

# “A beauty and daring all its own”

## A Note on Science and Canadian Literature

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In 1922, when Duncan Campbell Scott gave the annual address to the Royal Society of Canada, he spent some time considering the relationship between literature and science. On the whole, he saw it as a positive one: “Science has taught the modern [poet] that nature lives and breathes,” Scott mused, although he also felt that poetry “has no connection with material progress and with those advances which we think of as specialties of modern life” (266, 269). Wrestling with these contradictory instincts, Scott tried to articulate how both the natural and mechanical aspects of science might be poetically combined. He imagines what he calls “the poetry of the aeroplane”:

The poetry of the aeroplane has yet to be written, but, when it comes, it will pass beyond the expressions of bird-flight in the older poets and will awaken images foreign to their states of feeling. Shakespeare wrote of the flower that comes before the swallow dares and takes the world with beauty. The aeroplane has a beauty and daring all its own, and the future poet may associate that daring with some transcendent flower to heighten its world-taking beauty. (270)

The “poetry of the aeroplane” seems oddly specific to us now. What might seem now to be a strange choice should sensitize us to just how foreign a subject science, especially technological science, was to a poet of the early twentieth century. But Scott was correct in anticipating that science itself would become a topic for Canadian writers, not just a source for them of poetic detail, as it had been in the tradition of nature writing of the nineteenth century. He might have been amazed, however, at the breadth and depth of literary engagements with science that have come out of Canada: could he have imagined poetry collections dedicated to atomic

structure? He might have had some inkling of the development of Canadian voices in what he probably would call scientific romance—James De Mille’s *A Strange Manuscript Found in a Copper Cylinder* had been published in 1888—but he might have been surprised to find that one of the nation’s most prominent authors had produced a trilogy imagining the dystopic future of misused science. And would he have imagined bacteria writing poetry? Surely not.<sup>1</sup>

Interestingly, Scott’s anticipation of the poetry of the airplane contrasts with the opinions of J. R. Nursall, who appeared in a special issue of *Canadian Literature* dedicated to science and literature sixty years later, in 1983. In his article “To Dare to Attempt Impious Wonders: Science and Canadian Literature,” Nursall struggles to define his subject; he seems to see science only as a social subject of literature, and the idea of scientists as literary protagonists dominates this view (15). He also sees literary approaches to science as almost exclusively prose-based; aside from a brief mention of Al Purdy’s anti-nuclear poetry, Nursall asserts that he is “not aware of a body of science-delimited poetry of consequence anywhere” (26). Scott’s idea of the poetry of the airplane turned out to be more prescient than Nursall’s limited view of science poetry; the joint publication of a special issue of *The New Quarterly* and *Arc Poetry Magazine* in 2011 on literature and science (called “*QuArc*”) demonstrates the strong poetic interest in science, as have scores of individual poems and poetry collections over the past thirty years. Although Nursall argues “there is a creative unity between science and the arts” (17), he seems to find essential and perhaps irresolvable differences. He quotes Thomas Kuhn’s statement that “unlike art, science destroys its past” (25); for Nursall, this means that “the work of science is to find new truths, better answers, and new methods [that] will dispense of the old truths, answers and methods that have gone before.” This, Nursall argues, gives science an “open” status: “everything is exposed, to be changed” (25). On the other hand, he sees literature as being about the beauty of form, and form, he argues, is “fixed” (25). His main point is that literary work does not aim to annihilate previous work: each work of literature stands apart from every other; it does not “succeed” its predecessors, but is a single unity, apart and entire in itself.

We might have a more nuanced understanding of both literature and science now, but we must remember the radically different context Nursall was writing in only thirty years ago: the popular science boom in publishing and in television media had only just begun. Most notably, Stephen Hawking’s *Brief History of Time*, which initiated the phenomenon of the

scientific blockbuster, was not to be published until 1988. (Even bestsellers of earlier decades—those of Carl Sagan, Joseph Bronowski, Lewis Thomas, and E. O. Wilson—look like niche-marketed volumes in comparison with Hawking’s book and those of his publishing descendants like Richard Dawkins.) The popular science boom is significant: consider the direct influence of Hawking’s book on the writing of Margaret Atwood and Robyn Sarah, for example. So perhaps Nursall may be forgiven for seeing science and literature as poles apart; indeed, that is his final analogy: literature and science exist on a globe, one at each pole. They are a world apart, but share a surface that can in fact be navigated by an intrepid traveller who, when arriving at the opposite pole, will “discover that the natives are friendly” (30). The colonial metaphor is perhaps an apt one for a Canadian critic to choose.

