Learning to be Circumpolar:
Experiences in Arctic Academic Cooperation

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and Outi Snellman
(eds.)

With a preface by Oran R. Young

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-A note about the cover photo-

Elena Taleeva is from a family of reindeer herders in the village of Krasnoe, in the Nenets Autonomous District of Russia and is currently busy studying to be a livestock specialist at the Naryan Mar Technical College. We wish her the best of success with those and all her pursuits; and express our thanks for the use of this photo, which was taken by her friend, Tuula Tuisku, of Rovaniemi. Copies of this book are on their way to Elena.

Contents

Preface

The papers included in this anthology raise and seek to answer three major questions. Is Northern or Arctic Studies a distinct field of enquiry, and is there a place for this field in the curriculum of colleges and universities? What are the needs for higher education in the North and for the North, and what is the proper way to address these needs? And, perhaps most important, are there ways to link the development of Northern Studies with efforts to meet the demand for higher education in the North in a manner that produces significant benefits for both of these endeavors? Individual papers in the volume approach these issues from a wide range of perspectives. But the resultant diversity turns out to be a source of strength in illuminating questions like these which have no simple answers.

From one perspective, the field of Northern Studies constitutes an example of what many observers think of as area studies. But, increasingly, the field is emerging as an enterprise that goes beyond the typical content of area studies. For one thing, work in this field is emerging as a problem-oriented, interdisciplinary, and distinctly comparative activity. Whereas specialists in area studies commonly focus on a single country or, at most, two or three countries and endeavor to steep themselves in the relevant history and culture, northernists tend to select contemporary issues, such as the management of living resources, the pursuit of community viability, or the problems of coping with rapid social change, as topics to be examined in the light of experiences in different sectors of the Arctic. The fact that these experiences have differed sharply during the twentieth century in the Russian Arctic, the Euro-Arctic, and the North American Arctic offers striking opportunities to examine issues of this sort from a comparative perspective. To this, we can add a strong commitment not only to combining insights drawn from a range of established disciplines but also to thinking about the uses of different types of knowledge claims in addressing northern concerns. Because human communities in the North interact directly and intensively with their biophysical environments, the opportunities for fruitful collaboration between natural scientists and social scientists interested in the North are unusually great. The field of Northern Studies also offers an attractive arena in which to promote a dialogue between Western scientists and those who possess expertise of the sort often called traditional ecological knowledge (TEK), a fact that we are only now beginning to exploit in a mutually beneficial fashion.

Is there a place for Northern Studies so defined in the curriculum of colleges and universities? No one expects the dominance of discipline-based departments, which is a striking feature of mainstream colleges and universities, to decline during the foreseeable future. Yet interest is growing in many quarters in the attractions of interdisciplinary fields like Northern Studies as a recognized minor for students majoring in an established discipline. Whether a student's major is biology, or economics, or history, he or she may find it appealing to combine in-depth study of a single discipline with the opportunity afforded by Northern Studies to look at a problem of current interest to society from a broader range of perspectives. From the point of view of the proposed University of the Arctic, moreover, the problem-oriented, interdisciplinary, and comparative features of Northern Studies constitute major attractions.

They provide a distinctive niche for such a university which encourages education and research that is both relevant to the contemporary problems of the North and does not duplicate the efforts of mainstream colleges and universities. These features also provide a meeting ground for those who bring different disciplinary perspectives and distinct experiences from many parts of the Circumpolar North to their participation in University of the Arctic programs.

Recent years have witnessed a significant process of consciousness raising in the North which extends to higher education as well as many other areas of endeavor. Featuring a desire to mount educational programs in the North, for the North, and—to the extent possible—by the North, this process has led to the creation of a number of small colleges and universities, like Ilisagvik College in Alaska, Arctic College and Yukon College in Canada, the University of Greenland, and the Sami College in Norway. Understandably, these institutions of higher education are responsive to the needs of the indigenous peoples of the Circumpolar North, though it would be a mistake to exclude the activities of entities like the Center for Northern Studies from a consideration of roles for small institutions. Given the facts that they are relatively new, quite small, and often compelled to operate on tight budgets, these institutions have become leaders in the development and use of innovative educational methods. At the same time, they tend to be preoccupied with their own concerns, a fact that makes it difficult for these small colleges and universities to fulfill their full potential as players in the development of the Arctic as an arena for transboundary and transcultural education and research. In this connection, recent progress in the effort to create a consortium of the small colleges and universities of the Circumpolar North is a welcome development.

At the same time, a source of concern in this context is the existence of distrust between these small institutions and the "big" universities that are located in the North (e.g. the University of Alaska, the University of Tromsø, the University of Lapland) or that aspire to leadership in the field of Northern Studies (e.g. McGill University, the University of Colorado). The sources of this problem are not difficult to identify. The small colleges and universities fear exploitation on the part of the "big" universities, which have often seized on northern issues (including the concerns of indigenous peoples) to legitimize their programmatic initiatives but then proceeded to demonstrate little concern for the views of northerners in the conduct of their educational and research activities. For their part, the "big" universities fear that the proliferation of small colleges and universities in the North will lead to a decline in resources available for their programs and, in the worst case, a decline in academic standards. While there are local variants of this story in different parts of the Arctic, the broad outlines of the resultant problem are the same from one end of the Arctic to the other.

What can we do to alleviate this problem and, in the process, encourage mutually beneficial cooperation rather than a dissipation of energy and programmatic effectiveness arising from self-defeating forms of competition? The answer set forth in various forms by most of the contributors to this volume lies in the promotion of Northern Studies as a distinct field of enquiry, the launching of the proposed University of the Arctic, and the cultivation of cooperative relations between this "university without walls" and a newly-established consortium of small colleges and universities of the Arctic. Unlike traditional disciplines (e.g. chemistry, sociology, or philosophy), Northern Studies is a field that cannot be dominated by the "big" universities. The fact that this field of study thrives on experiential as well as analytic knowledge and encourages dialogue between Western, scientific knowledge and traditional ecological knowledge make it well-suited to cooperative activities founded on principles of mutual respect. The rapid pace of change in both human and biophysical systems in the North, moreover, provides incentives for the development of innovative programs of education and research in contrast to activities that center on the transmission of fixed bodies of knowledge. Although some may find this situation unsettling, it constitutes an environment in which cooperative initiatives based on genuine partnerships can thrive.

Where, then, does the proposed University of the Arctic fit into this picture? The University of the Arctic is intended to be a "university without walls" that does not have a fixed campus, a comprehensive curriculum, or a resident student

body. Its mission is to engage in policy-relevant education and research that contributes to capacity-building in the North by developing networks of well-informed northerners who feel comfortable in cooperating with each other, that provides a forum in which small colleges and "big" universities can play important roles, and that permits those interested in Northern Studies who are located outside the Arctic to interact with northerners in ways that contribute to solving the problems of the North. The development of personal relationships is important to the fulfillment of these goals, a fact that makes it essential for the University of the Arctic to provide an array of opportunities for face-to-face interaction among those interested in northern issues. Beyond this, there is no simple recipe for framing the programmatic activities of the University of the Arctic; its early years will constitute a period of experimentation and learning from experience. But the essays included in this anthology already offer a rich source of ideas that will help those responsible for formulating plans to devise an initial menu of priority programs for the University of the Arctic.

Oran R. Young
Dartmouth College
Hanover, NH
USA
1 September 1998

Learning to be circumpolar: an Introduction

Richard Langlais and Outi Snellman

We share a dream with many others of a circumpolar Arctic community. In that world, our neighbours are at least as much to the west and east of us as they are to the south, and it makes good sense to learn from each other about how to thrive in the lands of long winters and brilliant, intensive summers. Each of its communities see itself as part of the centre of a vast, rich region of opportunities and fulfillment, and not at the precarious edge of someone else's worldview. The world is immense and telecommunications are making it bigger for us by the day. There is much to learn about this world with an ocean at its heart.

This dream is behind this anthology. In this Introduction we wish to convey a sense of how much we have learned about what it means to be circumpolar. There is so much more that we know now than we when we began this inquisitive work, and right at the beginning of this book we must thank our contributors for patiently showing us the way as we imposed demanding timetables and occasionally whimsical requests upon their own often busy workloads. We asked them to give us the benefit of their experience in working with initiatives in education that involved the Arctic in varying ways and it strikes us that there has been a cheerfulness about this collaboration that bodes well for the future.

The shape of this book reflects the work that has been carried out by the Circumpolar Universities Association's Working Group on the University of the Arctic initiative. In our work in that forum, we often thought that it would be helpful to know more about the attempts of others with activities that had something in common with ours. The present University initiative has been developed within the context of deliberations by the Arctic Council; when the Council's Senior Arctic Officials first discussed the development plan for the University that we and our colleagues produced, they called for a study on circumpolar educational initiatives that would assist an assessment of the feasibility of the idea. This suggestion meshed well with the needs and expertise of the Working Group, which by then had been created to go do a feasibility study. Since the Working Group had been selected as an assembly of individuals active in various ways in education and research in the Arctic and who already had extensive networks in place, it became clear in another way that a study on circumpolar education initiatives was necessary both to tap the experience of the Working Group and to fill in the gaps that were perceived.

This meant that for practical reasons, the idea of a comprehensive study was rejected and an anthology such as this one was derived instead. The anthology has emerged, then, in response to the composition of a Working Group that was already contributing its expertise to the feasibility study in many ways, and follows a perception of what would be helpful to know more about, but that was not immediately available during the regular course of the Working Group's activities.

In addition to this explanation for the anthology's lack of comprehensiveness, we must also express our regret that we were not able to have more content reflecting the already substantial work in educational initiatives performed by the indigenous peoples of the Arctic. This has in part been a result of our ignorance—something that has been part of our learning to be circumpolar—but also due to circumstance. As with our efforts to secure a contribution from Alaska (apart from what was

already so knowledgeably contributed within the Working Group), most of our efforts to secure contributions were in the end left unfinished. We especially would have liked to have included a piece on the Consortium of Small Northern Colleges, as well as the proposal for a worldwide indigenous peoples university, both of which the University of the Arctic will surely be collaborating with in future. It is thus with extra appreciation that we thank the Inuit Circumpolar Conference, the Sami Council and the Association of Indigenous Minorities of the North, Siberia and the Far East of the Russian Federation, for their approval of our reprinting of their "statement of partnership," entitled *Shared Voices,* that was composed as part of the University of the Arctic initiative.

Many of the constraints, but also the stimulating challenge, that this anthology laboured under were due to what we felt was the need to have the book completed in time for two meetings of great importance for the University of the Arctic initiative. Both of these have Arctic education, from the primary school to "post-doc," on their agendas. These are the 7th Conference of the Circumpolar North Ministers of Education in Rovaniemi, Finland, on September 14-16, 1998 and the Arctic Council Ministerial meeting in Iqaluit, Canada, on September 17-18, 1998. Once again, we see this effort as an expression of our sincere desire to achieve as effective and broad a consultation as possible with the limited resources at our disposal.

What is also striking now, when we have the benefit of hindsight, is how much has already been achieved in circumpolar higher education. It is our hope that this anthology at least provides a sense of what we can identify as two of the driving forces behind such initiatives, namely the need for interdisciplinarity and for circumpolarity. The contributors call for both of these in many ways, but we would here emphasize that the complexity of the issues that are part of life in the north and the particular character of all that is Arctic are behind these calls. We see that two important projects in circumpolar higher education and research, namely the International Arctic Science Committee and the Circumpolar Universities Association, both of which are now approximately ten-years-old, strongly emphasize these points.

The sections in this anthology suggest the span of experience, from the more personal views of "Coming into the Arctic", to the national "Our Arctic", the regional "An Arctic of Regions", the circumpolar "Learning to be Circumpolar" and beyond, "Pushing the Northern Dimension." This was a result of the difficulty in finding initiatives that fit our definitions of Arctic and circumpolar. Since each of the contributors look at the north in their own way, with their own mix or twist on the Arctic (and indeed we encouraged the authors to provide us with the benefit of reflections on their "personal" experience) we tried to avoid a crude categorization that might have seemed overly judgemental and forced. We hope that as they are organized now, with a kind of "fuzzy logic," the authors will all feel comfortable with their placement.

As this book goes to press, less than a week before the Conference of the Circumpolar North Ministers of Education, the University of Lapland is abuzz with the excitement generated by the successful and much appreciated visit of the President of Iceland, Ólafur Ragnar Grímsson, on the occasion of the Twentieth Anniversary of the University of Lapland. In his Celebratory Speech, President Grímsson proposed the creation of a Northern Research Forum, using much of the same language as has been used in the Arctic Council's deliberations on the University of the Arctic. We are musing on the potential connections, to be sure, but are deeply grateful to President Grímsson for allowing us to publish his speech here so that all may read it and generate their own suggestions for a fruitful collaboration.

Coming into the Arctic

1. Hunting the northern character

Tony Penikett

Even back in the spring bloom of the last Yukon mining boom one always felt there was something missing. The young Yukoner hunting for gold in the late Sixties rather knew he was looking for it in all the wrong places: asbestos mines, copper mines, silver, zinc and lead mines.There was just no alchemy in those holes in the ground. Nor did it lie in the mined-out ghost towns that outnumber Yukon's living communities. As Robert Service[1] had the wit to see, the gold is in the finding, not in the hoarding of bullion. The hunt is the thing.

This truth also holds for Yukon's second industry, the trapping of tourists. Every summer tourists rush north to rediscover the myths represented on the covers of their glossy brochures: the high-stepping can-can dancer, the grizzled prospector panning for Klondike nuggets and the red-coated Mountie shooting it out with bad guys in the Malamute Saloon. Never mind that these images include more than a sprinkle of fool's gold.

The Klondike never saw a Moulin Rouge style can-can dancer until some tourism promoter invented the legend thirty some years ago.[2] As for the grizzled gold panner, an Aboriginal family on a fishing trip accidentally discovered the Klondike gold—shortly after a professional prospector had chased them off his claim on a creek nearby. The Klondike Mountie was a military man who made up laws to suit the occasion.

No matter. The can-can dancer is here to stay. With land claims being settled, mining corporations have started to make deals with Aboriginal communities. The Disney Corporation now owns the license to market the Mountie image, and a Hollywood makeover could do wonders for the Yukon tourism business.

In the Sixties a Yukon miner between mines could become a hotel clerk without any training. Back then a hotel was a place to make a deal, find a job, and eat or drink. If a miner drank too much, it might be the clerk's job to pack him off to a room where he could sleep until the morning after. Nowadays the big hotels are owned by huge tour companies that keep their clients captive on company boats, company buses, company restaurants. Company-sponsored entertainments feature can-can dancers, grizzled prospectors and maybe a Nelson Eddy-type Mountie or two.

A little white lie? Sure. The trapped tourists never hear any Aboriginal storytellers, see the Grouse Dance or feel beneath their feet the beat of a different drummer. Today, the front desk clerks all seem to be summer students earning degrees in hotel management, and there's likely no room in the inn for the miner on a toot or the different drummer, at least not during the high season because, while the midnight sun shines, the hunt for tourist gold is necessarily relentless. Meanwhile the true north remains undiscovered country.

Yukoners who have not found gold in either mining or tourism have sometimes explored the possibilities of politics and government. The not-so-young Yukoner looks over the local legislators, decides he could do no worse, then begins to hunt for power. Coming and going, he runs from meeting after meeting: speaking up, speaking out, talking non-stop, hunting the back rooms and the back roads for the vote of the shop steward or the village councillor: hunting, he says, for the power to put things right, the power to move government leftwards, grabbing at power with both hands and an open mouth, grasping at it before it slips through the fingers like tiny flakes of placer gold in fine slippery sand.

Even in bad times a few Yukoners get lucky. Some will bag money, a few will capture power and the odd one will gain both. Even with money and power in hand, the restless Northerner's hunt does not stop. It goes on and on. But for what?

A letter from Outi Snellman and Richard Langlais of the University of Lapland offers a hint or two if not the complete answer. The letter invites the retired Yukon politician to "contribute to an anthology . . . a study of academic initiatives involving the circumpolar Arctic. This includes education and research . . . [S]uch a study would be seriously lacking if your experience in these matters was missing . . ."[3] The last point may be questionable, but let's pretend it's just a polite fiction, a professional kindness from the anthology's editors to their prospective contributors. Given a choice, the politician himself might gladly have missed much of this "experience," but this inescapable experience *is* the source material. So, let it be.

Experience, education, research and academic initiatives involving the circumpolar Arctic: these seem to be the key words in the Snellman/Langlais letter. The *Gage Canadian Dictionary* defines research as "a careful *hunting* for facts or truth" and education as "development in knowledge, skill, ability or *character.*" The challenge is clear, but where does one look for the last word on the development of the northern, Arctic or circumpolar character? No more will it do to hunt through the pages of Jack London or Tove Jansson for it. One will not find it the vandalized bunkhouses of abandoned mine sites, nor in the frontier honky tonks where the young Yukoner once sought truth and beauty. Where then?

Statistically, the Yukon Territory owns more vehicles (read pickup trucks) and roads per capita than any other jurisdiction on the planet. The noted anthropologist, Julie Cruikshank, once called Yukon roadways "the gravel magnet."[4] One of the attractions of these magnets is the access to wildlife they give the hunter. Highway hunting is a long-honoured local tradition. Most of the moose and caribou harvested in the territory die mere meters from the willow ditches and dusty shoulders of Yukon's excellent roads. A number of these kills should, strictly speaking, count as accidents or vehicular slaughter since no firearm was involved, but the Yukon hunter does not normally brag about putting "road kill" on the supper table so the published data here may not be reliable.

In any event, the hunter might not have been actively hunting at the time. Without any warning, a moose may simply decide to cross the road. If this happens on the opening day of hunting season, what's a trucker supposed to do? He might be looking for a moose but, coming round a bend, he finds a bull caribou browsing by a culvert. Or let's say the driver has been dreaming of moose stew or caribou ribs, but runs smack into a grouse or a ptarmigan. Research is like that.

Aboriginal hunters, who have no truck with romantic European notions about the glorious chase, "big game" and the conquest of nature, also engage in a little highway hunting from time to time. Highway hunting may be more like shopping for groceries at a convenience store than many Yukoners care to admit. German and American tourists who pay good money to come north to collect trophies for their den walls might sneer at this common, cheapened, form of their noble pursuit. Yet everywhere the hunt continues regardless, and every northerner participates in some manner. For the northerner, hunting is not only eternal, but internal as well as external. The northern/Arctic/circumpolar character may well be a hunter, but he/she/it can also find themselves the object of the hunt.

Now, take George Orwell's advice[5] and try to visualize an "academic initiative." What comes to mind? A professor trying to start her car at forty below? Probably, the term refers to something that began in a university, the University of Lapland, for instance but, according to the instructions in the Snellman/Langlais letter, this must be a circumpolar initiative. While the vehicle might have started at Rovaniemi, it should have moved on, perhaps to another university, possibly to an entirely new one.

One thing is for sure. Anyone with the knack for accurately defining the northern character will likely be in or of the university, perhaps even a northern university. After all, what good would a northern university be if its students and professors did *not* help define the northern character? At present though, Canada's northern territories have no university of their own. The territories have colleges aplenty and campuses galore, but no truly northern university.

Not infrequently the Yukon politician heard constituents say, "We should have a university." Sure, the politician thought and mentally calculated the cost to the same constituents, now in their taxpayer mode and suddenly unwilling to underwrite their own idea. Every politician in temporary charge of public money routinely hunts for solutions to exactly this kind of dilemma. He may recall that Northern Canadians have started down this road once before only to come back disappointed. In the Seventies a Toronto visionary inspired leading citizens from the two territories to create the University of Canada North. The Canadian parliament granted U.C.N a charter, but no money, and a territorial government of the day objected because it had no control over the institution. So, unfortunately, U.C.N never became anything more than a paper project.

Throughout the Eighties the Yukon politician hunted for policy gold on the campuses of Fairbanks, Juneau, Luleå, Umeå, Tromsø and Rovaniemi. He marveled at the laminated beams of blond wood, the skylights angled to catch the winter sun, the great white walls waiting to frame the characteristically northern image. He marveled, and thought that the Yukon ought to have facilities like this. He sat at the feet (more often the knees) of chancellors and rectors, trying to discover their secrets. At lunch with a Yukon College president, the politician heard about 101 priorities but little mention of the literacy and numeracy deficits in rural communities. At assemblies of high school students, the politician asked where in the Yukon they would go upon graduation? "Toronto," one might reply; another, "McGill or U.B.C." Occasionally a student had her cap set on Harvard or another famous American school.

When in 1986 the territory began the bottom-up planning exercise known as Yukon 2000, experts asked how this could be done without the assistance of a regional university and the politician had to admit that he did not know. As it turned out the planning exercise showed that Yukoners did not know themselves all that well, much less their neighbours. Aboriginal leaders and municipal councillors had rarely, if ever, talked together. Mine managers and union members had not usually exchanged views except at the bargaining table. Simple facts about their own territory completely escaped Yukoners.

Most believed what they had been told. They believed that high-kicking can-can dancers ruled the gold-rush dance halls. Some seriously believed that tourists were responsible for the territory's high rate of alcohol consumption. Others believed that tiny impoverished communities could easily assume the political powers of provinces. Not a few mill workers thought it mattered not where their minerals eventually landed so long as the stuff got on the truck heading for the port of Skagway. One prominent politician stated as a fact that research was a waste of money.

Ignorance is not bliss, nor is it invincible. Curiosity has at least nine lives. The need to know is a powerful urge. Yukoners' discovery of shared values with the residents of the Mackenzie Valley and the Alaskan Interior made them curious about the Eastern Arctic and the land across the Bering Sea. In *Smilla's Sense of Snow,* Peter Høeg described the first Inuit Circumpolar Conference, where delegates discovered to their amazement that all Arctic peoples shared similar raven creation myths. Gro Harlem Bruntland's United Nations Report *Our Common Future* made Northern Canadians intensely interested in Scandinavian mining methods and tourism marketing techniques. Already, Swedish technology was helping reopen the Yukon's largest mine—and not a few minds as well. Aboriginal leaders were flying off to Europe to teach politicians there about hunting and trapping as a northern way of life. A new northern or circumpolar consciousness seemed to be dawning on the horizon, one not yet reflected in the region's public institutions. That might come with time but it would require serious reflection by artists, scholars and researchers based in some northern university, or at least associated in some way with a new kind of pan-northern institution such as the University of the Arctic—however it might evolve.

The official view, in Canada at least, is that the University of the Arctic was dreamed up over drinks by a couple of bureaucrats in a bar. Not so. Like the elusive northern character, the idea of the University of the Arctic has been around for quite a while. It has been there all along, hidden just out of sight in the bush and the barrens. Beyond the Bering Sea and across the Barents Region, the idea is alive. It lives not in the bricks and mortar boards of southern

"national" universities but in northern-lit visions of an emerging circumpolar community.

The eight Arctic Nations have now created the Arctic Council first proposed by Canadian Prime Minister Mulroney in a speech at St. Petersburg in 1989. The former Yukon politician has observed this process: from the early efforts of Professor Franklyn Griffiths and others to Alaska Governor Steve Cowper's founding of the Northern Forum at Anchorage in 1991; on the Gordon Foundation's Arctic Issues Advisory Panel and with the Canadian Arctic Resources Committee at parliamentary hearings and conferences overseas; and at the Arctic Council's opening ceremonies at Ottawa in September 1996.

Two years on, Canada's term as chair of the Arctic Council is ending. Official Ottawa has been desperately hunting for a "deliverable" product to mark its stewardship of this project and, so far, the University of the Arctic seems to be the only target in sight. The South needs the North to make this "virtual" international entity work, but truth to tell, the North needs this University of the Arctic even more. The hunt for the northern character must stalk this road. All other roads lead south. Follow them and the University of the Arctic will go south, too.

Or so it seems to this writer.

Notes

1. Robert Service, "The Spell of the Yukon," in *The Best Robert Service* (Toronto: McGraw-Hill Ryerson, 1953), 3.

2. Carolyn Ann Moore, *Presentation and Remuneration: White Women Working in the Klondike Gold Rush (1897-99) and the Decade Following (1900-1910),* MA Thesis (Toronto: University of Toronto).

3. letter from Outi Snellman and Richard Langlais to Tony Penikett, 19 March 1998.

4. Julie Cruikshank, "The Gravel Magnet: Some Social Impacts of the Alaska Highway on Yukon Indians," in *The Alaska Highway, Papers of the 40th Anniversary Symposium,* ed. Ken Coates (Vancouver: University of British Columbia Press, 1985).

5. George Orwell, "Politics and the English Language," *in Shooting an Elephant, and Other Essays* (London: Secker and Warburg).

2. Into the breach: student mobility and the electronic age

Scott Forrest

As part of an English class assignment in the seventh grade, I wrote an essay about how computers would change the way we go to school. The first of my predictions was that in a few years' time students would all have computers on their desks which would interact with the teacher's master computer at the front of the classroom. Further down the road, students wouldn't even need to go to class. In the comfort of their own homes they could dial-up over a modem and have all the information they needed available, and be able to submit assignments. Moving even farther into the future, I foresaw something I called the IntelliZapper. This device would "zap" all the information normally taught in school into a small microchip embedded in the brain at birth.

This information would be slowly transmitted into the brain as the child developed. Instead of going to school, "students" could engage in other activities while their brain did the learning for them. Most of this content was a fantasy borne out of my early fascination with computers and a strong aversion to having to sit in class every day.

When I unearthed this essay last year I was rather impressed with my own predictions, except perhaps for the rather Orwellian connotations of the IntelliZapper. The first two predictions have already come into being, more or less. While not universal, computers in the classroom and Internet courses are changing how education is delivered.

Fast forward six years later, circa 1990. I first tripped across the Internet as I began my undergraduate studies at Simon Fraser University in Burnaby, Canada. The unfriendly UNIX prompt that served as the gateway to the Internet those days was unfamiliar to most "artsy" students, but my electronic engineering friends soon showed me the way. So much has happened since then that it seems almost impossible to remember a time before Netscape and its ilk made the Web what it is today: graphical, dynamic, and easy. In fact, it was only a few years ago. So how did students at that time make use of this amazing new communications tool? Well, I managed to amass a fairly large collection of Simpsons sound files (so Homer would exclaim "Doh!" every time Windows crashed), while others played role-playing games in "multi-user dungeons" (MUDs). Sure, I could connect to the SFU library to look for a book, but I would actually have to enter the building and physically go to the shelf to make sure it was really there and what I wanted.

There was also something called WAIS. Lost now among the tide of Internet acronyms, I cannot even remember what it stands for. I do remember that it was from Switzerland, which conjured up notions of a massive super-computer lodged deep within a mountain in the snowy Alps. WAIS searched hundreds (maybe thousands) of databases across the Internet for information on a given search term.

In those early days, there was very little useful information out there (have things really changed?) so doing research on Canadian constitutional reform or the history of the Knights Templar, for example, was not WAIS's *forte*. The Internet of that day was not a very useful research tool for my purposes for a number of reasons. First, it was abominably hard to navigate, with an unforgiving user interface. Secondly, the Internet was not yet a mass medium, its membership dominated by research scientists in very technical fields.

By the end of the 1980s universities were just starting to give undergraduates user accounts on their large servers, which would change the composition of the Internet forever. But at that time there was still not much out there for we

social scientists. Our technical capacity to actually make information available to others was mostly limited to posting to newsgroups, general discussion forums on a variety of topics.

You all know about the Internet now, for better or for worse. You probably surf it every day, so I don't have to be one of the cacophony of voices exclaiming in awe at the wonderful things it can do and the many ways it has changed our lives. This tale, however, is not meant to be a tract on the social history of the Internet. I certainly don't want to prophesize, as I did those years ago, about all the ways that computers and the Internet will change the way we work, play and study in the future.

Fast forward again, seven years to September 1997. As a wide-eyed grad student from British Columbia, I embark on my first international educational experience. Having developed an appetite for studying international cooperation in the circumpolar North, I suddenly become a product of that cooperation. Through a joint agreement between Canada and the EU, I found myself transported to the Arctic Centre in Rovaniemi, Finland, within sight of the Arctic Circle.

Despite my past predictions, this educational experience did not take place from the safety and comfort of my living room. Nor would I have wanted it to. I actually had to get on a plane and physically transport myself half-way across the world. I went through customs at a border which has not yet been globalized out of existence, and entered one of many national cultures which, despite McDonalds, MTV, and Disney, is still somewhat different than my own. Once there I interacted with many people in varied and often challenging situations. I struggled with a foreign language, and it was not HTML.

Already today it would have been possible to have taken part in some sort of a virtual Arctic Studies Program, from the familiar surroundings of my own home in Canada. Connecting by Internet, I could have downloaded reading packages, submitted papers, even listened to lectures in live audio and talked with my fellow "classmates" in a virtual chatroom. Then I could have logged off, eaten dinner in my own kitchen, watched some local news on television, and gone out for coffee with my non-virtual friends.

I can already sense that you've made the same connection in your mind that I have discovered through my time in Finland. Something that our digital culture will have to grapple with more and more as electronic communications of all sorts are gradually substituted for personal interaction. No matter how advanced the technology, there simply is no substitute for face-to-face conversation and first-hand experience of a situation. The process of learning is unique to every individual, but the best learning takes place in human interaction. While the IntelliZapper might be able to instill data, I doubt it could replicate experience.

By travelling to Finland only through fibre-optic cable I would have missed:

- arriving in Rovaniemi after an eleven-hour ferry ride and a ten-hour train ride, wearing a not-so-fresh T-shirt, shorts, and standard issue fleece pullover to be escorted directly to the rector's gala banquet for the opening of the school year;
- running naked and screaming from the sauna through dark woods of northern Lapland into a freezing lake or rolling in the snow. You have not truly appreciated the full texture of snow until you have slid naked in it;
- my first load of laundry. Washing machines in Finland look a lot like dryers in North America, and vice versa. You can imagine the results. I was somewhat consoled to hear that a Finnish student that went to my home university in Canada made the same error;
- witnessing first-hand both the serenity of a small fishing village on the Varanger coast of Norway, and the environmental devastation around the Sveronickel smelter on the Kola Peninsula of Russia on the Arctic Studies Program's fall excursion.

Above all, I would have missed sharing many of these experiences with other students, both from Finland and abroad. Personal connections are the real advantage of first hand learning over the distance learning alternatives. A computer cannot replace the experience of sitting down over coffee and talking with people from very different countries, but with shared interests, problems, and concerns. No matter how far technology takes us, I defy it to recreate the surreal experience of a group of international students

visiting a nightclub in Apatity, Russia.

The instructors on the Arctic Studies Program's excursion to northern Finland, Norway, and Russia tried their best to instill some traditional learning into the group (often as we set off in the morning on the bus). We all realized, however, that our real education was not from the material which we were being taught, but from the places we visited, those people we met there and the informal discussions we had amongst ourselves. A university does not exist in classrooms, but in the connections among students, researchers, instructors, and staff. Those personal connections happen both inside and outside the traditional halls of learning. Whatever form the University of the Arctic takes it must take care to leave room for the spaces between structured learning where real knowledge can be gained.

The creators of the proposed University of the Arctic will have to struggle to find a balance between the opportunities that communications technologies can bring to uniting a widely dispersed student population, and maintaining human connections by bringing students and instructors together. This will not be an easy balance to achieve. It would be impractical, both logistically and financially, to bring every student to a field course in some part of the Arctic. In many cases, classroom learning with the aid of the Internet and other distance learning tools will be more appropriate. The type of program delivery will be highly dependent on what is being taught, and the level, number and background of the students. Different students will have different needs and interests, and will interact with the University of the Arctic in ways that are suited to their own situation.

The students who comprise this new university will be both traditional students from the South who have an interest in the North and a new set of students from the Arctic region itself who have so far only been able to access higher education by travelling to large centres in the South. The question of what methods to use in delivering education to this second group is critical. It would be very easy to replicate existing barriers to education within the University of the Arctic. Although the group of students which comprised last year's Arctic Studies Program were from many different countries, their backgrounds were quite similar. A student from Nunavut Arctic College in Iqaluit, Canada, himself from southern Canada, explained to me that almost all of his Inuit classmates did not want to leave their community and their families to go on exchange in some far off place. This feeling is a common one in many communities in the Arctic, and one reason why few students in northern Canada continue their education at universities in the South. While student mobility should be an important part of the University of the Arctic, it should still allow students to access higher education in their own communities.

Technology like the Internet will be essential to making such an ambitious project a success. Already in the planning stages of the university, e-mail and the Web play an important role in coordinating the combined efforts of a Working Group drawn from all around the circumpolar world. This Working Group itself provides an interesting case study in the limits of electronic communication and the advantages of face-to-face interaction. Although the daily work of the group is handled through e-mail communication, the real leaps forward in the development of the concept of the University of the Arctic have come in a series of Working Group meetings which have brought members together in a single location.

The University of the Arctic might do well to follow the path of its own Working Group. The day-to-day learning for most participants would be done at the local level, with electronic communications merging these localities together into a larger whole. Periodically, though, these interactions should be made "real" by bringing students and instructors together. In this way, the University of the Arctic will not be a "virtual university" anymore than it would be a traditional university built of concrete and steel. It will be something new altogether, both human and digital, both local and international. Careful and considered implementation of student (and teacher) mobility programs is the only way to maintain those balances.

3. The University of the Arctic: from Truelove Lowland to Kilpisjärvi

Bill Heal

With hindsight, the basic principles of the University of the Arctic began, for me, in the 1970s with the Tundra Biome of the International Biological Programme (IBP). They developed in the 1980s, moving unexpectedly to the tropics through a UNESCO sponsored Programme on Tropical Soil Biology and Fertility (TSBF). Then, returning to the Arctic in the 1990s, with involvement in the Arctic Monitoring and Assessment Programme (AMAP) and the Arctic-alpine Terrestrial Ecosystem Research Initiative (ARTERI), a Concerted Action of the EC, leading to the initiation of the University of the Arctic.

What were the threads that joined these activities and led to the University of the Arctic? At least five principles run through these different programmes.

- *What are the benefits?* The sharing of ideas and experience which lead to new insights and to the synthesis of understanding. 2+2=5
- *How is it achieved?* Through informal and formal networking, frequent face-to-face discussions close to the "real" world, and co-opertion.
- *Who is involved?* A combination of people from different disciplines, experience and approaches, but with a common focus. With a group of people combining relatively unconstrained youth and mature experience.
- *How does it happen?* Often in an unplanned, bottom-up, opportunistic manner. Serendipity!
- *What are the products?* In addition to the hard science papers, an unmeasurable output is the production of an international group of people whose education was dramatically expanded and contributed greatly to subsequent cooperation.

These principles may be best illustrated by brief, subjective descriptions of some of the key events in these international activities which have left a fundamental belief in the value of cooperative, trans-boundary action.

IBP Tundra Biome (1965-1980).

IBP was designed as a World-wide study of the "Biological basis of Productivity and Human Welfare" which took off in the late 1960s. The stimulus for the Tundra Biome, one of many IBP programmes, came from an accidental meeting between Frank Pitelka (an eminent American animal ecologist who worked on lemmings in Alaska), and Tony Gore (a moorland plant ecologist from UK), at a meeting on systems analysis in Michigan in 1967. Their common interests in how cold-dominated ecosystems function and the potential application of systems analysis was the stimulus for the development of an international research programme. Serendipity and cross-disciplinarity.

Some examples of the ways in which the Tundra Biome provided such a stimulating and long-lasting experience:

1. The consistent guidance of the more experienced "senior" researchers such as Eilef Dahl (Norway), Paavo Kallio (Finland), Boris Tichomirov (USSR) and Larry Bliss (Canada). This was complemented by the younger element who were relatively unconstrained by political and management niceties. The contribution of a

number of experienced researchers who, while not involved directly in the programme, provided independent advice eg Jerry Olsen (USA), David Goodall (Australia) and George van Dyne (USA).

2. Participation was dependent mainly on support for national sites which then combined to form a circumpolar network. But it was the Canadians, led by Larry Bliss who selected their site (Truelove Lowland on Devon Island) clearly based on the international need for a high Arctic site. Tundra Biome also benefited not only from the participation of Alpine and Antarctic sites, but also from what became known as the "Temperate Tundra". There were many debates about the definition of Tundra and a broad view prevailed. Upland sites above the tree line in UK and even a peat bog in western Ireland became strong elements in the programme, extending the climatic gradient and strengthening comparative studies on the influence of climate on processes of production and decomposition. The Programme thus benefited from flexibility of approach and with participation determined by commitment rather than a rigid geographical definition.

3. This was a research programme, involving a combination of Universities, Colleges and Institutes. Many undergraduate, graduate and post-doctoral students gained their early experience within the programme and subsequently became leaders in their own fields and in management eg Vigdis Lid-Torvik (Norway) in microbial ecology, Valery Behan (Canada) in arthropod ecology, Terry Callaghan (UK / Sweden) in plant ecology and mow Director at Abisko, while Thomas Rosswall (Sweden), another microbiologist, is now Rektor of the Swedish Agricultural University. These are but a few. The programme provided a significant international education for many, particularly through their involvement in meetings, field work and data sharing.

4. The unexpected was normal. Fresh insights arose from different viewpoints, . For example, in the early stages of the studies on decomposition of organic matter, a comparison of methods was made. Two distinct approaches were being used determined by the initial training of individuals. Patrick Flanagan, a microbiologist working at Point Barrow, Alaska was measuring respiration of leaf litter in the lab. I, as a young zoologist working at Moor House, UK, was measuring weight loss of litter in the field. We realised that both measures were legitimate and complementary. But it was Fred Bunnell from Vancouver, a systems analyst, who put the two approaches together. He combined the results in a general model and showed us how it could be used to validate the information and predict decomposition rates at an independent site (Abisko, Sweden). It worked! 2+2=5.

5. The Tundra Biome was certainly not always a success. There were major benefits in focusing different disciplines onto questions of the factors controlling ecosystem productivity. But questions of the relevance to Human Welfare were not addressed. We failed to bridge the gap between natural science and socio-economics; the human dimension. The programme was driven by the scientists. Management, land-use and social interests were not involved from the start. The science programme and scientists were committed at an early stage. There was little room or opportunity for later entry of other disciplines although some attempts were made. 10+1 did not even make 11. It was too little and too late.

IBP finished in the early 1980s and the network of researchers fragmented. A series of major synthesis volumes were published including one from the Tundra Biome.[1] What happened next? At a national level, only the USA, through the National Science Foundation, recognising the need for continuity of information had the vision and strength of will to continue in-depth research on major ecosystems with the establishment of the Long-Term Ecological Research (LTER) program.[2] Initial funding of six sites in 1980 has expanded to support 18 dedicated sites, including Toolik Lake in Alaska. This program is providing training and education for many students. Although cross-site comparisons within USA are not well developed, LTER has increasingly opened its doors to international collaboration and has taken initiated an informal International LTER network.[2] (There may be some evidence that international collaboration between researchers is easier to achieve than national collaboration, possibly because institutions and funding systems are highly competitive internally).

