

## The Spirit of the Arctic and the Next Generation of Arctic Researchers

Last September I was asked to give the closing talk at the American Association for the Advancement of Science (AAAS) meeting at Denali Park in Alaska. It was the 50th anniversary meeting of the Arctic section of AAAS, and several of the researchers in attendance had actually been at the first meeting back in 1949. My topic: Who will be the Arctic researchers of the next 50 years? I suspect I was chosen because I am middle-aged: not young enough to be part of the next generation, but not old enough to be an elder statesman. Personally, I think my chief qualifications are that I have two children born and raised in Alaska and, like many of the readers of this journal, I care about the Arctic.

In preparation for the talk, I spoke with researchers who had 30, 40, and even 50 years of Arctic experience. In one way or another, they all made it clear that it had been a privilege to spend their lives as Arctic researchers. I was struck as I talked to them that something more than science had kept them at it. An ineffable sense of place had caught them years ago and held them ever since. Ice, snow, sun, clouds, tundra, wild mountains and rushing rivers, people: all of these had combined to cast upon these veteran researchers a “spell of the Arctic” and to create in them a lifelong commitment and a sense of stewardship.

There is good evidence that this spell has been an important, perhaps even crucial, part of Arctic research since the beginning. The history of Arctic exploration and science is one of men and women who keep coming back. Some sort of spell must be in operation: after all, the Arctic is a harsh place. It is too cold, or too hot, too dark, and always too buggy. And it is a hard place to travel. Who likes being weathered in for a week or more? Who enjoys hiking over wet tussocks? Perhaps the critical question for the future is not who will be the Arctic researchers of the next 50 years, but rather, will these researchers be operating under the spell of the Arctic? And if they are not, what will have been lost, and what will have been gained?

An unmistakable mark of a person under the spell of the Arctic is the desire to spend as much time “out” as possible—out on the tundra, out on the glaciers, out in snow. A distinct distaste for being “in”—in an office, in a meeting, or in a classroom—is also common. If spending time “out” is essential in developing a commitment to the Arctic, then one troubling modern trend is that the amount of time researchers are spending out is decreasing. Field seasons are shrinking. At the turn of the century, scientists spent several years on expeditions. After the Klondike gold rush, this decreased somewhat, but through the 1930s, expeditions of nine months’ duration were still common. By the 1940s, field seasons had decreased to about six months. Today, students might spend only one to three months in the field, and senior investigators generally spend even less time out. In a little over 100 years, the time researchers are exposed to the Arctic has dropped by a factor of 10 or more. Can the next generation of researchers develop a sense of commitment to the Arctic if the time they spend in the field is not long enough to allow the land and sea to work their spell?

The drop in field time has been fueled by tremendous improvements in transportation. In the past, travel and survival absorbed more than half of the time and effort expended on a project. Today the same tasks can be done in a fraction of the time with relatively little effort. Consequently, less field time is required to get the same amount of research done. Simultaneously, the development of autonomous instrumentation, satellite communications, computers, and data loggers has led to an explosive increase in the amount and quality of data that can be collected. Data collection in the field is far more efficient now, and the data continue to stream in after the researchers have gone home. Now a single researcher, sitting in an office thousands of miles south of the Arctic Circle, can obtain more data than a small army could have collected before—and analyze it better.

This development in remote data collection, along with the dramatic rise in global science issues such as atmospheric pollution and climate change, has led to a trend of uncertain value: the development of a class of Arctic researchers some of whom have rarely or never been to the Arctic. These are researchers and modelers who have been attracted to the Arctic because it is a location where their scientific questions can best be answered, because it is a region for which there is increased research funding (in the U.S. at least), or perhaps both. Motivation by funding has both advantages and pitfalls. As the available funds increase, so does the number of researchers interested in obtaining these funds. In some cases, this brings in excellent new scientists, provides an influx of fresh ideas, and overall strengthens the field. Some of these scientists may go on to become committed to the Arctic. But increased funding also attracts scientists with no sense of commitment. These financial opportunists, researchers of short staying power, will be gone at the first sign of a decrease in funds. This is very much like what happened during the gold rush.