But if Nursall’s fumbleings reveal the newness of the critical space we are working in, we must admit that defining the parameters of “science and literature,” both within Canada and without, can be difficult. The field is a broad one. The designator usually refers to the study of the literature of science, wherein science is a subject of or the inspiration for a literary work. This can include science fiction and speculative fiction. Canadian literature has an early stake in both genres, dating back to De Mille’s *Strange Manuscript*, mentioned above. Likewise, there is a strong Canadian corpus of “post-apocalyptic” literature, including important texts like Atwood’s *Handmaid’s Tale* and William Gibson’s *Neuromancer* (see Weiss; Hollinger). Several of these texts attribute the apocalypse in question to the misconceived advances in science and technology; science is not always discussed directly in this sub-genre, but it frequently lurks in the backstory.

The subject of science fiction is a topic in its own right, however, and while it overlaps with the literature of science, it is not the same thing. Briefly, one may make the distinction between the field of science fiction and the field of literature and science by saying that literature and science is concerned with a broad array of literary writing that concerns science, including science writing, literature with scientific themes, and science fiction; whereas science fiction is a popular genre much more concerned with speculations on the future, scientific and otherwise. In science fiction, the idea of science is not required to respect current scientific knowledge or practice (although much of it, as seen in texts like Atwood’s *Oryx and Crake*, involves real science projected into a speculative future). The overlaps between literature and science and science fiction studies are significant, but the distinction tends to be maintained; for example, most readers would

not consider Atwood's *Cat's Eye* to be science fiction, although it is heavily invested in science as both a topic and a methodological principle.<sup>2</sup>

Other overlaps between the field of literature and science and other critical fields may be mentioned briefly here. The most substantial one beside science fiction is the field of medicine and literature. It is often remarked that medicine is an art as well as a science, and some texts in the field of medicine and literature are focused on the humanist interests of medicine and really do not engage with scientific issues much at all. Indeed, the emerging field of the medical humanities includes literary texts and literary methodologies that consider metaphor, narrative, and other poetics that provide an aesthetic and affective view of medicine. "In medical school," Jim Johnstone and Shane Neilson have reflected, "art is commonplace" (112). The scientific work of medicine underpins this humane view, however, so the interdisciplinary approach is inherent. The scientific aspects of medicine inform the writing of Timothy Findley, Monica Kidd, and Shane Neilson. Certainly Vincent Lam, who as a medical doctor and a writer is one of the few Canadian authors who has a professional footing in both science and literature, combines these worlds seamlessly in his award-winning *Bloodletting and Miraculous Cures*.

Similarly, the emerging field of animal studies intersects with science studies, but only partially: animals and animal lives are not always constructed as scientific subjects. There is a long Canadian tradition of animal stories, going back to Charles G. D. Roberts and Ernest Thompson Seton, through Grey Owl to contemporary writers such as Farley Mowat, Don McKay, and Barbara Gowdy. Much of the animal-oriented literature is part of another realm that likewise overlaps with science and literature, ecological or environmental literature. Ideas around ecology and environment have had a significant impact on Canadian letters and may well be the strongest single link between Canadian literature and science: indeed, there have been theories that posit almost all Canadian literature as some expression of ecological literature. Nevertheless, the realm of "nature" (broadly construed) is one of the initiating engagements of literature and science: as Scott said, science taught us that "nature lives and breathes"—and this was especially true in the nineteenth-century tradition of naturalist writing.