The tradition of international inter-site comparison has strongly developed through the current International Tundra Experiment

(ITEX). This has a very strong student participation and is driven by the interests and agreement of the researchers. It is a truly 'bottom-up' programme, initiated by Patrick Webber (USA) who worked in the Tundra Biome, and supported particularly by NSF. In contrast, two 'top-down' international programmes developed subsequent to IBP. The Man and Biosphere (MAB) programme of UNESCO was initiated to improve understanding of natural and social processes associated with the environment. It is a decentralised programme, launched in the early 1970s, with field projects and training activities in all regions of the world. It has had little involvement with the Arctic although it includes MAB-6 "Impact of human activities on mountain and tundra ecosystems", and a number of Biosphere Reserves eg Svalbard which have had a strong conservation function. Of particular note was a specific study of Obergurgl, a mountain region in Austria, which combined the knowledge and insights of business people, government officials, the people of Obergurgl, and scientists.[3] It was led by Walter Moser with an integrating model development by Fred Bunnell, both participants in the IBP Tundra Biome. The Obergurgl model was an imaginative early study of what we now see as Sustainable Development the social, economic and environmental elements are seen in models which now have general application.

The other major international activity is the International Geosphere-Biosphere Programme (IGBP). Led by Thomas Rosswall (a student from within the Tundra Biome), this research programme has been developed to address the questions of Global Change but with clear emphasis on Climate Change. It has an integrated Global perspective reflecting the interactions between atmosphere, land, water and sea which drive our environment and consequently resource utilisation and social dimensions.[4] Whilst largely dependent on individual national support, the international effort is powerfully driven by the commitment and collaboration of the research scientists. It has many excellent features and is making a major contribution to our understanding of climate change. However, of all the World's regions, the Arctic is being (or is likely to be) subject to the greatest change in climate, partly through changing ocean circulation patterns. Yet it is probably subject to less research and we have less understanding of the consequences in the Arctic than for other regions. Why? Probably, at least in part, because the small human and research populations have much less influence than the much larger communities in lower latitudes.

Tropical Soil Biology and Fertility (1980-1990)

A totally different environment from the Arctic provided further support for the ideas of cooperation, communication and the specific application of general principles. Through experience and information available mainly from IBP, three of us synthesised our understanding of organic matter decomposition in terrestrial ecosystems.[5] As a result of a number of accidental, IBP related contacts, the general concept germinated into a practical, though still academic, programme supported by UNESCO and IUBS. This was designed to improve the management of soil fertility through manipulation of the input and rate of decomposition of plant residues in the tropics where soil fertility was declining. The resulting circum-tropical network of researchers, including students, spanned India, Africa and South America and interacted with land managers with traditional farming and forestry experience.[6] Communication, exchange of ideas, and cooperation in experiments were central activities. It was in essence an international college.

But one striking, and totally unplanned, means of communication arose from the accidental meeting of a TSBF scientist and a performing artist in a bar in Uganda. This illustrated for me, the value of interaction between totally different disciplines and the power of unconventional approaches, in this case in communication.

The artist, Stephen Rwangyezi, was the founder of the Ndere Troupe. His aim was "to resuscitate and revitalise the traditional performing arts (music, dance, story-telling, poetry and theatrical rituals) which had suffered a century-long degeneration under constant assault of modern civilization."[7] The scientist, Paul Woomer, was keen to explore ways in which TSBF could interact with farmers and other resource users. The eventual outcome was a

highly professional, traditional pantomime of song, dance and comedy focused on the resource management strategies and practices used by farming communities. It presented the problems of soil impoverishment and the strengths of traditional approaches. Whilst retaining the traditional vitality and humour, it incorporated insights into erosion control, land subdivision, agroforestry, nutrient recycling, composting, legume seed inoculation and nitrogen fixation. The four hour performance, which has been translated into six local languages, was presented by this Ugandan troupe to groups of hundreds of farmers and their families in remote locations, in the field .

Serendipity had struck again, bridging disciplines and traditions, providing a novel and creative education approach, exchanging global and local knowledge, and revitalising traditional culture. Sustainable development based the combination of traditional and modern knowledge? Who paid? In the early stages funding came from the Canadian and Austrian Governments, the Rockerfeller Foundation and various international organisations.

The 1990s: ARTERI, AMAP and the University of the Arctic.

At Oppdal, Norway, in August 1993, the first major international conference on arctic terrestrial ecology since the Abisko IBP Conference of 1974 was held. A fundamental difference between these two conferences was the emergence of Climate Change as a driving issue, combined with the development of the various global and circumpolar organisations such as IGBP, IASC and AEPS. At Oppdal, the Working Group on integration of organisations and programmes, Chaired by Patrick Flanagan (USA) and Fred Roots (Canada), recognised that in the planning and execution of terrestrial ecology 'environmental protection and the involvement of all residents of the Arctic should be emphasised'. Also "that long-term research and monitoring in the Arctic must involve industry, academic and government organisations as well as research funding bodies and should vigorously cultivate a broad base of awareness, of the value to society, and the need for long-term support."[4]

One response to the Oppdal recommendations was from the European Commission. In 1996 it established a Concerted Action project, the Arctic-alpine Terrestrial Ecosystems Research Initiative (ARTERI), to provide a focus for debate and collaboration both within and outside Europe. As a mixed group of ecologists, some old and some new colleagues, we explored ideas of networking between sites to compare responses to climate change across the region and with other regions. The concept of a long-term site network arose with some common observations and experiments. This was developed into a proposal to exploit the N-S and E-W environmental gradients characteristic of the Scandinavian region, and contribute to an emerging series of IGBP High-Latitude Terrestrial Transects.[8] Marginal to this discussion, emerged the idea of strengthening collaboration between existing Universities and research Institutes to provide long-term capacity and academic freedom to address the various emerging issues. This also recognised the unique integrity of the circumpolar region, with its common features of environment, economy and sociology. Thus the seeds of the idea of a University of the Arctic were sown - probably not for the first time. The EC representative, Mario Catizzone, was encouraging.

The next step arose by accident through AMAP. At a meeting in Groningen in January 1997, I raised the idea of a University of the Arctic in casual discussion with David Stone (Canada) and Lars-Erik Liljelund (Sweden), then Chair and Vice-Chair of AMAP respectively. They immediately saw the relevance to the Arctic Council as a means of strengthening the Arctic infrastructure, meeting the needs of the peoples, and providing continuity and flexibility of effort. A Concept Note was presented at the meeting of Senior Arctic Officials in March 1997 and Canada and Sweden were encouraged to develop the idea. With funding from DIAND Canada a small Task Force was established, with individuals from North America, Europe and Russia.

The initial members of the Task Force were selected as individuals for their experience and interests, rather than as official representatives. However, through a brief presentation at a meeting of the Circumpolar Universities Association (CUA) in Lulea, Sweden (June 1997), the interests of the academic community was

confirmed and representatives from CUA joined the Task Force. This was a critical step. It not only established the connection with the University community, but also improved the balance of involvement of foreign affairs and education, and environment. The 9 members of the Task Force also covered a remarkably wide range of disciplines, removing the initial bias towards science, and including participation of at least one of the Indigenous Peoples.

The Task Force, in a short, exciting period, identified and attempted to address some of the central questions, such as:

- *Why do we need a new University?* Because the opportunities for higher education for residents in the North are seriously limited and future generations need to be educated to meet new challenges.
- *What are the challenges?* The increasing importance of economic development, social improvement and environmental protection. The goals cannot be achieved individually, nor in isolation from the wider circumpolar and global context. We are being overwhelmed by information; the challenge is to put the pieces of the jigsaw together. Synthesis is a major challenge for future generations
- *Why an international University?* Because the challenges are common to the regions of the Arctic and the issues affect the region as a whole, actions in one place influence and are influenced by others.
- *Why do we need another international organisation?* For individual subjects there are good international connections, especially in science. The gaps are between subjects, especially between science, economics, humanities and traditional knowledge.
- *What about existing international connections within education?* There are certainly some good links between individual establishments, but they cater for very few, privileged students and cannot provide a fully circumpolar perspective.
- *Is it a "virtual" university connected only by computers?* No, a key component will be face-to-face meeting of students and staff from throughout the Arctic. Personal contacts are critical to understanding each other and comparing experience. However, electronic systems will play an important role in planning, communication with students during dispersed parts of the course, and in administration.
- *Where will it be?* It will be dispersed. The courses will be run from various existing establishments throughout the region. At each, the course will draw upon international staff to provide a circumpolar perspective and may move between sites where appropriate.
- *Will it be dominated by the big Universities in the South?* No. Although there will be input from the South to provide understanding of the North-South interactions, the design will be to build on northern institutions, including colleges, and link directly with secondary and further education in the North.
- *What language will be used?* English will be the main language but arrangements will be made to communicate key course components at least in Russian and, as far as possible, into indigenous languages.
- *What will it cost?* Because the University will use existing facilities, most of the costs will be in staff time, student fees and travel. Capital costs will be minimal, mainly equipment such as computers. More detailed studies are needed to assess costs for different types of course and administration.
- *Who will pay?* Education funding varies greatly between countries. It is expected that arrangements can be made for reciprocal funding of students and federal or local support for staff and facilities. But commerce and industry should also be stakeholders and can provide material and financial support.

Doubtless other questions will be raised and we certainly did not have all the answers.

What rapidly emerged was a clear concensus that the Concept could fill a real need, encompassed in the vision of Gro Bruntland and in the inadequate term "Sustainable Development". It could be of major benefit to the peoples of the North. It could improve the understanding of northern issues and raise the voice of northern peoples in national and international debate. The Concept was certainly worthy of further development. But it must be carefully focused so that it does not simply replicate existing efforts.

The Development Plan[9], was finalised by the Task Force in Rovaniemi on September 8th, It was printed overnight, hand delivered to Canada by Outi Snellman two days later, translated into Russian, and distributed in time for the meeting of the Senior Arctic Officials in Ottawa at the

beginning of October, only 9 months after the first discussion in Groningen.

As with the Tundra Biome, TSBF, ARTERI and AMAP, opportunities arise by accident. When the time is ripe ideas can take off. However, the concept will only succeed with through innovation, enthusiasm and changes in attitudes. The value of shared experience is enormous. But with increasing communication and information we need to develop skills of synthesis, predicition and problem solving. Education in these skills and approaches will be a major challenge for staff more than the students -the students minds are not yet set in a way of thinking. The new demands on future generations require a new approach from the present generation. Who will teach who! Another facet which we have not yet fully addressed in the planning is the involvement of Stakeholders. Students from the University of the Arctic will be the future managers, politicians, industrialists, social workers, conservationists, etc. and will be employed by many different organisations. Therefore we must include the voices of Youth and of the Employers within the planning, sooner rather than later. Education is too precious to be left to academics.

Can the we overcome our political and parochial inhibitions and create a University of the Arctic? The first real University to circle the Globe? The idea is right. The time is right. Can we deliver? YES!

Notes

1 Bliss, L. C., Heal, O. W. and Moore, J. J. ,eds. 1981. *Tundra Ecosystems: A Comparative Analysis.* IBP Series No. Cambridge University Press, Cambridge, 813 pp.

2 *Long-Term Ecological Research*

3 Price, M. F. 1995. *Mountain Research in Europe. An Overview of MAB Research from the Pyrenees to Siberia.* Man and Biosphere Series , Parthenon Publishing, Carnforth, pp 230. For a review of research at Obergurgl see pp 13-18.

4 Oechel, W. C. & Holten, J. I. ,eds.1994. *Global Change and Arctic Terrestrial Ecosystems: an International Conference, 21-26 August, 1993: Recommendations.* Norwegian Institute for Nature Research (NINA), Trondheim, Norway, 53 pp.

5 Swift, M. J., Heal, O. W. & Anderson, J. M. 1978. *Decomposition in Terrestrial Ecosystems.* Blackwell Scientific Press, Oxford, 372 pp.

6 Woomer, P. L. & Swift, M. J. ,eds. 1994.*The Biological Management of Tropical Soil Fertility.* Wiley and Sons, Chichester, 243 pp.

7 Rwangyezi, S. & Woomer, P. 1995. "Promoting environmental awareness through performance education." *Nature & Resources,* 31, 34-39.

8 Heal, O.W., N.R Saelthun, J.I Holten and J. McConnell, eds. 1997. *Ecotones, Biome Dynamics and the Cryosphere: An Outline Plan for the Establishment of an IGBP High Latitude Transect in the Scandinavian/Northern European region (SCANTRAN). Report from a Workshop held in Trondheim, Norway, June 16-18 1996.* The Research Council of Norway, Oslo,

9 Heal, O. W., R. Langlais and O. Snellman, eds. 1997. *A University of the Arctic: Turning Concept into Reality. Phase 1: A Development Plan.* University of Lapland, Rovaniemi, 17 pp. Includes a Russian translation.

4. Leverage in latitude: the University of the Arctic

Janne Hukkinen

When I moved to Lapland in the winter of 1996, Finland was electing its national representatives to the EU Parliament. The centerpiece of the local Green Party candidate's campaign was a call for subsidized fuel for Laplanders. I had just left my previous home in Holland, where campaigning for subsidized fuel would have meant political suicide not only for a Green politician, but just about any politician. I realized I had come to a place where not just the physical environment but also the mental landscape was very different from the more crowded regions of the Earth.

Professionally, I could not understand the rationale of encouraging car transport in these ecologically sensitive regions, some of which were already burdened by intensive human presence. I also could not understand the one-dimensional conception of equity underlying the subsidy proposal. To me the message seemed to be that transportation should take up an equal proportion of every Finn's daily income. With distances longer in the north than in the south, northerners should be subsidized in their travel costs. Having just moved to Lapland from the most crowded country of Europe, I could but wonder where the very tangible value of empty space and clean environment had disappeared in this equity calculus.

But these, as I was to learn, were the typically snobbish ideas of "those brought by the train." In Rovaniemi, there are two kinds of people, the locals and those brought by the train. From Rovaniemi, the railroad goes south.

Yet as we enter the globalized 21st century, I think it is only the serious consideration of all kinds of ideas, snobbish and otherwise, that can secure the vitality and livelihoods of the circumpolar north. A university is a place for serious consideration of new ideas and the seeking of truth. Yet many northern universities and colleges today are primarily training centers serving the political and economic interests of the surrounding provinces. I think the emerging University of the Arctic is the best hope for enhancing genuinely academic endeavors in the north.

I cannot support my argumentation with hard, representative data. My evidence is anecdotal and specific to the University of Lapland and its Arctic Centre. The only justification for generalizing from this anecdotal evidence is that my stories tend to ring true to my circumpolar colleagues. While many of them share my experiences, the conclusions are mine alone.

Like many of its northern counterparts, Rovaniemi always was a town where people were just passing through. In the old days, the passers by were gold prospectors and lumberjacks. Today, they are entrepreneurs, service sector employees, and academics. They are passing through as tourists, since Rovaniemi is successfully developing tourist traps woven around the Santa Claus theme. Or they are on their way to southern Finland, as the country experiences the most dramatic emigration of people from the countryside to the cities. In a recent interview, the chief psychiatrist of the local hospital told that he was discovering in this town of 35,000 inhabitants mental problems and divorce rates comparable to those found in the metropolitan Helsinki region. He attributed this to the transitory nature of the town's inhabitants.

Personnel at the University of Lapland and its Arctic Centre mirror the tradition of transition. When I took up the position of director of the Arctic Centre, the institute was six years old and I was its sixth director. During my almost three-year tenure I have witnessed professors at the University of Lapland accept and leave their positions at an astonishing speed. Many of those who stay are locally known as "luggage professors," traveling weekly to their permanent homes in the south. I can now understand why one of the first questions during my job interview at the Centre was "If you get the job, will you and your family move to Rovaniemi?" Assurances of permanence are precious in latitudes of harsh uncertainty.

But there are those who have decided to make a permanent living in the north. These locals have formed tightly-knit social networks, often impenetrable to outsiders, as a shield against attacks from the southern centers of power. While this type of social organization is quite understandable and in many ways efficient for a small town, it also blocks the evolution of intellectually stimulating academic communities in the north. I see two types of problem emerging: Internal fragility of the academic community, and external control of the academic community by the political and economic interests of the surrounding community.

Many northern universities and colleges are fragile first of all because of the luggage professors, a phenomenon not specific to Lapland alone. When professors are physically present on a northern campus only to fulfill their teaching duty, the emergence of intellectually fruitful teacher-student relationships is unlikely. Another factor weakening the academic community is its small size. The University of Lapland, for example, which is actually one of the larger circumpolar universities, had no more than 2,600 full-time degree students in 1997. Furthermore, these institutions often have only a few faculties, which makes cross-disciplinary fertilization difficult. Finally, these universities often focus on training and education at the cost of research, which does not facilitate the feedback between research and education that has proven so essential to universities elsewhere. The University of Lapland, for example, had 2,500 part-time degree students and 4,200 continuing education students in addition to the full-time degree students in 1997.

Then there is the external pressure that the political and economic interests of the surrounding community so willingly and generously impose on the university. Let me make it clear at the outset that I am not talking here about the fruitful contacts that any university anywhere in the world should constantly cultivate with the surrounding society. That society, after all, is where the academia draws its legitimacy from. But I think it is important to distinguish between productive social liaisons of an autonomous university and direct influence of outside political and economic elites on the internal affairs of academia. And, since we are talking about small communities, it often becomes difficult to distinguish between internal and external pressure, when university leaders themselves are significant political and economic decision makers in the community.

Amidst academic hopes stuck in provincial politics, I offer you the University of the Arctic.

First of all, the new university would be large. As envisioned in the background documents available when this is being written — the "orange" one outlining the concept of the university and the "blue" one describing the assessment of its feasibility — the university would encompass not only universities and colleges situated within the Arctic region, but also non-Arctic universities with a tradition of Arctic research. Together with large scale comes the possibility to create a multidisciplinary university with a broad representation of faculties and the potential to address the complex issues of, say, human interactions with the Arctic environment.

Being large would also enable the new university to deal on a more even footing with the local political power bases and fellow universities in the south. And I want to emphasize it will be a balancing act. Being too large and too autonomous might only condemn the University of the Arctic to perpetuate the tradition of an academic ivory tower cut off from the concerns of the surrounding society. It might also repeat the history of a powerful center dictating the matters of a powerless periphery. To be large in a meaningful way will require that the future university clearly distinguish itself from the flourishing academic networks of the

Arctic. It will have to establish a strong and visible administration. It will have to establish rules and procedures, which will have to be able to resolve issues such as the comparability of academic credits and degrees. All of this will be painful, because it really means intruding on the autonomy of participating institutions. At the same time, the university should avoid every temptation to pour concrete for physical facilities. The single most attractive feature of the new institution is that it will be legally material yet physically immaterial.

The third attractive characteristic of the University of the Arctic is the built-in diversification of political and economic interests. To survive, the new university will have to recognize that it will be born in a global and modern world, in which it must attract resources from a multitude of extramural institutions. In my mind, this will also be the guarantee of its academic independence. The home provinces — and there will be many of them as a result of the geographical dispersion of the university — will have to learn to appreciate the most valuable contribution a university can have to local affairs: New and critical knowledge tested against the thinking of the circumpolar academic community as a whole. This is in sharp contrast with the often-dominant view of today, where the university and its parts are seen as brand labels in provincial marketing campaigns.

Making absent professors present is probably the biggest challenge for the University of the Arctic. After all, the university aims to be a network university with no new physical facilities and maximum use of modern information technology. The university should strive to find the best combination of new educational technologies, students moving around the Arctic from one study place to another, and professors following the students. Despite its networked character, the university should not miss the opportunity to become what a university can be at its best, namely, a place for intellectually stimulating encounters between students and professors in circumpolar academic institutions.

Small town decision makers like to think they know best the problems of the community and how to solve them. Often they are right. Unfortunately, the complex global challenges that Arctic regions face today have taken away the luxury of clearly defined, agreed-upon problems and solutions. Until very recently, the Arctic was just the forgotten backyard of the industrialized world. However, with resources diminishing elsewhere in the world, the Arctic has become the final frontier for global resource exploitation. History teaches us that the prospect for bounty goes hand in hand with conflict.

The transition from an abandoned backyard into a horn of plenty is reflected in today's conflicting discourses over the Arctic. To some, the Arctic should be emptied of its treasures and then left alone. To others, the region should become a thriving social and economic sphere on its own right. Then there are those who think of it as the recreation area of the more crowded regions of the world. And finally, there are those who would like to turn the clock back and have an Arctic of sparse population living off the land. Whatever the perspective, conflicts over the future vision of the Arctic will arise.

The University of the Arctic can help make sense of the conflicting viewpoints. It can combine the best aspects of academia to become a vehicle around the worst trifles of provinciality in small Arctic communities. The agenda for modern Arctic exploration is to understand both the environmental and the cultural dimensions of the coming conflicts. The University of the Arctic can act as a significant facilitator of a public, enlightened, and radical discourse over Arctic options. Without such a university, I have reason to believe that provincial politics will take over, outdated agendas will persist, and the initiative for the future will, once again, be grabbed by the south.

OurArctic

5. Shared Voices and a University of the Arctic—Views of Indigenous Peoples

Inuit Circumpolar Conference
Russian Association of Indigenous Peoples of the North
Sami Council

Introduction

For years, indigenous peoples of the Arctic lived under the shadow of the Cold War. We are greatly encouraged by the recent "normalization" of relations among Arctic states and the growing co-operation among them on environmental, economic, and other issues. A University of the Arctic that brings together indigenous and non-indigenous peoples, stressing interdisciplinary studies and our traditional ecological knowledge (TEK), could add an important dimension to Arctic co-operation. In particular, we hope the proposed University will enable indigenous peoples to learn from one another and will foster communications with the wider world.

Arctic indigenous peoples view the proposed University with great interest. In the past we have often been marginalized in institutions established in our homelands by outsiders. To avoid repeating this experience, we expect the University to be structured to meet our goals and objectives—as well as those of others—and to reflect our age-old experiences.

It is important that indigenous peoples be a visible and acknowledged part of the contours, structure and texture of the proposed university. We will have many students at this university, but we should also be members of the faculty, administration, and governing institutions that set research and teaching priorities. We look for certain guarantees to this effect in the charter setting up the University.

We are convinced that indigenous peoples across the Arctic have much to contribute to the proposed University. Our songs, stories, values, arts, crafts, and ecological knowledge—indeed our very cultures and economies—can underpin the proposed University. Its character and image should incorporate and build upon our experience. We are mindful, as well, that indigenous peoples can add political legitimacy to the proposed University, enhancing its ability to raise funds, particularly from the private sector. We are keen to play an important and constructive role in the unique endeavour to establish an international University of the Arctic.

The Arctic—In Dignity

Our region is too often portrayed as a cold or forbidding place with poor living conditions and a fragile environment and in which we have been largely assimilated by other cultures. These negative images of the Arctic and of indigenous peoples as "victims" are inaccurate. The Arctic has undergone extraordinary change in recent years, and it is important that a balanced image of our homelands be communicated to the world. After all, the Arctic is a psychologically warm and spectacularly beautiful place and our cultures and economies remain vibrant even as they undergo rapid change.

The Arctic is not solely a place for implementing policies and goals defined elsewhere by people with little direct interest in the region. It is our home. The University of the Arctic should help correct inaccurate and partial

images of our region and help communicate new and positive Arctic images to the world. This can be achieved through creative study, international co-operative research programmes, comparative social and policy science research, symposia, conferences, vibrant publishing projects, and a clear commitment by all involved to creative undergraduate and graduate teaching sensitive to different cultures and values. We hope an early research project will be undertaken through the University to document living standards and quality of life of residents, particularly indigenous peoples, throughout the circumpolar Arctic. Such research may aid the Arctic Council implement its still-to-be-defined sustainable development programme.

The Arctic—In Harmony

Natural resources in the circumpolar Arctic are widely exploited. Liberalization of international trade and democratization in the Federation of Russia are likely to promote further development of the Arctic's oil, gas, minerals and other resources. To accomodate these likely developments but simultaneously to protect our environment and economies we must do a much better job of conserving biological and cultural diversity, cleaning-up already polluted sites, and promoting sustainable development policies and programmes that help northerners become more self-reliant.

The University must recognize and accept that the Arctic is a fragile and vulnerable region. Indigenous peoples have lived in the Arctic for many years guided by its rhythms and seasons. Our generally harmonious relationship with the environment, our uses of natural resources and the ways in which we regulate and manage our relationship with our surroundings are topics the University might usefully stress, giving attention to our values and philosophies. In particular, we hope the University will assist us to restore linguistic diversity in the circumpolar Arctic for we are convinced that this is a key to cultural diversity and harmonious relations with nature.

The Arctic—In Modernity

We are fully aware of far-reaching processes of change in the Arctic. It is not our intent to slow this transition to "modernity;" rather, we wish the proposed University to help craft this transition, assisting in preserving the best of the old and promoting the best of the new. How can this be achieved? First, the University can promote excellence in education, teaching, and learning. It should be charged with generating, communicating, and disseminating traditional and scientific knowledge in ways that allow students to integrate what they learn and grow personally in terms of their ethics and morals. After all, universities should enable students and faculty to acquire wisdom as well as data. Second, the University can model itself as a meeting place, not just of people but of ideas, cultures, and ways of life. Shared voices and shared understandings—as the title of this report suggests—are possible only if the University is one of life's major intersections. Certainly we hope the University of the Arctic will be a key meeting place for indigenous and non-indigenous peoples. Third, we hope the university will promote research in which indigenous knowledge or "traditional science" as it is sometimes called, has a valued place in broader inquiry.

At the most basic of levels how should indigenous peoples participate in this potentially exciting and innovative new institution? Of the many answers to this question we concentrate on three:

1. As educated consumers of information generated by research
2. As educated participants in international debates about science and research
3. As contributors to the world wide process of scientific inquiry.

To approach modernity with confidence, we need to understand the strengths and weaknesses of the scientific method as applied in basic research and to learn how best it should be applied in the Arctic. Historically, researchers from the outside world have visited to study the Arctic and its peoples. No longer do we wish to be "objects" of research frequently misinterpreted to others. Nevertheless, we understand that to participate

effectively in basic research we need better formal education and to be able to make an original contribution to the process of inquiry. To understand research we need to recruit young indigenous people to the world of science, integrate traditional ecological knowledge with science, and encourage innovative research for and by indigenous peoples. The proposed university can help us achieve our goals and objectives, and at the same time we can help it to flourish and serve the broader public.

In Conclusion

The University of the Arctic must involve indigenous peoples. It must not be like other educational institutions experienced by some of us as "systems of pain" that ignore or even repress our cultures and economies. Considerable energy and time must be devoted to recruiting indigenous people, who will retain respect for and commitment to their indigenous societies and roots, to join the University. We offer to the university community our experiences and approaches to the world and to life; for example, consensual as opposed to litigative methods of resolving conflicts, and core values including respect for, rather than exploitation of, animals and nature. We hope these and other values of importance to us may be expressed in the charter that will breathe life into the University of the Arctic.

6. Education and research in Canada's North

Peter Adams

Abstract

The paper introduces Northern Studies in Canada through a series of vignettes. These vignettes include examples of teaching and research in the high Arctic (the McGill Axel Heiberg Expeditions) and in the subarctic (the McGill Subarctic Research Laboratory). They also include glimpses of teaching about and research on the North at a small university, Trent University, Peterborough, Ontario, and illustrations of the roles of the Association of Canadian Universities for Northern Studies. These examples are used as the basis for commentary on the idea of an international university of the Arctic.

Résumé

Le document présente les études nordiques au Canada à partir d'une série de vignettes, qui visent à donner une idées des activités d'enseignement et de recherche menées dans l'Extrême-Arctique (les expéditions Axel Heiberg de McGill) et dans les régions subarctiques (le laboratoire de recherche subarctique de McGill). Celles-ci donnent aussi un aperçu des activités d'enseignement et de recherche dans le Nord menées par une petite institution universitaire, en l'occurrence l'Université Trent de Peterborough, en Ontario, et illustrent le rôle de l'Association universitaire canadienne d'études nordiques. Ces exemples servent de point de départ aux commentaires formulés à propos du projet de création d'une université internationale de l'Arctique.

Preamble

I was asked to contribute some personal reflections on education and research in the North. I am delighted and honoured to do this. My experience includes teaching and research in subarctic and Arctic Canada and teaching and research involving the North at a university in southern Ontario. For a while, I was seconded from the university to the Association of Canadian Universities for Northern Studies. This was followed by my present work as a Member of Parliament who has taken a special interest in post secondary education and research, and the North.

As this book is part of an effort to develop a circumpolar university of the Arctic, I suspect that the editors invited me to contribute in part because of my early interest in a university in northern Canada. This included participation in the University of Canada North Concepts Conference, held in Inuvik in 1971. With this in mind, I thought that I would describe the main threads of my experience in northern teaching and research in rough chronological order, as they unravelled during my career, but dealing with the University of Canada North near the end. This will allow me to put the Concepts Conference into a perspective of the last twenty-five years.

The "threads" of my career are: the McGill Axel Heiberg Expeditions and later work on Axel Heiberg Island, N.W.T.; the McGill Subarctic Research Laboratory in Schefferville, northern Quebec and later work in that region; work in northern studies at Trent University, Peterborough; work with the Association of Canadian Universities for Northern Studies and my current sojourn in the Parliament of Canada. I will try to weave these into a story, which might

be of interest to those interested in a university of the Arctic.

Introduction

Someone once said that the Polar Continental Shelf Project (PCSP)[1], Canada's high Arctic aircraft support system for science, is our university of the Arctic. Professors and students from all parts of Canada and abroad, meet and mingle on PCSP aircraft and at the PCSP base in Resolute. This interaction continues through twice daily radio roundups when research camps exchange weather and other information through the PCSP operator. Requests for PCSP support are like applications for research grants so that the process of assessing them provides something of an overview of government and university research in high Arctic Canada. PCSP aircraft take researchers to high Arctic communities and bring people from those communities for hands-on research experience in field camps. However, over the years, the emphasis of PCSP has been on field science conducted from the South.

To some countries it might seem somewhat fanciful that an aircraft operation could serve as a university. But the fact is that Canada is a huge diverse country which does not have a national education system. Higher education is within the jurisdiction of the ten Provinces and two (soon to be three) Territories. Most Provinces have a number of universities and many colleges. The Yukon and Northwest Territories have college systems which spread throughout the northern communities. Most of these universities and colleges have some interest in teaching and research about the North. A similar point could be made for research in federal, and some provincial government departments.

It is not surprising then that, if people from these institutions work in the high Arctic, they should meet and interact under the aegis of the PCSP, the organization which carries them into the field.

In fact, of course, it is a mistake to think that all northern research and teaching is isolated in branches of single institutions—be they universities, colleges, government departments, institutes, centres or field stations. The reality is that these creative energies are captured and channelled at regional and national levels by all manner of organizations, associations, networks conferences etc. The PCSP can be thought of as simply being one of those.

My career includes involvement in single institutions and in networks of various types. This is normal for scholars in Canada whatever their teaching and research interests.

As a graduate student I began with the McGill Axel Heiberg Expeditions, my first post was as a resident Director of the McGill Subarctic Research Laboratory in northern Quebec, my second was Chair of Geography at Trent University in Peterborough. Later I was involved in various capacities, including Executive Director, with the Association of Canadian Universities for Northern Studies and now I am Member of Parliament for Peterborough.

I will describe each of these experiences and then discuss the University of Canada North and end with some thoughts on a circumpolar university.

Education and research—high Arctic Canada—the McGill Axel Heiberg Expeditions[2]

McGill University, Montreal, is a major player in northern studies in Canada today but in the 1950s and 60s it was pre-eminent. When I applied to the University of British Columbia and McGill for scholarships to do northern research, the former made me an offer but advised me to go to the latter. My initiation in the North was as a graduate student on the McGill Axel Heiberg Expeditions, led by my supervisor Fritz Muller.

Taking advantage of the newly completed aerial photo coverage of high Arctic Canada, Fritz Muller, beginning in 1959, organized a series of multidisciplinary field parties to Expedition Fjord on the west side of Axel Heiberg Island, N.W.T. The location was selected because of the opportunities it presented for in-depth research in a variety of academic disciplines. The idea was to reach beyond the more descriptive and extensive studies that had been normal for that part of the world. This was to be a detailed, long-term, study of a relatively small region which forms a sort of sample of Canada's more northerly Arctic islands.

It should not be thought that these expeditions were some sort of an academic shot

in the dark. In fact, McGill had played a very significant role in expeditions to, for example, Baffin Island and Ellesmere Island so that it had previous experience to draw on. The Arctic Institute of North America, which was at that time located on the McGill campus, launched a very successful expedition to Devon Island in the early sixties. Also the Geological Survey of Canada and others had conducted systematic research in the high Arctic islands and permanent weather stations had been established there a decade or so earlier. The PCSP, mentioned above, was already functioning in this region. The name "Polar Continental Shelf Project" reflects its origins in a major offshore high Arctic mapping and research program in the 1950s.

However, the McGill expeditions were remarkable in their day. In the first year, Muller had a diverse group of researchers and students, all working from air photos while colleagues were making the maps. Measurements and programs were begun in those days which continue today.

Fritz Muller, in designing his expeditions, deliberately emphasized their educational, as well as research, aspects. In his early reports and papers, he outlines his philosophy of including university and non-university researchers and graduate and undergraduate students to the benefit of all. He knew of course that it was quite usual to have students on government and university field parties in Canada but thought that the educational potential of his multi-disciplinary expeditions was greater.

Here again, however, the McGill Axel Heiberg expeditions were not a shot in the dark. Since 1954, McGill had maintained a teaching and research facility (the McGill Subarctic Research Laboratory) in a remote community in subarctic Quebec. When Muller began his expeditions, McGill students were already taking courses and conducting research, year round, at the Laboratory. But, more of this below as, in terms of my career, this is a thread which began to be spun later.

My own experience as a graduate student with the McGill Expeditions was quite remarkable. I was there to conduct my own research (on glaciers) but had experience to varying degrees with botanists, meteorologists, geologists, surveyors and a seismic crew. By modern standards, the undergraduate part of Fritz Muller's vision was a bit thin. I now believe that this was because McGill at that time, although very avant-garde in its graduate programs was rather conservative at the undergraduate level. Thus Muller did not have the best base for this part of his teaching program.

I left Axel Heiberg after completing my doctoral work and did not return again until 1981, following Fritz Muller's untimely death. I was invited to return to re-assess the situation in and around Expedition Fjord and, where possible, pick up where Muller left off.

An extraordinary amount of work had been done since Muller's first expedition. We were able to document this through the co-operative efforts of my university, Trent and McGill.[3] Since then, the McGill Station on Axel Heiberg Island and the rich research data base developed around Fritz Muller's efforts have provided the foundation for a steady flow of research projects involving not just McGill but many universities in Canada and abroad. They include Wilfrid Laurier, Waterloo, Queen's, McMaster, ETH, Zurich and Nevada, and many others, with steady underlying support from McGill and the PCSP. Many of these universities, like Trent, have strong undergraduate programs involving northern studies so that teaching (students working for credit) is now a common feature of work at Expedition Fjord, as Muller envisaged. Some of these universities, again like Trent, (of which more later) did not exist during the early years of the McGill Expeditions. Furthermore, Muller' s idea of long-term studies has borne some fruit. For example, the mass balance record of the White Glacier, the terminus of which is close to the McGill Station, is now the longest continuous record in the high Arctic, one of the longest in the world.[4]

When I returned to Axel Heiberg in the 1980s, I was very impressed by the change which had taken place among Canadian students during the previous 20 years. By then, our universities were producing many students with excellent research skills, and with great interest in and appreciation of the North. They were well equipped in terms of the field skills (e.g. cooking, skiing, climbing) and personal qualities (patience, calmness, etc.) necessary for work in remote locations. They were appreciably more interdisciplinary than we had been. They were also much better informed about the people of the North than we had been.

It will be noted that the University of Canada North Concepts Conference (1971) took place

roughly ten years after Fritz Muller began his expeditions and ten years before he died. The McGill Subarctic Research Laboratory, the focus of the next section, had been operating for 17 years in 1971.

Education and Research in Subarctic Canada—The McGill Subarctic Research Laboratory

As I have mentioned the McGill Subarctic Research Laboratory, in Schefferville, northern Quebec, was founded in 1954 so it pre-dates the Axel Heiberg Expeditions. However, in terms of my career, it post-dates them, as I was resident Director there in the mid 1960s. My association with "the Lab.," like my association with Axel Heiberg, continues to this day.

The railroad from the port of Sept Isles, on the St. Lawrence, to the iron mines of Knob Lake, later Schefferville, was an epic construction project of the early 1950s. When the railroad reached Schefferville, McGill was ready with its Subarctic Research Laboratory. This was conceived as a "permanent expedition at the head of steel." Ken Hare, who was Chair of Geography at McGill pointed out that the new mining town provided access to a huge and remarkably unknown territory. For a variety of reasons, the interior of the Quebec-Labrador peninsula, home and hunting grounds of the Naskapi and Montagnais peoples, had been largely bypassed by explorers and scientists. Hare's idea was to put a teaching and research facility near the middle of that peninsula.

The main financial basis of the Lab. was a small seismic contract and a large contract to run the aviation weather station for Schefferville. Each year, four graduate students were trained as weather observers and spent 12 months at the Lab. They lived on site, worked shifts around the clock as observers while taking McGill courses and conducting their own research projects. The Director who had status "equivalent to that of an Assistant Professor" at McGill, taught the courses and ran the Lab. Following their stay at the Lab., the (Master's) students spent an academic year at McGill, Montreal, writing theses and completing course work. Money earned at the Lab. generally carried them through their next school year.

Sometimes, the resident students were engaged in year-round thesis projects such as research involving local First Nations, studies of permafrost, lake ice or climate. More often, their theses had a summer fieldwork component (e.g. studies of glacial geomorphology or vegetation) which was conducted during the summer following their 12-month residency. These summer fieldwork students fanned out over the entire peninsula, from the Hudson Bay coast to the Atlantic, from Ungava Bay to the St. Lawrence.

In addition to weather observations, courses and thesis research, each resident student was responsible for one or more of the Lab.'s ongoing research projects. In my day, these included permafrost work in the iron mines, lake ice and snow cover studies and regional weather projects.

In addition to the Director, the permanent staff of the Lab. included a "Senior Weather Observer" who was, in fact, the technician in charge of most of the routine observational programs, including the seismic program. The remarkable success of the Lab. was due in large measure to the calibre of people attracted to this position. They almost all came with previous experience in the Arctic and (especially) the Antarctic.

Each summer, temporary staffing needs and the need for field assistants for graduate student and other field parties, brought considerable numbers of undergraduates to the Lab. Many of these benefited greatly from a very stimulating academic experience in the North. Many of them are still in Arctic work. However, as was the case on Axel Heiberg, the undergraduate side of the Lab. was relatively weak in the early days.

The McGill Subarctic Research Laboratory operated in this fashion from 1954 until the early 1970s. At that time, McGill lost the aviation weather contract. In 1983, the mining operation and most of the town of Schefferville closed down. As a result of these developments, the character of the Lab. began to change, with less emphasis on year-round activities. Like Axel Heiberg, it increasingly became a field station (now it is the McGill Subarctic Research Station), acting as a base for a wide variety of projects conducted by a considerable number of universities and other research organizations. Also, as transportation to the area became easier, it became the base for undergraduate field camps, in winter

and in summer, for universities across Canada and the United States. In this sense, formal teaching has continued to be a part of the Station's role.