The influx of topical scientists to Arctic research, while not new, is also a trend of uncertain value. These topical scientists focus on specific scientific problems rather than on regions. Sometimes they don’t even come to the Arctic themselves, instead sending others to collect their data. Rarely have they lacked volunteers; someone somewhere under the spell of the Arctic has gladly answered their call. Yet these distant scientists have often framed the larger scientific questions that have driven Arctic research, and in this way have kept it part of the scientific mainstream. But scientific productivity and relevance and Arctic commitment are different. How committed to the welfare and well-being of the

Arctic are researchers for whom the Arctic is just a temporary source of funds, or an element in a larger intellectual puzzle? Is it necessary that people be exposed to the Arctic for it to work its spell and create in them a sense of caring and commitment?

A more promising trend in terms of commitment is the recent increase in the number of scientists who actually reside in the Arctic or Subarctic. During the first century of Arctic exploration and research, scientists came from elsewhere, perhaps stayed a long time on expeditions, but ultimately left. Today, chiefly because of the founding of northern universities and colleges and the increase in branch offices of government agencies located in Arctic towns, many scientists now live in the North. How does this shift in residency affect the sense of commitment of the Arctic research community as a whole?

With at least six trends at work—declining length of field time, increasing autonomous and remotely sensed data collection, increasing funding in the U.S., more scientists chasing the funding, a shift from regional to topical focus, and an increasing resident population of scientists—predicting the future is difficult. Were it not for the increasing population of resident scientists, the number of scientists infused with the spirit of the Arctic might be in decline, but even office-bound computer modelers living in the Arctic get exposed to the magic of the land and sea during road and camping trips. In addition, while the length of field time overall has decreased, it remains the highest for students. They are younger, more impressionable, and more likely to be susceptible to the spell of the Arctic. For the future, it is more important for them to develop a sense of commitment than for any other group to do so.

It is my firm belief that if the researchers of the next 50 years are not committed to the Arctic, not under its spell, and not wanting to spend time out, the result will not be good. We have benefited from several generations of researchers who have been passionately (if sometimes quietly) committed to the Arctic. Along with their commitment came a sense of stewardship that we need to hand to the next generation.

What can we do to affect the uncertain future? Three things come to mind:

- 1) We must impart to students and newcomers a sense of the grand history of Arctic exploration and scientific research.
- 2) We must preserve and perpetuate our legends of epic Arctic research and our tales of Arctic science heroes. We need them to admire and emulate.
- 3) We must rededicate ourselves to mentoring in its fullest sense. This mentoring must include encouraging, pushing, passing down the histories and stories and, in these times of uncertain funding, shielding those we mentor until they have reached scientific maturity.

We might accomplish these three goals in many ways, though none is easy or guaranteed success. One of the simplest is storytelling: passing on to our students and to our younger generation the stories of how we came to the Arctic, who influenced us, and why the Arctic is important to us. I can illustrate this with a personal example. In 1981, I came to Alaska to study under Carl Benson. I later learned that he had first come to northern Alaska in 1950 with the U.S. Geological Survey. The geologist George Gryc had recruited him during one of his periodic visits to the University of Minnesota. George, in turn, had come to Alaska in 1937. He knew and worked with those legendary explorer/geologists J.B. Mertie, Jr. and Philip S. Smith, knew Simon Paneak before Anaktuvik Pass was settled, and he knew and was encouraged by Ernest de K. Leffingwell. Here was an unbroken chain stretching from me through my mentor, through his mentors, and so on back more than 100 years. Here were heroes and history aplenty, and a strong reason to be committed to the Arctic.

If we want the Arctic researchers of the next 50 years to be as passionate, caring, and committed as those of the past 50 years, then we must connect them to the past and give them reason to be committed in the future.

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