### **Canadian Literature and the History of Science in Canada**

Historian Carl Berger has noted that the culture of science remained rooted in Europe until relatively recently, and that pre-twentieth century science was essentially colonial in nature by virtue of that fact:

The implanting and growth of science in Victorian Canada was one strand in a complex fabric of transplanted British civilization overseas; like other strands in that culture it was modified and the resulting pattern was not an exact duplication. Nor was it entirely a matter of borrowing. Canadian naturalists belonged to an international community, and their contributions to science were recognized abroad long before it was ever admitted that the country had a history, still less a literature. (xiii-xiv)

From the European perspective, North America was seen first not as a locale of scientific thought, but as the object of scientific practice. Before the mid-nineteenth century, the New World would have been a destination for the British or European collector—a “collecting ground and exporter of raw material” in the form of natural and anthropological objects for the museums and cabinets of curiosity in the old country (Berger 3). In some ways, Berger suggests, collecting and other natural history work mitigated the isolation of the immigrant experience for nineteenth-century newcomers to Canada: “Given the relative simplicity and accessibility of natural history, and the alluring opportunities presented by an area scarcely described in depth, the practice for this science was one way for Canadians to add to the stock of knowledge and to assert a certain intellectual status” (9). Suzanne Zeller also suggests that scientific practice in Victorian Canada was an integral part of nation building. From the “geological tradition” of scientific practice, whose purpose was to “explore and exploit new lands all over the world,” and which assisted in “cultivating” the Canadian wilderness, to the “inventory science” of the collectors, science was an active part of the colonizing process (3-4).

In some ways it is difficult to distinguish between scientific and writerly activities in the nineteenth century, a time when “science and literature were still considered part of general culture rather than mutually exclusive activities” (Ainley 79). A case in point is Catharine Parr Traill, who wrote about the zoology, geology, and particularly botany of Canada. Traill was not a dilettante, but an expert observer deeply engaged with scientific practices, and with as much contact with the European scientific culture as could be expected given her geographical isolation.<sup>3</sup> The conjoined perspective of literature and science in the nineteenth-century naturalist enterprise is neatly summarized by Traill’s reflection that Canada is “the most unpoetical of lands” because of its lack of history. This, she comments drily, is “the lamentation of a poet,” and for her, the natural history of a landscape is a poetic enterprise that speaks to the interconnectedness between humanity and nature:

“Here there are no historical associations, no legendary tales of those that came before us. . . . No Druid claims our oaks; and instead of poring with mysterious awe among our curious limestone rocks, that are often singularly grouped together, we refer them to the geologist to exercise his skill in accounting for their appearance: instead of investing them with the solemn characters of ancient temples or heathen alters, we look upon them with the curious eye of natural philosophy alone. (128)

For Traill, naturalism is not singularly scientific in its interests; it also requires testimony of human agency in history, interacting with and shaping the natural world. This history is what makes a landscape “poetical” and therefore meaningful—not only to the poet, but to the naturalist.

Naturalist societies were popular in the latter part of the nineteenth century and early part of the twentieth century in Canada (Zeller 4-5). Canadians replicated the science-focused social events and field-naturalists’ collection parties that had been part of British and European culture a few decades earlier (Berger 17-18). Archibald Lampman and Duncan Campbell Scott were members of the Ottawa Field Naturalist Club and took part in the organization’s nature surveys and presentations (Berger 13). Lucy Maud Montgomery’s husband started the nature society of Prince Edward Island, although it is unclear if she participated herself (Berger 12). So although the scientific culture of nineteenth-century Canada may have been meagre in comparison to that of Britain, science was still part of the “dominant cultural mode” of Canada (Stafford 23). If we expand the idea of scientific knowledge to include Indigenous knowledge, we can see that some Canadians engaged the idea of science on completely different levels than those of Britons and Europeans, immersing themselves in natural history studies without institutional support and connecting with the traditional knowledge-making activities of the Native people (Ainley 81). Nevertheless, Native knowledge of the natural world, however expert it may have been, was rarely deemed scientific because it was not textualized and catalogued (Ainley 81-82).

Early on, Canadian science had a much more established status in the context of national identity than did Canadian literature. Berger relates the amusing (and sad) anecdote of the early Royal Society member who complained that while prominent Canadian scientists were easy to find, he could not find any writers of note: “But what is proposed or expected that the Section on English Literature is to do?” wrote the frustrated Daniel Wilson to the illustrious natural historian William Dawson; “I know not who to name. . . . It is like making bricks not only without straw, but without clay.” Finally Wilson proposed that he would “try to make out a list of illustrious

nobodies,” rationalizing that “the more insignificant they may be, the higher will be their delights when such Honours are thrust upon them” (Berger 19).<sup>4</sup> In turn, Lampman poked fun at the Society’s aged membership: “The dry bones gave forth an vivacious rattle,” was how he described one moment of an 1894 meeting (Berger 19).

