvement in living conditions will ensure continued markets for Earth's resources."

"Geoscience is the KEY to sustainable development through the mitigation of environmental damage and at the same time discovering new resources."

"Exploring, exploiting, and developing new frontiers such as ocean basins is dependent on geoscientific knowledge."

In short, I believe there has never been a better time to be a geologist in Canada. Canadian geoscience will always be faced with challenges. Our responsibility is how we deal with these challenges, from a personal perspective and through our employers.

Finally, there is another quote that I would like to share with you that I consider to be profound:

"I would say that being a geologist is one of the purely "Canadian" things to do. Canada has historically provided the world with a disproportionate number of its foremost geologists, and provided a fertile ground for expatriate geologists who came here to develop their skills. My identity as a geologist is strongly tied to my identity as a Canadian."

I believe that geologists have extraordinary lives. We treasure the earth and the environment we work in and, perhaps most importantly, we are emotionally attached to each other as colleagues and friends. The bonds we form with people over the span of a career are lifelong bonds that are the result of incredible experiences through discovery in the lab, in the field, or through publications.

This is probably the foremost reason why the Geological Association of Canada continues to be a vibrant and healthy society: its members, our collec-

tive friendship, and our love of geology.

At the outset I indicated that I was targeting my comments to young geoscientists. For these individuals, I hope that my comments have provided you with an indication of what is ahead of you. I envy you. Savour your experiences. Take opportunities as they present themselves; consider them not only in terms of financial gains but also as building blocks of an extraordinary life. For the more "seasoned" geoscientists, I hope my comments have provided you with a perspective with which you can identify and perhaps with an opportunity to look back at your career and appreciate what extraordinary lives you have led so far (it's not over!). I would also encourage you to share your experiences with young geoscientists you come in contact with in your daily lives.

I hope my message has been one that provides you a strong sense of optimism and hope.

Thank you for giving me this opportunity today.

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REFERENCE

Winchester, S., 2001, *The Map that Changed the World: William Smith and the Birth of Modern Geology*: HarperCollins, 352 p.