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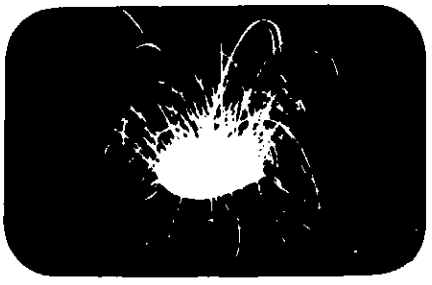

Pyroclasts

Are We Just Pieces of Meat? Life in the egosystem

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Drawing to a close, my sabbatical has provided many opportunities to reflect upon research within university life. My concern centres on our approach to science itself and although aimed at academics, it includes issues common to anyone swept up in this frantic age where productivity too often rules. Those of us at universities inevitably inherit great fragmentation of effort, so aptly embodied in its universal victim the absent-minded professor. For too much of the time we attempt too many tasks; lecturing, grading, graduate supervision, administration, the anxious search for research funding, and the now lithified expectation of "publish or perish" all clamour for attention. It's like juggling with Alzheimer's.

I view this with renewed objection after my year at Cambridge, suffused with the serenity of its gardens and the antiquity of its medieval colleges. Although it has its own facades and shortcomings, here is a place that still has an element steadfastly dedicated to the tradition of unhurried reflection. An ivory tower in the quicksand of Thatcherism certainly, but not without the rewards of its Francis Bacons and Sir Isaac Newtons whose magnitude is shouldered today by the frail brilliance of Stephen Hawking. Thought is highly regarded.

Casting my eye homeward across the Atlantic, I wonder to what extent have our universities and science succumbed to the deceptive efficiency of fast food chains? The other day I overheard a North American graduate student effusively boasting of his supervisor's ability to produce 30 pages of research per day, finally exclaiming with naive reverence that "the guy is just a machine"! "Exactly" was my silent reply. I envisaged this bionic academic tossing back litres of 10W-30, while the fingers of his free hand shimmered across the key board, like late afternoon sunshine on a lazy summer lake. Another student escalated this tribute to productivity by invoking a friend who now put aside his research for only three hours of sleep per night; in my books, a level of deprivation that would have been deemed unreasonable even by 15th century Trappist monks!

Like those who strenously stoked coal into the insatiable steam engines of the last century, frantic academics now churn out papers from their word processor into the equally insatiable boilers of endless new journals. We stand besieged by unending tsunamis of new and reused data. In Canada, the Quaternary history of one region lies buried beneath an utterly impenetrable maze of names and mutating interpretations, all refracted through generations of speculation. The overpublication, however unintended, has made the deciphering of its message as challenging as memorizing a telephone book. It is a very real problem.

So it is no small wonder that there is a willingness to count papers when no one has adequate time to read. My fear is that although we openly admit to the imperfection of this approach, it nonetheless has become adopted in an influential way (*i.e.*, note the anxiety with which it is referred to in conversation). This was made apparent to me in my last NSERC (Natural Sciences and Engineering Research Council) evaluation where one of my reviewers stated that my publication record "was only above average". I have no idea what this actually means, but clearly my "six papers in the past 3 years" fell short of being "really, really above average"! Heh, who's counting? In this case, my reviewer made no effort to consider my style of publishing which often involves single-authored papers summarizing the results of an entire field season. I have little interest in splitting or duplicating such papers in order "to pad the old CV", as one colleague sarcastically put it. Eventually, in my own career, I would much prefer to contribute 50 papers which left a comprehensible trail of information and ideas rather that hundreds of hasty efforts that devastated entire forests for the sake of so many echoes. I agree with Mike Church (*Geoscience Canada*, v. 14, p. 235) that to write more than two papers a year in the earth sciences requires the sacrifice of other university responsibilities, or "boiling pots". No, my grant was not cut back, it has simply been frozen in place for the past six years — presumably quite appropriate for arctic science.

