

PRESIDENTIAL ADDRESS

Geoscientists and Rodney Dangerfield: Neither gets any respect

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INTRODUCTION

Good morning ladies and gentlemen. The title of my Presidential Address is somewhat provocative, but it does capture the essence of what I will talk to you about today. To slightly misquote the late Rodney Dangerfield (Fig. 1), “we don’t get any respect! No respect, no respect at all!” That quote hits rather hard, but it leads me to something that I and many other geologists have pondered for some time now. Specifically, although geoscience or Earth science is a topic of great interest to the general public, I sense that we geoscientists really don’t have that much influence on today’s great geoscientific debates. We seem marginalized, yet we have much to contribute to the discussion on climate change, on the environmental impacts of oil sands development, on the role of government funding in science and education, and even on the debate over evolution versus creationism, or in its modern guise, intelligent design. Yes, it is true that there are some exceptional people amongst us who are influential - and the Royal Society does provide comment on such issues - but the average person on the street isn’t approaching many of us for our expert opinion. I find that troubling. And we should be

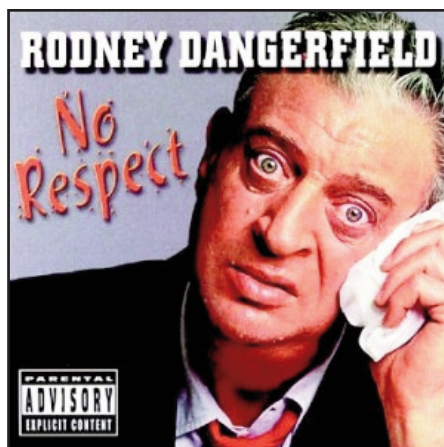


Figure 1: Cover of Rodney Dangerfield’s 1981 comedy album “No Respect”.

concerned because it is the general public - not the elites - that ultimately decide on how society evolves and adapts. Look no further than Montreal and the student protests if you doubt the “power of the people” telling its elected officials what is acceptable and what is not (Fig. 2). Look at Washington State just south of where I live in Victoria. Metal mining is essentially banned, yet Washington and British Columbia are both part of the Pacific Northwest and share similar geology and a relaxed west coast lifestyle. We are cousins. Yet, the family in Washington State will not tolerate metal mining. Solid mineral production in British Columbia in 2011 was 8.6 billion dollars (Rowins et al. 2011). In Washington State it was a fraction of that. But British Columbia is no mining nirvana. Uranium mining is now banned in British Columbia, yet in Saskatchewan it is welcomed. We British Columbians have banned a naturally occurring element in the periodic table that is widespread and occurs in minor amounts in many types of mineral deposits. Sodi-

um is also bad for our arteries, but I hope British Columbians don’t ban it from existence because as a naturally occurring element in the oceans, it is going to take one heck of a filtration exercise to remove it! The people that make these decisions, and the populations that support them, are not stupid. They are just not listening to us. Well, so what? People do silly things all the time. Unfortunately, as members of the GAC we are obliged to get involved because of our Association’s mission and vision.

The **mission** of the GAC is to “*facilitate* the scientific well-being and professional development of its members, *to facilitate* the learned discussion of geoscience in Canada, and *facilitate* the advancement, dissemination and wise use of geoscience in public, professional and academic life”. Wow – what a mouthful and how typical of a scientist’s attention to detail. I believe that we are doing a pretty good job with our mission. Our GACMAC meetings are great, our publications are profitable and highly regarded, and our journal is widely read. So we should give ourselves a pat on the back for these successes.

Our stated **vision** is to be “a multidisciplinary scientific society supportive of the entire scope of the geosciences in Canada. The GAC aims to be a geoscience community which is knowledgeable, professionally competent and respected, *whose input and advice is relevant, widely sought and utilized, and whose vital contribution to the economic prosperity and social well being of the nation is widely acknowledged*”. I’m not so sure we are doing the “vision thing” very well. As noted earlier, we are not really being sought out to form blue ribbon panels on earthquakes, nuclear energy, climate change, sustainable mining



Figure 2: Student protestors in downtown Montreal on April 20, 2012 (www.CBC.ca Image Galley).

practices and so on. This leads to a rather uncomfortable question. Why are we not being listened to and sought out?

I think that there are at least three possible reasons that we should consider:

1. We are largely irrelevant to the general population. Society has changed but we have not.
2. We have a credibility problem. We are in the pockets of big business, we produce marginally useful research, and teach self-serving curriculum.
3. We do not communicate or promote (ugh!) our geoscience very well.

Let's briefly examine these three possible causes and see which, if any, have merit.