Footnote No. 5 provides an entrée to the history and productivity of the Lab. and the Station. For example, the earlier volumes of the McGill Subarctic Research Papers contain academic papers and reports but also a great deal of information about the life of the resident students and staff. However, even the remarkably extensive literature about the Lab. and the huge body of literature produced as a result of research there, cannot do full justice to the impact of this remarkable institution on polar teaching and research. Those who worked there, especially the resident students and researchers, were imprinted for life. It *was* like being on a permanent expedition in an exciting new region, working in tough winter and summer conditions. Universities and research institutions, around the world have benefited from fires of interest and enthusiasm banked during years at the Lab. In some polar fields, the list of "Lab. graduates" reads like a *Who's Who.*

Even today, when transportation and communications have changed so dramatically so that the roles of places like the McGill Subarctic Research Laboratory are very different, I would urge anyone setting up or seeking to enhance a field station to study the Lab. as a model.

I find it interesting that the McGill Axel Heiberg Expeditions were succeeded by the McGill Field Station on Axel Heiberg Island which still functions today. And, the McGill Subarctic Research Laboratory was succeeded by a McGill field station in Schefferville, which also is still functioning. Fritz Muller, with his interdisciplinary "expeditions" and the founders of the McGill Lab. with their "expedition at the head of steel," were ahead of their times. They planted seeds, which have flourished to the great benefit of northern education and research in Canada.

When the definitive history of northern scholarship in Canada is written, no doubt the authors will discern all sorts of patterns and seminal influences. Let me give them some hints. Ken Hare, Chair of Geography and later Dean, at McGill is one our most distinguished northern scholars. He was the founder of the McGill Subarctic Research Laboratory and his peninsula-wide research projects gave it its first academic focus. He was also a key figure in the initiation of the McGill Axel Heiberg Expeditions. For the cognoscenti, I will also mention that my superior at McGill when I was Director of the Lab. was Pat Baird who was the leader of the Baffin Island Expeditions of the early 1950s which I mentioned in passing in my account of the Axel Heiberg work.

The Axel Heiberg and Schefferville operations were, of course, outposts of a university campus in southern Canada. A great deal of teaching and research in northern studies, naturally takes place on campuses in the southern part of the country. The next thread in my career deals with one of these universities, not McGill, but Trent University in Peterborough, Ontario.

Northern Studies on campuses in southern Canada—Trent University

I suppose that I should try to put the third of the Northern Studies threads of my career into perspective. As most Canadians live in southern Canada, it is not surprising that a great deal of our Northern Studies activity is in that part of the country. Today there are more than 80 universities in Canada as well as well-established colleges in the two Territories. I suspect that there is some Northern Studies activity at almost every university in the country and approximately half of them have a formal Northern Studies presence (this is addressed in the next section of this chapter).

Trent University, Peterborough, Ontario, was established in 1963. I arrived there, as founding Chair of Geography, in 1968. In 1963, the McGill Subarctic Research Laboratory had been operating for nine years and the McGill Axel Heiberg Expeditions were in their fourth year.

Trent was part of the great expansion in the number and size of universities across Canada. From the first, there was a strongly held vision of what this new university should be like. This vision included a strong emphasis on *undergraduate*_education and interdisciplinary programs and commitment to small size and small group teaching in a highly residential ("college") setting. By and large, Trent has succeeded in carrying through on these early objectives.

Interdisciplinary programs were not new in Canada. For example, Fritz Muller's graduate program in Glaciology, at McGill, involved Physics, Geology, Meteorology and Geography. But, Trent was a leader in the development of such programs at the undergraduate level. In this, it was on the leading edge of a wave which eventually reached all of our universities.

Three undergraduate programs have been of particular importance at Trent: Canadian Studies, Environmental and Resource Studies, and Native Studies. All of these, as well as many of the single discipline departments, have contributed to northern studies at the University. At the graduate level, Trent offers *only* interdisciplinary programs notably the Watershed Ecosystems Program and Canadian Heritage and Development Studies, both of which have been important vehicles for northern teaching and research.

Canadian Studies and Northern Studies at Trent, from the beginning, have been greatly advantaged by the steady support of the founder President of the University, T.H.B. Symons. Tom Symons, as the author of *To Know Ourselves,*[6] has been, and still is a major influence in the evolution of Canadian Studies in Canada and abroad. His seminal report included a substantial chapter on Northern Studies which he sees as in integral part of academic life in Canada. It will be seen in the next section, that Symons followed through on this interest in Northern Studies with an influential national report. The Canadian Studies Department at Trent has been active in teaching and research involving the North since its inception. It encourages students to study and conduct research in the North. Its program includes fieldtrips to northern Ontario.

The Environmental and Resource Studies Program at Trent has physical, biological and social science aspects. It too has incorporated Northern Studies into its teaching and research.

Native Studies were established at Trent in 1969. This was the first such program in Canada (there are now more than forty). From the first, aboriginal students were admitted from all over Canada, including students from the provincial Norths and the Territories. Today, Trent has formal links with Arctic College in the NWT. Its faculty offers courses and do research in the North.

My own department, Geography, was a more traditional single discipline department but, from the first, we worked in conjunction with the undergraduate and graduate interdisciplinary programs. And, in the first year of operation, we had more than fifty students in Northern Quebec and Labrador (based at the McGill Lab.), *in winter,* and we conducted the first of the field trips to northern Ontario which became annual events. With the flexibility offered by a new university, it was not difficult for me to offer an interdisciplinary snow and ice course which involved a biennial winter field trip to (where else ?) the McGill Lab. This course is still offered. As the Watershed Ecosystems Graduate Program developed, it became easier for us to send or take our students further afield. As a result, a steady flow of Trent students have made use of the McGill Station on Axel Heiberg Island, as well as the other field stations across the North. Field stations are mentioned again in the next section.

It should be remembered that Trent is still a tiny (4,000-student) university. I treat it here as a sort of microcosm of the way Northern Studies have evolved and are conducted in Canada. The focus for Northern Studies at Trent is the Northern Studies Committee, this is the meeting place for faculty and students, from all departments, with northern interests. This is the committee which, for example, screens northern research grants, encourages northern teaching across the campus and conducts an annual public lecture series in the North. This committee also administers the undergraduate *Emphasis in Northern and Polar Studies,* which can be added to degrees in any discipline if the student meets criteria which include experience in the North

All universities in the Association of Canadian Universities for Northern Studies, which is the topic of the next section of this chapter, have such a committee or a similar body. They are nodes in a cross-Canada network which has been a huge influence on the evolution of Northern Studies in this country. Lest the reader is losing patience, I would suggest that all these vignettes of northern studies in Canada do have a bearing on the matter of a University of the Arctic.

The Association of Canadian Universities for Northern Studies

In a huge, sparsely populated country like Canada, even in this electronic age, the "learned societies" and similar national academic organizations play a special role in focusing creative energies. The various activities of these organizations, such as conferences, journals, bibliographies, web sites and the like, foster contacts between scholars who live and work many flying hours apart. Most of these organizations are single-disciplinary in nature.

The Association of Canadian Universities for Northern Studies (ACUNS) is, as the name so cleverly indicates, the national organization of universities with Northern Studies interests. At present it has 32 member universities including Yukon and Aurora and Nunavut Colleges. Each of these institutions has at least a Northern Studies Committee (like Trent) although several have much more elaborate campus organizations like the Arctic Institute of North America at the University of Calgary, le Centre d'Etudes Nordiques at Laval, the Canadian Circumpolar Institute, University of Alberta or the Centre for Northern Studies (recently closed) at McGill. ACUNS is very much a multi-disciplinary organization embracing all those, on each campus, who are interested in the North.

In 1967, Government of Canada funding of university research in Northern Studies was formalized. Beginning in that year (the year before I went to Trent) universities receiving this funding sent representatives to more or less annual meetings to nail down their share of the cash and contribute to discussions about the research work involved. Each university in this research funding program was required to have a committee in place to administer the research grants. In 1977, these committees were translated into the campus committees which are the foundation of each institution's membership in ACUNS today. The original research grants program, which spawned ACUNS, still exists as the Northern Scientific Training Program (NSTP) which is administered by the federal Department of Indian and Northern Affairs. The funds are actually allocated by a committee which includes representatives of the main federal departments with interests in the North. It is difficult to overestimate the influence of the NSTP on teaching and student research in Northern Studies in Canada.[7]

Funds for NSTP and most ACUNS activities flowed through the Circumpolar and Scientific Affairs Directorate, Indian and Northern Affairs, Canada. Over many years, this Directorate performed sterling work stimulating and tracking Northern Studies work in the universities and in the federal government. Its publications are an excellent source of information on these matters. At present, this activity falls under the Sectoral Policy Division of the Northern Affairs Program of the same department.

The ACUNS thread of my career began at Trent, which was a founder member, but my most active involvement was from 1985 to 1987 when I was Executive Director, on part-time secondment from Trent. In the following paragraphs, I draw largely on these years. From the point of view of a tiny university like Trent, it is difficult to imagine Northern Studies in Canada without ACUNS or something like it. The large universities could perhaps have sustained Northern Studies programs alone but even they would have been much less productive in isolation.

Let me mention some of the activities of ACUNS in the 1985-87 period, as examples of more than 20 years of ACUNS activity.

We had annual meetings that were both administrative and academic in nature. We began the, still continuing, series of National Student Conferences on Northern Studies[8] which have brought together thousands of undergraduate and graduate students in all Northern Studies disciplines, from southern Canada and the North. These national conferences have spawned a variety of single-campus and regional student conferences. We maintained a scholarship program for students from northern and southern institutions. We produced directories, including a directory of northern field stations which was later expanded to include field stations in all circumpolar countries.[9] Another of our publications was a directory of Northern Studies scholars. We published a newsletter and a variety of other publications. We sponsored meetings and an important pamphlet on ethics in Northern Studies. And we sponsored conferences.

I will mention two of the conferences from these years to illustrate the work of ACUNS.

One was a conference[10] involving four of Canada's "subarctic universities," Lakehead and Laurentian in northern Ontario and Université du Québec en Abitibi-Témiscamingue and Université du Québec à Chicoutimi. These four member universities of ACUNS are located in regions which are subarctic by many measures. The purpose of the conference was to introduce them to each other so that they could share experiences in education and research. The topics of this conference explicitly and implicitly deal with the idea of a university of the Arctic which is the focus of this book. These are universities which operate in their own Norths and which conduct research and other programs elsewhere in Canada's North. Since that conference, the University of Northern British Columbia (UNBC) has been established in Prince George, B.C. It too would qualify as a "subarctic university."

The McGill Subarctic Research Laboratory represented university teaching and research in subarctic Canada in the 1950s, the establishment of universities in those regions did not begin until 1960 when Laurentian was founded in Sudbury, Ontario. This was followed by Lakehead (1965), in Ontario and Chicoutimi (1973) and Témiscamingue (1983), in Quebec. UNBC was not founded until 1990. From the point of view of this volume, it is interesting that the initiative to organize the Circumpolar Universities Association, one of the key organizations in efforts to establish an international Arctic university, came from Lakehead. The first Circumpolar Universities Cooperation Conference was held there. [11]

The other ACUNS conference that I will mention to illustrate ACUNS' activities is the *Conference on Education, Research, Information Systems and the North,* held in Yellowknife in 1986.[12]

The appendix to this chapter is an extended extract from the Preface of the Proceedings of that conference. It provides a sense of what ACUNS and the academic community it represents, were trying to do at that time.

This one conference had sections on libraries in northern communities, on-line information systems for northern data and publications, on Yukon and Arctic Colleges, on teacher education and distance education in the North. The conference proceedings contains a guide to all universities with Northern Studies programs, a guide to Native Studies programs, a guide to northern libraries, and a listing of northern newspapers and a map of northern field stations. The appendix describes the contents of the conference proceedings which were a reflection of Northern Studies in Canada at that time.

In some ways, I suppose, it is sad that I need to cite a long, boring extract like the appendix to give some sense of the scope of Northern Studies in Canada. When I was with ACUNS, I used an illustrated lecture on Canada's 50 or so northern field stations to do the same thing. I used work at the stations as an entrée to Northern Studies activity in the universities and other institutions using them. I came to enjoy the fact that the lecture was never the same as I was always in the position of presenting a small sample of a very large and wonderfully diverse whole.

Re-visiting the proceedings described in the appendix and remembering the conference and the elaborate preparations and follow-up associated with it, I am almost overwhelmed at what we were trying to do. As is often the case, activity before and after a conference is as important, or more so, than the conference itself. In fact, I now tend to the view that we over-reached ourselves so that the huge, in some ways encyclopaedic report must have been too daunting for its potential users. It might have been better to have held a number of separate conferences and produced a series of reports but then . . . !

The ACUNS itself, the conference in Yellowknife, the proceedings of the conference, including the references and lists which it contains*, were all examples of devices designed to give some shape and expression and some focus to the extraordinarily rich and diverse character of Northern Studies in Canada.* In other countries a handful of major institutions seem to be sufficiently dominant that *they* give expression and form to the national vision of Northern Studies. No doubt, creative teaching and research are going on in many institutions in those countries but the major institutions form the obvious first point of contact—the obvious gateways to the whole. This is not so in Canada—a state of affairs which is both our strength and our weakness. We try to compensate for the weakness part by means of the "devices" such as those mentioned here.

During this same period, I was involved in another attempt to provide some sort of a focus or centrepiece for Northern Studies in Canada. Following a report by T.H.B.Symons (who was mentioned in the previous section), the Canadian Polar Commission was established by Act of Parliament in 1991. This still exists today but its mandate is being reviewed. It would appear, at present, that it has not yet succeeded in meeting the expectations of its proponents.[13]

As I indicated earlier, national academic networks of all sorts are the norm for the universities and colleges of Canada. These networks are another way of providing expression to large, diverse, wholes. But, among those networks, I see ACUNS as being different for at least two reasons.

One difference arises from the fact that in this country "Northern Studies" is not simply an academic construct. It is an aspect of Canadian academic life which involves around a half of our huge country and the peoples who live there. This gives our Northern Studies scholars a special responsibility.

Also, ACUNS is different (although not unique) because it has always been a multidisciplinary organization. I have mentioned multidisciplinary and interdisciplinary studies at various points in this chapter. During my career, there has been a shift away from the single discipline approach to research and teaching. It is now quite natural to bring the resources of several disciplines together in research projects and teaching programs. ACUNS has been on the leading edge of this trend, and rightly so. It is simply no longer appropriate or efficient for, say, a physicist to work in the North in ignorance of the social, historical and environmental contexts. The same point can be made for, say, an historian working in the North.

Fritz Muller's multidisciplinary expeditions, the multi and interdisciplinary work of the McGill Subarctic Research Laboratory and the innovative interdisciplinary research and teaching programs of Trent University were on the right track and they can all be viewed as samples of work conducted by the members of ACUNS.

I am still very interested in the illusive goal of providing more focus and shape for Northern Studies in this huge and diverse country. I feel a bit like an artist trying to capture a sunset or the spirit and physical beauty of a person. Perhaps an international Arctic university would provide some external stimulus which would help us move toward this goal?

An M.P. and Northern Studies

The last "thread" in this career saga is my present role as a Member of the Parliament of Canada. My work as an M.P. involves me in the full range of constituency, national and international concerns of a federal parliamentarian. However I have tried to maintain my interest in northern teaching and research. In Northern Studies terms, this is perhaps the thinnest of my career threads but, potentially, as an M.P., I *should,* for various reasons, be able to influence Northern Studies in Canada.

Here in Canada, each Province and Territory has its own system of education. Thus our colleges and universities are provincial institutions. Nevertheless, the federal government has considerable influence over education, especially post-secondary education. For example, it transfers funds to the Provinces for higher education. It also, again for example, provides scholarships and loans for students. The federal presence is even stronger in research. For example, the federal government has its own research capacity and it funds faculty and student research through national research councils and direct grant programs.

The federal presence is particularly strong in Northern Studies. The federal government, directly and through the governments of the Yukon and NWT, has special responsibility for the North—the huge area of land and sea which lies north of the Provinces. It also has a special relationship with Canada's aboriginal peoples, including those who live in the Territories and provincial Norths. That is why it is the federal government which finances and otherwise supports the agencies and programs which I have mentioned as being important for Northern Studies including the Polar Continental Shelf Project, (the aircraft support system, you will remember) the Northern Scientific Training Program and the Association of Canadian Universities for Northern Studies. The federally-funded grants Councils are major funders of research in Canada. One of them, at least, had a special supplement for northern research which

it may be re-introducing.

Although the federal Department of Indian and Northern Affairs is the lead agency for many things northern, several other federal departments are major players in northern research and training. Examples (with some sample activities) are Natural Resources Canada (the Geological Survey of Canada, the PCSP and the national glacier program), Fisheries and Oceans Canada (ice breakers, marine and freshwater research institutes and programs) and Environment Canada (research institutes and programs, a network of field stations). The Department of Foreign Affairs and International Trade (DFAIT) leads in circumpolar and Antarctic affairs.

Let me give some examples of activities of the federal government concerning the North in which I have taken an interest since I was elected in 1993. In most of these I have played a very minor role but I mention them because they have implications for Northern Studies. Also they have some relevance for the development of a circumpolar university of the Arctic.

Perhaps the most important single development was the establishment in 1996 of the Arctic Council.[14] This is a permanent body whose membership includes the eight circumpolar nations and three indigenous peoples organizations, the Inuit Circumpolar Conference, The Saami Council and the Association of Indigenous Minorities of the North, Siberia and the Far East (of Russia). These organizations encompass most of the northern indigenous peoples. The Arctic Council was developed as a result of a Canadian initiative. It is a council of Ministers with a Chair and Secretariat which rotate among the nations concerned every two years. Canada is the present Chair.

Before the Council came into existence, we appointed our first Ambassador for Circumpolar Affairs, Mary Simon, who played a key role in the establishment of it. Mary Simon is a former two-term President of the Inuit Circumpolar Conference (ICC) which pioneered co-operative environmental and social initiatives in the North. From the point of view of this narrative, it is interesting that she is currently Chancellor of Trent University where she succeeded Ken Hare (who was mentioned earlier in this chapter).

The ICC is very much concerned with the Arctic Environmental Protection Strategy which has been one of the vehicles for bringing together northern nations for many years. The Arctic Council will continue to foster this Strategy and will develop a new program dealing with economic, social and cultural issues. Sustainable development is one of the foundations of the Council's work. I believe that the circumpolar nations have special global responsibilities in these areas—environmentally, the Arctic is an "early warning system" for the globe and the circumpolar Norths include the homelands of a remarkable number of indigenous peoples.

In Canada, devolution of power to the northern Territories continues apace. Legislation is proceeding through Parliament at present which will bring into existence the third Territory, Nunavut. This will be based on the heartland of Inuit culture in eastern Canada.

Although the Arctic Council is still young, I believe that I can already discern its influence on the federal government and through it, on Northern Studies in Canada. A simple example of this is the publication, by the Standing Committee on Foreign Affairs and International Trade, of the report *Canada and the Circumpolar World: Meeting the Challenges of Cooperation into the Twenty-First Century.*[15] This is a comprehensive report on a part of the globe which was diplomatically unfashionable until recently. A government response to this report (albeit not altogether positive!) is already available.

Similarly, in 1995, the Standing Committee on Environment and Sustainable Development produced a report on toxics legislation in Canada.[16] This, among other things, was notable for a substantial chapter on the North, which, in many respects, went beyond the legislative mandate of the Committee. I believe this reflected a renewed interest in the North among Committee members especially on the part of the Chair, Charles Caccia and the then Parliamentary Secretary to the Minister of the Environment, Clifford Lincoln. These two M.P.s play an active role on the international Standing Committee of Parliamentarians of the Arctic Regions which has been re-invigorated by the existence of the Arctic Council.

An example of the relevance of all this to this chapter is that both of the above reports made recommendations with respect to the importance of the PCSP and of polar science.

The Arctic Council explicitly recognizes that "the role that scientific cooperation, through the International Arctic Science Committee is playing in developing truly circumpolar co-operation."

I believe that these circumpolar developments augur well for teaching and research in the North and for an international university of the Arctic. Among other things, the Arctic Council provides a political umbrella for current and future educational and research activity. I am pleased that groups and individuals in Canada, including representatives of territorial and provincial and federal governments and non-governmental organizations have been involved in fleshing out the concept of such a university.

A University of the Arctic?

By this time, the reader may have forgotten the purpose of this anecdotal account of teaching and research in and about northern Canada. The idea was to give an impression of the extraordinary diversity of Northern Studies in Canada and of the decentralized system within which Northern Studies scholars and students operate, as a basis for comment about a circumpolar university. There is a well-established tradition in Canada of teaching and research in and about the North. The "system" concerned is not chaotic; in fact there are all sorts of patterns in it. However, there is no obvious centre piece or single point of contact. There are great strengths and weaknesses in an organization of this type. I now tend to the view that our system of Northern Studies is much stronger that most of us appreciate.

Take, for example, the Arctic Institute of North America (AINA) of the University of Calgary. This is a venerable institution whose activities have included the following: publication of a quality journal for more than 50 years, a substantial book/report/newsletter publication program, the operation of two major field stations in the North, teaching programs on campus and in the North and research grant and scholarship programs, the organization of a variety of research expeditions and projects in the north, an ongoing electronic information system (ASTIS) and a substantial polar library collection. In most countries such an institution could be the flagship around which Northern Studies scholars and students could congregate. Here in Canada, *in one sense,* AINA is the Northern Studies organization of one of the 32 universities and colleges of ACUNS. I believe that we have to maintain a national environment in which major centres, like AINA, can flourish while maintaining the diversity and quality of smaller centres scattered across Canada.

Those involved with the proposal for a University of Canada North (UCN) in the early 1970s had various objectives. Some especially, I think, those from the Yukon, saw it as a way of increasing opportunities for education in the North. Others saw it as a potential focus for northern research in Canada. Yet others saw it as some sort of a national symbol. I was interested in all of these objectives but now look back on the proposal as mainly being one more attempt to provide some focus for Northern Studies in Canada – a premature attempt.

Amanda Graham of Yukon College has published the best review and analysis of the UCN proposal.[17] In 1971, Richard Rohmer and others, took out letters patent for UCN. I attended the UCN Concepts Conference in Inuvik in 1972. You may recall that, at that stage in my career, I had been at Trent for four years, following work on Axel Heiberg Island and at the McGill Subarctic Research Laboratory. I never met Richard Rohmer (he did not attend the Conference) nor had I been involved in the development of the UCN idea. I was invited because of my known interest in teaching and research *in the North*. This interest had been expressed in part through correspondence with the then M.P. for Peterborough, Hugh Faulkner and with Jean Chrétien who is now our Prime Minister. Both of these parliamentarians served as Minister of Indian and Northern Affairs.

In my paper at the Conference, I did not particularly stress some of the themes of this chapter—teaching and research in the North and about the North. Instead I described the impact of a new university, like Trent, on its community and region. I talked about the economic and educational advantages which were being experienced in the Peterborough area as a result of the founding of Trent. I mentioned the significant national and international roles of even a small university. For example, Trent's Native Studies program was already drawing students from all over Canada. And, I tried to extend those

thoughts to the advantages, for the North and for Canada, of a university such as UCN.

It is interesting that despite my enormous enthusiasm for Northern Studies, I began to have doubts about UCN while flying to Inuvik. I travelled with Walter Currie, then Chair of Native Studies at Trent. Walter dressed in traditional native style before it was fashionable to do so. He was in the process of changing Trent's Native Studies Program from a fairly staid academic department into a vibrant centre for First Nations, Inuit and other undergraduates. He had some interesting ideas on the conservatism of universities!

At the Conference, I had several conversations with Nellie Cournoyea (then with the CBC, Inuvik, since then, among other things, Premier of the NWT). I also listened to a panel discussion involving George Erasmus (then with the Tree of Peace, Yellowknife, later President of the Dene Nation and Chief of the Assembly of First Nations.) They were interested in ideas of all kinds but they more or less convinced me that it was none of my business to impose a university of any sort on the peoples of the North. At that time, such an institution was not high on their list of priorities although basic education and training were.

Re-reading my correspondence of those days, it is interesting for me, now an M.P. in the Chretien government, that Jean Chretien reached that conclusion two or three years before I did.

Amanda Graham, in her thesis, makes the point that one of the positive outcomes of the UCN movement was the development of Yukon College and Arctic College. These now have campuses in communities all across northern Canada. And today, both colleges are valued members of ACUNS, and will be vital in Canada's contribution to an international Circumpolar University.

Today, northern students take college and university extension courses in the North. The Territorial governments assist students who wish to attend school in the South and southern universities have programs which bring students south or which send a student's professor North.

I have heard that northerners are beginning to think about a university in the North again.

It seems to me that the time is ripe for an international, circumpolar, university with a strong Canadian dimension. There are now well-established school and college systems in the Territories. We have universities in the provincial Norths and a large number of our universities are active in teaching and research in the North. There is a strong tradition of Northern Studies on our campuses and a reasonable national system for nurturing these studies. Even more important, Northern Canadians have developed their own research and education systems.

The Arctic Council, with its inclusive approach to northern peoples, provides a valuable framework for such a university. It allows each of the eight polar nations to become involved in the new institution.

Furthermore, I endorse the view of T.H.B. Symons who said "In my view, as scholars (or simply, if you wish, as citizens) in a *major* polar nation, we are morally obligated to contribute at the international polar level. We have knowledge and expertise which must be shared with other polar peoples. Similarly, as a small community of scholars struggling with the problems and opportunities of a great northern land, we must also *draw* on international scholarship, to the greatest extent possible, in order to properly fulfill our domestic and global polar obligations."[18]

I believe that such a university could have a healthy effect on education in the North and on Northern Studies in Canada. It would allow us to contribute more effectively to global polar research. It may well provide the sort of national focus that some of us have been seeking. Or, at least, it might encourage us to develop such a focus ourselves.

Acknowledgements

I am most grateful to Helen Burton for her tremendous help with this chapter. My thanks to Tom Symons, Tim Moore and Harald Finkler for their comments. All views expressed are, of course, mine.

Appendix

Extract from Yellowknife conference proceedings, 1986,[12] to illustrate activities of ACUNS.

Although, in one sense, this volume is the product of the annual meetings of the Association of Canadian Universities for Northern Studies (ACUNS) held in Yellowknife,

17-19 April 1986, the Contents represent much more than the Proceedings of one Conference. Discussions between ACUNS and groups in both Territories, about the roles of universities in the Canadian North, began long before the meetings were held and greatly affected the design and the nature of this volume. Negotiations with the Northern and Offshore Information Resources (NOIR) group and participation in their seminars resulted in the *Information Systems* conference which preceded and overlapped with the ACUNS meetings. These activities resulted in one of the major Sections herein. Correspondence with people who made presentations at Yellowknife and with others who could not be there resulted in additions to papers and additional papers which considerably enhance the value of this publication.

ACUNS viewed its Yellowknife meetings as an opportunity for a "mutual briefing" between its 35 members universities and the people of the North. The idea was that Northerners would be able to express their views on what the universities are doing and what they should be doing. At the same time, the universities would have an opportunity to make Northerners more aware of their work in the North and their motives for undertaking that work.

We think this exercise was very worthwhile. It is our impression that many people in the North agree. We hope that this will be the first step of many.

This volume is part of ACUNS' contribution to the exercise. It is specifically designed to be of use to Northerners as well as to others interested in Northern Studies. The last Section, for example, *is a guide to the universities in Canada which have a Northern Studies focus*. Realizing that the Canadian University "system" is even more confusing to those outside than it is for those inside, the Section begins with an overview of the national university scene. There follows *a guide to each university* which, in addition to information on Northern activities, contains basic information on such areas as *Native Studies, Distance Education, and Co-operative Programs* which might be of special interest to Northern residents. Wherever possible, in this Section and throughout the volume, *we have included "phone numbers* as well as addresses to facilitate communication with the individuals and organizations involved.

The first major Section is devoted to "Education and Research" in general. It contains articles by Northerners and others on various aspects of (mainly) pre-college education and research. It is in this Section that Northerners most clearly express their view of university activities in the North and in the South. The Section is also notable for a number of clear statements on the nature and objective of northern educational and research organizations. Here, as in the other Sections, a real effort has been made to ensure that each article contains enough information for an interested reader to begin to follow up points made in it.

The next Section represents the output of a workshop on "Higher Education and Training." It centred around the exciting work and plans of Arctic College and its relations with the universities. Much material which relates to Arctic College is also to be found in other Sections—for example under Teacher Education and Distance Education. As Bill Stapleton and Ole Nielsen, Co-Chairs of the Workshop, point out in the first article of the Section, there is a very strong feeling in the North that the universities and colleges of Canada, individually and, especially, collectively should do more to assist the developing education systems of the Territories. The list of recommendations from this Workshop presents an enormous challenge to a small organization such as ACUNS.

The third major Section of the volume is "Teacher Education in the North." This represents what is almost certainly the first real attempt to give an overview of the diverse Teacher Education programs which exist in Northern Canada (in the Territories and the northern parts of the Provinces). Beginning with circumpolar and national overviews, of which the contributions of the late Jack Cram form a very significant part, the Section contains material from Labrador, Quebec and both the eastern and western parts of the NWT. We hope that the juxtaposition of accounts of these different systems will be of use to those in these and other isolated regions which are developing teacher education programs.

The "Distance Education and the North" Section is also based on a special workshop at the Yellowknife meetings. It too is a remarkable overview of what is going on across the nation, plus one contribution from Alaska. It contains

articles on Distance Education in Newfoundland-Labrador, Ontario, Manitoba, Alberta and British Columbia and notes from Quebec. We hope that this overview of provincial activity will be of particular use to those in the Territories who are engaged in Distance Education work.

The Information "Systems and the North" Section has already been mentioned. Northern Studies (and the North) suffer from the lack of a basic information system. This is a problem for all circumpolar nations. The problem is that there is no easy way to pull together all the information on say, a particular region in the North. Nor is it easy to gather all relevant information on a single theme—say permafrost or caribou. In Canada, there are hundreds of "information systems" (ranging from libraries to on-line information services) which deal in part or entirely with "the North". The NOIR group (see article by Clarke and Goodwin) has begun to bring those responsible for these systems together. The Section contains accounts of the work of some thirty of these systems, more that a third of which are located in the North. We believe that *the coverage of Territorial libraries* alone is a unique contribution to the cause of an important northern information system for Canada. The libraries of the Territories are truly a "Pot of Written Gold" (see article by Abel) for Northerners, for the nation and the international Northern Studies community. ACUNS hopes that considerable strides will be made soon to link these and other information systems so that Northerners and others have full access to their contents.

Notes

1. A useful source of general information on the PCSP is: Michael Foster and Carol Marino, *The Polar Shelf—The Saga of Canada's Arctic Scientists* (Ottawa: NC Press Limited, 1986).

2. The *Axel Heiberg Research Reports,* McGill University, Montreal, form a substantial series. The best accounts of the origins of the expeditions can be found in: B.S. Muller, ed., *Axel Heiberg Island, Preliminary Report 1959-60,* (Montreal: McGill University, 1961); F. Muller et al., eds., *Preliminary Report 1961-62,* Axel Heiberg Reports (Montreal: McGill University, 1963); F. Muller, *The Living Arctic* (Methuen, Canada, 1981).

3. P. Adams, ed., *Field Research on Axel Heiberg Island, NWT, Canada* (Montreal: McGill University, 1987) contains a great deal of information on the Axel Heiberg work from 1959 to 1987. It includes a very complete bibliography and a list of groups (by C.S. L. Ommanney) which worked in Expedition Fjord during that period. In the context of the "threads" of this chapter, it is interesting that this report was published as the (last?) McGill Axel Heiberg Island Research Report, *Miscellaneous Paper No.2,* as *Occasional Paper No. 12,* Department of Geography, Trent University and as *McGill Subarctic Research Paper No. 41!*

4. For the glacier record see: J.C. Cogley et al., *Mass Balance, Axel Heiberg Island Glaciers, 1960-1991, a Re-Assessment and Discussion* NHRI Science Reports No. 3 (Saskatoon: NHRI Science Reports, 1995); W.P. Adams et al, "A small glacier as an index of regional mass balance: Baby Glacier, Axel Heiberg Island, 1959-92," *Geografiska Annaler* 80A (1998) 37-50. J.C. Cogley and W.P. Adams, "Mass balance of small glaciers, 1961-1990," *Journal of Glaciology* (in press).

5. The *McGill Subarctic Research Papers* (MSARP) are an ongoing series of close to 50 volumes. P. Adams, ed., *Ten Years of Field Research in Labrador-Ungava,* MSARP No. 20 (1966) provides something of a perspective on the Lab. in the earlier years. Most of the MSARP's before and some after this period contain glimpses of life at the Lab. Others which might be of particular interest in the present context are MSARP's Nos. 26, 28 and 39.

6. T.H.B. Symons, *To Know Ourselves: the Report of the Commission on Canadian Studies*, 2 vols. (Ottawa: Association of Universities and Colleges of Canada, 1975).

7. The founder and first Executive Director of ACUNS was Trevor Lloyd, Professor Emeritus at McGill. His account of the origins of ACUNS is "Whence came ACUNS?" in *Polar Science, Technology and Information,* ed. P. Adams and F. Duerden (Ottawa: ACUNS, 1988), 5-15. For the history of NSTP see: G. Rowley, *Northern Studies, An Historical Perspective of the Northern Scientific Training Program* (Ottawa: Circumpolar and Scientific Affairs Directorate, Indian and Northern Affairs Canada, 1988).

8. The proceedings of ACUNS' first National Student Conference on Northern Studies contains a wonderful sample of student involvement in Northern Studies at that time. Also, the Preface contains tables, maps and commentary on the status of Northern Studies in Canada, including the allocation of NSTP funds among the universities that year. The reference is: P. Adams and P. Johnston, eds., *Student Research in Canada's North* (Ottawa: ACUNS, Ottawa, 1988).

9. P.Adams, C. Slaughter and S. Bigras, eds., *Directory of Circumpolar Research Stations: Alaska, Canada, Finland, Greenland/ Denmark, Iceland, Norway, Svalbard, Russia, Sweden, 1993-94,* (1994).

10. P. Adams and D. Parker, eds., *Canada's Subarctic Universities* (Ottawa: ACUNS, 1987); again, the Preface provides some context.

11. Geof. Weller served as President of Lakehead and UNBC. His papers on universities of the North are a valuable source of information. The following and their references are an entrée to Weller's work: G.R. Weller, "Universities and the circumpolar north: a comparative analysis," in *Canada's Subarctic Universities,* ed. P.Adams and D.Parker (Ottawa: ACUNS, 1987), 3-16; idem, "Universities, politics and development in Northern Ontario and Northern Sweden," ibid., 17-34; idem, "UNBC and the development of northern British Columbia," in *The Changing Circumpolar North: Opportunities for Academic Development,* ed. L. Heininen, 3d Circumpolar Universities Cooperation Conference, Arctic Centre Publications No. 6 (Rovaniemi, Finland: Arctic Centre, University of Lapland, 1994), 214-226.

12. P. Adams, ed., *Education, Research, Information Systems and the North* (Ottawa: ACUNS, 1987).

13. For background on the Canadian Polar Commission see: F. Roots et al. *Canada and Polar Science,* report submitted to the Minister of Indian and Northern Affairs, Canada (1987); T.H.B. Symons, *The Shield of Achilles, The Report of the Canadian Polar Research Commission* (Ottawa: Circumpolar and Scientific Affairs Directorate, Department of Indian and Northern Affairs, 1988); P. Adams, *Canada and Polar Science Re-visited,* report for the Canadian Polar Commission (Ottawa: 1992).

14. For information on the Arctic Council, contact the Department of Foreign Affairs and International Trade, Canada. The website is as follows: http//www.dfait-maeci.gc.ca/%7Earctc/menu.htm

15. *Canada and the Circumpolar World: Meeting the Challenges of Cooperation into the 21st Centur—Report of the Standing Committee on Foreign Affairs and International Trade,* B. Graham, Chairman (1997). The official response to this report is: *Government of Canada, Response to the Report of the Standing Committee on Foreign Affairs and International Trade* (undated, but tabled in 1998).

16. *It's About Our Health! Towards Pollution Prevention, CEPA Revisited—Report of the House of Commons Standing Committee on Environment and Sustainable Development*, Charles Caccia, Chairman (1995).

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7. The Association of Canadian Universities for Northern Studies

Peter Johnson

The Association of Canadian Universities for Northern Studies (ACUNS), founded in 1978, currently has a membership of twenty-nine universities and the three northern colleges (Yukon College, Aurora College and Nunavut Arctic College). At the time of its incorporation its mission was:

- to represent the interests of member universities and colleges by encouraging government and private sector policies nd practices that support northern scholarship;
- to initiate programs which will increase public awareness of polar science and r esearch in Canada;
- to establish mechanisms through which resources can be allocated to member universities and colleges so as to increase knowledge of the North and ensure an appropriate supply of trained northern researchers, managers, and educators;
- to enhance opportunities for northern people, particularly indigenous northerners, to become leaders and promoters of excellence in education and research matters important to the North;
- to facilitate through conferences, seminars, research and other methods, the understanding and resolution of northern issues;
- to co-operate with other public, private, and international organizations concerned with the advancement, application, and impact of northern scholarship.

In the 1980s the Association, headed by a President and an Executive Director, promoted a series of workshops and conferences, and was active in lobbying on behalf of northern science. In the last five years ACUNS has seen a reduction in its core funding from the Government of Canada during the Program Review process and subsequent budget restraints. The position of Executive Director was eliminated and activities were scaled down to reflect the volunteer president position. In this its twentieth anniversary year ACUNS is pursuing with renewed vigour a number of objectives following a strategic plan review in 1997.

The major immediate concerns of the Association are the viability of northern science in Canada, and the training of the next generation of northern scientists. Both of these have been seriously affected by a number of fiscal and policy trends over the last few years. A second major objective is to obtain a renewed commitment to northern science for the next century.

Canada does not have a national northern science and technology policy. It is a void which has been apparent since the early 1980s and which, although it was recognised by senior science advisors at that time, has never been rectified or even seriously addressed. Two years ago discussions started within the Federal Government on a Northern Science and Technology Strategy. A document on *"A Federal Northern Science and Technology Strategy"* was circulated within government and, based on comments received, a workshop on the *"Coordination of Federal Northern Science and Technology"* was held in February 1998. ACUNS submittted a position paper, *"A National Northern Science and Technology Strategy",* for this meeting. In this paper ACUNS pointed out Canada's weak position in comparison with the Arctic research effort of a number of other circumpolar countries, and argued for a national policy. The document was also circulated widely in the university and government communities and has been partly responsible for increased level of discussion at present. The paper also presented an argument on the critical state of university based northern science, northern science training, and science logistics. It drew strong **c**omparisons

with the fact that the Aurora Research Institute in Inuvik and the Nunavut Research Institute in Iqaluit had developed in depth research agendas. It also pointed out the commitments being made by other nations to research in the Arctic.

