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Andrew D. Miall

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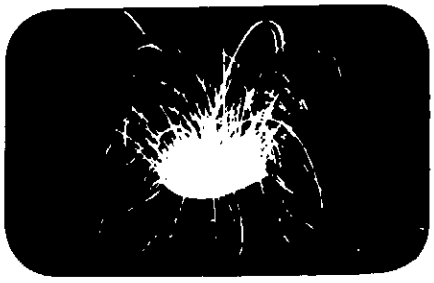

Pyroclasts

The Pursuit of Science: Time to Look at the Sacred Cow?

Andrew D. Miall
Department of Geology
University of Toronto
Toronto, Ontario M5S 3B1

Scientists are chronic complainers. We say we never have enough money for our research, never enough students, the government does not respect us, politicians do not understand science, and so on, and on. What do we do about it? We form groups — societies, government departments, companies, research consortia — to promote and apply our discipline; we start journals, hold symposia, issue press releases, or just grumble a lot in the cafeteria.

Earth Scientists have been very successful at this game. Despite a global downturn in the resource industries, our services are still needed for the discovery and development of fuels and minerals, the Ocean Drilling Program has been one of science's great success stories, and the earth sciences constitute one of the half-dozen major disciplines every self-respecting university feels it must have in order to be complete.

In a way, though, we are the victims of our own success. The effort to build, promote, consolidate and publicize our activities has led (in my view) to a horrifying proliferation of organizations, events, and research products at the very time the Western world in general has begun to realize that the global debt, accumulated through the application of the Keynesian philosophy of deficit financing, is probably forever unpayable, while huge global problems, such as Third World poverty and the deteriorating environment, continue to worsen at an accelerating pace.

Consider, for a moment, one tiny area of human endeavour, the subdiscipline of sedimentary geology, in all its forms, as practiced in one mid-sized First World country, Canada. At least fourteen nationwide organizations in Canada are concerned, in part or entirely, with sedimentary geology, as a research area or as applied to a specific range of societal problems. Some of these are national Canadian organizations (societies, government groups, *etc.*); others are international, but with significant operations in Canada. The 14 are as follows: AAPG, CANQUA, CGC, CSPG, CSRG, GAC, GSC, GSGP, IAS, IGCP, LITHOPROBE, ODP, RSC and SEPM. I deliberately list these by their acronyms because the acronym disease is part of the impression of muddle and confusion I wish to convey in this article (a key is given in Table 1). All the organizations have their own budgets, programs and priorities; most are in the business of sponsoring new initiatives; most have their own series of publications and symposia; and all are making demands on the declining discretionary incomes of individuals or the tax-account deficit of government. This list of 14 does not, of course, include the individual or small-group (commonly *ad hoc*) initiatives by universities, in-house company activities and provincial surveys.

The problem is the appalling overlap of functions and programs and the duplication, inefficiency and waste that surely have resulted. This recently was brought home to me by the realization that, as a result of my personal involvement with more than half of these 14 organizations, I have assisted, at different times, in the launching of two (at least — who knows?) of the three major international symposia on sequence stratigraphy

Table 1 Acronyms every Canadian sedimentary geologist should know.

AAPG	American Association of Petroleum Geologists
BCPG	*Bulletin of Canadian Petroleum Geology*
CANQUA	Canadian Quaternary Association
CGC	Canadian Geoscience Council
CGF	Canadian Geological Foundation
CJES	*Canadian Journal of Earth Sciences*
CSPG	Canadian Society of Petroleum Geologists
CSRG	Canadian Sedimentology Research Group
GAC	Geological Association of Canada
GSA	Geological Society of America
GSC	Geological Survey of Canada
GSL	Geological Society of London
GSGP	Global Sedimentary Geology Program
IAS	International Association of Sedimentologists
IGCP	International Geological Correlation Program
JGR	*Journal of Geophysical Research*
JPG	*Journal of Petroleum Geology*
JRAS	*Journal of the Royal Astronomical Society*
JSP	*Journal of Sedimentary Petrology*
LITHOPROBE	the name of a research consortium, not an acronym
NSERC	Natural Sciences and Engineering Research Council (Canada)
ODP	Ocean Drilling Program
RSC	Royal Society of Canada
SEPM	Society of Economic Paleontologists and Mineralogists

(a current red-hot topic) that are to be held during the 1990–91 academic year, two of them within a week of each other on different continents. Do we really need three such meetings? There are perhaps a hundred key people worldwide who are making valuable contributions in this area. Are they all going to present three different papers during 1990–91? Of course not. Most will be too tired or too over-extended financially to attend more than one of these meetings, leading to duplication of papers and a lot of missing key people. Net result: dilution of effort and waste.

I have personally campaigned against such waste on several occasions. During the 1970s, when I was resident in Calgary, there was a move to establish a local Calgary section of SEPM. I thought this a ludicrous idea, in view of the overwhelming presence of CSPG, to say nothing of AAPG, and several of the other organizations listed above.

