Conclusion

Landscapes of Science: Placing Knowledge, Displacing Nature

Stephen Bocking

THESE ESSAYS EXAMINE MANY ASPECTS OF SCIENCE: who does it, and why; what objects are observed, measured, and manipulated (or ignored); how scientists fuse nature and culture to form new phenomena. But central to these accounts are the places of science. Evidently, what we know about nature is shaped by where we know it. Hence the promise of bringing together the history of science and environmental history, as a way of learning how knowledge has been entangled with Canadian spaces and places.

And it's especially interesting to use these essays to consider several places alongside one another: to look at what was done amidst Arctic winds, Georgian Bay breezes, the sounds and smells of the laboratory, or the stillness of the herbarium. One thing we learn is the value of examining knowledge—observations, instrumental data, objects collected or synthesized—in relation to the people and practices that formed them. At the lake scientists sampled fish. Up north technicians launched balloons. Over in the lab researchers extracted samples from animals. Behind the doors of the herbarium curators stored and ordered fragile specimens. Like knowledge, these practices were diverse and evolving, shaped by local attitudes, circumstances, disciplines, technologies, and practical concerns. Nature's agency was also always present, even—and sometimes especially—when scientists struggled to impose control.

These practices also illustrate how transforming experience into knowledge means making choices about what to include and exclude. These places were sites of sensation: cold winds or warm sun, the quiet herbarium, the smells of the lab. Some of this sensory information—mainly, what was seen—was extracted, mobilized and became knowledge. The rest remained fixed in place, perhaps becoming merely anecdotes of the working day.

These essays also demonstrate the value of locating the places of science within larger spaces of human and nonhuman activity. Technicians relocated to the Arctic because meteorologists decided that the region was an essential element of global weather systems. Biologists saw Georgian Bay as a window onto Great Lakes fish communities. Herbaria functioned within global networks of movement and storage. In each place, observations extended beyond what could be sensed directly, and scientific practices, although located in particular places, were framed in relation to and influenced by larger contexts.

One way we might think about these places and how they relate to larger spaces is as sites of exchange: between humans and the rest of nature, or between local places and spaces elsewhere, through networks defined by the movement of people, knowledge and power. As sites of exchange these places became linked to the geographies of Arctic weather systems, Great Lakes fish populations, the commercial production of vaccines, and imperial networks enabling movement of useful plant species. But boundaries also restricted such exchanges, including between humans, as when Indigenous people were excluded from Go Home Bay—a case of boundaries enforcing the place of science within the larger spaces of settler colonialism.

Scientific practices were also about making claims that would be taken as true, exemplifying the significance of credibility to the history of modernity. The point was to be persuasive: that instruments on balloons

truly described Arctic weather, that vaccines would work as they should, or that collections exemplified the diversity of life (and not just what happened to catch the collector's eye). So along with knowledge, trust was also being constructed. But there's no single recipe or rulebook for this. Scientists in laboratories create trust by imposing standard practices and firm boundaries (in theory, if not always in practice) between their workspaces and the outside world. Knowledge produced there is thus rendered "timeless" and "placeless." In contrast, scientists and technicians in field sites invoke the authenticity of nature: truth comes from being out in the world. Both views are represented in these essays.

But as these essays also show, scientists, like other humans, can have varied motives. In these places it wasn't just about the science. Go Home Bay was far from the city's noise and dirt, and promised relaxation and solitude. Technicians pursued into the Arctic both their own interests (good pay, advancement) and those of their institutions (military and commercial demands for accurate weather forecasting). The vaccine laboratory was located at the intersection of disease protection, commercial benefit, and demands for safety and efficacy; it blurred the boundary between laboratory and factory. Plant collectors harvested pleasure along with their specimens, while the herbaria that accumulated their finds anchored networks of agricultural improvement.

These diverse motives illustrate how science operates in several registers. One is the manipulation of materials: measuring, moving, mixing, transforming. Another is the social consequences of these activities, with science embedded in networks of economic and political relations, often creating new places and forms of life. In these various ways, science has been implicated in key episodes in the environmental history of Canada.

These essays examine case studies that took place before humans had reached quite so deeply into the stuff of life—before engineered genes,

endocrine disruptors, nanomaterials, and other substances about which we still lack full understanding—or quite so widely, with our ongoing transformation of the globe's atmosphere, oceans, and lands. Novel scientific practices, from computer models to remote sensing to genomic analysis, were also still beyond the horizon, or just coming into view. So were ideas about the social responsibility of science and its relations with other ways of knowing, including Indigenous knowledge. From our own position deep in the Anthropocene we might look back almost nostalgically at these tentative forays—at least until we recognize in them the origins of our current predicament.