The Creative Scientific Writing Workshops at BIRS

An interview with and by the organisers: Marjorie Senechal (Smith College) and Chandler Davis (University of Toronto)

In the spring of 2004, tucked in between workshops on mathematical logic and foundations, manifolds and cell complexes, Fourier analysis, numerical analysis, probability theory and stochastic processes, mechanics of particles and systems, game theory, economics, social and behavioural sciences, dynamical systems and ergodic theory, and quantum theory, BIRS held its second five day experimental workshop on creative scientific writing. The first took place in September, 2003. Curious colleagues have asked us, and continue to ask, what these workshop were like and what they accomplished. In the self-interview that follows, we address these and other questions.

Why hold workshops on creative scientific writing at BIRS or anywhere else? Mathematics is an art form, so isn't mathematical writing creative?

Alas, the population that recognizes the creativity in a mathematical or scientific paper is smaller by many orders of magnitude than the number who remember their Latin. By *creative scientific writing* we mean something else: mathematical and scientific ideas as subjects for poetry, drama, short stories, novels, nonfiction, comic books, essays, and film.

Why would anyone write about science and mathematics in this way? Does anyone do it?

Mathematics is part of world culture, part of the human spirit. It's as fit a subject for art, music, and literature as any other. As for who, some mathematicians write poetry, fiction, nonfiction, or drama. And there are non-mathematician poets, fiction writers, nonfiction writers and dramatists whose work engages mathematicians and mathematical ideas. Our first workshop had fifteen participants, all highly accomplished, and the second had twenty, ditto.

But aren't you mixing apples and eggs?

Talk about mixing! But, with garlic and salt, apples and eggs make an excellent omelet. We assumed from the start—and now we firmly believe—that non-mathematicians who write creatively about mathematics and mathematicians, and mathematicians engaged in creative writing, have a lot to teach and learn from one another.

Okay, but isn't it confusing to mix all those literary genres?

On the contrary! Creative writing is often sparked by cross-genre insights. For example, in our workshops a poet helped a fiction writer find a better way to tell the end of his story. A mathematician nonfiction writer helped a dramatist extend the ideas of her play, ideas a filmmaker sitting in on their discussions recast in doggerel form. A novelist had insightful comments on poetry. Of course, it helped a lot that we pressed everyone to circulate his or her work in advance. By the time we arrived in Banff, we'd read it all, thought about it, and were eager to comment.

Why should BIRS take the lead in encouraging this?

Call it "outreach" if you like, part of the larger effort of mathematicians everywhere in these days of dwindling funds to explain who we are and what we do — and why it matters. Or, if you prefer, an effort to engage scientists and mathematicians in a wider world of discourse. The need to create a body of literature around mathematics and science is widely acknowledged by mathematicians and non-mathematicians alike.

But is there an audience for creative scientific writing, as you describe it?

The popularity of plays like *Proof* and biographies like *A Beautiful Mind* and *The Man Who Loved Only Numbers* show that there's a large and growing public eager to share in the great ideas of mathematics and science. The creative writer's job is not to coerce them to eating these things like medicine hidden in jam, but to convey these ideas through literature instead of formalism.

Yet except for obvious examples, like those you cited, creative writing about the content of mathematics is extremely rare and creative writing about the activity of mathematical creation is even rarer.

That's why we organised the workshops: to encourage practitioners who engage this content in their work. To give them opportunities to discuss important issues, to learn what others are doing, to encourage each other, to critique current work, to welcome young writers into the field, to spark collaborations, to forge networks and build community.

Then the creative writing workshops' goals are the same as any other BIRS workshop!

Yes, but as we noted in our report to BIRS after the first workshop, our program is, of necessity, highly experimental. In the first workshop we followed the standard practice of assigning each participant an hour lecture slot. But that didn't always give people the detailed, line-by-line, feedback some hoped for. And a few people read work they'd already published, so feedback was moot. We found we needed to set aside time for other things too. So, for the second workshop we modified the format in various ways.

How did you organise the time?