The final report of the *Coordination of Federal Northern Science and Technology* workshop developed ten themes.

1. Establish national direction and a vision for northern S&T.
2. Enhance federal support for logistical services
3. Improve information sharing.
4. Establish overarching coordination mechanisms.
5. Improve participation of northerners.
6. Enhance connections with universities and other northern researchers.
7. Improve access to federal data.
8. Improve northern science capacity.
9. Build consitituencies for northern S&T.
10. Participate and draw benefits from international activities.

Many of the conclusions in these themes are precisely in line with ACUNS position on northern science. At the same time that this workshop report was appearing the Government of Canada was responding to the widely-acclaimed report *Canada and the Circumpolar World* from the Standing Committee on Foreign Affairs and International Trade. This report made forty-nine very specific recommendations, but the response very weakly supported many of those affecting science and was not encouraging about the search for greater vision and commitment in the near future. The response is totally opposite to the recommendations of the Government's own workshop.

The future of the logistics program

The single most critical issue at present in Canadian northern science is the future of the logistics program. At a time when the majority of the circumpolar nations have been reinforcing their logistics capability the Polar Continental Shelf Project (PCSP), Canada's widely-acclaimed program, has been caught in the downsizing process within Government and the reduced commitment to northern science as we move towards the creation of two new territories. The result is a rapidly declining capacity to support the fundamental research programmes of university researchers. Most other projects operate on a cost recovery basis, forcing all government departments outside Natural Resources Canada (the current home of PCSP), to divert resources to logistics if they wish to persue a northern science program. Some judicious use of resources by PCSP has eased the decline to date but the field season of 1999 will be a critical year for university research. Reliance on a logistics system which is cost recovery-based makes planning difficult as department budgets are not set until just a few months prior to the commencement of field operations.

The same Program Review process which has had an impact on PCSP has also affected science funding budgets with the reduction in the budgets of the granting councils over the last half a decade. The effect of this on northern science has been compounded by the lack of specific northern science programs in any of the granting councils. The northern supplement programme of the Natural Sciences and Engineering Research Council, which recognised the additional costs of research in the north, was discontinued as budget pressures increased early in the decade. In the universities young faculty members are not commiting to northern science as productivity pressures increase for tenure and promotion. Mike Robinson, the Executive Director of the Arctic Institute of North America, has also mentioned this in a recent commentary in *Arctic*. So funding constraints, logistics difficulties, and career pressures have all combined to reduce northern Science. In its most recent budget the Government "*proudly*" announced a return of the granting council funds to pre-Program Review levels, a level which was totally inadequate even five years ago.

Northern communities

Additionally in Canada the Indigenous peoples of the north, through land claims agreements and through the devolution of the Northwest Territories have gained, through the licensing procedures, a large amount of control on the

research conducted. Many abuses of the research process had been reported over the years, particularly in the communities, and the negotiation of the return of territorial rights of the indigenous people enabled them to gain control of the research being conducted in their communities. All scientists, from the anthropologists in the villages to the physical scientists on the ice caps, now have to conform to rigorous application and communication procedures. Most are more than willing to adhere to the requirements, but some physical and natural scientists have had difficulty adapting to the degree of control which is now exerted by northern communities.

There is slowly emerging a balance between the legitimate aspirations of the Indigenous communities and the maintenance of the integrity of science through the development of dialogue and the involvement of communities in research. The northern perception is perhaps best summed up by a comment I heard a few months ago when a member of an indigenous group complained about the reference to the Arctic as a "global change laboratory." The term laboratory for his homeland made him feel, once again, like a specimen to be studied. ACUNS has been, and will continue to be, involved in discussions on the licencing procedures, advocating streamlining of the process, promoting integration of indigenous people into the research process, and developing communication channels. Communication about research and the results of research is seen by the people of the north as the most critical issue in northern science.

The licensing procedure has had a negative impact on university science in the north. It has been perceived as a barrier to research and it will take time for both the northern people and the research scientist to feel completely comfortable with the new relationships. An integral part of the licensing procedure is communication, both during the planning stage and after completion, in the communities. This requirement obviously increases costs by multiplying the number of visits to communities, a reality that the funding agencies will have to come to grips with in the immediate future.

In 1982 ACUNS published its ethical principles for the conduct of research in the north. These became the guidelines for all research,but particularly for the social sciences and the humanities. 1998 sees the publishing of an update edition of the principles. The revision process was spearheaded by Amanda Graham from Yukon College and Jim McDonald from the University of Northern British Columbia. They will attest to the diversity of opinion within the academic community after the extensive process that was required for the revision to be written and approved. The new document was officially released at the *Circumpolar Conference on Sustainable Development* in Whitehorse, May 12-14 1998.

Trends for northern science

What trends does ACUNS see for northern science in the next decade and beyond? First, we feel it is essential to develop a national northern science policy, including both fundamental science and applied science and technology. A vision of northern science will permit the development of strategies to attain the goals laid down. In order to move ahead with both a university and a government science agenda priorities will have to be established. In the United States a strong vision has been established and resources granted to the National Science Foundation to persue a number of goals in Arctic Science. With a commitment to northern science backed by financial resources for the research granting councils (Natural Sciences and Engineering Research Council, Social Sciences and Humanities Research Council, and Medical Research Council) and for logistics (in a refocused, and arms' length Polar Continental Shelf Project), university research and the training of the next generation of northern scientists could proceed with more confidence. At present, confidence is so low that many scientists are refusing to involve graduate students because of doubts about being able to complete projects, because there are no career prospects within academia or government, and even where university positions are available the pressures of requirements for promotion make a northern focus difficult.

Northern science training requires a great amount of resources. The Northern Scientific Training Program (NSTP) of the Department of Indian Affairs and Northern Development

has been a critical element in getting students into the field. ACUNS supports this program very strongly and will be endeavouring to persuade the Government to commit more resources as the Federal balanced budget situation continues. NSTP however presumes that the supervisors of students are themselves receiving adequate funding. Our objectives are to push for more recognition in the granting councils of the special needs of northern science, to have special programs for northern science, and to appreciate the additional logistics and communications costs involved in northern science. In the social sciences and humanities in particular it is necessary to establish contact with the community in advance of the project, visit the community to discuss the research proposed and integrate the needs of the community into the research plan, allow for the completion of the research, and then return to the community to discuss the research findings. Some communities will also hold the right to withdraw consent for the research to be released. For a graduate student looking to complete a masters degree in two years or a doctorate in three years this is a serious challenge.

ACUNS will continue to promote dialogue between students through the National Student Conferences on Northern Studies and through support of regional student conferences. The national conferences are held every three years with the sponsorship of the Department of Indian Affairs and Northern Development. They provide a showcase for the excellence of students working in the north and recently have been a testament to the dedication of some students despite the constraints. The Fifth National Students Conference, held in Vancouver in November 1997, was the first to move from Ottawa and was hosted by Simon Fraser University. For the year 2000 we have accepted an invitation from Université Laval in Québec City to host the conference. The Groupe d'études Inuit et circumpolaires and the Centre d'études nordiques will be joint hosts of the conference.

An additional challenge to training is that courses and programs are widely dispersed in Canadian universities. There are notable centres of expertise, for example at Université Laval with the Centre d'études nordiques and the Groupe d'études inuit et circumpolaires, and at the University of Calgary with the Arctic Institute of North America, amongst others. At other Universities there are northern foci in some departments, but it is difficult to obtain a comprehensive multi-disciplinary training with a circumpolar perspective. It is for this reason that we are participating in the feasibility study for a circumpolar University of the Arctic. Although the main rationale for the University is to provide training for northern people in their own communities and from a truly northern perspective it will also permit southern students to obtain that perspective either in courses which they can credit to their programs in a southern university or as full participants in University of the Arctic programs. The University of the Arctic provides the opportunity to develop a new university tradition, breaking away from the "discipline" constraints of the western university tradition. The ideas of issue oriented programmes which will not become entrenched as permanent programmes of the University, timetabling and structure in tune with the cultures of northern indigenous peoples and other northern residents, and the circumpolar focus are challenging but exciting elements of the concept. It is being proposed that the issues will be developed and reviewed in consultation with all northern organisations and institutions. The Arctic Council, which has been a stimulus to the initial feasibility study, will be a major part of this consultation process.

Field courses and participation in ongoing research programmes are one of the most effective mechanisms for developing commitment to northern studies amongst students. ACUNS is commited to preserving existing opportunities and promoting new programmes. I will refer here to the activities centred on one northern Canadian field stations the Kluane Lake Research Station of the Arctic Insititute of North America, with which I am most familiar. Over the twenty-nine years that I have been conducting research from the station there have been many large and small research programmes based at the station. Hundreds of masters and doctoral students have completed their studies assisted by just as many undergraduates. Programmes in Biology, Botany, Geophysics, Geology, Geomorphology, Medicine, Meteorology and Climatology, Glaciology and Zoology have produced the expertise that has formed the core of Yukon Territory Government departments such as

Natural Resources. In addition, undergraduate field courses have provided further access to training. In the last few years field courses from the University of British Columbia, the University of Calgary, the University of Toronto and the University of Ottawa have been based at the station.

We perceive that one of the ways in which northern science can be promoted in Canada is through partnerships between the granting councils and other agencies and institutions. One mechanism which might be particularly attractive is partnerships between SSHRC and First Nations communities. The Royal Commission on Aboriginal Peoples, although not specifically dealing with research, implies a vast domain in which research needs may be identified by Indigenous peoples. Nunavut Research Institute and Aurora Research Institute have both identified extensive research agendas. As a consequence there is an opportunity for partnerships for research and Dr. Marc Renaud, President of SSHRC, has expressed interest in such partnerships. Similarly partnerships between NSERC and SSHRC on integrated research programs, which are becoming more important in northern research, might be promoted.

There has been a trend over the last few years towards big science projects, to which the natural and physical sciences lend themselves more than the social sciences. There is some feeling, however, that small-scale fundamental science must not be ignored. Many of these projects are the building blocks for the big science and the big expeditions and they are very cost-effective. The signals of climate change in the Canadian Arctic were first recognised by smaller projects on Ellesmere Island and the Mackenzie Delta. We will need to enter into dialogue with the Indigenous Peoples to explain the nature and importance of these projects and how they might eventually contribute to sustainability in the global perspective as well as in the circumpolar perspective.

8. Northern environments and peoples: reflections on intercultural and transnational education

Ludger Müller-Wille

The following deliberations on "Teaching the North," revised and expanded from an earlier publication[1], are personal reflections on my involvement in Northern Studies, research and teaching since the mid-1960s, beginning as a young student interested in delving into languages and indulging in cultures, which led to learning, studying, conducting research and teaching on and in the circumpolar north, and in the end being able to establish a career that supported these interests. The exploration of intercultural and transnational education was part of my upbringing, embracing a strong philosophical assumption of equal rights and opportunities with respect to culture, language and livelihood. In going "abroad" from home (Germany), I fully understood that the studying of other areas and cultures is not only seen as "an expansion of one's own horizon," that fosters cross-cultural understanding, but that the ones who are studied and taught about outside their own context also perceive and experience it as an intrusion. Thus, the promotion of "area studies" as a generic for "Northern Studies" is quite often a tightrope walk as one tries to balance all sides all around in order to achieve justice to the cause, which is namely to enhance mutual respect among peoples, nations, and states in the rapid process of globalization. This process clearly has an impact on how contemporary education is perceived of and how it can, as before, contribute to the shaping of identity based in the local context of culture and language.

The "Northern Studies Programs" discussed below were in most cases a result of external efforts and strategies to raise the level of awareness and knowledge of areas and their peoples who were outside their reach. In reflecting on the developments during the last three decades, it is my strong belief that such "focused study programs" are part and parcel of the empowerment of peoples for determining their educational needs and demands in whatever way they choose to. Thus, "Northern Studies programs" that have been developed by external interests need to revise their rationale in the changing context of the circumpolar north, as indeed has happened in some instances that I will explain below. Educational planners and strategists who work under the contemporary umbrella of international political regimes, such as the Arctic Council, have an opportunity to weigh the balance by progressing along these lines. Various attempts have been tried, and it needs to be seen which is the appropriate avenue for local northerners to engage fully in such constructs as, e.g. the University of the Arctic, which focuses on broad issues linking environment, development and climate change, while, however, always being in danger of neglecting cultural and linguistic diversity.[2]

Concept and scope of Area Studies Programs

Since the early 1970s, an increasing number of North American and European universities and colleges have established formal study programs focusing on the broad field of "Northern Studies," with other labels such as "circumpolar," "polar," or "Arctic studies," being used as well. These programs cater mainly to the introductory (senior undergraduate) level, with some exceptions that also aim at graduate training and studies. These educational developments are clearly the outgrowth of long-term extensive research and studies in the circumpolar regions, within the various polar-rim states and other non-polar countries with special interests in northern areas. Polar (Arctic) research and science did evolve in disciplines that defined their professional identities mainly during the second half of the

19th century, in particular around the activities of the First International Polar Year in 1882-83. In these emerging disciplines, students were guided by their mentors in the pursuit of academic degrees concentrating on specific aspects of polar environments. In this context, teaching was kept to methodologies and theories and their applications in these highly specialized fields.

After active research, usually based on field work in northern regions, the contemporary teaching of Northern Studies has drawn from the various concepts of "area studies," to use a generic term. These concepts had been developed particularly in cultural anthropology (ethnology) and human geography, differentiating areas and their societies on the basis of specific characteristics. Concepts such as "Kulturkreislehre" (culture area studies) and "Landeskunde," or "Länderkunde" (regional geography), emerging in German-speaking countries early in this century, and "Area Studies," as part of the liberal arts college curriculum in the USA since the 1940s, have had a considerable influence on the emergence of study programs that focus on regions and their cultures.

These study programs were to enhance global (international) understanding and knowledge by their inclusion in national educational curricula. On the other hand, they also have become a tool for promoting one's own image through foreign cultural policies abroad. An example is the rapidly expanding creation of "Canadian Studies" internationally on a global scale, and financed by the Department of External Affairs of the Government of Canada since the early 1970s, to shape Canada's perception by other nations for, among other purposes, the expected influence on Canadian unity. There are institutions, which have similar functions, in other countries that can be mentioned, such as the Goethe-Institut, America House, Institut français, British Council and so on.

In the setting of the 1970s and into the 1990s, the reference for Northern Studies became the interdisciplinary and/or multidisciplinary framework, which required the integration of different subjects with their particular concepts, terminologies, theories and approaches (e.g. similar to the structure of Environmental Studies, whose development has occurred more or less simultaneously).

The various Northern Studies programs that have been tried and/or still exist certainly express different purposes and goals. However, it seems that the following elements are at the core of such programs:

(a) to focus the attention on the circumpolar north, with its particular natural environments and human conditions;

(b) to provide better knowledge and understanding of on-going processes in countries that combine both northern and "non-northern" regions, i. e. reacting to needs and demands for education and training; and

(c) to contribute to the continuation and enhancement of the inherent knowledge of northern aboriginal peoples.

These elements can mainly be found in programs established in universities and colleges located outside the circumpolar north. Educational institutions that have recently been founded in the north have taken a more holistic and comprehensive approach, which stresses the provision of a broad educational base for the local population. In fact, in that context, it is no longer important to separate Northern Studies from other programs, since it is apparent and pervasive in all programs.

The success of Northern Studies programs: a personal view

In North America and particularly at McGill University, the foundation of the bi-national, American-Canadian Arctic Institute of North America in 1945, located at McGill University between 1945 and 1976 and since then at the University of Calgary, created a major initiative to expand, encourage and support research, especially by graduate students in northern, i.e. arctic and subarctic, North America. At McGill University the interest in northern field work has mainly been centered in the Department of Geography and led to the establishment of the McGill Subarctic Research Station at Schefferville in 1954 and which, to this day, continues to be an important research and training base in the physical sciences. Since the early 1960s the field station on Axel Heiberg Island in the High Arctic complemented these efforts and created a stimulating research atmosphere for northern science at McGill University.

In January 1977 I obtained an appointment in the Department of Geography at McGill University in northern human geography/ cultural anthropology including the task of developing the teaching of Northern Studies. Since then I have become involved in a number of initiatives, planning and developing various types of "Northern Studies Programs" at McGill University and internationally (Alaska and Finland). These various programs and initiatives and their success are described below. Next to my commitment to these educational efforts, I have taught, conducted research programs, and supervised students in geography (and cultural anthropology) on a regular basis. All of my graduate students focused their theses on northern issues and topics without having taken, except for one student, a study program in Northern Studies specifically—an indication that disciplinary territories and boundaries are still much alive, despite the efforts to expand interdisciplinarity.

The Kevo-Schefferville Subarctic Exchange Program (1978-79)

My first formal engagement in teaching "Northern Studies" to university students began in 1977, when I proposed a scientific-cultural exchange program to Paavo Kallio, the late Professor of Botany at Turku, that would utilize the existing northern research stations of Turku University at Kevo and of McGill University at Schefferville. On the Canadian side I was joined by John E. Lewis, climatologist at McGill University, in organizing this unique project combining natural and social sciences.[3] After considerable preparation and fundraising, the program was held in Canada in 1978 and in Finland in 1979.

The goals of this exchange program were developed with the intent of bringing together scientists and students from two northern polar countries—Canada and Finland—in order to enhance a better understanding of each other's situation related to environmental and socio-economic conditions in subarctic regions. During the summer of 1978, eleven Finnish researchers and post-graduate students conducted extensive botanical studies at and around Schefferville where they cooperated with Canadian students. During Winter 1979, fifteen Canadian and American students took courses with John E. Lewis and myself in geography, anthropology and Finnish language at McGill University in preparation for their six-week stay at Kevo from July to September, 1979, when they pursued individual research projects that were designed in consultation with the local municipality and whose results were returned to the community of Utsjoki.[4] In addition, the group participated in several excursions throughout northern Fenno-Scandia and southern Finland, with a stay at Turku University at the end of the visit.

The Canadian component of this exchange program stressed both academic and cultural experiences, which was achieved by involving the students with the local community through projects, voluntary work (e.g. in the hay harvest), open houses and public performances exposing the students to the bi-cultural nature of a Sámi-Finnish village in northernmost Finland. The resulting research reports were published and distributed widely in the community.[5] Afterwards several of the students continued with their northern interests, mainly in the environmental field; some even went back to Finland for a year of studies, keeping in touch with the contacts they had made during the first stay.

Although connections between the institutions have been maintained on a personal level, no further formal exchanges, although contemplated, have been tried. Still in retrospect people agree that the exchange was a success that stimulated young students and researchers in their interests in the north and other broader issues.

The McGill Graduate Diploma in Northern Studies (1979-82)

In 1973, McGill's Centre for Northern Studies and Research (closed in 1996) was established in the Faculty of Graduate Studies and Research. In the late 1970s and early 1980s, as one of its members, I was part of the creation, teaching and administering of the first formal "Northern Studies program" at a Canadian university, the "Graduate Diploma in Northern Studies," a one-year, 30-credit program that consisted of newly-developed courses given by instructors drawn

from many different departments and faculties on a voluntary basis. The program was established to meet real and perceived demands at the height of discussions around northern development projects (the Mackenzie Oil and Gas Pipeline, the James Bay Hydroelectric Development) and Native Land Claims throughout Canada.

This volatile atmosphere around national social and enviornmental issues had spurred the interests of students and people who saw careers developing around northern topics. However, the program was discontinued after only three years (1979-82). It had become apparent that the demand for such a program, aimed at administrators, teachers, etc., was rather limited (4 to 6 students took the program at any one time during this period) and that the resources required to cover the vast topics in Northern Studies appropriately did not relate to the small number of students finishing the graduate diploma. Still a follow-up survey confirmed that, in fact, all students who took the program did end up in fields related to the north, using the diploma as a base to built their careers. No efforts have since been made in the university to revive this particular program.

The McGill Inter-Faculty Minor in Northern Studies (1988-97)

By the mid-1980s, conditions for the creation of new undergraduate study programs had changed in the Faculties of Arts and Science at McGill University. A series of Minor programs was established to respond to the interests of students to allow for qualitative differentiation in their studies and thus transcripts to make their acquired skills more apparent to prospective employers. Thus the inclusion and identification of a Minor program next to the Major in the transcript was a step in that direction. At McGill University, such Minors focused on the geography, history, cultures, languages, politics and economies of specific regions such as the Middle or Far East, Latin America, Canada, Québec, etc., or on particular concerns and issues such as Women's Studies, Ethics, History of Science, or Environmental Studies, and others.

By the late-1980s, a number of staff changes in the Departments of Anthropology and Geography resulted in a high concentration of faculty with research commitments to and courses on the circumpolar north. Based on this newly-obtained strength in both research and teaching, I coordinated the efforts to establish a curriculum for a Minor in Northern Studies with a minimum of resources, i.e. no budget. The Minor in Northern Studies, put together by drawing from existing courses and creating only two new courses (seminar and field exercise), was approved as an inter-faculty Minor program in Arts and Science and began formally in the fall of 1988.

The McGill Minor in Northern Studies was part of a number of Minor programs that were offered to students next to their Major. In the required 90-credit program for a 3-year Bachelor's degree, a student would typically need 54 to 60 credits towards the Major, allowing an additional 18 to 24 credits for a Minor with the remainder being filled by elective courses. The Minor in Northern Studies required 8 courses or 24 credits taken in the Faculties of Arts and Science. The range of courses gave the students considerable flexibility to pursue their individual interests, including the opportunities to conduct studies and research in northern locations. The courses were divided into four required courses including specific Northern Studies courses with field work, and four optional courses to be selected from a vast range of listings from different departments in Arts, Science and Law.

From 1988 to 1997, approximately sixty students participated in the Minor in Northern Studies, of whom half graduated with the Minor. In 1992, the Faculty of Science approved for the first time an *Ad hoc* B. Sc. Major in Northern Studies upon special application by a student who designed her own program. She completed it in 1994, the only Bachelor in Northern Studies ever awarded by McGill University.

Next to the regular curriculum of courses, special activities were organized to allow the students to participate in the existing academic networks in Northern Studies nationally and internationally. Students participated in and gave presentations at various conferences, i. e. at the 7th Inuit Studies Conference in Fairbanks (1990), the 3rd National Conference of Students in Northern Studies organized by the Association of Canadian Universities for Northern Studies

in Ottawa (1991), and at the 8th Inuit Studies Conference and the First International Congress of Arctic Social Sciences held in Québec (1992). Visits were also organized to neighboring Northern Studies programs such as at the Center for Northern Studies at Wolcott, Vermont (USA), whose students had come to McGill University at various occasions. In addition, outings and excursions were arranged to experience and learn about particular elements of northern lifestyles, such as sauna, snowshoeing, ski touring and others. Such activities contributed to the cohesiveness and the success of the program.

The opportunities to apply for and obtain grants or scholarships for students in the Minor in Northern Studies have been very limited. However, the Northern Scientific Training Program by the Department of Indians Affairs and Northern Development (Ottawa) provides students with excellent opportunities to conduct field work in the north. Furthermore, existing exchange programs between McGill University and other universities with Northern Studies, i.e. University of Alaska Fairbanks (USA), Copenhagen (Denmark), Lund and Uppsala (Sweden), were and still are utilized by students to expand their northern connections internationally.

Although the number of students in the Minor program was never very high, it was observed that between seven and twelve students were in the program at any given time. This size of student group allowed intense teaching and studying conditions resulting in appropriate preparation for students to obtain positions in the north and northern-related work. However, interest in regions has its own boom-and-bust cycles and also often depends on staff who are committed to specific geographic areas in research and teaching. By the mid-1990s, registration in this Minor program reached a low point, making it necessary to consider its future, since, on principle, it was never directly funded by the university. After nine years of operation, the program was discontinued in the Fall of 1997, at a time when McGill's Faculty of Arts went through a complete restructuring of its programs, diversifying the offerings of Majors (36 credits) and Minors (18 credits). At this point, it is not very evident that this program will be revived in this new context in the near future.

Involvement in Northern Studies internationally

As the coordinator of McGill's Minor in Northern Studies I was able to develop more formal contacts with a number of similar programs in Canada, the USA and Europe (mainly Finland). The contacts provided for student and staff exchanges and the comparison of academic and administrative experiences among coordinators.[6] In 1989, I took up an invitation by the Institute of Circumpolar Studies, a summer school at the University of Alaska Fairbanks (UAF), to teach a course and also discuss possible cooperation. This led to my involvement as an advisor for the planning of the M.A. in Northern Studies in the Liberal Arts College at UAF. In September 1991, I joined the program's inaugural term as a visiting professor teaching the first group of students on aspects of human conditions in the circumpolar north.

Parallel to these Alaskan developments, the newly-founded Arctic Centre (1988) at the University of Lapland (Rovaniemi, Finland), whose first director Kyösti Urponen participated in the UAF summer school in 1989, designed a one-year undergraduate Arctic Studies Program under the advice of its International Scientific Advisory Committee, on which I served from 1990 to 1994. This internationally-oriented program began in March 1992, and has continued since then.[7] Between 1992 and 1996, I made teaching contributions to this program and to the Northern Cultures Program at the University of Oulu (Finland), which had started in 1994. Furthermore, during my sojourn as the director of the Arctic Centre (1994-96), I administered the expansion of the Arctic Studies Program into an M.A. in Arctic Studies in 1995.

These international contacts among Northern Studies programs without and within the circumpolar north enhanced the spirit of cooperation to provide for more intense exchanges of ideas, students, staff and other practicalities. A number of efforts have been made to institutionalize such cooperation internationally, e.g., under the umbrella of the Circumpolar Universities Cooperation Conference, held every second year since 1988, and its representative body, the Circumpolar Universities Association, or through the foundation of the so far quite ineffective

International Association of Northern Studies Programs founded in 1992, or under the sponsorship of the Northern Forum and finally the Arctic Council. From the outside, this looks like a plethora of regimes seemingly competing for solutions to the demands and challenges of education in the circumpolar regions. Despite the emerging political and administrative structures, it is hoped that the essence of pedagogy is not lost: the relationship between teacher and pupil to guarantee and safeguard the transfer of knowledge and skills as an individual experience to the benefit of the society at large.

Teaching the north: a cooperative effort

Each academic institution has different circumstances to consider when creating special teaching programs, such as focusing on Northern Studies. Conditions, requirements, demands, needs and resources vary considerably from place to place. McGill University lies outside the circumpolar north. It is a large metropolitan university with diverse demands and interests in research and teaching. Northern research and teaching have been strong at McGill University throughout most of the 20th century. This potential was for a time translated into a special focus in teaching, the Minor in Northern Studies. However, it is evident that the contributions of this university's academics to Northern Studies and research is different from universities and colleges that are situated in the north, since their response has to be to their region's and its population's needs and demands. Thus McGill University can, in its limited way, make an appropriate contribution to broadening the approach in Northern Studies and provide a complementary perspective to the one of the increasing number of circumpolar universities. I see an emerging role for non-northern academic institutions and their members to give full support and recognition to northern educational institutions in their efforts to provide high-quality education in ways appropriate to their surrounding conditions; developing their cultural, linguistic, political, and socio-economic distinctness related to the northern environment.

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9. Japan's involvement in circumpolar initiatives

Shigeo Aramata

[1] Japan, Hokkaido and the circumpolar area

What does "circumpolar initiative" mean for Japanese universities? The question should occur when one reflects upon the territorial and cultural location of Japan. The northern limit of Japan is only about 45° north latitude and its southern limit is a little bit beyond the Tropic of Cancer.

Let us observe more detail about the geographical situation of Japan.

Japan consists of four main islands and about 3,900 smaller islands that are located east of China and Korea. Japan's land area is about 370,000 square kilometers, excluding four islands still under diplomatic discussion with Russia. It extends from the eastern tip of the Asian Continent in the north to the western tip of the Pacific in the south.

In general, in the temperate zone in the Northern Hemisphere, the climate is mild on the western side of the continent, while it is rather severe on the eastern brim. Japan is located on the eastern edge of the Asian Continent. However, Japan is separated from the Asian Continent by the Sea of Japan and the East China Sea and has a very long coastline. For this reason, in winter the severe climate in this country becomes milder. As mentioned above, ocean currents affect the climate of Japan. The Black Current and its branch, the Tsushima Current, which are warm, and the Kuril Current and the Riman Current, which are cold, flow along the Japanese archipelago. These currents strongly affect the Northern Hemisphere generally.

From comparatively detailed observation one can draw the following conclusion: there are nevertheless territories where it is cold and snowy in the winter. Hokkaido island is peculiar among the many islands of Japan in its subarctic characteristics. And in Hokkaido, several districts can be differentiated, such as southwestern Hokkaido, which is under the influence of the Tsushima Current; northwestern Hokkaido, to which the strong cold wind from Siberia blows in winter; north-eastern Hokkaido, which is under the influence of the Okhotsk Sea, with flowing ice in the winter; and southeastern Hokkaido, near which the strong Kuril Current flows.

The culture created by the ancient Japanese is called the Jomon (straw-rope pattern) Ware Culture. The Jomon Period lasted from about 10,000 B.C. to about 300 B.C. The major economic activities were hunting and collecting natural foods. From 300 B.C., the era of the Yayoi Ware Culture had begun. Yayoi ware uses more refined clay than Jomon ware and is baked at higher temperature. The Yayoi people brought rice cultivation to Japan, and agriculture was started by settled farmers.

Japan has far more rainfall than other countries. The nation's mean precipitation is 1,700-1,800mm while that of European countries is only 550mm and that of North America 650mm. The Japanese summer is very humid and suitable for cultivating rice. It is rice cultivation that political power had been based on in Japan and from which its traditional culture had sprung from. High productivity of rice cultivation had supported high population density (115 persons/sq. km in 1900), although according to geographical land classification only 12.7 percent of the land is lowland and only 13.7 percent of the land is agricultural, according to current land use. Speaking geographically, the mountainous areas and volcanic zone together occupy 60.3 percent of the land. Forests and fields occupy 67.3 percent.

Historically speaking, Hokkaido island became involved with Japan comparatively recently, in connection with the Russian expansion into North Asia. The mass settlement movement of Japanese (Wajin) to Hokkaido island began only after the Meiji Restoration (1868). Japanese traditional agriculture (rice cultivation) was not suitable enough for Hokkaido's climate and created a problem involving aboriginal peoples (mainly Ainu), which occured together with the process of a new settlement movement of immigrants from traditional Japan. The occupation of Hokkaido by Japanese who came from traditional territories of Japan made Arctic problems of their own. In other words, the Japanese people, especially Hokkaidoitee, cannot stand indifferent to the problems nor to the people who are living in the Arctic World.

Hokkaido has an area of 78,413 sq km, which is 21.0 percent of Japan's total, and has a population of 5,644,000, which is only 4.6 percent of the total. The population density of Hokkaido (72 persons/sq km) is considerably small compared to that of the entire country (332 persons/sq.km). This is another of the problems common to the Arctic peoples.

Apart from what is mentioned above, the current globalization of the world market economy and the recent enormous speed of the technological advance of human society raises the question of whether contemporary human beings can set a course of sustainable development for future generations. Japan, as one of the high-technology nations, must do its duty in carefully observing and researching what happens in the Arctic area. Problems concerning the Actic area are now becoming an important branch of Japanese national issues. The Japanese central government will not be able to escape from touching upon these serious problems.

[2] Universities in Hokkaido Prefecture

One might recognise that the foundation of a modern higher educational institution in Hokkaido was surprisingly early when one recalls the fact that Tokyo University began a year later than Hokkaido University. Sapporo Agricultural College, which was the ancestor, or first institution, of Hokkaido University, was established in 1876.

The Meiji Government's puropose in establishing a new research and higher educational institute in Hokkaido was not merely to fill the void of higher education in Hokkaido, where medieval enlightenment was lacking, but to create completely new knowledge for developing a new land in a subarctic area, for the sake of the Japanese nation's struggle for existence in the Modern World. Dr. William S. Clark, then the President of the Massachusetts Argricultural College in the U.S.A., was invited before its start to be the vice-president of the Sapporo Agricultural College. In this one can see the Japanese Central Government's wishes with regard to the new college's activities. Dr. Clark, in fact, played a role as the first president of the college, especially in connection with its students.

Thereafter, in agricultural spheres, traditional Japanese cultivation skills, which were brought by immigrant farmer families, came to the newly growing Hokkaido agriculture side-by-side with Western European farming methods imported by Hokkaido University and Hokkaido gevernment institutes. Therefore, the colonization of Hokkaido created a new type of lifestyle and production method there.

In the period of Japanese imperialistic expansion into the Asian continent, the Japanese central government became more eager to support research activities at Hokkaido University, because of its concern with and relevance to Arctic and sub-Arctic environments and lifestyles. In 1941, the Research Institute of Low Temperature Science was established within Hokkaido University. One of the most remarkable research results of the institute was the success in making the Artificial Snow Crystal, by Dr.Ukichiro Nakaya.

By the end of the Second World War, besides Hokkaido University, Hokkaido also had the Muroran Institute of Technics and the Otaru College of Commerce. And now (1997), there are seven national universites, two public universities and sixteen private universities working in education and research in Hokkaido Prefecture.

The experiences of the Japanese people in living on Hokkaido—or Hokkaidotee—have made them somehow different from people who have been living in the traditional area of Japan in their taste in housing, food and clothing. They

have actively searched for something adequate for creating a pleasant lifestyle in Hokkaido. Of course, the target of these research activities has been societies in the Arctic and sub-Arctic area, especially societies in the Nordic area.

There seems fair reason for why persons from only four universities in Hokkaido, namely, Hokkaido-Tokai University, Doto University, Hokkaido University of Education and Kushiro Public University of Economics have gone a step ahead compared to other persons from another territory, in participating in the meetings or workshops of the Circumpolar Universities Associaton.

[3] Some characteristics of the higher education system in Japan

The spiritual and cultural life of the Japanese, of course, has its long history. The Japanese language, the phonetic structure of which seems to be related to southern Asia, and its grammatical structure, which seems to be related to northern Asia, has retained its originality for a long period, say, more than a thousand years, having created its own letters. The religious life of the Japanese had once been arranged into the polytheistic Shinto. Thereafter, Buddhism was imported through the Korean peninsula and continental China. Occasionally there were struggles between Shinto and Buddhism. However, a tolerant polytheistic atmosphere in Japan mixed Shinto and Buddhism in everyday life.

Buddhism has had more enlightening power than Shinto in the cultural life of Japanese individuals. Buddhist temples have had programs for training priests. Some kind of education and research developed through those programs. By the latter half of the middle ages, Buddhist temples were managing primary schools in reading, writing and arithmetic for boys and girls from the common people.

As the market economy developed, a divergence of education and research from religion was progessing. Individual specialists, or experts, who managed small private institutions, appeared in research and education. In the Tokugawa era, three different divisions of higher education and research existed in Japan. Divisions can be differentiated according to the culture that teachers and students had for acquiring new knowledge. This was a difference in whether they took knowledge from books written in Chinese (Kangaku), or from books written in traditional Japanese (Kokugaku), or from books brought from Europe (Yougaku).

When the Japanese Meiji Government decided to open the door of the Japanese economy to the world market and make it live in competition with other national economies and in defending itself from foreign armies and navies, the government had to make a decision to learn Western European civilization in a speedy way for the sake of the nation's existence. A unified education system, from primary school to universities, that is strongly influenced by European models and is also strongly regulated by the central government was established, for instance. Primary schools were similar to soldier training and the university chair system was like the German model, which originated in the guild system. Spontaneously-grown traditional Japanese educatiönal institutions, whether from religious activities or from private civil activities, were nearly rejected for development in the new era.

The secondery education system had parallel sub-systems; firstly, grammar schools, which prepared students from the common middle schools for universities; secondly, higher occupational colleges, each of which were specified for agriculture, technology, fisheries, commerce and so on, which accepted students who finished middle school. Under these courses were common middle schools and vocational middle schools, next to primary schools or advanced courses of primary school.

Since the Japanese central government had financed and strictly controlled the educational and research institutions, this system made a base for the newly arisen hierachical society. Which kind and level of school one graduated from became the mark of one's social status. The wage payment system in Japan had for a long while been influenced by this social status system.

After World War II, a big change occured in the system of educational and research instututions in 1949, with the School Education Law and the National School Establishment Law. In general it can be said that the change was a kind of democratization of the education

systems. Compulsory education had increased to the junior high school level. Old universities, grammar schools and higher occupational colleges had been unified into new universities, even when they had a part of a community college of a certain sphere. In them, they combined high level specialized education with general education, in the U.S meaning. A puzzling mixture of the German model and the U.S. model appeared.

Governmental control became weak in the operation of university management, because the Faculty Board (professors' conference), which has the right to elect its dean and has an influence in the election of a university rector, in accordance with their votes. This stuation was legitimized by the national reflection over the experience of the War period, when academic freedom had been violently injured.

Subsequently, in Japan a continuous expansion of higher educational institutions followed Japanese economic growth. Of course the objective possibility of expansion was in the macro aspect of economic growth. In the micro aspect, one can see that those Japanese who were seriously impressed with the Japanese hierachichal society were eager to give their sons and daughters the opportunity of higher education and that the lack of supply in the market easily pulled entrepreneurs into college and university management. Now Japanese universities have three kinds of financial system; State Universities, which the central government finances, Public Universities, financed by local governments, and Private Universities, which very recently have been receiving a small subsidy from the central government.

The above-mentioned situation shows the limitations of governmental budgets for research and education. Though the common people eagerly desire egalitarianism, restriction of resources has worked bureaucratically and resulted in uneven distribution among educational institutions and especially among research institutions. Chances for getting more resources for research became a component of status.

No doubt, as they say, the spreading and upgrading education in Japanese postwar society made high-tempo economic growth certain. However, I must also show another point, which is that the process of spreading universities was accompanied by professor and student inflation and that the central government keeps the strong regulative power through the way of financing them. Moreover, the government has constantly been regulating the university, taking the place of an accreditation body for university standards, especially when new institutions are to be established. Governmental financing policy for univeristies has been selective, because of scarce resources and its making a base for new hierarchical status. Governmental regulation also creates many obstacles to cooperation between business and the academy. The basis of the argument is to ask why a cooperation with a certain company is permissible, when resources for the research are being spent from the public budget.

[4] Deregulation of the Japanese university system and the Circumpolar University Initiative

As a result of the above-mentioned historical process, the number of Japanese university students in 1950 was 220,000, and it has increased to 2,547,000 in 1995. They are distributed as follows: 599,000 at state universities, 84,000 at public universities and 1,864,000 at private universities. The number of foreign students in 1995 was 54,000. The education continuance rate for Japanese boys and girls seems sufficiently high. In 1995, the ratio of those advancing to senior high school was 95.8 percent, to university 32.1 percent, and to graduate school 9.0%.

At present, the conditions and circumstances given to Japanese institutions for education and research are dramatically changing. First, in the situation where increasing demand for education had continually exceeded supply, there now appears the situation in which an increase in supply exceeds the demand, because of the shrinking birth rate. Second, inflation in the numbers of university students has made it a new task for higher education institutes to adjust themselves to mass education and to demand more occupational than scientific training. Third, a life-long education system is needed in accordance with rapid technological change and an aging society. Fourth, differentiation policy in educational programs and in the sphere of research and development is crucial for survival in global competition. Traditional unified

regulations are not adaptable nowadays.