Firstly, are we irrelevant? Have we been looking down the optical microscope at Becke lines while Rome burned? Certainly, many of the funding agencies seem to think that we are not sufficiently innovative and that our research is not easily commercialized. Has society changed but we have not? Looking back 12 years to 2000, the start of the new millennium, we see that times certainly have changed. Twelve years ago some folks were predicting the end of the world. Our computers were going to stop working and chaos would ensue. Geologists were becoming Geoscientists. Geology was becoming Geoscience or Earth Science. The "worldwide web" was

still relatively novel, cell phones were primitive, and Facebook was just a funny word.

For geologists and the geoscience profession, it was a fairly grim time. The fallout from Bre-X in 1997 combined with the "dotcom" meltdown and the European sell-off of national gold reserves lead to a nuclear winter of unemployment for those in the mineral exploration and mining industry. Raising money was all but impossible for new projects, and self-serving politicians in some western democracies were predicting that mining was a "sunset" industry. Standing here today, I wonder what in world these people were thinking because our consumption rate of materials and energy has dramatically increased. A school child could have predicted that mining would become even more important to society, like it or not. As we educators say to students taking our courses in introductory geology and mineral resources, "think for a moment about how you got to this lecture. The steel used for the bus you took or the aluminum for the bike that you rode, the aggregate used to build the roads you travelled, the electricity used to power the stop-lights to keep you safe, and to keep this building warm and lit, the fuel for the trucks to transport the meat pie you bought on the way here". The list is almost endless, but what is profoundly disturbing is how uneducated and uninformed many people are about this simple

truth, regardless of their political philosophy.

Okay - back to 2000. For researchers, the 3rd or 4th NSERC reallocation exercise - I can't remember the exact number - left geoscience out in the cold yet again. First they asked us to be broad-minded and then criticized us for not being specific enough like our colleagues in chemistry. Do you remember that? Government geological surveys were being downsized but the bureaucracy was mushrooming. Finally, the whole topic of global climate change was beginning to seep into the public consciousness. Some predicted that we were entering the "age of the geoscientist". Surely if anyone had answers to these problems it was the humble geoscientist.

Okay fast forward to the present: today, in St. John's. By any measure, geoscientists are more relevant now than they were 12 years ago. The problems that society faced in the past are more pressing now. I find no evidence for the geoscientist becoming irrelevant.

So what about the second possibility? Do we have a credibility problem?

This is an easy question to answer. No, I don't believe that we have a credibility problem. Although those engaged in the mining and energy business are challenged by many non-governmental organizations and some First Nations, these land ownership issues are an artifact of historical injustice and are not caused by the industry. In fact, it is government that has commonly abandoned its responsibility to redress these injustices. It has been left to the industry to negotiate benefit agreements, revenue sharing, and resource ownership. Actually, I find it remarkable that we have the number of resource development partnerships between First Nation communities and mining companies in Canada given the lack of government leadership. On sober reflection though, lack of government involvement may be one reason why something was accomplished!

For those in academia and government geological surveys, we are universally viewed as honest brokers. We are scientists and teachers, not politicians.

So what about the third possibility - that we are poor communicators and reluctant promoters of geoscience? This is a good question and many other society presidents and university leaders have commented on it. Why do we struggle to promote our geoscience to the general public? Like almost every geologist I know, I dislike the word “promoting”. As trained scientists and professional geologists, we don’t need to sell or promote anything. Our science speaks for itself. I measure the phase transitions in a fluid as a function of pressure and temperature. I date the zircons in the rock. I measure the copper and gold abundances in an ore mineral. I measure the sulfur isotope ratios of a zoned sulphide mineral with a laser. I don’t need to step up to a stage like this to sell you on my science. It’s unseemly and unbecoming as a professional. We are trained to be factual and indeed, a case could be made that a worse group of self-promoters, with a few exceptions of course, could not be found anywhere else in Canada at this time. I look into this room and see a group of smart, highly opinionated, truth-seekers ready to speak their minds.

So we are disinclined by training and habit to promote our science. But I think that we must do this if we are to thrive in the modern world where competition for research and investment dollars is fierce.

We must overcome our “failure to communicate” as said by Strother Martin to Paul Newman’s Cool Hand Luke (Fig. 3).

So I conclude that it is primarily our failure to communicate that is causing people to ignore us. Well, what are some things that we can do to be better communicators? I’m no expert, but there are some things that I have found helpful. I challenge each of you to think about how you can better communicate the results of your research or exploration success to the general public. It is time for us to step up to the plate. As I said to my Survey colleagues in British Columbia a few months back “Ask not what your Survey can do for you, but what you can do for your Survey”. I’m not sure if the phrasing was quite right, but the sentiment was clear enough. We need to let people know what we do. The



Figure 3: Prison warden (Strother Martin) speaking to “Cool Hand” Luke (Paul Newman) in the 1967 film *Cool Hand Luke*.

average Canadian needs to know what you do. Remember our GAC vision.