I also disagree with the growing expectation that supervisors have their name automatically appended to the accomplishments of their students. In my view, insufficient reasons for doing so include: (1) that your research grant funded the project; (2) that your inclusion in all ensuing papers would favour increased funding that would of course benevolently accrue to the projects of future students; (3) that you actually visited your student in the field; or (4) that you shared endless hours of conversation (cups of coffee) welding together the research. In other words, you acted as a good supervisor! Everyone needs to establish their independence. The most important of whom are those making their debut on the professional stage with their well-earned academic identities. Like Mike Church I feel that simply listing single-authored papers by one's former students should attest to the success of one's research grant with equal weight as unnecessarily co-authored papers.

The adding of peoples' names to papers has become a form of "academic chain-mail" affirming the contention of one of my colleagues, whose NSERC cup runneth over, that "more is better". To counter this, review committees might consider taking a closer look at what the principal investigator has actually contributed on his own. To dissuade

the abuses of chain-mail authorships I would suggest that each person be credited with a contribution expressed as a fraction of the number of people on the paper. So three authors gives each contributor one-third of a publication.

No doubt the most infantile and transparent example that counting still retains a considerable following is the Citation Index. In this delightful global summation of all references to your name, we can all weigh in like a bunch of bouncy Sumo wrestlers. Now we can stick these academic body-weights into our CVs and grant applications like tags into hamburgers on the supermarket shelf! Pragmatically speaking, getting to the meat of one's career.

Having said all this it is time to "pass some of the flowers" invited by Janet Halliwell (Director, Research Grants, NSERC: *Geoscience Canada*, v. 15, p. 163). Canada has shown important leadership in confronting the numbers game and designing manageable grant applications. On many occasions, I have boasted to envious colleagues from other countries that upon re-application to NSERC we are invited to submit up to our three most significant papers in the past three years. Such progressive procedures clearly point the way. Nonetheless, page 1 of the Personal Data Form still requests us to list our "total number of papers ever published in referred journals". Despite this, the emphasis on quality *versus* quantity remains NSERC's strength and the considerable burden of its conscientious reviews.

In closing, my concern remains that our persistent temptation to count our colleagues' productivity, however unconscious, promotes a frenzy that not only diminishes the quality of science, but, more importantly, the quality of life itself. I can only hope that agencies such as NSERC continue to wean us from this shallow standard. Others, particularly university promotion committees, remain too enamoured with paper-counting. Curiously, academics remind me a bit of Czechoslovakia: overthrown as it was by the USSR in the late 1960s for its tendencies to Westernize, it is now, ironically, more reluctant than ever to trade-in the hard line for perestroika. Are we similarly imprinted with what we once tried to resist?

With tongue-in-cheek, here are some recommendations. For those removed by more than 5 years from the completion of their Ph.D.s, there would be a two-year moratorium on all publication. During these two years, we would actually have the time to find out what each other has been doing. A year's sabbatical only allows one to raise one's head from the grindstone and entertain the thought of serious reading. The moratorium would form a useful, stratigraphic unconformity across the chaos of existing literature, which we would then have time to section. It would also serve to eliminate the swarm of needless journals presently devouring our trees like frenzied locusts. After the moratorium, no one would be allowed to publish more than two papers in a given year, each no more than 15 pages in length. Who really has that much more to say? What you offered the readership would simply be new information and, however you chose to publish, your name could only appear twice in a given year. Chain-mail authorships would thereby be ended. I dare say we could even get rid of refereeing papers given the lamentable disinterest that many show for even signing them! (my sympathies to John Shaw (*Geoscience Canada*, v. 15, p. 291-292)). Imagine, actually having time to think and being able to converse about your colleagues' interests. So perestroika for now comrades, see you at the Oscars.

P.S. I have just finished my second paper on my sabbatical (no, this isn't it). The information is new and it's all I have to say.

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