A deregulation process in the higher education system is going on in Japan. The contents of the deregulation are the following.

First, the curricula of the university programs is becoming more flexible compared with the unified standards that were given directly by the central government in latter years.

Secondly, a semi-governmental body for the control of university standards is now coming into force. The name of the body is Daigaku Kijun Kyoukai (Association for University Standard). This association will be followed by several associations segmented on the basis of academic fields and also followed by some kind of accreditation bodies of international universities and colleges.

Thirdly, units of university credits are becoming more transferable and mobile among institutions. In connection with this, a semi-governmental Authority for the approvement of academic grades, for the sake of people who received sufficient amount of credits from different colleges and universities, has been established (Gakui Juyo Kikou).

Fourthly, cooperative agreements between domestic or international institutions are becoming much more significant than they were previously.

All of these phenomena are supposed to work for the Circumpolar University Initiative. Undoubtedly we can concieve a good chance for the Circumpolar Initiative in contemporary Japan.

However, I must add the following explanations. The question of who is responsible for determining decision-making is not yet settled in Japan. Public opinion is bringing rectors or presidents of universities into focus. Nevertheless, in the contemporary formal structure of the Japanese university system, the term of office for rectors or presidents has usually been strictly limited and actual power in decision-making has very often been shared between administrations of financial bodies and professors' faculty boards. In the great transitional period, a heavier historical role is allocated to the person of individual rectors or presidents. This is the reason why Japanese universities have until now been weak in responding speedily to the Circumpolar Initiative.Anyway, where necessity exists, the way to fill the lack will appear. I am optimistic in the expectation that just the will of several strong persons can open the future for the Initiative.

I personally think that the easiest approach to Japan for the Circumpolar Initiative is that it builds a certain board for the Arctic University, which includes multinational members; and in a certain existing institution investigates and registers courses or classes proposed by cooperating institutions; and approves grades for students who bring credits from the registered courses or classes.

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10. UNIS—The University Courses on Svalbard

Asgeir Brekke

The end of the Cold War brought a mild wind of optimism to the world and in particular to the frigid regions of the Arctic, where the people had suffered for generations under the hostile yoke of an evil armaments race. For many people, the fall of the Berlin Wall made an opening for new and inspiring visions; so it also was for the inhabitants and, in particular, the politicians in the northern regions of the world. It was well understood that the huge and strategic areas of the Arctic, which had been controlled by the infernal intelligence agencies on both sides during the Cold War, soon would open up for international activities and challenging enterprises in the area. This was also the case in the Norwegian government, where the Svalbard archipelago had for long been an area of delicate international diplomacy. In order to secure Norwegian sovereignty of the islands according to the international Svalbard treaty, Norway must continually demonstrate an active presence on Svalbard.

By far the most important Norwegian activity on Svalbard during the last fifty years has been coal mining. The Norwegian government, however, has a strong desire to find alternative possibilities for employment on Svalbard. The mining of coal has resulted in a well-developed settlement in Longyearbyen, a village of about 1200 people, and the infrastructure of this village is by far the best developed at these high latitudes in the Arctic. As the Norwegian sector of the Arctic is the mildest and most easily accessible, it represents a very attractive basis for engagements in the high north. In view of the growing concern about the changes in the global climate, the Arctic plays a unique role. The fact that the Arctic is one of the regions of the world that is least polluted by *in situ* activities allows its use as a point of reference for a manifold of global research programs that aim to differentiate between man-made and natural causes of climate change.

The Norwegian Minister of Research and Education, Dr. Gudmund Hernes, quickly understood Svalbard's potential for becoming a centre for international research, when *perestroika* had become a reality. Also for the Norwegian government, which wanted to present itself as an institution concerned about global pollution, increased research activity on the islands would compensate for a decrease in the controversial coal mining, but still leave the Norwegian activity on Svalbard at an acceptable level. An initiative to increase the Norwegian employment in research and education on Svalbard therefore had at least a two-fold mission.

Increasing scientific activity

The European Incoherent Scatter Radar Association (EISCAT), which is an international organisation engaged in research of the upper polar atmosphere using advanced radars, already in 1989 took advantage of the softened international tension and proposed plans for establishing such a radar in Longyearbyen. As these plans materialised and a decision to build the radar was made in 1992, several individual countries also contributed to an increased scientific activity on Svalbard by building several new research stations in Ny-Ålesund. The Norwegian government seized the opportunity and decided to build UNIS—The University Studies on Svalbard—in order to take advantage of the synergism related to the anticipated growth in international research activity on Svalbard.

There was of course no reason to establish

UNIS on Svalbard just for giving courses that could be done more easily and inexpensively at other universities on the mainland. It was therefore necessary to take advantage of Svalbard as an open natural laboratory in the Arctic and concentrate on relevant disciplines.

UNIS started in the Fall of 1993, with twenty undergraduate students in geology and geophysics. The plan was to accept a hundred students by the Fall of 1994, by expanding the study options to biology, geology and geophysics, each of which are related to Arctic research. It is well recognised that within these Arctic disciplines the research groups are small and similar courses are given to groups of only a few students. By establishing a unit like UNIS, one can offer courses of common interest for the groups and bring together at one place both students and lecturers from different universities. Such an arrangement results in a more cost-effective education and at the same time establishes a larger community of students with different background and experience.

Already from the start it was envisioned that UNIS would be an international entity where about half the number of students and a large contingent of the lecturers would be invited from abroad. At the moment, about thirty percent of the students are from foreign countries. UNIS has also expanded the number of disciplines in which courses are offered by including Arctic technology.

In order to make UNIS attractive for the lecturers it was important to secure a relatively large budget for it, so that the academic staff could work on their own scientific projects and participate in international meetings and research programs. It was also necessary, in order to avoid the academic staff at UNIS becoming scientifically isolated, to invite skilled lecturers from other institutions in Norway as well as abroad. At the moment, about a third of the lecturing at UNIS is done by invited lecturers.

For such a plan to become effective, it was necessary to give UNIS adequate budgets.

The budget of UNIS has been a little less than thirty million Norwegian Kroner (NOK) per year for the last years and is expected to stay at this level. The cost of the investment at UNIS is between fifty and sixty million NOK.

From the start of UNIS, it was intended that undergraduate courses would be given because it was expected that such courses would attract the most students. One important problem that was soon realised in the planning of UNIS, however, was the question of acceptance of UNIS's courses as part of the curricula for undergraduate students at other universities. Not only was this a problem within foreign universities, but also universities in Norway. The latter was rather disappointing, since UNIS is an association owned by the four universities on the mainland; and it was expected that these universities would contribute to the curriculum of UNIS by proposing courses with relevance to their own courses. Unfortunately, some of the courses presented at UNIS partly overlap with courses given on the mainland, which thereby reduces the attraction of UNIS for some of the students. This is a problem related to lack of co-ordination between the mainland universities.

For the foreign students, it was soon realised that their undergraduate studies were usually based on rather well-defined sets of courses, and it was therefore difficult for the students to leave their main campuses for taking courses at UNIS. Some of the courses offered by UNIS, in order to be attractive to a sufficient number of students, had to be changed to graduate and doctorate degree levels. At the moment, several of the courses are given at these higher levels and some of them are rather unique, on an international scale.

The UNIS centre

When entering UNIS you already notice at the doorstep that you are walking into a very different academic environment, compared to traditional universities on the mainland. Posters ask you to take off your shoes, and you may place your boots in heated pigeonholes.

A large, open fireplace forms the centrepiece in the hall, which also forms the cafeteria for staff, students and lecturers. The building is well-equipped, with a lecture hall for two hundred people, several smaller lecture rooms, a library, computer rooms, laboratories, and nicely designed offices for staff and students. The design of the building fits nicely into the unique landscape of Svalbard, and it is the most attractive building in Longyearbyen.

When the students first arrive at UNIS, they

have to go through a special course in how to cope with the Arctic climate. Although it is relatively mild in Longyearbyen, considering the very high latitude—more than 78° N—the weather can sometimes be hostile. Furthermore, polar bears wander around on Svalbard, and one may meet them when out touring on the island. In order to be prepared for any unfriendly bear attacks, the students are instructed in how to use guns. These courses are mandatory for all students who join UNIS.

The students live in accommodations about three kilometres uphill from UNIS. The student houses are newly-renovated former living quarters for the miners, who now all live in flats in Longyearbyen. Each student has his own private room, or study, about ten square meters of space, but have to share kitchen and bathroom with four-to-six others. The total space available per student is about twenty-six sq.m.

The monthly rent at the moment is 1600 NOK, or about 250 USD, which is less than the students have to pay for similar accommodations on mainland Norway. The cost-of-living on Svalbard is about the same as on mainland Norway. Food can be bought in two supermarkets, and three or four cafés and restaurants serve evening meals at reasonable prices.

UNIS assessed

So far, we can conclude that UNIS has been a success. Students from close to twenty countries have taken courses on Svalbard, and the lecturers who have been invited to UNIS most often like to come back. The students are very active in their study work as well as in the social life in town. They contribute to choirs, theatre groups, sports arrangements and even local politics. The students at UNIS score on average higher points than students at the mainland universities, and they also take more courses per semester.

There are now plans to expand the UNIS building to include offices for other science and research organisations at Svalbard, such as the Svalbard division of the Norwegian Polar Institute, the Svalbard Science Forum, the EISCAT organisation, the Svalbard Museum, the Magazine of Culture and History, the Governor and the Svalbard Satellite Station. This expansion will bring a larger contingent of scientific activity close to UNIS and improve the possibilities for scientific work in more fields there.

In view of the concept of the University of the Arctic, which is thought of as a network of universities and schools of higher education in the Arctic region, UNIS may play an important role as a centre for higher education in the natural sciences. One can imagine that other institutions could form similar centres for other disciplines. The experience gained by UNIS has been very positive both for the students and the lecturers, as well as a success for its initiators.

An Arctic of Regions

11. From North to North: personal perspectives on student mobility between northern Europe and northern Canada

Aron Senkpiel
Outi Snellman

It's amazing," Mika says, surveying the Yukon River valley and the pine-covered hills that climb from the green river water to the mountains in the distance. "I feel so at home." Then pausing, he adds, "Sure there are differences—the rivers near my home in Finland are a different colour and here there are mountains, but it's still the same somehow."

Mika Flöjt has just arrived in Whitehorse, the capital of Canada's Yukon Territory. An international studies student at the University of Lapland in Rovaniemi, he's come to Canada to take Northern Studies courses at Yukon College. He's arrived early, classes don't start until after the Labour Day weekend, so he's been doing lots of "local" things: walking and cycling and fishing and talking. There's been lots of talking.

Mika writes for a small paper in his home town of Kuusamo, a city in northeastern Finland just fifty kilometres from the Russian border. He's already sent back two articles. One is about the twelve Grizzly bears that were shot at the Whitehorse city dump last year after an electric fence was installed around it. The other was about the desperately low returns of Chinook salmon—Mika says "chin- uk"—to the upper reaches of the Yukon River. Mika is worried. He tells me fishermen in Finland dream about coming to the Yukon or Alaska to catch a "chin-uk" and they are very worried about what is happening here. "El Nino," he says, "it's a big problem for the North." It's hard not to smile, not because we don't share Mika's concerns, we do, but because here is a young northern Finn talking to Yukoners about worries and hopes and aspirations they share. As northerners, they seem to share a common "internal" geography, one that makes a Mika seem as "foreign" to an urbanite from Helsinki as a Yukoner is to a Vancouverite. Mika is going to add a great deal to his classes at Yukon College, just as Kerstin and Victor Andersson and Kerstin Jonsson, two students from Luleå University in northern Sweden, made enormous contributions last year.

Take Kristin for example. Last fall, she drove over to Alaska with several Yukon College faculty to visit the University of Alaska Fairbanks. She and one of the faculty ended up visiting one of the graduate seminars in the university's northern studies program. The topic was northern architecture. At one point Kerstin observed how the university's architecture reminded her of Russia: lots of dull, grey concrete. Wouldn't bright colours be nicer, more inviting, in the dark winters of the North?

Mika's, Victor's and Kristin's experiences, like the experiences of most of the other forty-five students who have participated in the North Consortium's student mobility project, offer compelling evidence that vital new connections are being forged between students, faculty and administrators of institutions in northern Canada and Europe. To fully understand the significance of this, one needs to recognize that the North Consortium, a project funded under a bilateral agreement in Higher Education between Canada and the European Union, is the first major cooperative program between "high latitude" institutions in Europe and Canada. Almost as importantly, it is the first enterprise to simultaneously involve the new University of Northern British Columbia and the three small and relatively young colleges that, together, constitute Canada's modest

postsecondary capability in its Far North: Aurora and Nunavut Arctic Colleges in the Northwest Territories and Yukon College in the Yukon Territory. Because post-secondary educators in Canada's Far North are just beginning to do what post-secondary educators in the European North have been doing for years, the North Consortium has provided an historically important opportunity to transfer European knowledge and skills in international higher education to Canada while, at the same time, transferring knowledge and skills—both east to west and west to east—in a wide variety of scholarly and professional fields of importance to the circumpolar world. Such cooperation amongst northern institutions is, as has been noted elsewhere, the *raison d'etre* of the Circumpolar Universities Association. Indeed, we would like to suggest that the establishment of the eight-member "North Consortium" and its student mobility project is not only a result of the work of the Circumpolar Universities Association but compelling evidence of its success in promoting institutional cooperation in the North that, in the words of Finnish scholar Lassi Heininen, is "multilateral," "horizontal," and "regional."[1]

The Origins of the North Consortium

As a result of the work of the Circumpolar Universities Association, representatives of many of the world's northern institutions have been able to meet—in Thunder Bay, in Tyumen, in Rovaniemi and, more recently, in Prince George and Luleå—and discover that there are marked parallels between the regions they serve and the professional challenges they face. These similarities were not only the subject of frequent discussion in the hallways between sessions at the Association's biannual conferences but the subject of many of the papers presented in the sessions. Indeed, by the time the institutions congregated in Prince George for the Fourth Circumpolar Conference, many representatives were looking for concrete opportunities for cooperation.

Consequently, when Canada and the European Community signed their joint agreement in Higher Education in 1995 and asked Canadian and European institutions to submit proposals for student movement between Europe and Canada, a number of CUA members saw a timely opportunity to strengthen existing connections at the administrative level and to extend them to faculty and students as well. They also saw an opportunity to improve their "connectivity" and increase the exchange of needed information and expertise: two objectives that they shared with the terms of reference developed for the EC/Canada mobility program.

Given this appropriateness and timeliness, in early 1996 representatives of the University of Lapland in Finland and Yukon College in Canada invited a number of other institutions to join the North Consortium and to develop a joint proposal that would, presumably, be different from other proposals in that it would focus specifically on the institutions of and students from the northern extremities of the two continents. In all, eight institutions agreed to participate, four in northern Europe and four in northern Canada. The European partners are the University of Lapland in Finland, Umeå and Luleå Universities in Sweden, and the University of Aberdeen in the United Kingdom. As already noted, the Canadian partners are the University of Northern British Columbia, one of Canada's newest and most northerly universities, and the three colleges in the northern territories.

The Project Design

At the outset, these new partners recognized that certain constraints needed to be addressed if a workable project was to be designed. These are worth attention here. First, the design had to take into account the very small size of many of the participating institutions, particularly of the Canadian colleges. This meant that it would be highly unlikely that institutions could identify a single cohort of students with uniform interests in a particular field that could, in a lock step fashion, move across the Atlantic. Second, the design needed to take into account not just the high cost of transatlantic travel but the exorbitant cost of northern travel. (Let us be specific here. In Canada, the cost of travelling from one of the major northern centres like Whitehorse, Yellowknife, or Iqaluit to the corresponding southern hub—Vancouver, Edmonton or Montreal—can exceed that of travelling from

Montreal or Toronto to London.) Third, for a project to succeed it needed to address the pronounced differences in programming level that exist between Europe's northern universities and Canada's northern colleges. That is, three of the four northern Canadian partners are two-year institutions that do not grant degrees. Clearly, something was required which went "beyond" conventional student exchange.

Let's look then at the basic logistics of the project and how it has addressed some of these concerns.

Unlike most of the projects funded under the EC/Canada agreement, which are of three years' duration, the North Consortium's project is of four years' duration. Because most of the institutions would be working with each other for the first time, the organizers felt that it was essential that there be time to build the relationships and establish the systems the project would require. For example, the project design calls for the establishment of a student-oriented website and an internet-based forum for the project organizers. Also, as we shall see, because of several features of the project design, additional time would be needed "up front" to select the students for the first of the two student cohorts. As well, the organizers felt that time was needed at the end of the project for program evaluation and information dissemination so that not only the participating institutions but other northern institutions could benefit from the project.

So far, what has been described may seem quite conventional. It is, however, in the project's "developmental focus" and its method of student recruitment and selection—where the project organizers have used what they call a "strategic, individualized approach"—that the project's uniqueness becomes apparent. Let us elaborate.

First, the title of the original proposal—"Promoting Student Involvement in the Economic, Cultural, and Political Development of Northern Peripheral Regions"—draws attention to the fact that the project's primary goal is not simply to provide interesting travel opportunities to participating students but to promote, through student exchange, the transfer of information of importance to northern economic, cultural and political development from areas of the North and institutions which possess the information to areas of the North and institutions which need the information. Thus, in this context, to be blunt, student exchange becomes a means rather than an end.

This emphasis on regional development in key or "strategic" areas necessitated the development of an individualized approach to student recruitment and selection. This approach not only took into account the small size and isolation of many of the participating institutions but optimized the number of areas of relevant study, the potential impact of individual projects and, by extension, the benefit to participating students and institutions. Working with faculty at the home institution, each student applicant has been asked to develop a study plan which not only describes a problem or subject of study in an "area of relevance" to the home institution but, at the same time, identifies a participating institution with expertise in the area. That is, in keeping with the aforementioned developmental focus, we have encouraged students with interests in areas of importance to their regions to move to institutions which possess the needed skills or expertise. Thus, it was envisaged, for example, that a student registered at the UNBC might propose to study forest management practices or value-added wood processing at one of the Swedish partners or a European student interested in aboriginal land claims or new forms of participatory government might choose to do research at Nunavut Arctic College.

In keeping with the above, five criteria were identified to assess each application. First, the study plan had to be of some contemporary relevance to the applicant's home. Second, the student had to exhibit considerable scholastic ability. Third, the student had to show some "commitment to the region." Fourth, the student had to show some commitment to a profession or field. Finally, in keeping with a major condition of the funding, the proposed program of study had to be fully transferable back to the student's home institution.

Implementation

So much for theory. The project is now nearing completion. An enormous amount of work has been done by a large number of people, far more than were originally involved in the original

design of the project. First, an enormous amount of information about the various institutions has been exchanged using a variety of media. We have, for example, "traded" extensive collections of institutional literature. A worldwide website has been established that allows students to access the information needed to identify possible destinations and develop proposals. As well, through the University of Lapland, an electronic conference for the project coordinators has been established. With these, students, faculty and administrators at Yukon College can find out (and are busy doing so) about the University of Lapland and the other European participants. The establishment of the website and the conference has, in turn, led to a flurry of one-to-one e-mail correspondence between students and faculty. As well, faculty who are helping interested students have, in many cases, sought out counterparts at other institutions for the first time. One particularly interesting exchange has, for example, occurred between faculty members from Yukon College and Luleå University.

Most importantly, though, the first round of exchanges went very well and students have been selected for the second cohort. As with the first cohort, there continues to be some variation from the desired "three students per institution," but these variations are consistent with the differences in size of the participating institutions. For example, on the Canadian side, in Cohort One UNBC sent seven students, while Aurora College only sent one and Nunavut Arctic sent two. Not surprisingly, then, UNBC, which is the only degree-granting institution on the Canadian side, also received more students than its Canadian partners. This imbalance is also evident in Cohort Two. There has been more balance on the European side in; in Cohort One each institution sent and received between four and six students, a pattern that has persisted with Cohort Two.

The subjects of study of students in both cohorts show a reassuring diversity and relevance (although there is a conspicuous absence of students interested in the physical, natural and engineering sciences). More specifically, students participating in Cohort One are pursuing studies in Social Work, Forestry, International Studies and Relations, Commerce and Management Studies, First Nations Studies, Community Health, Outdoor and Environmental Studies, Law, Education, Tourism Studies, Industrial Work Environments, and Political Science. Clearly, the project is attracting, in a manner consistent with its primary goal, students in areas of particular relevance to the development of northern peripheral regions.

From Problems to Challenges

We would, of course, like to claim that the project has experienced no problems: not with inter-institutional incompatibilities, not with inadequate human or financial resources, not with deadlines, not with student selection, and certainly not with differences in temperament. However, the truth is that it is an academic project involving eight institutions, one of which is over 500 years old while three others are barely more than ten years old. Also, these eight institutions are in four different countries, some of which have highly competitive postsecondary systems while others have very "open" systems. Add to this the fact that postsecondary education in the Canadian North is far less developed than it is in the European North. And recognize that, if the ECU is included, a total of five different currencies and three different accounting systems are involved.

Yes, there have been problems. While many are the result of incompatible administrative systems, the most important can, we believe, be explained by the simple fact that the project not only has broken new ground, but new northern ground: a task that always brings its own special challenges with it.

First of all, apart from the already mentioned interaction through the CUA, there was little prior academic exchange between institutions in northern Europe and northern Canada, certainly nothing of this scale. Indeed, lack of prior connections, particularly amongst faculty, has been cited repeatedly as one of obstacles that has had to be overcome. While this was partly anticipated by the incorporation of a planning year up front, most of the project representatives believe that some form of faculty familiarization, perhaps mobility, should have been built into the project design, had the guidelines permitted it. This would have resulted in, it is believed, the context in which the highly individual interests

of students could have been discussed and addressed.

This lack of previous interchange was further exacerbated by the Canadian participants' little previous experience with international student exchange. It was, by and large, a new area of endeavour. This project introduced the representatives of the Northern Colleges, relatively quickly, to the often complex "culture" of international academic negotiations and management. Additionally, many of the administrative tasks required by such an initiative—eg. international program promotion and student selection and evaluation—were new to the College representatives. They needed to acquire a lot of new information and skills, often in short order.

This inexperience may also explain, at least in part, the modest participation by First Nations students (there was good Sami participation). Promotion was perhaps too passive; generally, students had to "self-select" the program. If the posters and other announcements whetted their appetites, they needed to seek out more information and develop their applications. Only now, after the selection of two intakes, does the project have the visibility that would result in broad participation.

But, importantly, as the project has matured, many of these "problems" have been resolved while others are no longer seen as problems but as challenges. This fundamental change in perspective has, we believe, been most evident in the very strong, very positive bonds that formed amongst the insitutional representatives between their first and second meetings. The first meeting took place at the Finnish Institute in London in June 1996. Most of the people at the table were meeting for the first time. We were a rather disparate group of young and old, of men and women, of bureaucrat and academic, of junior and senior. Each of us brought his or her own views of the project; each brought varying degrees of commitment to it. Given these differences, we were all a little nervous, all a little cautious. Not surprisingly, as we went about our work we had, as we politely say, "our differences."

The second meeting was held at Yukon College in May 1998, just as the last of the Cohort One students were returning to their home countries and the Cohort Two students were beginning to make their final preparations for their study periods abroad. During the meeting, the institutional representatives finalized their plans for evaluation and discussed ways to sustain the project and preserve the very considerable new linkages that had been established amongst the eight institutions. The work whent quickly: it was clear that it was not a group of wary academics and administrators that sat down, but a group of friends, valued colleagues, keen to work together. What was also clear was that all of us, to a person, felt that because of the project a great deal of utility and beauty had been created and that it would be sad if it were not to continue.

Conclusion

It is too early, of course, to tell if the Consortium's mobility project will fully accomplish its goals. However, there are, as we've seen, promising early indications of considerable success. Perhaps because of this project there will be a new group of young academics and professionals for whom the distances and isolation imposed by the North will be just a little less intimidating, just a little less isolating, than they have been for those who have organized this project.

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12. The Center for Northern Studies

Steven B. Young

The Center for Northern Studies appears to be fundamentally different than any other institution in this anthology. The others involve larger parent institutions, government support, group activities connecting several related institutions, or some combination of these. The Center for Northern Studies has, in its more than quarter century history, been almost entirely free-standing. This situation is at least partly due to the Center's location in the United States, where private educational iniatiatives, and private educational institutions, are much more of a tradition than in other countries, particularly in the modern era. Although a private organization like the Center for Northern Studies probably would never have come into existance in most other countries, perhaps our experiences can relate in some way to the rest of the Arctic World.

Building up the Center—the 1970s

Let's begin with a bit of history. I started the Center for Northern Studies in 1971. At the time, I was a Research Associate at the Institute of Polar Studies, now the Byrd Institute of Polar Studies at The Ohio State University, in Columbus, Ohio. The Byrd Institute was largely a graduate study and research institution, which had grown out of the Geology Department. In the late 1960s, there was an effort to broaden the scope of their polar research into other fields, and I was one of the early representatives of Biology. This effort wasn't entirely successful, probably largely because of internal university politics. At the same time, students were setting fire to the library, tear gas suffused the atmosphere, and students were gunned down on the nearby Kent State campus. I had a home in Vermont within the range of moose, ravens, loons and Labrador tea, a compelling interest in the Arctic and in undergraduate education, and a level of naivete and idealism that strikes me as being almost miraculous in retrospect. Columbus, Ohio, hardly looked like a place to build a permanent life, and I honestly believed that I could rouse the interest of the "community" of polar scholars and build a team that could, in turn, create a unique and successful educational institution.

Our initially stated goals were:
- to carry out research and education in all aspects of the environment of the Circumpolar North
- to transcend traditional diciplinary boundaries in our educational programs
- to combine field and classroom education
- to involve "players" or "stakeholders," as they now seem to be called, from outside the academic world in our educational activities.

Interestingly, these basic goals have remained essentially unchanged. Furthermore, in spite of many developments, initiatives, and organizations dealing with education in the Circumpolar North, the need seems as great now, and nearly as far from being met, as it was in 1971.

By early 1973 the Center, situated in Wolcott, Vermont, had begun cooperative arrangements with other institutions to teach summer courses and transfer University credit. The University of New Hampshire was our first partner in these efforts, and they helped us sponsor the courses "Introduction to the Polar Environment" and "Winter Ecology." Our location in Northern Vermont allowed us to include a field component in our courses. Our local climate can actually be characterized as being subarctic, since only four months of the year have mean temperatures above 10° C. Our winters are roughly equivalent to those of central Scandinavia, with heavy snow

cover and lake ice for several months of the year and temperatures averaging far below freezing. We are also within a few hours drive of extensive areas of alpine tundra, and two days drive from central Quebec and Newfoundland.

Major studies in Alaska

In 1973 the U. S. Department of the Interior began a series of major resources studies on areas in Alaska which had been designated as potentially of national interest under the Alaska Native Claims Settlement Act of 1971 (ANCSA). CNS was well qualified to take on responsibility for field studies of this kind. In the summer of 1973 we made a major study of the Noatak River Basin. We continued to do similar work in the Yukon-Charley Rivers area, in the Katmai area, near Lake Clark, and in other parts of Alaska, and we published a series of major reports on these studies. (e. g.Young 1974; 1976).

We also continued to stress our educational initiatives, and I, as Director, taught courses at Dartmouth College and Middlebury College. In 1976, Middlebury suggested that we explore the prospect of jointly creating a program in Northern Studies. We accepted this idea with enthusiasm, and the result was the creation of a program with an undergraduate Major in Northern Studies—the only one of its kind in the United States. We graduated our first student (John W. Irons III, now Dr.) in 1977. By the early 1980s we had full enrollment (12-15 students, all from Middlebury) in our Semester in Residence at the Center, and we had established our program of extended field trips into Newfoundland and Labrador. We graduated 10 to 12 students per year in Northern Studies, making it a medium-sized major at Middlebury. We also, after several tries, received a joint National Science Grant with Middlebury for support and growth of the program. We also continued our research efforts in Alaska, and often were able to involve students in these projects. This in fact led to a Student Originated Study of the Ray Mountains, in Interior Alaska, which was funded by the National Science Foundation (Farquhar and Schubert 1980).

In 1981 Oran Young, a Political Scientist whose interest in the Arctic had been growing over the years, agreed to come to the Center as Co-Director. We arranged an Adjunct apointment for him at Middlebury, so that both the Natural and the Social Sciences were represented by introductory courses taught on campus, and we began a spring Semester in Residence at the Center, focused mainly on Social Sciences. By this time we had aquired some three hundred acres of land (much of it previously family-owned) and built a substantial building with classroom, offices, laboratory and library.

A shift in institutional collaboration—the 1980s

At that point, it would seem that we should have been in a place to really build on our success. Of course, things didn't work out that way. The Northern Studies Program at Middlebury was soon caught up in College politics. Administrative support proved to be less solid than had been thought, and various appointments were made (or terminated) which weakened the connection between Middlebury and CNS. In the ensuing years the program was more or less cast adrift, then placed under the umbrella of a department (Geography) that did not strongly support it and, ultimately, dismantled.

At the same time, our traditional research funding sources began to dry up. In order for the Center to continue to exist we had to branch out and find new sources of students. This required us to build a larger organization, with emphasis on recruitment and administration. These efforts did not meet with enough success to allow us to maintain the enlarged organization. By 1986, it was necessary to retreat to a much diminished position, and several key people left the Center.

The years since 1986 have been marked by about an equal mix of successes and failures. We have continued to be involved in some research, mostly in the case of visiting scholars. The educational program has sometimes operated at near capacity, but at other times enrollments have sunk so low as to require the cancellation of some semesters. We have maintained and expanded the library, and recent grants have allowed us to modernize many aspects of its services. We have expanded our field courses into Iceland and the Northern Isles of Britain, and we have continued to play a major part in the academic lives and

growth of a number of fine students.

Overall, we have had some 200 students participate in at least one program lasting a full semester, as well as an additional 200 who have participated in one or more short course. Nearly 100 students actually majored in Northern Studies at Middlebury College. Many of our former students are involved in the North in some fashion, ranging from University instructors to fisherpeople to artists. The vast majority of our students over the past 20 years maintain regular contact with the Center.

For several years we offered scholarships to students whose background was in northern communities. Nine students, mostly Eskimos from Alaska, completed at least one semester under this program. There were a few problems, mostly involving the fact that the native students were often older and had families, and many of them had a good deal less preparation than our regular students. Nonetheless, all students in this program aquitted themselves well, proved to be capable and flexible, have remained in touch with us and say that the time spent at CNS was valuable to their lives and their careers.

Lessons learned

Clearly, there are a number of lessons to be learned from our experiences, and many of them are relevant to the new initiatives in Arctic education that are arising as this is being written.

Higher education in the United States is almost unique in the developed world in that it is largely in the private sector. Although State colleges and universities are partially supported by the government, students and their families are still expected to make major contributions to the costs of education. Colleges are run as businesses (although normally not for profit). Colleges and Universities compete for students in something of an open marketplace, and the more prestigious institutions can charge higher tuitions and compete for more qualified students than other institutions. This means that an institution such as the Center for Northern Studies is under very strong pressure to be associated with one or more of the "best" educational institutions. It can then charge high enough tuitions to be able to field a high quality-program, even if the actual enrollment numbers are small.

There has also been a rapid rise in non-profit educational organizations that specialize in field educational programs that are more or less associated with environmental issues. Examples are: The School for Field Studies, National Outdoor Leaderships Schools (NOLS), Sea Semester, and Audubon Expeditions Institute (AEI). These are often heavily marketed, involve travel to exotic places, and are primarily aimed at students who are at relatively early stages in their undergraduate careers, and who are more involved in exploring their educational options and in what is generally known as "personal growth" than in committing to a focussed and demanding course of study. We believe that programs of this type have had a negative impact on CNS in two ways. They have, of course, created competition for students. Perhaps more important, it has been difficult to maintain a distinction in the minds of potential students between the CNS program, with its focus on intense academic approaches to specific northern issues, and the more typical "adventure, exploration, and personal growth" emphasis of many other programs. CNS has experienced pressure to take in students who are not fully qualified to participate in our programs, and difficulty in convincing students that the rigor and self direction/motivation we expect in our participants is appropriate for modern American students.

In a related concern, it has never proven to be possible to create a viable summer program. This is an obvious shortcoming with respect to Northern Studies, since many of the possibilities for field work can occur only in the summer. But many American students are under intense pressure to make the maximum amount of money possible during summer, in order to help support their educational expenses. There is comparatively little tradition for summer educational programs as part of attaining an undergraduate degree in the United States.

We have also found the noose of disciplinary requirements tightening over the past few years. Serious students, the type we hope to attract, often must take more required courses than in the past, so that their options of participating in our program are increasingly limited.

Our efforts to involve non-academic "stakeholders" in our academic programs have

never worked very well. This is hard to understand. It would seem to be reasonable that interests such as oil and gas, mining, banking, and tourism would be interested in making certain that their point of view was represented in a program that attempts to give its students well-rounded and pragmatic overviews of northern issues. It sometimes appears that the level of incomprehension and distrust between the business community and the environmental community is nearly unbreachable, and that our program is regarded by business as being unfriendly and biased toward the environmentalist point of view. We hope in the future to convince representatives of business and industry to help us provide additional viewpoints in our program.

New initiatives

Northern/Arctic Studies in the northeastern United States is in a rather unusual situation. There are many institutions of higher education which have some interest and tradition in the field. Dartmouth College and Bowdoin College have museum and library collections specifically involved with arctic issues. Individual faculty members of other institutions have often been involved in long-term studies of arctic concerns, as in the case of Brown University (archaeology-anthropology), University of New Hampshire (Greenland Ice Sheet Project), University of Massachusetts (geology/geography), to name only a few. Several non-university institutions are deeply involved in the Arctic (e. g. the U. S. Army Core of Engineers Cold Regions Laboratory, CRREL). However, none of these institutions has been able or willing to sustain a broad-based educational program in Northern/ Arctic Studies. We have always believed that the Center for Northern Studies was ideally situated to bring together the educational aspects of several of these institutions. So far, our efforts in this direction have had limited success. The rising interest in Arctic education, particularly as it is being expressed through the University of the Arctic initiative, suggests that it is time for renewed efforts in this direction.

At the time of writing, several new initiatives seem to be bringing the Center for Northern Studies closer to fulfilling its goals than we have ever been before. In the past year we have revivified our Board of Trustees and begun a planning and development process that is already beginning to bear fruit. We have received several foundation grants for improving our facilities and carrying out the planning process. We are giving strong consideration to changing our focus toward graduate level education, with the prospect of being able to offer a Master's degree in Northern Studies. We would continue to accept qualified undergraduates into the program, but would not compete in the "adventure semester abroad" market. We have made a number of connections with other insitutions, both in the United States and abroad, and many of these should lead to a broader-based student body and a variety of ways of creating interconnecting programs. Most importantly we have been deeply involved in the early stages of creating a University of the Arctic. As this initiative develops, we hope to continue to have a major role. It certainly appears to be the most promising avenue for us to finally make major strides toward fulfilling the goals we set for ourselves in 1971.

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13. Experiences and remarks on the first years of the Arctic Studies Program[1]

Lassi Heininen

I worked as the coordinator of the Arctic Studies Program (ASP) at the Arctic Centre, University of Lapland, Rovaniemi, Finland, from 1991 to 1995. The program was established and had its name when I came to Rovaniemi to start my work in the Fall of 1991.

The first basic course of the ASP—called *Introduction to the Arctic* at the time—took place in the Spring of 1992, and since then the ASP basic course has run annually in the Fall. In the Spring of 1993 the program expanded by a new level, the Advanced Arctic Studies (AAS), a half-year course for those who have completed the basic course. All together, by 1993 ASP was a one-year study program.

The last basic course coordinated by me, which was the fourth year of the basic course of the ASP, was in the Fall of 1994, with twenty students. The Advanced Arctic Studies (AAS) of the Spring of 1995, with ten students, was my last AAS. Until that time there had been about ninety students whom I had taught and guided in the program.

Most of them had completed the ASP, either the basic course or the whole one-year program, by the end of Spring 1995; some in the short run and others in the longer run. Some of the ASP students—e.g. Maija Laukkanen and Sirpa Seppänen who completed the one-year program of the ASP Diploma in Arctic Studies in December 1994—were with me almost from the beginning. When they said to me, "You can't get rid of us!" I appreciated it very much and am still pleased about it.

The following four points of view are my experience and the principle results of being the coordinator, and the original designer, of the ASP. They are first of all my personal experiences, but can be taken as some sort of creative comments or even guidelines, when thinking higher about other educational activities in the circumpolar north, including a University of the Arctic.

1. Internationalization as a tool

Students of the ASP in 1992-1994 came from eleven different countries; from Europe and America, but mostly from the U.K., Russia, Germany, Canada and Finland. They came either through the Erasmus Student Mobility scheme, or were supported privately, or by a University grant.

In those years, not only the students, but also the lecturers of the ASP, came from many different institutions and universities in Finland and abroad, such as from Russia, the U.K. and the U.S.A. The ASP had both excellent and motivated students (both foreign and Finnish), and the institute and I had broad national and international contacts, interrelationships and networks.

All the teaching and most of the activities in the ASP were, as they are still, conducted in English. Therefore, the ASP had at the time a very international atmosphere and context. Perhaps it was one of the first real international study programs in the Finnish universities, which phenomenon nowadays is more common, and seems to be even a "must" in Finland. For the ASP this was natural, of course because of the foreign students, but also because of the idea of crossing the borders of the northern and Arctic studies programs.

According to my personal understanding of the ASP's internationalization, having included the use of the English-language as a tool meant

simply enabling students from different universities and countries to come to study northern affairs and regions and even the relationships between different phenomena.

2. "Made in Finland and Lapland"

The ASP has its roots in Finland, in Lapland, and in the traditions of the Finnish university research and knowledge. The ASP is planned, organized and coordinated in its "own" way"; it is not a copy of any other study program.

The program has been developed with our own ideas, ways, knowledge, experience and understanding, and with some Finnish and northern rough edges. At the same time the curriculum of the AAS was flexible and redesigned according to the interests of the students.

Some elements of the ASP might sound non-academic, and only exotic, but they were important and relevant in order to be able to understand the students and how they feel. Someone can take this as a weakness of the study program; for me it was, however, a richness, even a precondition for its being fresh, and to have new and interesting points of view about how to study.

3. Subject-oriented

During the first basic courses of the ASP, I heard on the campus of the University of Lapland that in the end the ASP is just some sort of a "tourist" course, not a real study course! Well, in a way this is true as far as our traveling and excursions are concerned. I would, however, call the ASP either "hero tourism" or "science-tourism"! For the ASP students and teachers, travelling and exoticism have been a method for concentration and to illustrate the substance of the studies. It is first of all about subject-matter, and a little bit for fun.

For example, the Kilpisjärvi excursion in the beginning of the basic course in September was intended to give the ASP students a possibility to find their personal touch or general point of view about the North and northern affairs, and particularly about Finnish Lapland and her nature. Therefore, one of the most important tasks given to the students during the excursion was to try to discover your own North!