The proliferation of journals is part of this problem. A few years ago, I was asked by a European publisher for my opinion on their idea to launch a new international journal in the area of basin analysis. I opposed this vigorously, pointing out the long list of established journals that already do a good job in this area, including (here are some more acronyms): *AAPG Bulletin, BCPG, CJES, Geological Journal, Geological Magazine, GSA Bulletin, GSL Journal, Journal of Geology, JGR, JPG, JRAS, JSP, Sedimentary Geology, Sedimentology, Tectonics* and *Tectonophysics*, to name but 16 of the major North American and European publications. The idea of a new journal died at that time, but some ideas are like weeds that no amount of weed killer can eliminate, and, a little later, another European publisher proposed the same idea. This time it came to fruition, and we are now stuck with the new journal, *Basin Research*, which had to delay start-up of publication for over a year because it could not scratch together enough good papers. It remains thin. This is at a time when many Canadian university libraries are slashing journal subscriptions to meet budget deficits, another fact I pointed out to these publishers. (The curious reader will discover that I am on the Editorial Board of *Basin Research*. This is a, perhaps misguided, case of "if you can't beat them, join them".)

The advantage of our system is that it provides opportunity and encouragement to a lot of people, especially young scientists. For example, it helped me to make my own contribution to proliferation when, in 1977, at the tender age of 33, I was able to persuade CSPG, GSC, NSERC, CGF and the University of Calgary to help in various ways to start a new idea, that of the Fluvial Symposium. This idea has, to some extent, become respectful and institutionalized, so that four such meetings have now been held worldwide, with a fifth in the planning stages. Other similar Calgary initiatives that come to mind are the Devonian Symposium, the Clastic Tidal Deposits Symposium, and the Shelf Sands and Sandstones Symposium.

This is all undeniably good stuff, for science in general, the pursuit of knowledge, Canadian nationalism, and the winning of merit awards and promotions. But where do we draw the line? How do we decide enough is enough? How do the costs and benefits of five fluvial symposia stack up against the costs of global poverty? I do not think that this is a trite question.

Is the alternative a monolithic, Soviet-style approach to science, run from the top down by a few aged academicians who make all the decisions? (And is it a coincidence, perhaps, that, at the riper age of 45, I seem now to be contemplating the need for such an alternative?) Is there a larger role for such umbrella bodies as RSC or CGC to play in co-ordinating scientific activities nationwide in Canada? Should NSERC be thinking about the continuing relevance of "curiosity-oriented research" and the level of funding it requires? (There's a hot potato for you!) And what about the international scene? How do we decide what is important? Is waste the price we pay for the dynamism that has resulted in the overwhelming dominance of Western science?

I believe these are questions we need to ponder as we increasingly realize the limitations of the Earth's resources. The budgets of governments and individuals are unlikely to ever get much bigger; they are more likely to continue to diminish. We are going to have to accept that research environments will deteriorate and funding for science is going to decrease over the years. We are going to have to ask ourselves the question "is more science necessarily a good thing?"

Accepted 20 December 1989.

Canadian Continental Drilling Program — Workshop
Programme canadien de forage continental — Colloque

The Role of Scientific Drilling in Studies of Global Change
Forages Scientifiques et Changements à l'Échelle du Globe

In 1986, at a meeting in Berne, Canada and 73 other countries agreed to take urgent action to study the social effects of changes to the geosphere and biosphere, especially climatic change arising both naturally and as a result of modifications to the composition of the atmosphere. Borehole information of various kinds provides an important part of multidisciplinary studies of global change. This workshop will be concerned with proposals to the CCDO for drilling in different environments in Canada, including the New Quebec Crater and the St. Lawrence Estuary, with a view to addressing some important questions in global change. Papers are invited on any aspect of the application of scientific drilling to global change studies.

En 1986, lors d'une réunion tenue à Berne, le Canada, de même que 73 autres pays, convinrent de l'urgence d'étudier les effets sur l'homme des transformations globales de la géophère et de la biosphère incluant surtout les changements climatiques naturels ou anticipés à la suite des modifications dans la composition atmosphérique. Les forages scientifiques peuvent permettre l'étude de plusiers aspects liés aux changements à l'échelle du globe. Ce colloque portera sur différents projets du PCFC qui s'adressent à ces aspects, incluant les propositions de forage au Cratère du Nouveau-Québec et dans l'Estuaire du Saint-Laurent. Le colloque est ouvert à toutes autres propositions touchant le sujet de l'application du programme de forage aux études des changements à l'échelle du globe.

Date: May 3-4, 1990 0900-1700 h

Place: École Polytechnique
University of Montreal
Department of Geology
Room C-630

Information/Renseignements:

Dr. M. Drury
Geological Survey of Canada
601 Booth Street
Ottawa, Ontario K1A 0E8
Tel. (613) 995-5478

Dr. M. Bouchard
Département of Géologie
Université of Montréal
C.P. 6128, Succursale A
Montréal, Québec H3C 3J7
Tel. (514) 343-7542