I’ll pass along a few experiences of mine that really drove home the point that I wasn’t communicating why geoscience is such a great profession and how geoscientists really can make valuable contributions to our society. First, let me tell you about my attempt to become an astronaut in 2008.

I have been interested in space exploration since I was a boy. You should be aware that geologists and geophysicists have played significant roles in the NASA space program (Fig. 4). Dr. Harrison Schmitt was an American geologist and the last person to walk on the moon. He went up on the final Apollo mission (#17) in 1972 (Fig. 5) and was later a United States senator. More recently Andrew Feustel, an American who graduated with a Ph.D. in Geophysics from Queen’s University (Kingston) in 1995 had several recent missions aboard the space shuttle. Both Schmitt and Feustel were prominent speakers at the Geological Society of America meetings in 2009 and 2010, respectively. I applied in 2008 to be an astronaut with the Canadian Space Agency and made it to the

final 2% of the 5,345 applicants. That’s a lot of budding astronauts out there! It was an exciting time and Carolyn, my wife, and I were told to start looking at places to live near the Johnson Space Centre in Houston. I had complete Canadian Security Intelligence Service (CSIS) and Federal Bureau of Investigation (FBI) criminal record checks on myself and my family. We passed, and the 7 month selection process was a fabulous experience that I will remember all my life. My final interview involved a panel of 6 lead by Dr. Jean-Marc Comtois, the Chief of the Astronauts, and Dr. Dave Williams, Canada’s physician-astronaut who completed two space shuttle missions and three spacewalks (Fig. 4). He and Bjarni Tryggvason, another Canadian astronaut, were retiring at the end of 2008 and the Canadian Space Agency was looking for replacements.

Dave Williams started off by asking me “why I wanted his job?”

Pretty blunt guy and I replied that geologists, and in particular exploration geologists, share many similarities with space explorationists. We travel to remote places; we live cheek-to-jowl with other colleagues for extended periods of time; we rely on team mem-

Scientists in Space



Dr. Dave Williams
CSA Astronaut
Physician
(record for EVA)



Dr. Harrison Schmitt
NASA Astronaut
Geologist
(last man to walk
on the moon)



Dr. Andrew Feustel
NASA Astronaut
Geophysicist
(Queen's graduate
1995!)

Figure 4: Scientist-astronauts in the Canadian Space Agency (CSA) and the National Aeronautics and Space Administration (NASA).

bers to survive in fairly extreme climates; we are accomplished scientists; we study the Earth, which the moon was probably part of at one time; we use sophisticated instruments; we are very independent but disciplined; and our parents really don't really understand why we choose to do what we do, but it all seems very exciting. Finally, geology, like space exploration, is a relatively young discipline. The plate tectonic revolution was occurring at the same time that Neil Armstrong first walked on the moon in 1969.

He next asked me "What do you think the *right stuff* is? You've probably seen the movie and have an opinion".

Ohh kay - I replied that I thought it was one's ability to overcome whatever obstacles were placed in front of one's path in a calm, calculated manner without much fuss or drama: a real professional. Successful geoscientists also have the "right stuff" because they are always trying to "beat the odds", be that finding the next ore deposit or doing "big science" on a modest NSERC Discovery grant! Dave Williams nodded and replied "yah, that's pretty much it". I passed that question.

The Chief of the Astronauts - Dr. Jean-Marc Comtois - next asked me why the Canadian Space Agency should choose a geologist (one of us!) to be one of its next two astronauts. My reply was similar to what I said earlier in this talk. This is truly the "age of the geoscientist" and never before has society needed our guidance on how to strike that balance between humankind's demand for resources while maintaining the health of the planet. The issues today are climate change, protecting our air and water resources, and mitigating geological hazards - not winning the Cold War and fighting Russian communists. In fact, the United States doesn't even have a space shuttle to get to the International Space Station anymore - they need to hitch a ride on the Russian's Soyuz space vehicle! I thought that the interview went well, but I obviously missed the mark because I didn't make the final 38 selected for further competition. Actually, at 44 I was slightly too old for starting in the space program.

These experiences stretched me and taught me that I really wasn't used to communicating many things about the geoscience profession. It really required more thought than I



Figure 5: The famous *Blue Marble* photograph of the Earth as seen by the Apollo 17 crew on their way to the moon in 1972. The photo is attributed to NASA geologist-astronaut Harrison Schmitt.

had appreciated.