There were of course also traditional elements as a part of the teaching, such as lecturing to a class, essays, and some, but only a few, examinations and grades. In my mind, however, the latter elements, especially examinations, were not needed in the one-year course of the ASP, mostly because of high motivation of the students.

In the AAS the main idea was to put together the theory and the practise, words and deeds, both in a theoretical level, and in a practical level and by flexible ways. This was done for example by showing and creating a process which is a relevant phenomenon e.g. in the relationships between ecology and society. In practice it was not only to talk about the importance of crossing the borders, as well as limits, but also to cross borders like national borders by yourselves.

This phenomenon includes an aspect of trying to find alternatives and relevant points of view in order to solve problems, first of all dealing with the relationship between man and nature, ecology and society.

In my mental map the ASP had both academic as well as practical purposes. All the influences of human activities—either the utilization of natural resources damaging or protecting the environment—are impacts of decisions made by politicians and other people in different societies and in the international system at social, political and economic levels.

In the teaching there were also other new trends and activities such as science tourism and travelling, discussion and debate about a principle, practical affair, or problem. The so-called role game has been my method for showing and demonstrating the multi-dimensional and complex situation of the international system and the circumpolar north in the 1990s; and to have an interesting and stimulating puzzle about how to conceptualize the situation and preconditions for sustainable development in the Arctic, or in some northern sub-region like the Kola Peninsula.

This teaching and discussion was led by different lecturers, such as the experts of Neste Oy, reindeer herders, state officials, and not only by university professors. This was to narrow a gap between the academic world and the surrounding world.

4. Also Understanding

What is the idea or meaning of the program: an overview of Arctic and northern affairs, as we were advertising? The Arctic/circumpolar north is the focus, and knowledge about that is essential. I would also, however, include feelings and atmosphere: e.g. having a sauna, going for a swim in a lake and hiking on the top of the nearest fell instead of a lecture, and better understanding, in order to have more tolerance of other cultures.

I emphasized to the ASP students that in the ASP we take into use a machine and way that is already effective enough: a Human Computer! It can handle new and fresh facts as direct knowledge, but also feelings and atmosphere, and finally an understanding of northern affairs.

If the program can create understanding, or at least a readiness to try to understand, the most important phenomena and interrelationships of northern affairs, we have gained much. In my mind the core of the learning process goes in principle according to following the steps of: facts, knowledge, atmosphere, understanding, or elements for understanding.

At the same time it is important to emphasize that one of my main ideas when coordinating the study program was not to produce, or even try to produce, any Arctic "freaks." Instead it was to create that readiness to understand northern phenomena and regions and, even more important, interdependence between different elements, phenomena and ecosystems.

That is why, in the basic course of the ASP, we went into the core/focus of the course i.e. the Arctic. In the next level, in the AAS, however, we were there, yet also came out and tried to take the Arctic, and the circumpolar north, as a part of the globe.

I call this a journey toward and to the Arctic, which we took the students with us on; at the end of the journey we also pull the students back to the world.

The point here is that the Arctic/circumpolar north is only a part of the northern hemisphere and the globe. It can be used like a laboratory, as can any other geographical regions of the Earth, in order to understand new phenomena and challenges, different cultures and nations.

Beyond the ASP

Maybe one of the most important results of the study course was to encourage and motivate the students and not only give them enough knowledge and understanding to ask relevant questions dealing with the North and northern affairs, but also enough knowledge to know answers, or from where to find, answers as well.

In my last term as coordinator of the ASP a question about developing the ASP was raised: what is possible and useful? ASP as a one-year study program, or as a degree program, or even as a graduate school, in arctic or northern studies?

This was natural, because there was an agreement that the basic course *(Introduction to the Arctic)* was ready and complete, including the aspects of exoticism and hero tourism for undergraduate students.

The Advanced Arctic Studies was under development in order to, on one hand, integrate it into the research and research projects of the Arctic Centre and to utilize the experience of the researchers of the Arctic Centre. And, on the other hand, it was also to cooperate with the faculties of the University of Lapland and the other universities such as the University of Oulu and that of Helsinki. A natural goal, then, would be to recruite the AAS students to the research projects of the AC and the faculties of the University of Lapland, which would be an activity beyond the AAS.

Adding more weeks of study and a Master's thesis to the ASP creates a Master's program in Arctic or northern studies, as was done in the Fall of 1995. Building up a study program is not, however, only mathematics or manifestation. It is a process—a "step-by- step process"—including intellectual resources and activities and networking, which should guarantee proper, and enough, higher education in the major subjects of students, and not only in general in northern studies.

One could have either a degree program or a graduate school, but in any case build up a process, together with faculties and other universities at the national and international levels. This is the way, especially with a graduate school in northern affairs, to have northern researchers and other experts with a strong major subject and who are not "only" experts of general northern affairs.

These things are important for the main tasks and challenges of the future in the circumpolar north, which we are already facing in the 1990s. We say that sustainable development, which the Arctic Council has taken as its main principle and goal, is needed all over the globe, and especially in the circumpolar north. The question of how to reach it is also a common challenge for education, lasting much longer than from the first years of the ASP, with our stimulating puzzle, to the beginning of a University of the Arctic.

1 This article is based on my Address to the ASP-students in the Course Completion Celebration in Rovaniemi, Finland on December 15, 1994; and my presentation in the Panel on "Teaching and Learning from the North" (a professonal meeting dealing with Northern Studies Programs at the Circumpolar Universities) at the CUCC 4 in Prince Georgia, British Columbia, Canada on February 24-26, 1995.

14. My three years with the Arctic Studies Program

Arja-Liisa Räisänen

In the Spring of 1996, the Arctic Studies Program—ASP—had an excursion to Inari, which is a small multicultural village in northernmost Finland. The center of Inari village consists of some houses, one hotel, with a bar, some handicraft and souvenier shops, two grocery stores, a school and a church. All these buildings are situated along the main road, which runs through the village. Inari is also a center for Sami people in Finland. The Sami Parliament, Sami Radio, Sami Museum and Educational Centre for the Sami area are all situated in Inari. The main sources of livelihood are agriculture, forestry, fishing, reindeer herding and social services. The inhabitants of the village are Sami people, Skolts and Finns and you can hear at least several languages being spoken: Finnish, Sami, Norwegian, English and German. The village is also popular for tourists from all over the world and you can see them everywhere taking photos.

The aim of our excursion was to give an insight into the multicultural north. The students had the task of making observations of how multiculturalism was visible in the village. The students spent one afternoon in the village visiting the shops, the church and the local bar. The students found their task very difficult and frustrating. They felt that there was nothing, except the road signs in both Finnish and Sami languages, that showed that Inari was a multicultural village. Even when they were sitting in a local bar and talking with local people, either in German or in English, they did not see or feel the multicultural atmosphere in Inari. They did not pay any attention to the fact that local people smoothly changed languages several times in one discussion. With Germans they used German, with Finns, Finnish, with their Sami friends, Sami, and with the ASP students, English.

Some of the students were disappointed, because they did not meet "real" Sami people. The biggest disappointment was that they found the centre of Inari village to be too "modern." This showed that most of the students had romantic and even unrealistic expectations. They were expecting to see indigenous people with colourful costumes, reindeer with sledges and traditional Sami houses, called "kota." They wanted to see proof, or signs, of "traditional" culture. In reality they actually met people of different ethnic backgrounds and cultures, but they were unable to recognize it.

This story of the ASP excursion illustrates those challenges that we have to face when planning northern or arctic study programs. One of the biggest challenges is how to make the students understand the diversity and complexity of the north, to see what is traditional and modern, to realize the relationship between continuation and change.

When I started my work in 1995, the Arctic Studies Program was already three-years-old. It was established at the University of Lapland in 1992 to increase internationalization at the university. Outi Snellman, Director of International Relations at the university, and the former ASP coordinator, Lassi Heininen, were the key actors of the ASP. In the Spring of 1992, when the pilot phase of the ASP started, more than fifty students applied to the program, most of them Finnish. Seventeen students were accepted and they all received a certificate. Twelve of them continued their studies in Spring 1993 and they all completed the pilot advanced phase of the program. In 1993, after the establishment of the ERASMUS exchange program, the number of international students increased, and the program became a truly international program.

In 1995, the University of Lapland and the Arctic Centre decided to reorganize the structure of the ASP and develop it into a Master's level

program. This task was given to me, when I began my work as a coordinator of the ASP in early Spring of 1995. It was quite easy to start to develop the new ASP, because of the good planning work which was done before my time. The new structure and content of the program was planned together with the Arctic Centre's researchers. It is important to point out that the content of the ASP was and still is based on the expertise of the Arctic Centre's researchers. After several meetings with the researchers, we agreed that we wanted to offer a wide variety of courses from different themes, which covered ecological, political, social and cultural aspects of the north. Although the ASP was structurally reorganized, it still had the same goal: to provide a broad multidisciplinary insight into the circumpolar north. We wanted to educate experts in northern and arctic issues.

The new structure of the program divided the studies into three units: Basic Studies (fifteen credits); Advanced Studies (fifteen credits) and a two-year Masters program (fifty credits), which included Basic and Advanced Studies but also a thesis project, worth fifteen credits. The program was open for both Finnish and foreign students. It has been possible for students to study either one semester and complete the Basic Studies, or stay for the whole year and do both Basic and Advanced Studies. The Basic Studies consists of introductory courses on various themes dealing with the circumpolar north. The courses cover environmental, ecological, social, political and cultural themes.

The second phase of the program aims to broaden students' understanding of the north. We would like to give the students the possibility to specialize in certain topics or themes. In practice that opportunity has seldom been a reality, because so few of the exchange program students—those who have come to form the basic student body of the program—have stayed for the whole year. It has been more practical that all students (8-12) have participated in all courses during the Spring term. However, the possibility of specializing in certain fields has been given to students in another way. It has become the custom that the students have been able to choose their research paper topic individually according to their interests.

During these three years, the Master's program and the degree of Master of Arctic Studies has been completed by three students. From the very beginning of the Master's program, few students have been interested in it. This is partly due to the fact that most of the ASP students have been exchange program students, who only stay for one or two semesters. The other reason has been the status of the Master's program. It has been a so-called "international degree," which under the Finnish educational system has not qualified as formal postgraduate studies. Developing the Master's program and integrating it into the Finnish educational system is the latest challenge for the Arctic Centre.

As a matter of fact, the entire Arctic Studies Program is under reconstruction. According to our plans, the future Arctic Studies Program will be developed into Master's level studies. The Program will be situated within the Master's school system at the University of Lapland, but remain organized and coordinated by the Arctic Centre. The researchers of the Arctic Centre will be responsible for teaching and supervising the thesis work. The new program means a stronger connection between the University of Lapland and the Arctic Centre. The ASP students will be registered at the University of Lapland, or at their home universities, and complete their degrees at their home institutions. The new ASP offers high level courses, so-called Advanced Studies *(syventävät opinnot)*, which give a broad interdisciplinary understanding of the Arctic. The new ASP will be a two-year program. It will be open to both Finnish and foreign students, as well as exchange students. Although the program is intended to be a two-year program, it will still be possible to study only one or two semesters of it. Annually, twenty students will be accepted into the program.

Since its beginning, the courses in the ASP have been held in English and the students have done all exams in English. The use of the English language in teaching has made it possible to develop the ASP into an international multicultural program. During these years we have had students from Germany, Austria, France, Russia, Hungary, Spain, Italy and Japan, as well as from English-speaking countries, such as the UK, USA and Canada. The use of the English language is sometimes difficult both for the students and for the lecturers. Actually, during

their studies all ASP students have to adapt to "foreign English." This means an adaptation into the German, Russian, Finnish, Canadian, British, American, Russian, Japanese, Swedish, Norwegian, or Sami, ways of pronouncing English words. One former student once noticed that by the end of the ASP studies we were all speaking "ASP English," a mixture of several languages and funny pronunciations. The use of English in teaching has also had positive effects. It has become a tradition for native English speakers to help their fellow students with essays and study papers by checking their English grammer and the spelling of the words. This has strengthened the ASP spirit among the students.

The planning part of my work, although interesting, is not the most challenging part. The real challenge has been working together with the students, for they are from different cultures, different educational systems and represent a large variety of disciplines. These multicultural and multidisciplinary aspects of the student group enrichen it, but also make it very demanding both for the teachers and students. During my first two semesters as a coordinator, I took part in lectures and gained much knowledge about the Arctic side-by-side with the students.

By joining the lectures I not only gained knowledge about the north, but also learned different teaching methods. In our program, the Arctic Centre's researhers use not only traditional lectures, but also seminars, group work, case studies, role play and excursions. When participating in the courses I realized that students learn new things not only from the researchers. They learn much more from each other, e.g. when we were discussing about the ecological and political situation on the Kola Peninsula, the Russian students who came from that region could illustrate the situation through their experience and everyday life in much deeper ways than the lecturer. In practice this means that our ASP teachers use the students' multicultural and multidisciplinary background as a resource. The interaction between the students and teachers has always been the key philosophy in the ASP. We encourage our students to be active and critical; we want them to ask questions and use their previous experience and knowledge as part of the learning and teaching processes.

The multidisciplinary background of the students is sometimes also a problem. The students might find the logic of disciplines other than their own to be very strange. For example, cultural studies students have had problems following the ecology courses, because even the basic biological concepts were not familiar to them. On the other hand, natural science students have had problems in understanding courses of the anthropological kind. One physical geography student once came into my office and complained in frustration that anthropology is just stories after stories, with no objective facts. We have tried to solve this problem by discussing with the students the ways of doing research in different disciplines. Also, the different educational systems that they come from sometimes cause problems, for example, in deciding how to transfer ASP credits and marks into the students' studies at their home institutions. Hopefully, the now-established ECTS (European Credits Transfer System) will solve that problem.

When beginning their studies at the ASP, students have to adapt to new situations in many ways. They have to adapt to the atmosphere in Rovaniemi, which is a small northern city. They have to adapt to the cold climate and dark *kaamos* period in autumn. They have to learn to cope with students from different cultures. I consider this adaptation to the different environment and cultures and to the multicultural and multidisciplinary student group to be the most important part of the ASP. The possibility of studying together with people from different regions of the north and south helps the students to understand the diversity and complexity of the north. Especially the field trips to the North Calotte and Kola Peninsula have raised the consciousness, of both the students and myself, about the fragility of the northern environment and cultures.

In the Autumn of 1997, we had a ten-day excursion that showed many aspects of life in the north to the students. It was interesting to follow how the consciousness of the students rose during the trip. When travelling in Finnish Lapland, the students took photos of people and houses without any hesitation. But this attitude changed when we visited a small Sami village in Russia. We all felt like intruders when our big bus drove into the village and children

gathered around us. When walking through the narrow alleys it no longer felt right to take photos of houses or people without asking permission. Before we left the village, the students wanted to buy chocolate from the local store. They all ran into the shop expecting to see a Western-style supermarket. Instead of finding drinks, candies and bread, they came out empty-handed. One of the students told how the shelves of the shop were almost empty, and if all the students had bought something, nothing would have been left for the people in the village. After our visit, the students began to realize what the realities of life are for the small indigenous nations in the north.

During these three years when I have worked as a coordinator of the ASP, sixty-five students from different countries have studied in our program and sixty of them have received either a Certificate or a Diploma of Arctic Studies. An international Master of Arctic Studies degree has been awarded to three students. The program has matured during these years. In 1995 an evaluation system was established. The students were asked to evaluate the structure and content of the courses. The evaluation forms were collected after each course. At the end of each semester, the evaluations were given to the teachers and evaluation meetings organized. Student evaluations of the courses have been very important for the program, because they showed us the way to develop the courses. The evaluations have helped us to find new teaching methods and diminish overlap. The meetings with the teachers have also been important for increasing the interdisciplinarity of the courses and the cooperation between lecturers.

When writing this essay in early July, the corridors of the Arktikum building and the ASP classroom are empty and silent. The students have left us and traveled home, hopefully with new ideas and experiences. As the students were leaving, the new ASP students for the coming year were being selected. Twenty-five new students, from the USA, Canada, Egypt, Finland, Germany, Russia and the United Kingdom, will begin their studies in September. At the very beginning of the term we will travel with them to the northernmost regions of Finland. The aim of the excursion will be to give them not only an academic understanding of the north, but also a first-hand personal experience—the feeling of the north.

15. Anthology of the Baltic University Programme: a view from St. Petersburg

Victor Ionov

In January 1998, in Moscow, Russia, the international workshop on the implementation plan for LOIRA, Land-Ocean Interaction in the Russian Arctic, was held. This project, or rather multidisciplinary research programme, is a Russian Arctic adaptation of the international LOICZ (Land-Ocean Interactions in the Coastal Zone) Programme.

Victor Ionov: *Associate Professor of Oceanology, Head of the Department of Oceanology, Faculty of Geography and Geoecology, St. Petersburg State University; and Director of the Division for International Baltic and Arctic Projects (DIBAP).*

There in Moscow I first met Richard Langlais and even heard from him about the new project for a University of the Arctic. After some discussions, he convinced me that I could be a member from Russia of the circumpolar university Working Group. It reminded me of the start of another co-operative international university programme: the Baltic University Programme. This Programme is a regional university network among more than 135 universities in the fourteen countries in the Baltic Sea basin.

The Programme offers undergraduate credit courses using satellite TV and runs joint research projects. The subjects chosen are those of common concern to the entire Baltic Region, and where international cooperation is of key importance, such as in environmental issues and the development of democracy. The Baltic University Programme is coordinated by Uppsala University, Sweden.

Kalmar, Sweden, February 19-22, 1991. *The Planning Conference of the New programme put together thirty-three participants mainly from universities of all countries around the Baltic Sea seven years ago. St. Petersburg (former Leningrad) State University sent two representatives: Assoc. Prof. Dr. Victor Ionov as a teacher, and Senior Researcher Dr. Oleg Savchuk as an expert of the Baltic Sea problems.*

The idea of such a Co-operative Educational Programme with the use of TV as a medium for university-level courses was a more than very ambitious one. It was the time just after the capture the TV tower in Vilnius, Lithuania, by Soviet troops. At the end of the first day of the conference the participants signed a special document:

February 19 - 22, 1991
AN APPEAL TO NOBEL PEACE PRIZE WINNER, PRESIDENT M. GORBACHEV

We have gathered here from nine nations under the auspices of Uppsala University Baltic Sea Planning Conference at the Kalmar Telecommunications Centre to develop a Teaching Project which will link research and teaching, faculty and students around the Baltic Sea using the modern media of television transmission.

This project will research and present an accurate state of the ecology of the entire Baltic Sea Drainage Basin and instruct students in all nine countries (the USSR was still in existence and three Baltic countries, Ukraine and Belorussia were not yet independent. V.I.) in those skills necessary to project and preserve this ecosystem.

We are concerned that the present occupation of Radio/TV Tower in Vilnius, Lithuania will seriously hamper such a communication link and we are further concerned that a similar fate awaits the transmission towers in Latvia and Estonia.

For this reason, we appeal to you to return the Vilnius, Lithuania Radio/TV Tower to its normal function and to maintain the normal functions of Estonian and Latvian systems as well. In this way, you will be contributing not only to the preservation of

peace in the Baltic but also providing the opportunity of the preservation of the Baltic Sea for future generations.

This document was signed by the participants from thirty universities in their individual capacities.

In those days, to believe that after half-a-year the Programme would be running was close to impossible. But the Leader of the new Project, Lars Rydén, was a so enthusiastic and dynamic person that I decided for myself that I would do my best just to help him personally in spite of the feeling that the Project looks like a dream that is quite far from the reality of the eastern part of the Baltic rim. The most important and difficult task was to explain the idea after coming back to the East and to recruit some non-standard, open-minded people in our home University, within the St. Petersburg and Russian part of the Baltic Region.

Leonid Tikhomirov -
member of the science group of DIBAP;
singer and songwriter.

I live on the Vasilievskiy island and the windows of my flat look onto the Gulf of Finland. Good place for dreaming. So in Summer 1991 I dreamed about walking around the Baltic Sea and had a plan—nine countries and one hundred cities in three months, or two months by bicycle, or one month by car. The political situation changed so fast in that summer and this dream looked possible in the new conditions of freedom.

We studied together with Victor at the Department of Oceanology and said "Goodbye" to our Alma Mater in 1971. We met each other again on the twentieth anniversary of our course. I told him about my crazy plan and he answered, "Great! . . . But it's better to realize it within the new International Baltic University Programme."

For some weeks I tried to find a sponsor and came down soon from the clouds to the ground. "It's better to write a song about the Baltic Sea!" I decided. Thirty years I played guitar, worked in musical theatre and had a long list of my songs. OK: in November the song was ready in both audio and video versions. At that time we prepared some video materials for the first course of the Programme and the song, called "SOS—Save Our Sea," stands as a dessert to this banquet. It was a surprise for me and my friends—this song was included with the video-lessons and become an official hymn of the Programme.

SOS – Save Our Sea
Leonid Tikhomirov

Throughout history the Baltic Sea has tied together the people living around its shores. Now the Sea is in danger. Today's industrialized societies around the Sea threaten to destroy its water, its bottoms and its life forms—our living environment. It's time to understand it and help to the Sea. Right now, friend!

I like to spend the evening time by standing on the beach.

And I'm delighted by the colours of sunset.

Wherever I've been far from this shore I can't forget this sight.

This charming view of Baltic Sea I can't forget.

A long time ago the people came here to found life on these shores.

The sea was kind. It gave to people everything.

Today it's tired but still we're giving it poison and death.

What will the Sea give back to our children, our kin?

I want to go into the Sea without fear and pain

And deep my body up to my face. This is a way, it should be.

And when the fresh wind takes away the clouds of dirty smoke

I'll see the white gulls and clean blue sky above the Sea.

Look at the map, my friend. The Baltic Sea seems like a big blue bird

That brandishes wings above our peaceful northern lands.

Let's save its health! Let's save its life! Because it's our life, my friend.

It's time to do this and it's time to understand.

"The Baltic Sea Environment," (BSE) was organized in 1991/92 with the participation of eighty universities in the region. The course consisted of ten two-hour satellite TV sessions and a thirty-five-page booklet for each session and two space bridges/links between universities and local seminars. The BSE course outlines the

total environmental situation of the Baltic Sea region.

Contents of the course:

1. The geoecology of the Baltic Region.
2. Life in the Baltic Sea—a lesson on Ecology.
3. Eutrophication of the Baltic Sea.
4. Man and the Baltic Sea.
5. Industrial emissions and pollutants.
6. Toxicology: environmental impact of pollutants.
7. Environmental economy and law.
8. The Future of the Baltic Sea.
9. Water and wastewater management.
10. The prospect of a sustainable society.
11. Environmental Projects in the Baltic Sea.
12. Environment, economy, health and politics.

Victor:

-This course was first transmitted by satellite TV in October 1991 and began with a great success. It was so exciting for all in St. Petersburg State University, starting from the Rector and down to a second-year student to realise that this is happening right now. In different universities the students, panel experts and faculty are taking part in the educational process simultaneously over the Baltic region and we are just a part of the Baltic academic community. After the first TV session all students of the virtual Baltic University received special booklets as an option for the content of the satellite lessons. The university level course was started.

Leonid:

-I remember the first TV bridges that broadcasted from St. Petersburg State University. Buses with equipment on the bank of the Neva, cables that stretched along the corridors, bright lights, crowds of students and nervous faces of professors—some more minutes and northwest Europe will see us. We are TV Stars!

My activity inside a Project at that time was connected with publicity, video, music—such unusual things for a science and educational group. But each of us tried to do his part of the work professionally. Of course there were many mistakes and wrong steps and our life at the Department was a mini-copy of the life of the country. Astonishingly the time of foundation of this Project coincided with changes in Russia and our lives as a whole. Our problems were the same as the problems of the country.

"Peoples Of The Baltic" (POB) was a series of programs, complemented by the booklets, conveying a general understanding of the societies in the region, of the processes of establishing independent nations in the emerging democracies, and forming new relationships between new and old states. POB was organized in 1993/94 with the participation of one hundred universities in the fourteen countries of the Baltic Sea basin.

Contents of the course:

1. Meeting-place Baltic.
2. Baltic Empires
3. The Multicultural Baltic Region.
4. Democracy in the Baltic Region.
5. Minority Rights, Human Rights.
6. Towards a Security Community in the Baltic Region.
7. The Future of the Baltic Region.

Victor:

-To run the Baltic University Programme even in one University was a rather complicated task. It was obviously that much harder to create a network of several Universities within the region even in one country. First we started to disseminate the information about the new project in other Universities and Research Institutions. We did it through the people, mainly friends graduated from our University some years ago and who are working now all around the Russian part of the Baltic Region. Together with our Swedish partners we visited many universities in St. Petersburg, and other cities were very important and helpful for creating the new thinking about the real international cooperation for education in the Region.

Leonid:

-Good atmosphere is a sign of our "firm." First of all I think it comes from Lars Rydén of Uppsala University, the Director and main coordinator of the Programme, and other chiefs in the local centres. We try to keep it in our group.

A new tradition in the Programme is organization of the meetings of the chiefs in

different cities of the Baltic Community. In June 1997, we received the guests in our University. Besides the conferences and official ceremonies, the visitors got an excursion around the city and beautiful suburbs, went to museums and had a great dinner in Peter-Paul Fortress, with a home-cooked fancy six-kilogram cake (six years of BUP) with a map of the Baltic Sea on the top. And for the finale a small ship carried us down by the Neva under the rising bridges with merry songs and all kinds of SPb beer. All white night!

Our common language became a "Baltic English"—a mix of fourteen accents of original English. No country in our cooperation has English as the official language, but half of them speak or understand Russian. However, I think that using English is better for the songs about the Baltic Sea. By the way, during those meetings I wrote a new song for BUP. It's called:

Around The Table
Leonid Tikhomirov

Let's sit around the Table that is the Baltic Sea.
It's time to work on problems postponed for all these years.
It's time to be the masters of this surrounding land,
'Cause our life goes on without end.
So much divides the people who live on Baltic banks.
We're speaking different languages and holding different ranks,
But we all truly understand the call of wind and waves:
On every beach their sound remains the same.
Sky and seagulls, dunes and rivers,
Stones and seaweed, snow and ice,
Ships and networks, towns and peoples:
The Baltic lives, lives for us.
Bays and islands, granite and pine trees,
Clouds and rain, asphalt and grass,
Roads and bridges, maps and dreamers:
The Baltic sings its song for us.
Let's sit around the table and drink some tasty beer.
We know how to brew it—about that have no fear.
Together raise our glasses so full of amber drink.
No barriers to do our common things.
Vashe zdorovie! Kippis! Prosit!
Uz veselibu! Skool! Terviseks!
I sveikata! Skoll! Na zdrowie!
Drink it together for our health!

Victor:
-The Division of International Baltic and Arctic Projects (DIBAP), or the Centre of Baltic and Arctic Studies, as a university unit at SPbSU was formally created in May 1994. DIBAP has a function of the Russian Centre of the Baltic University Project and now is responsible for the twelve universities-participants in Russia—from St. Petersburg, Petrozavodsk, Novgorod and Pskov.

"A Sustainable Baltic Region" (SBR) was organized in 1996/97 with the participation of 150 universities in the fourteen countries of the Baltic Sea Region. The main components of the course are a TV series of ten programmes, produced through the cooperation of a consortium of national TV companies in the region, broadcast via satellite TV and national TV channels, a series of well-illustrated booklets and a database on national resources and environmental impact in the region, available via the Internet.

Contents of the course:
1. The Road towards Sustainability.
2. Energy.
3. Man and Materials Flows.
4. Food and Fibres.
5. Sustainable Industrial Production.
6. Towards Sustainable Mobility.
7. Community Development.
8. Ecological Economics.
9. Foundations of Sustainable Development.
10. From Intention to Action.

Taulukko tähän

Victor:
-One can say that the figures show a decrease in the number of students in the Baltic University Programme and our University from the first years of the Programme. Yes, it is so. But we also should keep in mind the tremendous changes in our country. The students in St. Petersburg now are able to choose between several international programmes in our University and in others as well. They also can go abroad for summer school study or even for substantially long periods. That means we have the only students who are interested in the subjects of our courses as they are. Nobody comes to us now just because we are part of an international Programme.

Leonid:
-I think that seven years is the age for changes. We felt it the last semester—something still living, something needs changing, something for dying. In the end of the academic year (April 1998) we organized DOD—the Day of Opened Doors. We invited our students of the past and present years for discussion about our success points and problems. It was very useful conversation and we decided to have the same meeting annually.

Now we know how and what to do ahead. In October 1998 we're going to open our eighth working season and next seven-year-cycle (SYC). And I will think about a song for the Arctic University. Why not? It seems to me that it's ready (in Russian) and called "Wind and Snow-Storm."

Victor:
-Today we are thinking about the use for our network of old partners within the BUP cooperative Project and the young colleagues for the former BUP students of new educational and research projects. Who knows, perhaps after some years we will write something about the history of the establishment of the Northwest Russia Network of the University of the Arctic?

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16. The case of the Arctic: Scandinavia, the Barents region, and the Circumpolar North. Examples of trans-regional educational partnership

Esko Riepula

Background

In the decades between the world wars (1919-1939), Northern Europe was divided into nationalistic states. The countries in the region had little to do with one another and the relations between them and, in particular, their relations with the Soviet Union, were characterized by mutual suspicion and even hostility. This isolationism and suspicion had its origin not only in the differences among the social orders of the countries but also in the cultural and religious border between East (Constantinople) and West (Rome) which has run through the region for a millennium.

Even the Nordic countries (Sweden, Norway, Finland and Denmark), which can all be considered Western, kept their borders closed. Each tried to maintain its own national character, independence and identity by isolating itself from foreign influences. One manifestation of this trend was the strict language policy adopted by Sweden and the closing of what had been an open border between Sweden and Finland. Swedish citizens living along the Finnish border, who were traditionally either bilingual or mostly Finnish-speaking, were forbidden to use Finnish in school or official business in the decades between the wars.

After the Second World War, the situation changed dramatically. The period saw the establishment of the **Nordic Council**, a joint political body for cooperation among the Nordic countries, and the **Nordic Council of Ministers**, the practical organ for cooperative activities. The creation of these bodies, coupled with increased political and economic cooperation, led to the Nordic countries' approving free movement of people—the Nordic passport union—as early as the 1950s, as well as to the establishment of the common Nordic labor market, which offers the citizens of each country equal access to employment in the region. Operating alongside these official channels was the organization **Norden**, a friendship society based on free civic activity which made its own distinctive contribution to cooperation among people and civic organizations throughout the Nordic countries.

After the War, the relations of Finland and the other Nordic countries entered into a period of peaceful coexistence with the Soviet Union. This development brought a stability to the relations between the Nordic countries and the East, which endured throughout the Cold War period, from the 1940s to the early 1990s.

Increased political and economic links sparked increased activity among civic organizations throughout the region. Chief among these organizations was Norden, which promoted cooperation at the grass-roots level across borders. National friendship societies operating in each country promoted contacts with the Soviet Union, although this work was not multinational in the same way as that of Norden.

This grass-roots level civic activity led to increased cooperation among the northern parts of Sweden, Norway and Finland (the **North Calotte**, or Skullcap) in the 1960s; Iceland joined somewhat later. The principal forum in which

this cooperation has taken shape - for four decades now - has been the biennial **North Calotte Conference**. The conferences have dealt with international and national issues which are important to development in the Calotte region.

The prime mover for the North Calotte conferences and for international cooperation in the region was **Ragnar Lassinantti**, governor of Norbotten, Sweden's northernmost province. Indeed, it is to him that we owe the term "calotte", or skullcap, which describes the position of the region on the globe. (The region is like a skullcap on the Earth's head.)

Ragnar Lassinantti was born along the Finnish border in Norbotten, an area where most of the people were Finnish speaking. As part of Sweden's attempt to assimilate the population of the region, however, in the 1920s and 1930s it was forbidden to use Finnish in the schools or make Finnish literature available in the libraries. Mr. Lassinantti's mother was born in Finland, spoke only Finnish and, as an avid reader, had to have something to read in Finnish. Her son, also an avid reader, secretly borrowed books for his mother from Finland. This was the impetus—as Mr. Lassinantti himself has said—for his burning desire to promote Nordic cooperation in all aspects of language and culture.

As a promoter of cooperation in the Calotte area, Mr. Lassinantti became a living legend during his term as governor of Norbotten from the 1960s to the 1980s. He personally launched a wide array of supranational initiatives concerning the region and set numerous projects in motion. He was a personal friend of all the heads of state in the region at the time and a political presence that transcended individual parties. One example of his accomplishments is the **Cooperation Commission of the North Calotte Universities and Colleges**, a network for establishing and maintaining contacts among the institutions of higher education in the region.

The Cooperation Commission of the North Calotte Universities and Colleges

As late as the end of the 1950s, opportunities for higher education were still utterly lacking in the northernmost part of Europe. Even research on the North Calotte had been more in the "expedition" vein, aimed at bringing new, or at least previously unknown, information to the national centers; the research on the region had not been undertaken for the benefit of those living there.

The postwar era brought a change in this regard as well. Universities were founded in the northern parts of Sweden, Finland and Norway: The first was the University of Oulu in Finland, founded in 1958; next came the University of Umeå in Sweden, established in 1965; this was followed by the University of Tromssö in Norway, founded in 1968. The principal aim of these institutions was to serve the people of the respective regions through research and teaching and to promote comprehensive development of the regions. In short, the universities were founded in and for the regions in which they were located.

The other cooperation that had sprung up in the North Calotte fostered increased cooperation in the higher education sector as well. Work focused specifically on higher education was begun in the late 1960s and resulted in the establishment of the **Cooperation Commission of the North Calotte Universities and Colleges (Sw. Samarbetskommissionen för Universiteten i Nordkalottområdet)** in 1971.

According to its bylaws, the Commission is to function as a cooperative network among the northern parts of Sweden, Finland and Norway in the area of higher education. As far as research is concerned, it is to promote scientific and technical cooperation in the region in order to improve business life. Further, the Commission is responsible for creating joint programs for training researchers and for research on national and linguistic minorities (the Sámi).

Initially, cooperation occurred only among the Universities of Oulu, Umeå and Tromssö - the founders of the Commission. However, by the end of the 1970s, the number of participating institutions had grown, following the establishment of the Norwegian regional colleges and the Universities of Luleå and Lapland. The group expanded further in the 1980s when the University of Iceland joined.

At first, funding for joint research and educational projects was provided by the Nordic Council of Ministers; later, projects were financed

by the participating institutions through funds which they set aside specifically for joint projects to be overseen by the Commission. This funding not only provided stipends to support joint research projects but also made possible symposia and other opportunities for researchers to meet one another. When the joint Nordic exchange program Nordplus and the related funding became available in 1988, Commission-financed activities declined as project financing gradually shifted to Nordplus.

Although the activities of the Cooperation Commission are now rather limited in scope, its role in initiating and driving trans-regional cooperation over the past thirty years has been significant indeed. The position and significance of the Committee have declined with the creation of new forms of cooperation and financing; these include Nordplus, which was established in the late 1980s, as well as ERASMUS and the other EU exchange programs begun in the 1990s. The recent expansion of cooperation among northern universities to cover the entire circumpolar region have further diminished the Commission's activities, which focused solely on the North Calotte.

Despite its present limited profile, the Commission, the cooperation it promotes and the links it has forged are still very much alive. It goes without saying that it is this forum where institutions of higher education in the North Calotte are most likely to find kindred spirits when looking for future partners in cooperation. At present, the work of the Commission consists mostly of contacts among the leadership of the different universities and keeping abreast of the national higher education policy in different countries to assess the impact ongoing developments may have on the prospects of institutions of higher education in the North.

As I have said, student and researcher exchanges now take place in broader contexts than the North Calotte: their scope may be the Nordic countries, Europe (e.g., Interreg programs), or the EU and North America jointly. All of these programs offer potential benefits for trans-regional cooperation in the North Calotte. Accordingly, the work of the Cooperation Commission now focuses more on making the best use of these exchange programs in the North Calotte rather than on providing direct support for exchange activities.

The Circumpolar Universities Association (CUA)

In the early 1980s, the Cooperation Commission of the North Calotte Universities and Colleges began pursuing the idea of expanding the network of cooperation among universities beyond the Nordic countries. To this end, it invited universities in Alaska and the northernmost parts of Canada to participate in its activities. This did not, however, result in permanent cooperation; if my memory serves me correctly, a representative from the University of Alberta attended a couple of Commission meetings. As the universities in the North Calotte grew, and their cooperative networks expanded, it was natural for them to seek contacts and cooperation beyond the Calotte region; they began going global.

Two people figured especially prominently in starting global circumpolar cooperation some ten years ago: Professor **Geoffrey Weller**, Vice-President for Academic Affairs at Lakehead University in Thunder Bay, Canada; and **Douglas C. Nord**, Professor of International Politics at the University of Minnesota, Duluth. As researchers in politics, Mr. Weller and Mr. Nord were interested in universities operating in the circumpolar region, the activities of these universities, their facilities and their regional impact. They had already visited the universities in northern Russian in connection with this interest , after which, in the late 1980s, they acquainted themselves with the universities in the North Calotte.

On the initiative of Vice-President Weller, Lakehead University set out systematically to develop its international relations in the circumpolar north by signing cooperative agreements with a number of universities in Russia, Scandinavia, Alaska, Iceland and Greenland. With its newly established Centre for Northern Studies, it was a logical step for Lakehead University to host a conference with a particular emphasis on the role northern universities play in regional development. The conference, entitled "The Role of Circumpolar Universities in Northern Development" was held at Lakehead University in November 1989. Some 150 participants from throughout the circumpolar region attended the conference; the Conference provided a forum that included the

presidents and/or rectors of most of the partner institutions.

The Conference was a definite success and all of those attending acknowledged the need for it. Accordingly, the joint conference of presidents and rectors decided to continue the series of conferences through the Circumpolar Universities Association. The following conference was scheduled at Tuymen University in Russia in 1991, and the third at the University of Lapland in Rovaniemi, Finland, in December 1992, to coincide with the dedication of its Arctic Centre.

The conferences were held as scheduled. At the Rovaniemi Conference, rules were drawn up and approved for the Association; procedures were established for admitting new members; and a secretariat was set up to handle day-to-day affairs. According to the its rules, the Circumpolar Universities Association (CUA) is an organ for cooperation between universities and other institutes of higher learning and research in the northern circumpolar world. The aim of the Association is to encourage cooperation and to promote higher learning and research in northern areas.

The CUA currently has approximately 50 member institutions from all circumpolar countries, including Japan and China. A secretariat to assist the association is housed at the University of Lapland.

The Luleå Conference brought to light an opportunity for cooperation between the CUA and the then recently established Arctic Council in elaborating the University of the Arctic initiative that had been presented to the Council. Follow-up contacts led to a commission for the CUA for further preparation of the University of the Arctic initiative.