Well, a typical day went like this:

8–9: Breakfast in Corbett Hall, BIRS's headquarters

9–10: Reflections: the full group meets to discuss, orally or in writing, issues raised or works presented the previous day; further ideas and inspirations.

10–11 and 11–12: Two presentations of works-in-progress to the full group, followed by discussion.

12–1:30: Lunch

1:30–4:30: Time free for writing

4:30–6: Parallel sessions — as many as anyone wished — on works-in-progress in small groups, two to ten, for line-by-line comments and editing

6–7:30: Dinner in the Banff Centre dining hall

7:30–9: Discussions of general issues, or public readings with participants in the Banff Centre's workshop *Writing With Style*.

Tell us about the evening discussions.

The first was called, "What, Why, and For Whom?" It covered a lot of ground, from lamenting math phobia and emphasizing the need for better science and mathematics education, to considering the many forms that outreach can take. And we lamented the worm in the apple: *Proof*, *A Beautiful Mind* and other popular works wouldn't have been so successful had the mathematician character been sane.

Audiences always prefer demented geniuses, or flawed ones. Not only scientists and mathematicians. Think of Amadeus, about Mozart, and all those films about van Gogh.

It's true, it's very difficult to portray intellectual creativity of any kind. But the scientific/mathematical nut is tougher to crack — sorry, wrong metaphor. I mean, the mad composer or painter or writer can be shown composing or painting or writing madly, furiously, but in the end he or she produces something the public can hear or see or read. While a mathematician, mad or sane, produces a mystifying theorem. But on the other hand, the play *Copenhagen* was a great success and the novel *Einstein's Dreams* conveys the scientific creative process in a beautiful way. And *Arcadia*, a funny and chaotic play whose leitmotif is chaos theory, is a modern classic. The mathematical formalism is symbolized in its structure.

Using a mathematical structure to talk about math — that reminds me of a sonnet by Edna St. Vincent Millay, "Euclid alone has looked on Beauty bare." The poem's strict form mirrors deductive geometry's austere beauty. "Fortunate they Who, though once only and then but far away, Have heard her massive sandal set on stone." Would you say the sonnet form has mathematical affinities?

One of us would, the other wouldn't. But that's a discussion topic for a future workshop. Back to your earlier question: our discussion the last night was, "Where Do We Go From Here?"

The last night? Then tell us first about the public readings.

Well, as you know, BIRS is located in the world-renowned Banff Centre. With studios nestled in the woods, outstanding mentors, excellent performance spaces and a fine library, the Banff Centre nurtures aspiring, mid-career, and established musicians, painters, photographers, writers, and actors. Artists love Banff. And Banff loves the artists: the centre's world-class exhibitions, public readings, and performances enhance Banff's appeal to tourists year-round. The BIRS leadership hopes BIRS will interact with the Centre. So in organising our workshops, we worked closely with Carol Holmes and Edna Alford of the Banff Centre's Writing and Publishing Program. Their "Writing in Style" workshop and our second workshop took place the same week. On two evenings, we merged the two groups for informal public readings. A few participants in other BIRS and Banff Centre programmes attended too. We hosted an evening of poetry, with eleven readers from both groups. They hosted a prose reading evening, with fewer readers of course, but again from both groups.

And were these readings successful?

Very. Participants in the two groups met one another and some of their conversations continued at meals the next day. Another important benefit was the opportunity for writers, in both groups, to read their work to and get responses from audiences outside their usual orbits.

So where do we go from here?

In many directions! Workshop participants plan to stay in touch, and to keep each other informed of the progress of their work. We will share information about publishers and agents. Someone suggested we ask BIRS to link our publications to its website. The Mathematical Intelligencer already encourages creative writing in mathematics, but we want it to do even more. We hope to hold another workshop at BIRS in the future, in close association with Banff Centre writing programs, and to publish an anthology under their auspices.

I can see it now: a hefty tome, the year's Best Creative Writing in Mathematics.

Yes, the hottest item in the bookstore, its sales topping the year's best short stories, best essays, best mystery stories, best political fiction, best non-required reading, best recipes, best science and nature writing, best spiritual writing, best sports writing, best travel writing, and best erotica.

Hors de doute. Merci.