Another communication wake-up call came from my boss, the Assistant Deputy Minister (ADM) of Energy and Mines in British Columbia. As any Chief Geologist knows, all ADM's play the devil's advocate! An economist by training, my ADM asked me, "How do you know that anything that you do is any good?" I was perplexed and said what do you mean? He replied, "Well if you are in the automobile business and sell more cars than last year, then clearly you are doing a better sales job. If you are a medical doctor and you are doing more hip replacements each year, then clearly you are doing a better job of serving your patients. If you are a high school teacher and a higher percentage of students are graduating from your school each year, then you must be doing a better job of teaching. But how do you guys know if your maps are any good?" I thought for a moment and said "What a great question". I just assumed that people in my own organization understood what we geoscientists do. So I said, "You have a point. Maybe our geology maps are bad because nobody ever seems to find anything in British Columbia!" Then I got serious and pointed out that we have been making maps of British Columbia for 115 years. We have developed a set of mapping protocols, refined over many years from the interaction and feedback from industry

users and academic colleagues. We have binders on the process for naming geological formations and deciding what map symbols should be used and so on. But I did point out that the impact or success of our work is not something that is easily measured or quantified. This fact is what makes geoscience such a hard sell in the modern "results" driven world. We are at pains to explain or *communicate* how good science actually evolves. It's a trial-and-error process. If it's predicable and success is guaranteed, then it is not science. It's something, but its not cutting-edge science.

He then asked me if anyone really uses our maps anymore. I sensed that the survey might be in some trouble and replied that they sure do. Anyone involved in mineral exploration needs a modern geological map. I said look at it this way. "If I am trying to get you to invest in an area, I need modern information". Try raising money or writing a grant proposal based on 30-year-old data. Good luck with that. Even my next door neighbour, without knowing anything about geology, knows enough not to invest in something based on information that is 30 years old and obsolete. Now compare your ability to raise money using a geological map created just a year or two ago, done at a much smaller scale, using new age dates, showing new geophysical anomalies, new mineral occurrences, and new structural interpretations. Now *that map* will reveal new opportunities that are worthy of investment. This is what I am talking about.

He accepted my explanation that a new map is indeed a very useful piece of geological information, but then said big companies like Teck and Xstrata don't really do any grassroots exploration anymore do they? "These guys just fly around the globe buying stuff that other people have discovered and developed right?" More miscommunication! I said yes, Teck still does

grassroots exploration, perhaps not very well mind you, but you are correct to a degree. The modern mineral industry does have a problem of not doing enough of the high-risk, early-stage work that is required to discover new deposits. It's far easier, and a lot less risky, to simply buy someone else's mine to increase your share price.

So what can we do to improve as Communicators and avoid being Rodney Dangerfield with no respect? I have four modest suggestions:

First - We have a unique and fascinating science to talk about. Let's be more "muscular" as an Association. Be stronger advocates. Not lobbyists, but advocates. Look at the GSA and perhaps consider modeling some of our initiatives after what they do. For example, the GSA is committed to geoscience education from Kindergarten through to Grade 12. It strongly endorses the resolution that "*Earth Science must be taught and assigned high value throughout the U.S. educational system, because it is vital to the American economy, environment, health and national security*".

Secondly - Think "Canada" first and support the GAC. There are many international geoscientific societies that one can join, but organizing a short course in Peru or a fieldtrip in Italy, while great for you and your preferred sub-discipline, is not necessarily going to do much for Canadian geoscience. There is nothing wrong with these activities, but just think a little bit about where you are devoting your energies.

Thirdly - Show some leadership in your professional life. Real leadership is all about taking and accepting risk plain and simple. People will follow you if they see that you are putting something on the line. Real leadership isn't easy, but it's required to advance our profession.

Finally - Let's remember that we are communicating with a media-saturated society that really doesn't understand, nor necessarily value, what

geoscientists do. It's hard. We don't cure cancer or save whales. We do not lead social movements for lower tuition rates or the eradication of child poverty. We must be more creative with how we communicate with Canadians.

Well that concludes what I would like to share with you today. Thank you for listening to this Address and giving me the privilege to be your GAC President the past year. I enjoyed the experience immensely and want to thank my wife Carolyn and our three boys who indulged me this past year when Dad was "doing geology" for folks from Newfoundland.

REFERENCE

- Rowins, S.M., Jones, L., and Madu, B., 2011, British Columbia Geological Survey Activities in 2011: *in* Geological Fieldwork 2011, BC Ministry of Energy and Mines Paper 2012-1, p. 1-9.

Correction:

Archibald et al., (Geoscience Canada, v. 38, no. 4, p. 155-163) inadvertently forgot to acknowledge anonymous landowners at Horsefly and Quilchena, and Robert Drachuck, Robert Campbell, and the late David Langevin at McAbee for access to these sites. Also please note the typo: Marlow Pellatt works for "Parks Canada", not "Parts Canada".