The role of the CUA has not involved the arranging of student and researcher exchanges as such. In keeping with the theme of the first conference, the CUA has been principally interested in assessing and promoting the status and role of circumpolar universities in regional development work. In this capacity, it has proven to be an excellent and effective body for cooperation and a forum for the exchange of information, experiences and research findings. However, with the increased attention to the north brought by the establishment of the Arctic Council, the time is right for CUA also to start broadening the scope of its activities. The involvement in the University of the Arctic initiative has been a clear indication of this.

The Barents Euro-Arctic Network

The Barents Euro-Arctic Region (BEAR) of cooperation was established in Kirkenes, Norway, in January 1993 through a declaration signed by the foreign ministers of all the Nordic countries and Russia. The initiative was made and has been most actively pursued by then foreign minister of Norway Mr. **Thorvald Stoltenberg**.

Mr. Stoltenberg's initiative was closely connected with the end of the Cold War following the fall of the Berlin Wall and the collapse of the Soviet Union. He was urging new forms of cooperation in a region beset by many international disputes and conflicts of interest. The agreement on cooperation he envisaged was to involve not only northern countries (Norway, Finland, Sweden, Russia and Iceland) but also the European Union and North America, that is the United States and Canada.

The **Barents Council**, which is composed of the foreign ministers of the participating states, established a **Regional Council**, which coordinates practical cooperation. The Regional Council includes a representative (governor or equivalent) from each regional administrative official (province or equivalent). The Regional Council in turn has set up a number of working groups to address development in specific fields. One of these is the **Working Group of Higher Education and Research**.

The Working Group has one representative from each of the regions represented on the Regional Council; that is, Norway has three members in the Working Group; Sweden and Finland each had one member from 1994 to 1997 but currently have two each; and Russia has three members.

The Working Group prepared a number of bilateral and multilateral projects concerning both higher education and research which were included in the Regional Council's first **Barents Programme**, approved for the period 1994-1995. One of these projects was the launching of the **Barentsplus** student exchange program.

Most of the projects approved in the early phase of the Programme (including Barentsplus) were started with the funding that was granted.

However, only Norway has set aside funds for this cooperation in the future. The lack of common funding means that in Finland and Sweden the Working Group will be left with precious few opportunities to guide cooperation.

The most extensive student exchange has taken place between the universities in northern Norway and Northwest Russia. For the most part Sweden (University of Luleå) has offered Russian students the opportunity to pursue a degree in technical fields, while the activities in Finland have been short-term exchanges related to Arctic Studies (University of Lapland) and the natural sciences (University of Oulu).

Summary/Conclusions

As we have seen, trans-regional cooperation in Europe's northernmost regions goes back three decades. From cooperation in the Northern Calotte—the northernmost parts of Scandinavia —cooperation has expanded in recent years to embrace the entire circumpolar north. Irrespective of its geographical extent, the cooperation has consistently brought to the fore the northern dimension as a value, a habitat and as a field of interaction for the people living in the region. Only research on the North done in the North and the knowledge gained from that research can best serve the needs of the people living in that region and ensure sustainable development there.

Yet, in nearly every country we can see colonialist features, as central governments attempt to steer the interaction between northern regions. These features are plainly visible in Finland and Sweden where Barents cooperation and EU Interreg projects are concerned. In these countries, the regions which will be objects of the measures involved have no power of decision regarding the use of funds for cooperation; rather, this power is distributed in central state government. Clearly, such an administration of resources seriously weakens the opportunities of the regions' own actors to take part in trans-regional cooperation. Despite such difficulties, the people living in the northern regions of Europe have a strong desire to be involved in trans-regional cooperation. The North Calotte - northernmost Scandinavia - has centuries-old traditions of cooperation interrupted only by the surge of nationalist policies between the world wars. The region has always been and continues to be, in the words of Ragnar Lassinantti, a region "in which three countries, four languages and five peoples meet and coexist peacefully with no need for measures by the United Nations."

Interaction between East and West in the Barents Region was also brisk before the political upheavals of this century. The future prospects for this work are well expressed by Mr. Stoltenberg, who has pioneered a new era in cooperation in the region. As he said last autumn:

"Now, if I am right in this (and I hope I have convinced you) then we will see, or could see in ten-fifteen years time, a sub-regional cooperation in the Barents Region, in the Baltic Sea, and in the Balkans. And if you then have a look on the map of Europe, you will notice that this zone, Barents-Baltic-Balkans, is the very zone which had been full of tension, violence, and wars through history. If we through this sub-regional cooperation and the success of the regional cooperation, in this way manage to contribute to turning this zone into a zone of peace and stability it will be of immense importance for future generations. Not only in Europe, but I think in a global context."

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Learning to be Circumpolar

17. The northern European states: new perspectives call for creative research[1]

Ólafur Ragnar Grímsson

Honourable Rector, Governor, Mayor
Speaker of the Sami Parliament
Distinguished members of the faculty
and students of the University.

The opening of the academic year is indeed an occasion to celebrate the adventure of exploring the unknown, of discovering and charting new territories in science and the arts, of sharing in the spirit of discovery which over the centuries has enabled students and scholars to transform the universities into unique communities of learning and innovation.

Although the sites of teaching and research, together with the churches, are the oldest institutions in Europe and carry in their collective memory ages of darkness, cruelty and terror as well as times of progress, enlightenment and reforms, it is certain that never before have the universities faced such fundamental challenges, such urgent demands to provide understanding, directions and discoveries which provide us with guidance through the wilderness of ever-growing change.

The century which now is coming to an end has been the bloodiest in the entire history of Europe and the world. It has produced wars and terror, established regimes of torture and totalitarian cruelty.

But this century has also been an era which greeted great advances of democracy and human rights, of scientific and technological progress which brought man into space and close to the core of the creation; a century which celebrates discoveries which give us life, health and longevity; a century which has brought the world together in such a splendid way that events are now immediately shared by everyone and institutions of learning, libraries and laboratories are opening their Internet doors to every citizen in our global village.

So overpowering and glorious are the collective fruits of these discoveries that man is now fast approaching the state which the Bible teaches was granted to God alone, approaching the very essence of the creation, the mastery of mankind's fate.

The forces of change have fundamentally altered the economic and political map of Europe and the world, and brought social transformation which affects every aspect of our daily lives, alters the family and the workplace, the schools and the seats of power, in the village and in the regions, in the nation state and in global institutions alike.

Northern Europe has indeed seen dramatic demonstrations of these changes. New states and regional organisations have been created. For the first time in our history there is now in existence an interlocked network of organisations embracing the entire area from Russia across the Baltic States and the Barents Sea through the Nordic countries, over the Atlantic Ocean and Greenland into Canada and the United States of America.

The three regional organisations – the Baltic Council, the Barents Region Council and the Arctic Council – all of them created in the present decade and all advancing in relevance and scope from each new year to the other, are a clear demonstration of the political transformation which has taken place in Northern Europe, not only bringing into being new states and new territorial bodies within states, but also creating for the first time exclusive forums for co-operation between the Northern European states and the two most important states of the

twentieth century, the United States of America and Russia.

Although the Baltic, Barents and Arctic Councils are all different in composition and purpose, they constitute together a new structural reality in Northern Europe. They show how the end of the Cold War has fundamentally changed the political and economical landscape in Europe and brought the northern regions into key positions, influencing strongly the success of the new Europe and the stability of the Russian – American relationship.

The Northern European states have now been given new opportunities for co-operation, both among ourselves and with Russia, the United States and the European Union, co-operation endowed with regional, national and global dimensions. It is therefore of utmost importance that we in the Nordic countries bring our long and well-established tradition of co-operation, open dialogue, friendship and informal approaches into the new institutional frameworks created for northern European co-operation.

It is indeed strange to look back to my younger years when in the 1960's I became engaged in the pioneering project called "Smaller European Democracies", initiated by the distinguished scholars Stein Rokkan, the most prominent Nordic social scientist of his time, and Robert Dahl, one of the leading American political thinkers of this century.

Then the democratisation of Europe was still uncertain and restricted; fascist dictatorships dominated in the southern part of the continent; totalitarian regimes kept iron grips on central and eastern Europe. Now, over 40 democratic states have become members of the Council of Europe, which was founded on the ruins of the Second World War, primarily to keep France and Germany from initiating another war, but now effectively proving the advance of democracy and human rights.

Throughout this century the universities have always been highly influenced by the forces of political, economic and social change, both in their choices of research and areas of teaching, and in the formulation of conceptual frameworks and academic boundaries.

The Cold War dominated international and strategic studies. The emergence of new states from the wings of the colonial powers changed the scope of economics and research into development, customs and conflicts. The protest movements of the sixties and the seventies brought critical perspectives to the studies of the environment, of the role of the women, of the rights of different races and indigenous populations. Recent discoveries in science and technology have raised fundamental questions on the role of interdisciplinary research and teaching.

In fact it is quite natural to wonder how the universities will be able to continue their contributions to innovation, discovery and pioneering thought when the world is being transformed so fast and in so many interrelated ways. Has the pace of progress become so great as to prevent reflective knowledge and social comprehension?

It is especially urgent for us in Northern Europe to give priority to research and teaching dedicated to furthering the understanding of the fundamental alterations taking place in our part of the world. The political, economical and social transformation in Northern Europe now challenges scholars, researchers and students to describe and interpret the multitude of change now affecting the future of the Northern European states, the potential of our nations and our communities.

Let us look briefly at some areas which urgently need more research and deeper understanding, areas where new questions need to be asked and new concepts and referential frameworks need to be formulated so our actions and decisions, views and conclusions can be directed by knowledge and wisdom.

First, the political innovation – we could even say the political creation – which in the last 10 years has dominated the evolution of Northern Europe. New states have gained independence; increased rights have been given to local and regional institutions. A network of regional organisations is bringing new dimensions to the relationship of the northern states to key partners in the future evolution of Europe and the western world. The decision-making structures are in a continuous flux and the classical academic and democratic question – Who governs, where and how? – now requires new answers, bringing into focus the nature of democratic accountability in the modern world. We could even say that Northern Europe has become a working laboratory of new political institutions and

relationships: local, regional, national and global. A proper understanding of this dynamic reality can help to make the new Northern Europe a model which others could study and follow.

Second, the relationship between environmental protection and sustainable economic growth is a crucial element in the successful development of Northern Europe. How we treat this relationship is not only of fundamental importance to ourselves but will also greatly affect the global environmental situation. Northern Europe includes such a gallery of environmental problems and challenges that it almost defies the strongest of will-powers to hope for solutions to them.

Northern Europe is a host to some of the worst examples of military pollution, to threats from nuclear wastes and unstable nuclear installations. Furthermore, climatic change could affect the Barents region by increasing sea level rise and aggravating soil erosion, and thus affect living conditions in a dramatic way. It is also a sad reflection on the direction of modern scientific research that at present we lack international programmes focusing on the development and application of climate models for predicting future changes in the Arctic. Northern Europe harbours some of the most sensitive biosystems in the world; plants and species balance on the edge of extinction. Our oceans and seas have been home to some of the most important fishing stocks in the world. Now, however, they could be threatened by the failure of our political systems to reach agreements on the management of ocean resources.

How the Northern European states deal with these daunting problems will not only have implications for the global environmental system but will also be a test of whether we can twin together political and economical reforms to secure our own sustainable future.

Third, the transformation of security structures and security arrangements following the end of the Cold War and the disintegration of the Soviet Union. Here there is a tendency to hide the new reality by still using in part the old conceptual framework.

The expansion of NATO, the need to make Russia secure, stable and integrated into the western world, the failure of the European institutions to solve by themselves the civil war crisis in some parts of our continent – all of these developments have enhanced the role of the United States in European affairs, made America an even more crucial partner in the evolution of Europe.

Although Finland and Sweden remain outside NATO, both countries have entered into formal security arrangements with NATO through the Partnership for Peace Programme and through membership of the Euro-Atlantic Partnership Council. Thus the distinction between the five Nordic states with respect to NATO and European security needs a fresh look by experts in international relations. It is now necessary for scholars and researchers to explore how these developments have changed the security concept, the notion of alliance and non-alliance; how new forms of security co-operation have affected the thinking, the training and the culture of the armed forces; how applicable or redundant the traditional security studies are to understanding these new realities in Northern Europe.

It was no coincidence that Iceland hosted last year the first NATO-sponsored exercise in which Russia participated, thus showing that the integration of Russia into the future security structures of Europe might be made easier through the avenues created by the Northern European states than by following the older routes of central Europe, which throughout the centuries have always been more explosive.

Fourth, economic growth and income distribution in the Northern European regions, the financial structures and the management of monetary issues together with the availability of national and international capital for constructive investments – these are all issues of critical importance for the future of Northern Europe and for the growth of successful and stable political co-operation between states and territorial institutions. It is indeed an interesting question whether the successful model for balanced economic growth is the integrated, centrally-directed European Union model or the more decentralised American model where respective states and regions operate as independent actors in global markets, their success measured by the international trade of Texas, California, Utah, Tennessee and other states as separate entities.

We face the challenging question as to which of these two models is a better guide for the

evolution of the Northern European territories and for dealing with the different regions of Russia. How is economic growth in northern Canada, Greenland, northern Norway, the Faroes and even Lapland to be achieved? We need an open examination of these alternative economic models, of how to combine different elements from each for our own advantage.

These four areas and indeed many others, as for example social disintegration, growing crime and narcotics trade, cultural transformation, education and human rights, would each be a sufficient challenge in itself. Taken together they constitute a qualitative transformation of the perspectives facing the universities and research institutions in Northern Europe.

Of course we have seen recognitions of these changes in many academic institutions in Northern Europe and the University of Lapland here in Rovaniemi is an outstanding example of pioneering_in new territories of research and learning. There are also other signs that point in the same direction. In Akureyri, the centre of northern Iceland, the new university has during its first decade initiated programmes and forums inspired by these challenges. The decision to establish in Akureyri an institute dedicated to the memory the great Icelandic-Canadian explorer, Vilhjálmur Stefánsson, is yet another confirmation of our determination to advance in new directions and towards sustainable human-environmental relations.

But more is required. We need an inter-connected network of sustained co-operation and dialogue among the entire community of scholars from Northern Europe and those specialists from other parts of the world who are interested in sharing in our explorations.

In reflecting on how to create such an integrated community of Northern European scholars dealing with issues, projects and problems related to the future of our countries and regions, an academic network which year by year would deepen and extend our understanding and provide Northern European institutions with sound substance for the democratic decision-making process, I visited again in my memory the pioneering role of the ECPR, the European Consortium of Political Research, which was established a quarter of a century ago by Jean Blondel, Stein Rokkan, Richard Rose, Hans Daalder and other farsighted and energetic professors and scholars in order to bring together the growing number of researchers interested in the social, political and economic problems associated with the emerging European integration and the changing political and social structures of our continent. The ECPR became not only an institution for pioneering research and studies, but it also brought into being a community of European scholars who otherwise would have been dispersed and even isolated.

The successful ECPR model might be applied to the challenging task now facing the universities and research institutions in Northern Europe. The creation of an annual or biennial forum which could be named the Northern Research Forum, NRF, would bring together in a systematic way the wealth of academic talent now existing in Northern Europe. The creation of the Northern Research Forum would provide regular opportunities for introducing research papers and holding workshops on the significant problems I have briefly outlined here today and others which will evolve in the future, enabling young researchers and scholars to present their findings to audiences of distinguished and learned experts. It would further co-operation between scholars from different parts of Northern Europe and integrate the new institutions of learning and research in Northern Europe into the more established world of traditional universities. The Northern Research Forum would bring scholars from the newly independent Baltic states into the established co-operation between Nordic scholars and thus contribute to the integration of academic research in the eight Nordic-Baltic states. The forum would facilitate participation by outstanding scholars from other parts of the world and allow American and Russian scholars in particular a convenient and regular entry into the academic world of the Northern European communities; thus furthering indirectly American-Russian academic co-operation and opening up avenues to American and European foundations which financially support research and academic co-operation.

I hope that the University of Lapland will in the light of your outstanding record and your pioneering initiatives in many fields take a lead in examining this proposal. I have discussed it briefly with the rectors of the University of Iceland in Reykjavík and the new Akureyri

University in northern Iceland and they are indeed interested in exploring how such a sustained network of academic co-operation could be established.

I am looking forward to our discussions tomorrow in the seminar entitled: "New Perspectives for Global Northern Research and Education" and to reflecting on the views and conclusions presented by some of your distinguished scholars.

I am both deeply honoured and touched by the invitation to address you at the opening ceremony of the twentieth academic year of the University of Lapland.

It has given me the opportunity to share with you some thoughts and reflections on the future of research in Northern Europe and how this relates to some of the most urgent global issues of our times.

I thank you for the opportunity and the honour to participate in this distinguished ceremony.

1 Celebratory Speech held at the Opening Ceremony of the 20th Academic Year of the University of Lapland, September 7, 1998.

18. Circumarctic science co-operation after the Cold War

Odd Rogne
Fred Roots

Cooperation during the Cold War period

During the Cold War, the Arctic was split in two by an Ice Curtain. The Arctic region separated the two major military blocks, even though it constituted the shortest distance between them. In spite of this military tension, which included spying and mutual suspicion, there were some points of contact¾mostly through international governmental organisations that had projects or programmes having an Arctic component.

In science, there were a few contact possibilities between the West and the Soviet Union through the international co-operation that continued in Antarctic research (as many scientists from the northern hemisphere work in both polar regions), and occasionally in Svalbard. Svalbard is under Norwegian sovereignty, but through the international Svalbard Treaty offers access to all treaty nations. The Soviet Union had for decades two major coal mining settlements there—and considerable research facilities. From these contacts and from publications, Western scientists had some knowledge of what was going on, but co-operation was very limited.

There were one or two periods of thaw, one of them when Mr. Khrushchev was in power. Some developments for co-operation in the Arctic were achieved, notably through the World Meteorological Organization, under which circumpolar meteorological stations were accomplished, and through the International Council of Scientific Unions (ICSU), resulting in the establishment of parallel World Data Centers in the USSR and Western countries in the fields of oceanography, solar-terrestrial physics, and glaciology. Some initiatives for sharing knowledge and management of natural resources were discussed. But during the negotiation period the political climate worsened, and the only outcome was the 1973 Agreement on Conservation of Polar Bears. This was a positive and good step, but initially the ambitions were for broader co-operation.

Melting of the ice curtain

The initial signals of change came around 1984-85 with discussions about bilateral co-operation. Canada became the first Western country to negotiate and sign a bilateral co-operation agreement with the Soviet Union. That agreement provided for information exchanges and co-operative research projects in four principal areas of Arctic science and technology:

- geosciences, mineral and petroleum resource development;
- environment and living resources;
- northern construction and transportation; and
- education, anthropology and ethnology.

Norway followed two years later with agreements for bilateral exchange in the fields of: upper atmosphere research;

- oceanography of the Barents Sea;
- geology of the Barents Sea; and
- biological investigations.

Shortly thereafter, a USSR-USA agreement was signed for co-operation on research in the natural sciences.

But the Soviet policy was for bilateral co-operation only, and in "safe" areas such as research in areas not related to national policy or

security. However, new signals came and we learned about "glasnost" and "perestroika" etc. Those engaged in Arctic research started to talk about possibilities for circumarctic co-operation, an opportunity that had been closed for decades (with some exceptions) although so logical from a science point of view. One expression of this broadly-felt need for circumpolar Arctic co-operation in several areas of science was the establishment of an unaffiliated grass-roots science body, the Comité Arctique International, in which scientists from government, academia, and industry in a large number of countries (including several non-Arctic countries and a few hesitant participants from the Soviet Union) took part. During the period 1984-1990 the CAI organised a number of successful circumpolar conferences on key Arctic science-related subjects, but without formal government backing it was unable to secure support for joint research projects or to continue. However, it did a great deal to strengthen the establishment of a "circumpolar science community," embracing a wide range of subjects, to show the scientific and practical benefits of international co-operation in the Arctic. It thus helped to set the stage for acceptance in government that the time was ripe for more formal means of co-operation.

Also during this period, the scientific activities of the United Nations agencies began to take on global dimensions. Scientists from northern countries who were involved in international activities, particularly in the fields of water resources (International Hydrological Decade—IHD) and human activities and biological resources (UNESCO Man and the Biosphere Programme—MAB) became aware of the fact that although their countries were supporting the much-needed co-ordination of research world-wide and in developing countries, as well as in the temperate parts of their own nations, the UN science programmes were conspicuously absent in the Arctic regions. The UNESCO programmes were one of the few areas where the Soviet Union, as a member of the UN, was involved in multinational science. The result of several discussions and meetings was the establishment, in 1985, of the UNESCO-MAB Northern Sciences Network, and a year later of a Northern Research Basins Network under the UNESCO IHD (now the International Hydrological Programme—IHP). These two "networks" provided means of contact and co-operative study between Soviet and western ventures, and have continued modest but useful contributions to circumpolar scientific knowledge.

The progressive loosening of communications at the time also enabled some already existing specialist scientific bodies that had been circumpolar in concept, but restricted in practice, to have greater participation from the Soviet Union. Principal among these were the International Union for Circumpolar Health (IUCH) and the International Permafrost Association (IPA).

These developments formed the basis for discussions—at an informal lunch during a meeting of the Scientific Committee for Antarctic Research (SCAR) in San Diego, USA, in June 1986—of an international group of scientists involved in Arctic research. The conclusion reached was that these discussions should continue, but as a first step meetings should be between persons involved in Arctic research or Arctic science programmes of different Arctic countries, not as formal representatives of the governments of those countries. The reason for this limitation was the then Soviet policy with regard to northern research only allowed for bilateral co-operation with Arctic nations only, and making an agreement for multinational research co-operation between the Arctic nations would still be very difficult.

For those responsible for calling the first of these meetings, the term Arctic country had to be defined. The only concept used at that time in the Soviet Union was the Arctic rim nations (Canada, USA, Denmark, Norway and the Soviet Union), i.e. those countries having territories bordering the Arctic Ocean. However, since science representatives in Finland and Sweden had shown a strong interest in this new co-operative idea, and as also having some neutral countries in the group would be beneficial, they were immediately added to the list. Shortly after, Iceland appended a strong wish to join, and so the definition of the Arctic countries was born¾i.e. those countries having territories north of the Arctic Circle. This definition was later to be adopted by these eight countries, and they came to constitute the members of the later intergovernmental co-operation.

The first step in these discussions (later to be

known as the IASC process) was taken at the meeting on the 13th of February 1987, which was attended by scientific representatives from the eight Arctic countries. Most of us had experience from scientific co-operation in the polar programmes of the International Geophysical Year 1957-58 and its successors the IHD and the International Biological Programme (IBP), as well as from SCAR in the Antarctic, and that co-operation was our model. However, the political scene was now quite different from that during the IGY, and in many respects completely opposite to that concerning Antarctica. We needed a political blessing from our countries for our undertaking. However, there were no appropriate political bodies that could provide this blessing, as governmental co-operation in the Arctic was still regarded as impossible or premature. The Arctic policies of several western countries were also strongly nationalistic and defensive. Many political analysts continued to be doubtful about our undertaking, not least because the Soviet Union still had bilateral co-operation as its policy.

However, no real progress is ever made unless you really try to overcome obstacles. Most of us were science managers in agencies that had some independence from policy but with close links to governments, so we could easily consult with and be advised by the proper authorities. In general, we were quietly encouraged¾but also told that we could easily fail. In our first discussion paper (see Roots, Rogne, Taagholt, 17 November, 1987), one finds a statement of the need for an "International Arctic Science Committee," and for an "Intergovernmental Forum on Arctic Issues"; the latter reflected the necessity for some governmental mechanism that could, when required, and if we were to succeed in establishing a broad co-operative science organisation, deal with policy problems.

The changing role of the Soviet Union

Except for their modest involvement in the United Nations science programmes and in Antarctica, the Soviet Union still had their "bilateral co-operation only" policy. Opportunities during bilateral discussions at high level were used to promote broader circumarctic co-operation by presenting both a scientific and policy justification for it. Further, several key persons received copies of our reports and minutes, and as it turned out, this small action led to success. We later found out what had happened: a key person, who personally found our arguments convincing and lying in the best interests of the Soviet Union, wrote a proposal to President Gorbatchev's office. This proposal included a few short statements written in the style that the President used. This proposal was presented shortly before President Gorbatchev's visit to Murmansk (in November, 1987), where he announced a change in Soviet policy with regard to co-operation in the Arctic. In his announcement of the new Arctic policy, the proposals relating to co-operation in research have formulations that can be traced back to the IASC documents. This change in Soviet policy was fundamental to further progress, and at the same time boosted interest for the initiative in western countries.

Although the major political obstacle had been removed, there were striking differences as to how such an organisation should be designed and operated. From much of the science community there was a wish to co-operate with any scientist, whether that person was from an Arctic country or not. The other extreme was a desire to limit the co-operation to scientists from other Arctic nations. This view was most strongly voiced by governmental representations of the Soviet Union. The governments of some countries expressed support in principle, but had no mechanism or structure to act on that support unless it was seen to be an aid to existing national Arctic policies. Other countries welcomed the proposed co-operation as a means of assembling international "partners" who together could resist or balance what they saw as scientific dominance or "picking of scientific plums" by countries with large science budgets. Those discussing the formation of an IASC had a wide range of disparate national and scientific agendas and objectives to choose from and deal with.

Reconciling the wide range of views needed both considerable work in the planning group itself and in some governmental and diplomatic consultations. Breaking new ground requires time, especially when people in government are involved. On the 28th of August 1990, the International Arctic Science Committee (IASC) Founding Articles were signed in Resolute Bay,

Canada ¾ and the work on really building a new circumarctic science organisation could start.

IASC in 1998

IASC now has national science organisations in 17 countries as its members. The IASC mission is to encourage, facilitate and promote the full range of basic and applied research encouraging cooperation and integration of human, social and natural sciences concerned with the Arctic or at an international level; and to provide scientific advice on Arctic issues.

In following this mission statement, IASC has developed good links with a number of Arctic organisations. Multidisciplinary projects initiated by IASC and identified as being important to our user community have been implemented.

The strength of IASC lies in its ability to draw on and mobilise the best scientists, and in doing so by being alert to the needs of both governments and other users.

Other circumpolar initiatives

The progress in creating a circumarctic science organisation also inspired others to develop circumarctic activities. The next to come was the International Arctic Social Sciences Association (IASSA), which was also founded in 1990. IASC includes all sciences, but its initiators had been natural scientists or managers of institutions whose programmes dealt predominantly with the physical and biological sciences. Several social scientists, fearing that they would at best be in a minority in IASC, felt the need for an international Arctic association in their own discipline, which then could be affiliated with IASC. Other already established, specialised scientific organisations based in the West saw the opportunity to include members from the Soviet Union and thereby become more circumarctic. The Arctic Ocean Sciences Board is an example of this.

However, government representatives who had been advisers to the IASC negotiations began to consider the possibility of circumarctic governmental co-operation that would follow the lines of the "Intergovernmental Forum on Arctic Issues", that had been proposed in the 1987 discussion paper leading to IASC. The first successful development became known as the "Finnish Initiative" or the "Rovaniemi process". The initial ideas had been born in a discussion in IASC, and an important part of the background to it was Finland's need to achieve progress in their discussions with the Soviet Union on transborder pollution. The strategic situation in this respect was hopeless for Finland to deal with on its own, whereas bringing the issue up to the circumarctic level would mean that they would obtain partners , who could all focus on Arctic pollution.

This initiative had a difficult start, but when Canada gave it strong support, a firm hope was created for moving it forward. Oddly enough, the USA was the least enthusiastic partner. However, the Arctic Environmental Protection Strategy (AEPS) was signed in June, 1991 in Rovaniemi, Finland. It has since developed into a major international programme of environmental monitoring, co-operation in environmental policies, and in dealing with emergencies.

This initiative became a part of the Arctic Council agenda in September, 1996, when this even broader Arctic governmental co-operation was established. The Arctic Council agreed on its Rules of Procedure in February, 1998. It also confirmed that IASC will be an accredited observer at Council meetings, the only science organisation having that status to date. It remains to be seen which activities of the Arctic Council will develop beyond the earlier AEPS programmes.

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19. Ministers of Education in the Circumpolar North: a consortium

William G. Demmert

The ministries of education in countries or states that touch the Arctic Circle, and that offer educational opportunities for the Native peoples that reside in the far north, have formed an international consortium that focuses on improving schools and schooling for the peoples indigenous to these remote parts of the world. This consortium meets every two to three years and includes the Ministers of Education and/or their Deputies of Education from Greenland, Norway, Sweden, Finland, Quebec, Northwest Territories, Yukon Territory, Alaska, and Russia.

The birth of the Ministers of Education Consortium is closely aligned with the Steering Committee for the International Cross-Cultural Education Seminar Series in the Circumpolar North that I chair (herein referred to as the Steering Committee or Committee). The story of the Ministers Consortium begins with a conversation in 1986 between myself and the Honorable Dennis Patterson, Minister of Education in The Northwest Territories at the time. Dennis was part of a local steering committee or planning team created to organize an education seminar scheduled for Iqaluit, Baffin Island, NWT, Canada in June 1987 (other members of this team included Mary Cousins, one of the early members of the Steering Committee, Malcolm Farrow, a principal of the Gordon Robertson Education Center in Iqaluit at the time, and David Wilman, then a Principal of the Eastern Arctic Teacher Education Program). The local planning team worked in tandem with the International Steering Committee. Dennis asked whether the presence of the Ministers would complement the efforts of the Steering Committee or detract from the discussions intended to focus on improving educational opportunities for circumpolar peoples. I was the Commissioner of Education for the State of Alaska during this period, and was the international contact for the local planning committee organizing the seminar. In this capacity I was able to work directly with the local planning team and serve as the primary personality from the Steering Committee for this work.

My immediate reaction to Dennis' proposal was that I thought it would be an excellent opportunity for our Steering Committee members to get together with the various Ministries of Education for it could provide a unique platform for the two groups to discuss common interests from a mix of different perspectives. I communicated my support for the idea immediately to Dennis. I anticipated that these common interests for northern education would include: 1) strengthening local control of education; 2) strengthening the curriculum, including the introduction of local perspectives about historical events; 3) improving the quality of teachers and teaching in elementary and secondary schools, including the recruitment and hiring of more Native teachers; and 4) providing opportunities to strengthen the indigenous language and cultural base of students from communities in transition. In retrospect I think that the partnership eventually embraced all of these interests in one form or another over the years.

During this period of circumpolar activity northern communities were in a variety of transition stages from subsistence economies to cash economies. They were actively identifying leaders for local, national, and international politics. They were confronting major challenges about the idea of what an education for their youth must include. Each recognized that there

must be systemic change in the way schools were operating if we were to do a better job preparing the young for the world of today. A changing environment was fast becoming more and more difficult to keep up with and adjust to. The variety of perspectives would represent unique views from Alaska, The Northwest Territories, Yukon Territory, Northern Quebec, Greenland, Norway, Sweden, Finland, and possibly Russia. I communicated to Dennis that I would contact the Steering Committee members, present his proposal and include a personal recommendation that we invite the different Ministers of Education to the Iqaluit seminar.

For a historical perspective it is worth noting here that an initial conference on education in the far north, was held in Montreal Canada in 1969, and organized by Frank Darnell, at that time a professor at the University of Alaska. His partners in developing this northern international conference included Mr. Charles N. Zellers, Director, Office of Indian Education, U.S. Bureau of Indian Affairs; Mr. Don Simpson, Director of Education, Department of Indian Affairs and Northern Development of Canada; Dr. Norman Chance, Professor of Anthropology, University of Connecticut; Professor Andre Renaud, University of Saskatchewan; Mr. Eric Gourdeau, Arctic Institute of North America; Professor Victor Fischer, University of Alaska; Professor William Loyens, Anthropology, University of Alaska; and Mr. Ralph Bohrson, who served ex-officio as a representative of the Ford Foundation, the primary funding agency.

The general feeling expressed by Frank Darnell, and other members of the Montreal planning committee, was that if there were any follow-up activities to the Montreal conference there should be greater representation from the indigenous communities of the North. The first meeting in Montreal was certainly dominated by non-Native officials from private, university, or government agencies. Mr. Ralph Bohrson of the Ford Foundation strongly supported the position that any future activity should include greater representation from the various Native communities in the North. Frank met with me (I was a U.S. Deputy Commissioner of Education during this period), and other representatives of northern communities about follow-up activities to the Montreal conference. Ford was not interested in funding a second conference and Frank and I talked about the possibility of a series of conferences in local northern communities. The idea was acceptable to Ralph Bohrson and the Ford Foundation and a new proposal was developed.

From this initial beginning of official domination in the Montreal conference, and a lack of Native community leadership and formal participation, Frank Darnell organized a different kind of steering committee for continuing the discourse on Native education in the far north. Sponsored by the Alaska Federation of Natives, University of Alaska Fairbanks, and the Scott Polar Research Institute of Cambridge University, this Steering Committee, which I now chair, was organized with a mix of Native and non-Native university, government, and Native community leaers and ignored any official group or organizational affiliation. The first Chairman of the Steering Committee was Roger Lang, at the time president of the Alaska Federation of Natives. This new Steering Committee represented a group of practitioners with a personal and professional interest in the far north. This new Steering Committee decided early that they would separate themselves from government sponsored and controlled activity and hold a series of community-based seminars on education in the "Circumpolar North." The point I am trying to make is that the absence of Ministries of Education from across the Circumpolar North in each of our meetings (except in the country a seminar was held) was the result of a deliberate and conscious decision early in the life of this new, unofficial, International Steering Committee.

The Committee was very successful in helping local planning committees organize several seminars in Alaska, Canada, Greenland, and Norway. It also helped Ministries of Education organize conferences in the Yukon Territory and Russia (to discuss ways to improve schools and schooling for Native students in each location). Again, as the chair for the International Steering Committee, I served as the primary contact. The nature of activities, and the support of local communities, helped foster the establishment of a closer working relationship between the Ministries of Education and the Steering Committee. The "partnering" of local seminars with Ministries of Education were necessary in

recognizing the importance of working more closely with representatives of government if change was to occur. The comfort level about working more closely with officialdom was sufficient at this time to invite formally the Ministries of Education to the Iqaluit, Northwest Territories, Canada meeting.

The seminar in Iqaluit was designed to include a meeting of local community members and educators interested in improving the education of Northern Native children. The format encompassed the presentation of a series of papers by members of the Steering Committee, local education leaders, and community members. The content of these papers were then open for discussion and debate in small groups. The keynote address was given by Mary Simon, then President of the Inuit Circumpolar Conference (ICC) and was titled "Inuit Control of Inuit Education." The papers included presentations on issues of who controlled the schooling of Native children; the place technology must play in rural schooling; the importance of early childhood education; teacher training initiatives in Arctic countries; curriculum development; and the importance of Native languages and cultures to our well being as Native peoples.

Recommendations developed for each topic were then presented to the larger group for questions and clarification, and included suggestions for local as well as international communities. The Education Ministers participated in this part of the seminar, but also met separately at Mingotuq, a remote outpost camp at Gold Cove, eight miles from Iqaluit.

This initial retreat (herein referred to as the Ministers Conference) was scheduled to discuss education concerns from a Ministers of Education perspective. The Ministers, meeting under the leadership of Dennis Patterson, decided to meet periodically in one of the countries of the members, and work specifically on ways to improve schools and schooling for Native children in the Far North.

They agreed to explore:

3) sharing of curriculum, program development and expenses for the cost;
2) joint workshops and conferences designed for teachers and staff;
3) jointly developing distance education programming and technology;
4) exchange of research findings;
5) improved opportunities for international exchanges of students, including a review of fees and financial assistance charged for outside students; and
6) exchange information on policy and legislative issues (Farrow & Wilman:172)

Participants in this first meeting of the Ministers in Iqaluit included The Honorable Loyola Hearn, Minister of Education for Newfoundland and Labrador; the Honorable Piers McDonald, Minister of Education for the Yukon Territory; Mr. Jean-Paul Olivier, representing the Minister of Education for Quebec; Mr. Henrick Lennert, representing the Minister for Education and Culture for the Home Rule Government of Greenland; and, of course, the Honorable Dennis Patterson, Minister of Education in the Northwest Territories, and myself, the Commissioner of Education for Alaska. The level of interest, excitement, and commitment reflected by this first group can certainly be highlighted by a quote from Dennis Patterson in reflecting about those times *("I will never forget the sight of Henrick Lennert getting off the Twin Otter and kissing the earth after that offstrip landing!")*. There was no landing strip, the plane landed on the tundra, between two hills, with a sheer drop-off on the starboard side of the plane, in what looked like the top of the world.

I was selected as the chair for this group. I accepted the chairmanship on the condition that we hold the next meeting of Ministers in Alaska, and that as we rotated meeting places, we rotate the chair to correspond to the location of the next meeting. My proposal for rotating the chair to correspond with the Ministry hosting the next meeting was endorsed. The second meeting of the group, which I chaired, was held in Juneau, Alaska in late May, 1988, and already showed significant change in the make-up of Ministers of Education. We were beginning to lose members to the political process. The third meeting of the Ministers of Education was held in the Yukon Territory and was chaired by Piers McDonald. Piers was instrumental in holding the various Ministers together for the first few years because of this rapid change of Ministers as the political process moved on. The Steering Committee has been the stable presence over the years and Piers worked very closely with me as chair of the Steering Committee to include

representation of the Ministers at each of our International Seminars. He also worked directly with new Ministers to insure a continuation of the original commitment to meet every few years.

During my tenure as Commissioner of Education in Alaska, the Governor arranged for a conference of Pacific Rim countries in September of 1989. The purposes of this Third Northern Regions Conference were economic primarily, but included a major section on education. Edna Maclean, serving as a special assistant to the Commissioner of Education at the time, was a member of the Governor's planning task force for the "Pacific Rim Conference" and organized a major forum on education. The main recommendations coming from that conference were(Report of the International Seminar On The Education of Northern People):

1) Creating an International Institute of higher education for the training of professionals in the circumpolar north;

2) Creating a central location in the circumpolar north for a systematic exchange of ideas;

3) Incorporating Native languages, culture and history as a basic part of schooling and extracurricular activities;

4) Fostering teacher and student exchanges in Native language and cultural activities;

5) Establishing of a permanent international committee that would hold regular meetings; and,

6) Asking governors to plan for financial support to implement the recommendations.

The first Deputy Minister of Education for the Soviet Union, Vladimir Novichkov, was a delegate to the Conference and actively participated i the discussions that took place. This was the first opportunity for contact with the Russian Ministry since the original circumpolar meeting in Montreal in 1969, and as Chairman of the International Steering Committee, I scheduled time to talk to Vladimir about the Ministers of Education consortium, and about the International Steering Committee. Novichkov expressed an interest in these activities, and asked if I would organize a small colloquia on educational research in the next year or so. I asked whether I should work through the U.S. State Department and their official counterpart or through the State of Alaska. His immediate reaction was do it outside both entities, or we would never meet. He felt official sanction would become embroiled in a bureaucratic maze.

I agreed to organize such a meeting in connection with a Steering Committee meeting that I called during my work at Stanford University. I was co-chairing a commission called the Indian Nations At Risk Task Force (appointed by the U.S. Secretary of Education, Laurel Cavasos) and writing the report of the Task Force at the time (Indian Nations At Risk: An Educational Strategy for Action). I felt an international analysis of the report would be worthwhile, and that I could organize a discussion on educational research using members of the Stanford faculty. The meeting was held in March of 1991. My impression of this meeting was that the Russian participants were excited about being exposed to ideas of school reform, and indicated that they were developing a new educational priority that would concentrate on northern peoples. They were exploring new ideas and very interested in what U.S. educational research reported regarding the improvement of schools and schooling.