One aspect of Canadian science that seems to be reflected in the literary culture is the relatively weak interest in Darwinism in the nineteenth century (Zeller 15-19). Berger has noted that on the whole, Canadian naturalists seem to mute Darwinist debate, with the notable exception of William Dawson, who fought it vociferously: “After the flurry of reviews in the 1860s, they seldom wrote general appraisals of the theory and kept to themselves whatever spiritual anguish this new view of life might have caused them” (Berger 68). One reader praised Catharine Parr Trail for eschewing any of the “irreverent materialistic philosophy . . . of too many of our modern naturalists” (Berger 70). Berger notes that evolutionary theory was not overtly addressed in Canadian academia until the turn of the century (75), and interestingly, the situation seems to be similar in Canadian literature: we don’t see writers taking the implications of evolutionary theory head on until after the First World War, with poets like E. J. Pratt. There is a case to be made for reading Darwinism as a more subdued force in earlier Canadian literature—a subtext to the animal stories of Charles G. D. Roberts and Ernest Thompson Seton. Roberts’ and Seton’s stories about the red-in-tooth-and-claw natural world often contain a Darwinian aspect, although they are not truly scientific in their outlook (Berger 74). Overall, though, it seems the naturalist tradition of science lingered in Canada long after it faded in Europe; Frederick Philip Grove, for example, published two books “in the naturalist tradition” as late as 1923 (Berger 78)—out the same time as Scott’s Royal Society address, and just a few years before a young modernist would declare post-Darwinian science a “catalyst” for a new poetic mode.

Perhaps it is an indicator of how quickly the Canadian poetic landscape was changing in regard to poetry’s engagement with science that, only four years after Scott’s Royal Society speech, a young A. J. M. Smith wrote of the influence of science in his essay “Contemporary Poetry,” published in 1926 in the *McGill Fortnightly Review*. Examining the differences between the poetry of the Victorians and that of his own time, Smith concludes that the changes are both formal—a stripping away of archaic diction and a willingness to experiment with new forms—and topical. In both types of change he sees the impact of science, which has provided new frameworks for literature,

from “various psychological theories of the subconsciousness” to new understandings of the nature of time and space (32). Smith is particularly concerned with the social impact of technologies of industry, transport, and communication, and with these technologies’ simultaneous effect on poetry:

In less than three decades came the motor car, the steam turbine, the aeroplane, the telegraph and wireless, and the electric light. The result was that the standard of living was very quickly raised, business corporations were formed to exploit the new discoveries, and the whole world contracted almost visibly under the tightening bands of closer communications. Things moved faster, and we had to move with them. (31)

Even more significant for poetry, Smith feels, are the religious and philosophical shifts that have come with particle physics and relativity: “Science, again, has been the catalyst,” he writes, for “a movement away from an erroneous but comfortable stability, toward a more truthful and sincere but certainly less comfortable state of flux” (31). As Smith noted, while some writers viewed scientific developments with suspicion, even dismay and anger, other poets were “awakened to a burning enthusiasm by the spectacle of a new era” (130). Indeed, Smith’s vision of a science-positive literary approach was fulfilled by writers like F. R. Scott, who even took up Duncan Campbell Scott’s indirect challenge for a “poetry of the aeroplane” in his poem “Trans Canada” and married those poetics to the Victorian tradition of science as nation building. In his lyric, Canada is joined together through modern plane travel, on “the everlasting arms of science” (157). Scott’s poem goes further, however, connecting this technological development with cosmic existence; the national unification of flight is subsumed in the astronomical immensity of the universe:

This frontier, too, is ours.  
.....  
And every country below is an I land.  
.....  
I have sat by night beside a cold lake  
And touched things smoother than moonlight on still water,  
But the moon on this cloud sea is not human,  
And here is no shore, no intimacy,  
Only the start of space, the road to suns. (158)

With the same gesture that F. R. Scott uses to build Canada through the technology of the airplane, he transcends the paltry limitations of national identity. If science is a resource for Canadian poets, it also demands of them—and us, their readers—that we take a wider, even cosmic, view of our existence; and therefore the Canadianness of Canadian science and literature



is undone in its inaugurating gesture. This may be the kind of “beauty” that the earlier Duncan Campbell Scott was after: the poetry of science might ask us to engage in aesthetic concerns that transcend nationalism.

But what of the “daring” Duncan Campbell Scott evokes? If poetry is where we’ve most taken up the existential implications of contemporary science, prose is where our relationship to science is worked out most fully in reference to its sociological, cultural, and ethical impacts, and many of these subjects require courage and a sense of daring. Whether we are looking at the sprawling futurist landscape of Gibson or Atwood’s *Oryx and Crake* trilogy, or the much more intimate landscape of a single individual and his or her relationship with science, as in Alice Major’s meditations on science and art, prose gives us the scope and depth to work through our complex experiences of science, positive or negative. Dystopic concerns obviously fit in here, but just as interesting are the novelistic spaces where science is inspirational, formative, and artistic: in Atwood’s *Cat’s Eye*, science is part of a complex network of knowledge that builds the child protagonists; it is an essential component of this novel as *Bildungsroman*. We might consider such a text as metaphor for the literary development of a nation as well; science is part of what has “built” our common identity as Canadians, including our literary identity.<sup>5</sup>

As the most celebrated contemporary Canadian author with a sustained interest in science, we can see Atwood working her way around the subject, looking at science from multiple perspectives. Her portrayals of science are somewhat conflicted; it is both a source of inspiration and a source of concern. She has addressed this in interviews, noting that while some might think her “anti-Science” (“My Life” n. pag.), she does not attribute an absolute moral framework to science outside of its applications in society (Atwood, “Conversation” n. pag.). Rather, Atwood’s more comprehensive interests in social justice and cultural dynamics extend to science, bringing science into the discussions we must have about our contemporary society. Atwood’s longevity and cultural impact make her somewhat unique insofar as she has had the time and the latitude to explore science from multiple perspectives, but as we will see in this issue, more recent novelists like Madeleine Thien are also developing a sustained and nuanced pattern of engagement with the subject of science. The cultural and social investments of science are immersed in political issues around colonialism, gender, race, economics, and class, as well as the deep tradition of engaging with nature that has such deep roots in Canada. Whether writing in poetry or prose, fiction or non-fiction, Canadian writing about science has a complex and

sustained tradition. Going back to Nursall's early reflections on the subject, the past thirty years of writing science in Canada may bring us to different conclusions than the ones he came to; rather than seeing literature and science as a world apart, we can see that they have shared intellectual and cultural space in Canada from the beginning of the Dominion, and that space does have beauty and daring all its own.

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#### NOTES

- 1 Christian Bök's *Xenotext* attempts to encode a sonnet (in a shortened, modified form) in a bacterium that will "write" the texts. *Xenotext* is the most literal example of how Bök uses science in his writing—it is not a subject, but a method. For Bök, scientific concepts and technologies inform poetry directly: science provides the ways and means of poetic discourse, form the nature of sound (as opposed to language) in his sound poetry to the bacterial structure of *Xenotext*. Bök has also explored the boundaries between literature and science in *'Pataphysics': The Poetics of an Imaginary Science*.
- 2 Science fiction studies of Canadian literature include Jean-François Leroux and Camille La Bossière's *Worlds of Wonder* (Ottawa: U of Ottawa P, 2004), David Ketterer's *Canadian Science Fiction and Fantasy* (Bloomington: Indiana UP, 1992), and Andrea Paradis' *Out of this World: Canadian Science Fiction and Fantasy Literature* (Ottawa: Quarry, 1995).
- 3 In fact, Traill was not even the first female science writer in Canada; Lady Dalhousie and Harriet Campbell Sheppard contributed natural history papers to cultural journals in the 1820s (see Ainley 82).
- 4 Berger notes that the Canadian Royal Society was much more exclusive than its British and Australian sister societies (18-19).
- 5 The fact that our highest-profile author is out in front with the literature of science is significant. While some of us might begrudge Atwood's dominance as a Canadian author on the international stage, it must be acknowledged that when she takes hold of a topic, others notice. I think it does contribute to the perception at home and abroad that Canadians are particularly active in regard to science and literature. What is interesting is that this means that the field of science and literature studies in Canada intersects with studies of canonicity.

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