As a result of this meeting, the Russian Ministry of Education invited Anton Hoem, Edna Maclean, and myself to a meeting in Russia to be held at St. Petersburg. It was to be a meeting of key policy and research people working on northern Russian education issues. They translated the work I had done on Indian Nations At Risk: An Educational Strategy for Action into the Russian language, and used that as a basis of discussion for the meeting that took place in St. Petersburg during March of 1992. As a result of the Pacific Rim Conference, the Russians participated in the Ministers Meeting in the Yukon Territory, and participated in the meeting in Norway. I was invited back to Russia during the Spring of 1996. The trip was designed to initiate a major educational reform effort designed by Vladimar K. Batsin, Deputy Minister of Education for the Russian Republic (and a participant in the Stanford meeting). Reform was necessary because of the changes resulting from their new economic and political initiatives.

It had taken twenty years to bring the Russians back to the international circumpolar initiatives. It is important to note that they have twenty-seven northern tribes that formed a consortium near the end of the Mikhail S. Gorbachev

administration. All of the Northern Ministers of Education were again part of the consortium (except that the Alaska Commissioner of Education has not participated personally since the Whitehorse Meeting in the Yukon Territory, but did sent representation to the Greenland meeting).

Jan Henry Keskitalo (a permanent member of the Steering Committee) was also able to strengthen this relationship between the Ministries of Education and the Steering Committee during his work in planning the Ministers Meeting in Norway in 1992. As a complement to Piers McDonald's continuing efforts, the Greenland representatives to the Steering Committee, Ingmar Egede, and Karl Kristian Olsen (Paartoq) were partners in keeping the idea of the Ministers meetings alive when Piers McDonald moved from Minister of Education in the Yukon Territory, to minority party, and eventually to Head of Government in the Yukon. Ingmar and Paartoq worked very diligently to convince the latest Minister of Education in Greenland to host the next meeting of Ministers. This was eventually accomplished and a meeting was scheduled for September of 1995.

It was at the Greenland meeting in Sisimiut in 1995 that the Steering Committee and the Ministers working closely together, developed an actual partnership, rather than having two separate entities with different agendas. This was due in part to Konrad Steenholdt, Minister of Education in Greenland, and Grant Hawley, Deputy Minister of Education in Quebec. They both promoted, and were comfortable with, a closer working relationship between the two groups. Paartoq (a permanent member of the Steering Committee) was instrumental in helping to bring this about because of the way he organized the Greenland Conference of Ministers. As the Chair of the Steering Committee, I served as a Co-Chair for that meeting, along with the Minister of Education in Greenland, Konrad Steenholdt. This helped promote the idea of co-chairing future Ministers meetings. This is especially true for the planning of future Ministers meetings.

The Greenland meeting was pivotal because the Steering Committee and the Ministers agreed to a three point agenda. This revised the Ministers of Education initial agreement and set of priority areas, and formalized a change in the Steering Committee agenda from its initial focus on partnering seminars in each of the member countries. This new agenda includes the following:

1) Support formal research on a number of schools from the circumpolar north that would identify successful educational projects presently in place;

2) Form a network of elementary and secondary schools that would be linked in a school improvement project; and

3) Build a consortium of small northern colleges and universities to focus on strategies for improving teacher training and post-secondary education delivery services to peoples in the circumpolar north.

At the Greenland meeting, Zoe Pohjanvirta, representing the Minister of Education from Finland, expressed interest in hosting the next Ministers meeting. The group discussed the possible Finnish invitation for the next meeting and indicated their support of the proposal. Ms. Pohjanvirta suggested that she expected to have a firm commitment by the summer or fall of 1996. The group agreed to meet at Western Washington University, Bellingham, Washington (USA), to work on the details of the Greenland agreement, and begin some preliminary discussion on the possible Ministers meeting potentially scheduled for Finland. In the Bellingham meeting the group agreed to a planning meeting in Quebec for the fall of 1997. A preplanning meeting was scheduled for New York in March of 1997 at which time the proposed invitation for a Ministers meeting in Finland was expected to become formal.

A planning group, representing both the Ministers of Education and the Steering Committee, met in Quebec City in September 10 - 13, 1997. The formal invitation for the next Ministers of Education meeting, to be held in Finland, was made and accepted. Participants, the agenda, and a report of the progress made for accomplishing the decisions made in Greenland were the major topics of discussion.

In support of the proposed activities agreed to in Greenland, I committed to establishing a circumpolar electronic network based out of Western Washington University. There would be a conference forum and a chat room for the

Ministers, for the Steering Committee, for the Northern Colleges, and one for the elementary and secondary schools. This has just been accomplished (spring of 1998) and now requires that each group take the time to sign into the system and begin using it. It can be accessed through the following: **http://www.wce.wwu.edu/ resources/circumpolar.**

The next meeting of the Ministers will be held in Rovaniemi, Finland, September 14-16, 1998. It is expected that the Circumpolar states, territories, provinces, or countries of Alaska, the Yukon Territory, The Northwest Territories, Quebec, Greenland, Norway, Sweden, Finland, and the Russian Federation will send representation. It is also expected that most of the International Steering Committee that I chair will be present for that meeting. We will focus on the role of Native languages and cultures in the school, educational technology, early childhood education, current educational research, and generally on ways to improve schools and schooling for Native children.

Over the years we have found support for positions that:

* The development of a person's language base is critical to improving academic performance;
* That learning in the language of the home, and continuing development of that first language promotes the learning of other languages and improved academic performance;
* That a positive image of self, and one's people, are necessary attributes to developing worthwhile satisfying adult lives, and that a healthy self-image is tied to one's understanding of the place traditional culture has in a person's life;
* That highly skilled teachers (including the use of Native teachers) are necessary if schools are to be successful in improving the academic performance of young children; and
* That parents, community members, and local leaders must support the systems of education that are in place, that they must be active partners in the education of their children, and that systems can be changed to accommodate their social, cultural, spiritual, and academic needs.

I expect that the Steering Committee will continue to extend the practice of forming partnerships with formal organizations like the Small Colleges of the Circumpolar North, the Circumpolar Universities Association, the Arctic Council, and local elementary and secondary community schools. A series of partnerships or a consortium of this unique grouping could significantly influence the future of education in the Circumpolar North. It could serve as a base for an international discourse, and a direct avenue for local communities, to continue their efforts to understand what local schools must become, and what the role of parents and local community members must be in order for Native children to meet the challenges of this modern, technical, ever changing world.

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13. The Association of Circumpolar Universities

Geoffrey R. Weller

Introduction

The Rectors and Presidents of the circumpolar universities met for the first time at a special session organised for them as part of the First Circumpolar Universities Conference held at Lakehead University in November 1989 to mark the opening of the Lakehead Centre for Northern Studies. At that meeting it was agreed that a Circumpolar Universities Association would be formed.

Discussions on the nature of the new Association continued at the Second Circumpolar Universities Conference held at Tyumen University in Russia in 1991 and the Constitution of the Association was formally signed by twenty-two representatives of universities from around the circumpolar north at the Third Circumpolar Universities Conference held at the University of Lapland in Rovaniemi, Finland, in December 1992. Further conferences have been held at the University of Northern British Columbia in Prince George in 1995 and Luleå University in northern Sweden in 1997.

This chapter begins by discussing the circumstances encountered in organising the first and pivotal meeting of the circumpolar universities and of their Rectors and Presidents at Lakehead University. It then goes on to indicate something of the nature of the first conference and some of the difficulties that it revealed. There is then a discussion of the development of the Association in terms of its conferences, its Constitution, and the establishment of a permanent secretariat. It concludes with some comments about the likely future of the Association.

The Origins of the First Circumpolar Universities Conference

The origins of the first circumpolar universities conference, and of the Lakehead Centre for Northern Studies and the Circumpolar Universities Association, can be traced to Lakehead's efforts to enhance both its northern presence and its international presence in the mid- and late 1980s. These efforts began largely as a consequence of a broad institutional self-analysis sparked by the need to submit a brief[1] to the Ontario Government's Bovey Commission of Inquiry into that province's universities. This led, among other things, to a revision of the university Academic Plan that gave greater emphasis to Lakehead's northern mission and which included a proposal to create a Centre for Northern Studies. My own involvment in these efforts was largely the consequence of my being Vice-President (Academic) at Lakehead University from 1985 to 1990. In that capacity I chaired the Academic Plan revision process, chaired the committee that recommended the nature of the Centre for Northern Studies, and chaired the committee that organised the First Circumpolar Universities Conference. My exposure to matters northern was enhanced not only by the fact that I was Lakehead University's representative to the Association of Canadian Universities for Northern Studies (ACUNS) for most of the same period and a member of the ACUNS Board of Directors for two years (1987-1989), but also because some of my own research related to northern regions. Part of this research involved comparing the roles of universities in northern Ontario and northern Sweden.[2]

The First Circumpolar Universities Conference was the end result of a mixture of five initiatives taken on both the internal and external fronts. The first of the initiatives was on the internal front. Lakehead University was prompted by the Bovey Commission to undertake a wide-ranging review of its Academic Plan covering among many things its roles, areas of strength and possible future "niche" areas,

funding sources, and relationship with the community of Thunder Bay and the region of northwestern Ontario.[3] This review concluded that Lakehead should place much greater emphasis on the fact that it was located in northern Ontario and had a special set of missions to play as a northern, regional university. A wider set of roles than was initially expected of the university by the provincial government were identified and extra and special monies were sought from the provincial government to help carry out these roles. However, this conclusion was not readily accepted either by some of the then existing Lakehead University faculty members or by the provincial government. The First Circumpolar Universities Conference was partly intended to expose the faculty members at Lakehead to their equivalents from all over the circumpolar north in the hope that their commonality of outlook and problems would be immediately evident.

Many of Lakehead's faculty members were hired from outside Canada when the university was founded in the middle sixties and they had little knowledge of, or even affinity for, northwestern Ontario. Morever, they conducted little research on the region. Upon my arrival at Lakehead in the early seventies I was, in fact, advised not to conduct research on the region as it would mean my research would be regarded as parochial, would be of no interest to the wider academic community, and that that, in turn, would limit my career prospects. Indeed, many saw their stay at Lakehead as likely to be temporary, as many clearly intended to move either to universities in southern Ontario or to universities elsewhere in Canada and the United States. However, in the tight academic market of the early and mid-seventies they became "stuck" (as they regarded it) at Lakehead. More especially they were not hired to promote a northern" mission for the university as there was no northern mission at the time. Not unexpectedly, many of those hired during the early years were not very keen on having the university adopt a clear "northern" mission some twenty years after its founding. Many of them denied Lakehead was in the north because for many of them Canada's north was the territorial north of the Yukon and the Northwest Territories. Many did not recognise the similarities between northwestern Ontario, the rest of Canada's provincial north, or the circumpolar north generally. Many even joked about the term "circumpolar" and ridiculed the idea that Lakehead would have anything to gain by establishing links with universities in other parts of the circumpolar north. Fortunately, others realised that there was a natural logic to a northern mission and northern connections that might well result in both more funding and better links with the university's region.

The second initiative was external and related to trying to change the funding categories of the Ontario provincial government to accommodate the new northern role. The provincial government had established Lakehead University very largely as an access point to university education in the north. It was not expected to have, or funded to have, a role in the economic, social or cultural development of the region. A change of roles would require different and specialised funding; funding the government would have difficulty finding. However, after much lobbying, the university managed to acquire additional targetted allocations. It was these monies that Lakehead used to propose a Centre for Northern Studies that would symbolise the new role and make it clear that the extra funding was being used for specific purposes and not just disappearing into general spending.[4] One of the primary purposes of the First Circumpolar Universites Conference was to celebrate the success in getting the money that had made the Centre possible and to establish circumpolar northern contacts for the Centre.

The third initiative consisted of approaches to the other three northern universities in Canada and to the Association of Canadian Universities for Northern Studies (ACUNS) and other northern-related institutions with a view to trying to get them to pay greater attention to the northern parts of the provinces. At that time ACUNS so heavily concentrated upon the far north of the Yukon and the Northwest Territories that the provincial northern regions tended to get short shrift, as did the four ACUNS member universities that then existed in the provincial northern regions. Many of the southern universities that studied the north, and which were members of ACUNS, did not recognise the significance or separateness of interest of those universities that actually existed within northern regions. However, the Executive

Director of ACUNS at the time, Dr. Peter Adams, did, and he responded positively and organised an ACUNS-sponsored conference of the then four Canadian provincial northern universities, Lakehead and Laurentian Universities in Ontario and the branches of the University of Quebec in Chicoutimi and Abitibi-Temiscamingue. The papers presented at the conference were published in 1987 in P. Adams and D. Parker, *Canada's Subarctic Universities.*[5] The First Circumpolar Universities conference was partly intended to continue and strengthen the links between these four provincial northern universities and the links between these four and similar universities elsewhere in the circumpolar north.

The fourth initiative consisted of trying to expand Lakehead University's contacts with other universities in similar regions of the world. Thus Lakehead began to sign a series of agreements with universities throughout the circumpolar north. The agreements were designed to encourage faculty and student exchanges and joint research efforts, particularly on northern topics of mutual concern. Lakehead signed agreements with the Universities of Lapland and Oulu in Finland, UmeÂ and Luleå Universities in Sweden, and Syktyvkar, Tyumen and Kemerovo Universities in Russia. Approaches were also made to Tromsø University and the Universities of Alaska, Greenland, and Iceland. A formal agreement was also signed with the University of Minnesota Duluth (UMD). This agreement with UMD was not so much because it was a northern institution in the same sense as the others, but because it was Lakehead's closest neighbouring university and because UMD had what it called a "northern circle" focus. I worked with Douglas C. Nord of UMD to coordinate the efforts made to share the benefits of our various links. The First Circumpolar Universities Conference was partly intended to bring together all the universities represented in these new alliances, and those universities with which Lakehead still had hopes of forming links with. Indeed, most of them were represented at the conference.

Lakehead's fifth initiative was to find out more about the role of universities in developing regions in general, not just in the circumpolar northern regions. This was because it was increasingly clear that Lakehead University needed to play a much greater role in the economic and social development of northwestern Ontario and that other universities elsewhere had adopted a clear regional development role, although, of course not always in a northern context. For this reason I attended a conference entitled "The Role of Universities in Developing Regions," which was held at the Ben Gurion University of the Negev in Israel. The key individuals in this were Sam Aroni, Yehuda Gradus, and Fred Lazin, and it was they who edited a book resulting from the conference.[6] They went on to hold a second highly successful conference in 1989, also at the Ben Gurion University, which resulted in the formation of the International Network on the Role of Universities in Developing Areas (INRUDA). This partly explains Fred Lazin's presence and paper presentation at the First Circumpolar Universities Conference and a continuing contact between the two organisations that led to them holding their conferences back-to-back in Luleå in 1996.

The First Circumpolar Universities Conference

The First Circumpolar Universities conference was held in November 1989 at Lakehead University. It had three purposes: to bring together academics to discuss the role of the northern universities; to mark and celebrate the opening of the Lakehead Centre for Northern Studies; and to bring together the Rectors and Presidents of the northern universities with a view to establishing a permanent organisation of some kind to enable the contacts established to be continued and expanded.

The conference brought together about 150 delegates from all over the circumpolar north. The main focus of the papers presented was on the varying roles of those universities that had their main campuses physically located in the circumpolar north. The papers dealt with the role of these universities in promoting social and economic development, with the difficulties that they had serving widely scattered, widely variegated populations, and the difficulties they encountered in relations with southern governments and southern universities. Some papers also dealt with general northern issues

that did not necessarily directly relate to the role of the universities, but were examples of the types of issues that faculty members at these universities, and elsewhere, were concerned with. The papers were later published under the auspices of the Lakehead Centre for Northern Studies.[7]

A second aspect of the First Circumpolar Universities Conference was the fact that it was held to mark the official opening of the Lakehead Centre for Northern Studies. Thus the opening ceremonies for the Centre were held as a part of the conference. The primary focus of the Centre was upon the northern parts of the Canadian provinces, and especially northern Ontario. This made it unique in Canada at the time. Since regions very similar to the Canadian provincial norths exist within many of the nations of the circumpolar north the Centre also adopted a comparative perspective, as the content of the First Circumpolar Universities Conference indicated. The Centre that was opened at the conference consisted of a Director, five other faculty members and a northern and regional studies librarian. Physically it occupied a house adjacent to the campus and a special room in the Chancellor Paterson Library housing the northern and regional collection.

A third aspect of the conference was the bringing together of the Rectors and Presidents of the circumpolar northern universities. The intent was to have them not only participate in the conference but also meet in a less formal way to discuss future connections among the group. Each of the Rectors and Presidents was also asked to prepare and present a formal paper on the role of their university in their particular northern region. The meeting of the Rectors and Presidents went well and it was agreed that there would be a second Circumpolar Universities Conference and the matter of a permanent organisation would be further discussed at that meeting. The second conference was held in Tyumen and the Circumpolar Universites Association was formally established at the third conference at the University of Lapland in Rovaniemi in 1992.

Some Problems Revealed

The organising of the First Circumpolar Universities Conference, and the conference sessions themselves, revealed two major issues that have affected the Circumpolar Universities Association ever since. The first involved controversy over the definition of the circumpolar north. The second involved controversy over the legitimacy of creating an association of those universities located in northern regions rather than one that included both those located in the north and those located in the south that had significant numbers of faculty members that studied northern regions.

The organisers of the First Circumpolar Universities conference defined the circumpolar north in relation to political boundaries rather than the physical and climatic factors that were commonly used up to that point. The reason for this was twofold; first, the northern university administrations operated partly in the political realm and political boundaries had real meaning for them. Secondly, university regional development roles involve the social sciences to a large degree and political boundaries have far more meaning in the social sciences than in the physical and natural sciences that had largely dominated northern studies up until then. Not only did the organisers take political boundaries but they took those political boundaries to be the ones as defined by the various political jurisdictions themselves. That is, the "north" in Scandinavia was taken to be those counties that each of the Scandinavian nations themselves defined as being the "northern" ones. In Canada, the north was taken to be the territorial north and the northern parts of the provinces for which the individual provinces had established a northern Ministry or some kind of specialised northern agency. The same approach was taken with the definition of the then Soviet north. Apart from these areas the political boundaries of Alaska, Iceland and Greenland were clear enough. It is interesting to note that most of those who had difficulty with this way of defining the boundaries of the north were the delagates from the southern universities that studied the north rather than the delegates from the universities located in the north so defined. The difference may well have been due to the fact that those who actually resided in the north may

have been much more aware of the ways in which the fact of the existence of political boundaries affected their history, daily life, and future prospects for development.

The controversy that arose over the question of the legitimacy of taking this approach to defining the north in part reflected differing views taken by social scientists and natural scientists. To some extent it reflected the fact that northern studies in Canada, and much of the rest of the circumpolar north up to that point, had been dominated by natural scientists. Natural scientists, of course, are largely not affected by what they often term "artificial" political boundaries drawn across the northern landscape. Social scientists, on the other hand, are very much affected by them in many ways including the need to contact different governments, Ministries, and organisations as well as the frequent need to rely on statistical data gathered separately by these different political jurisdictions.

The second controversy concerned the definition of a circumpolar university being one that had its main campus actually located within the northern regions as defined by these political boundaries. The universities that were located in the north clearly saw that they experienced a range of problems and prospects in operating within those regions that those universities that were located outside them did not. Moreover, they recognised that there was a similarity about the issues they faced throughout the circumpolar north.

Thus the definition of the north used, and the limitation of the core membership by a politically defined region, seemed instinctively correct and non-controversial to them. However, the definition was very much resisted by a number of universities located outside these regions, but which had a number of faculty members who studied these northern regions, such as elements of the University of Alberta in Edmonton and elements of the University of Winnipeg in Manitoba. In some instances the opposition was most ill-tempered. Representatives of both of these universities kept argueing that they were more "northern" than the four Canadian circumpolar universities since they were located at a higher latitude. While, indeed, at more southerly lattitudes, the Canadian circumpolar universities are in regions defined by their respective provinces as northern and for which they have special bureaucratic agencies. Moreover, the circumpolar universities are located in places with all the characteristics of hinterland regions.

Both the University of Alberta and the University of Manitoba are located well to the south of those areas their two provincial governments designate as "northern." In addition, they are both located in the largest cities and the provincial capitals of the two provinces and do not have hinterland characteristics. Beyond claiming a more northerly lattitude, the basis for the objections of the southern universities was never clearly expressed or explained. However, it was no doubt born of a fear that the circumpolar universities might begin to lay special claims to resources and research monies and that the circumpolar universities might eventually grow to rival the southern universities in northern research.

Growth and Development of the Association

That there was a natural affinity of interest between the circumpolar universities can be seen by the fact that they have held a series of very successful conferences in many parts of the circumpolar north and that they now have an organisation with a Constitution and a permanent secretariat based at the University of Lapland.

The proceedings of the first circumpolar universities conference were published in a volume issued by the Lakehead Centre for Northern Studies.[8] It included fifty of the papers presented at the conference. The second successful conference was held in Tyumen, Russia. The third was held at the University of Lapland in December, 1992, to coincide with the dedication of the Arctic Centre presided over by the then President of the Finnish Republic, Mauno Koivisto. A useful selection of some twenty-two papers from this conference was published by the Arctic Centre in 1994.[9] The fourth circumpolar universities cooperation conference was held at the University of Northern British Columbia in Prince George in 1995. This was part of a year-long set of events held to celebrate the opening of this

new university, the first completely new one to be built in Canada for nearly thirty years, and the first to be built in northern British Columbia. The papers presented at this conference were also published.[10] The fifth conference was held at Luleå University in 1997.

Apart from a series of successful conferences, other indications of the success of the Association were the decisions to formally adopt a Constitution and to switch from a moving secretariat, namely the host institution for the next conference, to a permanent one. It was informally agreed at the first conference at Lakehead University that a permanent association of circumpolar universities should be established. The matter was discussed further at the second conference at Tyumen university and a Constitution was formally presented and adopted at the third conference held at the University of Lapland. The original Constitution was signed by twenty-two universities and other institutions of higher learning. The constitution states as the purpose of the Association that it is an organ for cooperation between universities and other institutions of higher learning and research in the northern circumpolar region of the world and that its aims are to encourage and to promote higher learning and research on these northern areas by acting as a means of communication and an organiser of meetings and conferences.

At the fourth conference at the University of Northern British Columbia a proposal was made and passed that the University of Lapland become the location of a permanent secretariat for the Association. This arrangement was considered useful both because it ensured continuity and because the Arctic Centre of the University of Lapland already housed several other northern secratariats, thus facilitating cooperation with them.

Conclusions

The Association of Circumpolar Universities has become a well-established organisation and a useful forum for the exchange of information among the universities that are actually located in northern regions. It could still remain this and continue to perform a valuable role. However, it might be useful to the circumpolar universities, and to the northern regions in which they are located, if the Association considered two actions.

The first possible additional action would be to invite representatives of the governmental agencies responsible for the northern regions to a conference deliberately designed to explore linkages between the universities and those agencies. The extent of the links between the circumpolar universities and the northern agencies varies widely throughout the region but in every case they could be improved to the benefit of all. Subsequent conferences might expand the links with other regionally-related groups; maybe concentrating upon a different sector of the northern societies at each conference.

The second possible action would be for the Association to consider becoming an active lobby group on behalf of the circumpolar universities with the governments of the nations of the circumpolar north. Various developments in many of the nations of the circumpolar north have meant that there has been a lessening of governmental attention to their northern regions, and particularly to their northern universities. A joint approach to combatting these tendencies might well be very helpful not only to governmental agencies and universities, but also to the economic, social and cultural health of the residents of these regions.

Notes

1. Lakehead University, Lakehead: The University of Northwestern Ontario (Submission to the Commission on the Future Development of the Universities of Ontario) Thunder Bay: Lakehead University, 1984.

2. See Geoffrey R. Weller and Robert G. Rosehart, "Universities, Politics and Development in Northern Ontario and Northern Sweden: A Comparative Analysis" Canadian Journal of Higher Education Vol. XV, No. 3 (1985), pp. 51-72.

3. Lakehead University, Academic Planning at Lakehead University Thunder Bay: Lakehead University, December 5th 1986.

4. Lakehead University, Report of the Presidential Advisory Committee on Northern Studies Thunder Bay: Lakehead University, 1986.

5. Peter Adams and Doug Parker (eds), Canada's Subarctic Universities Ottawa: Association of Canadian Universities for Northern Studies, 1987.

6. Fred Lazin, Samuel Aroni, and Yehuda Gradus, The Policy Impact of Universities in Developing Regions

London: MacMillan, 1988.
7. Lakehead University, The Role of Circumpolar Universities in Northern Development Thunder Bay: Lakehead Centre for Northern Studies, 1991.
8. Ibid.
9. University of Lapland, The Changing Circumpolar North: Opportunities for Academic Development Rovaniemi: Arctic Centre, University of Lapland, 1994.
10. Shauna McLarnon and Douglas Nord, Northern Parallers (Proceedings of the 4th Circumpolar Universities Cooperation Conference) Prince George: UNBC Press, 1997.

21. Experiences in higher education learning: international practice through the Arctic Social Science PhD Network

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Gérard Duhaime

Introduction

The role of the University is continuously changing. From formerly being a national cultural mission closely connected to the development of the nation-state, the University is developing towards a different kind of institution, one that is no longer linked to the destiny of the nation-state by virtue of its role as producer, protector, and inculcator of an idea of national culture (Readings 1996, 3). Instead of the idea of national culture providing an overarching ideological meaning for what goes on in the University, the university has become an important player in the internationalization and globalization process.

On one hand there are many elements of truth in emphasizing, as Reading does, that the changing role of the University has to be considered seriously, in order to prevent this situation where competition for grants and funding covers up the real meaning of higher education and its close connection to research. But at the same time it is also crucial to stress the new opportunities this opens, for international understanding, open relations and open minds. And it is important to not only be aware of these changes, but also to contribute positively and to take advantage of the new perspectives these changes create.

Arctic research is increasingly coming into the international spotlight, promoted by spectacular films and TV programs focusing on the beauty of the Arctic wildlife, and the exotic traditional lifestyles. And in this process Arctic social science also seems to thrive. But a characteristic of the scientific activities in relation to social science is the fact that they are conducted by a relatively limited number of persons spread around among a relatively high number of universities and colleges within as well as outside the Arctic. Only a few are situated directly in the Arctic, while most of them are in the countries with historical links to the Arctic, and many of them still maintain this connection. This dispersed structure may be a problem in relation to research, but this is usually solved through a number of inter-institutional activities such as congresses, seminars, workshops etc. But the dispersed structure is an important hindrance for arranging education programs at a doctoral level, which is necessary for a continuing supply of new researchers in arctic social science. At the same time it also creates problems for the quality of the doctoral programs that are maintained.

Taking a glance around the Circumpolar area and counting the total number of doctoral students focusing on social science should include students from all countries in the area and may end up with a substantial number. But when counting the number of students at each university or college, the number will be very limited. Consequently there are only very few high level programs in Arctic Social Science, just as there are limited resources available at one single place—in most cases not enough to create a special program aiming at Arctic questions. But the need is obvious and becoming more and more clear, among other things due to the growing interest and need in connection with development problems where social scientists are of importance (Duhaime 1996).

Through many years of practice in higher education teaching, several teaching methods and pedagogies have been applied: project-based teaching, group work, multi-disciplinary courses, cross-cultural seminars, comparative studies, and last, but not least, field work and field courses, just to mention a few. All of them have specific qualities, taking advantage of specific characteristics of the learning process, and thereby serving the main purposes of higher education. A synthesis of these experiences have been used as a basis for the creation of the Arctic Social Science PhD Network, which started its activities in 1995, based on a collaboration between a number of research institutions involved in Arctic social science. By means of funding from NorFA, The Scientific Commission for Greenland, Roskilde University, The Danish Social Science Research Council, Université Laval and the Canadian Social Science Council, it has been possible to create the setting and gather together the necessary "critical mass"of doctoral students and academic skills required for a program of sufficient quality.

The setting

The fundamental idea behind the program is that doctoral students from the participating universities should meet at least once a year for an intensive course of at least two weeks. The responsibility for the practical arrangement of the course is successively taken by the participating universities. Between the course arrangements the students and the professors are in individual contact—person to person—through means of communication such as e-mail, Internet etc. But at the same time a discussion forum is maintained through a discussion list on the network. Electronic communication has become an important tool for education as well as research, but all experience seems to confirm that this form of communication is facilitated and expanded strongly though the personal knowledge acquired in person-to-person experiences, through even short meetings, and even better through an intensive course (Rasmussen 1995).

A region as well as a theme is chosen as a suitable setting for the course. As a guideline for the selection of the theme is the question of contemporary problems relevant for the development process in the Arctic. The 1996 course took place in southern Greenland, focusing on the diversity in settlement development; the 1997 course took place in the north-eastern part of Quebec, emphasizing the conflict between megaprojects and local participation in the development process; and the 1998 course took place in the North Calotte area (Langlais and Brekke, this volume), with a focus on security in the North. Activities being planned are courses focusing on self-determination in the Arctic (Nunavut 1999), resource management in the Arctic (Alaska 2000), and the impact of industrialization on Arctic development (Russia 2001).

The content of the course is based on a number of activities, with a 50/50 division of time between academic activities and excursions and visits in the region. Before the start of the course selected literature is distributed among the participants. The literature focuses on the theme of the course, trying to give a starting point for the discussions, and at the same time an introduction to the region. During the course each of the participating professors give one or more lectures emphasizing all three levels of the research process: the empirical basis, the theoretical framework, and the methodological approach. Also included in the presentation are a number of local and regional capacities in relation to the theme as well as to the region. It involves local authorities, governmental representatives, local people involved actively in the development process, local scholars as well as academics who have special knowledge in relation to the region in focus.

The doctoral students contribute to several activities during the course, but the most important individual contribution is through the presentation of their on-going research. For these sessions, one of the other students participating is appointed as the main discussant, and during a couple of hours the project is presented and discussed. Guidelines and ideas from the participating students and professors contributed during this presentation provide valuable ideas for the doctoral student.

As mentioned above, the visits to local authorities, organisations, projects, etc., play a crucial part in the course, and around fifty percent of the time during the course is spent in practical and introductory visits. Through these visits the participants are introduced to real-world activities,

given an overview of a part of Arctic development that differs from their own background and experience and at the same time given a common framework of reference that enables the exchange of experience between the participants. In addition to these activities, a number of thematic discussions are initiated, focusing on cross-cutting issues, with a point of departure in the common experiences during the regional visits. During these discussions the disciplinary approaches and the different experiences merge into truly interdisciplinary discussions.

Renewal as well as continuity among participants is emphasized as a part of the course. The main idea is that all involved doctoral students should be able to participate in up to three courses, and thereby receive, as well as share, experiences during different stages of their projects. By including different themes and regions as a basis for the courses, the participants are given a broader basis for the evaluation of their own projects. At the same time continuity is maintained as some of the professors will participate in several courses, either by being involved in the arrangements, or as contributors, or both, in two or more consecutive courses.

Besides the activities directly connected to the course arrangements, a number of other elements that are part of the network arrangement should be emphasized. A first element is the creating of a network of active students and academics in social science. Networking is crucial for the advancement of science, and a way of developing a network is through participation in international conferences and workshops. This, however, is a slow and time-consuming process, so the network established through participation in the course arrangement is an important contribution to the professional environment of the future academics.

A second issue is the fact that network-based communication is generally recognized as an important tool for scientific work, but very much limited by the impersonalized and more or less anonymous exchange of views through discussion lists. By providing the participants with a "real" face to associate with the names, communication on discussion lists and Internet becomes much more effective, and enables a much more detailed and deep understanding of the individual contributions.

A third effect is the creation of a practical basis for exchange of students and academics between the participating universities. Knowledge about academic excellence, the sharing of information about the activities taking place at the universities, and the sense of feeling at home in the academic environment are crucial elements for a successful exchange arrangement and, even better, it seems to work in reality!

The Content

The content of the courses can be seen at two different levels. The first level has to do with the general approach to the course design, while the second level has to do with the specific content of each of the courses.

On the general level, the focus of the course is towards contemporary northern development, with special attention to comparative studies in relation to community development in the Arctic. Within a short time period, the environmental, cultural, political and economic realities for Arctic communities have changed drastically. From a situation where income and livelihood was a result of harvesting the natural resources of the region, there has been a change towards a situation with an increasing degree of transfers and international inter-dependencies. From an understanding of the Arctic environment as unspoiled and inexhaustible, the consequences of trans-boundary contaminants and resource exploitation are increasing concern that this is changing. On the other hand, there has also been a change from an ages-old way of life to one of forming the basis for sophisticated Home Rule governments, industrial expansion, and international aboriginal movements.

This general development raises many questions in relation to the dynamics of the development process: What are the development perspectives for the people living in the Arctic communities? Is it possible—and desirable—to continue the present development of living conditions? Are transfers becoming an enduring element in the Arctic societies? Is it a resolvable task to change the dichotomy between autonomy and dependency into a vehicle for an independent development? Are the cultural characteristics of the Arctic communities being devoured by the international society? Is it possible to develop

the concept of sustainable development into an analytical instrument to grasp and comprehend the seamless web of interrelationship between nature, society, economy, technology and culture that constitutes the conditions for development in the Arctic?

Questions like these have been useful for directing the general approach towards the specific content, recognizing that comprehension of the environmental, cultural and social framework of the community is extremely important and necessary in order to be able to understand how economic and social advances are perceived in different parts of the Arctic, and under different cultural settings. On the specific level—i.e. the concrete content of each course—each course therefore has been designed with a specific focus on cross-cutting issues, which are facilitated through the choice of the specific region for the setting for each course, and by involving faculty within the chosen problematique.

A region, as well as a theme, are both chosen to make a suitable setting for the course. The guideline for the selection of the theme has been whether the theme has to do with the question of contemporary problems relevant for the development process in the Arctic.

The 1996 course took place in southern Greenland with a thematic approach emphasizing the diversity in the settlement structure. Southern Greenland is a perfect illustration of diversity as it is characterized by a variety of settlements with very different sizes, and with very different economic structures. There are settlements based on hunting, small-scale fishing, large-scale fishing, fishing industry, farming, administration, education, transportation etc.

The 1997 course took place in the northeastern part of Quebec, with a thematic approach emphasizing the conflict between megaprojects and local participation in the development process. With a large number of small settlements, many of which are indigenous, and with megaprojects in hydropower and mining, this setting is perfect for giving a first-hand impression of the conflicts.

The 1998 course has taken place in the North Calotte area, from Murmansk in the east to Tromsø and Longyearbyen, Spitzbergen, in the west. The thematic focus is on security in the North, with a broad definition of security emphasizing security in relation to not only the military situation but also to resources and the environment.

So far, activities have been planned for 1999-2001, as well. The 1999 course will focus on self-determination in the Arctic, with the setting being the newly-established territory of Nunavut, while the year 2000 course will be focusing on resource management in the Arctic and is planned to take place in Alaska. The 2001 course will concentrate on consequences of industrialization in the Arctic, by emphasizing the social, economic and cultural problems in relation to industrialization, as well as the impact of industrialization on Arctic development. It is planned to take place in Russia.

The pedagogies

It is often assumed that the questions of pedagogy can be treated as afterthoughts, and a general belief is that if teachers just present the "right knowledge" to the students, the students will automatically learn something. At best, questions of pedagogy are reduced to debating whether one might use a seminar, lecture, or multimedia format (Arononwitz and Giroux 1991, 88).

This holds even more true when it comes to the question of learning in higher education. There seems to be a very limited recognition of the need for specific pedagogic reflections when it comes to Master- and Doctorate-level learning. It is generally assumed that learning takes place among the students if they are merely present when faculty in specific fields present their high-level knowledge through lectures. But in general learning requires more than just the presentation of facts and theories. Learning requires an interactive process between the learner and the learned, as well as the subject involved.

There are several pedagogical rationales built into the Social Science PhD Network model, which means that the course arrangements and the setting, in addition to the resource rationalities, also are based on a number of pedagogical considerations (Rasmussen 1997).

Common experience as a framework for the exchange of ideas: the students, as well as the professors, will have their knowledge connected

to their specific—usually differing—experiences, and this experiential-cultural framework creates limitations to the acquisition of new knowledge. When the professor explains theories by using models and giving references to his own background, it may not be understood by students with other backgrounds. But through fieldwork and excursions, the students, together with the professors, are establishing a common framework of reference, which acts as a framework of interpretation that facilitates the learning process.

Olesen (1996, 234-35) stresses how general qualifications as an individual process is part of a more comprehensive individual creation of experience that is based on a framework of actions/processes through which the individual produces him/herself under the influence of social conditions and inner influences. It is at the same time an individual *and* a collective learning process. This is parallel to what is emphasized by Vygotsky (1996; Tryphon and Vonèche 1996; Daniels 1996), that learning and psychological development is an interactive process between learning and social interaction. The human's collective and societal activity as a social meaningful activity in general is a central element in explaining the connection with the learning process, that the social activity mirrors the human's relation to the external reality through which there is a change of the reality. And last but not least, that the internalization process is focusing on learning as an outside-in process where the interaction creates the relations to the surroundings. When these relations are internalized they create the foundation of the cognitive processes.

Challenging existing knowledge as a basis for new knowledge: throughout the course the students are introduced to familiar experiences and explanations, which affirms their already established understanding. But at the same time they are confronted with experiences that require new sets of explanations, and during their construction of a new framework of understanding, they need to re-evaluate their formerly-acquired knowledge. This is parallel to Piaget's approach (Piaget and Inhelder 1969; Wadsworth 1996), focusing on the externalization process where the cognitive process is first constructed internally, and subsequently leads to external reactions that are able to modify the relations to the surroundings and with the dynamic elements in the learning process. This latter process is assimilation versus accommodation, where assimilation is the process where new observations and stimuli are added to and used as confirmations of already existing understandings; while accommodation is the process where new observations and stimuli do not fit into an existing framework of understanding; causing the need for a change in the existing framework of understanding; either as simple modifications, or as paradigm shifts. This understanding at the same time emphasizes the dynamics of equilibrium and disequilibrium, where equilibrium is the situation where there is a balance between assimilation and accommodation, while disequilibrium is a situation of unbalance.

Real world problems and problem solving: true understanding requires problem-solving. Only when confronted with a specific problem do the "why" and "how" questions develop in the students' minds. At the same time the problem-solving approach is one of the best ways of creating true interdisciplinarity, as most problems are interdisciplinary by nature. In addition, the course setting emphasizes the interconnection between the individual's achievement, the group work, and the lecturing activity. Through the project work and problem-solving, the things acquired during the course will be brought into use, and consequently become a much more active part of the students' knowledge. This approach is parallel to Wurzdorff's and Hutchings' (1988), who emphasize how an integrated off-campus experimental situation is an important setting for the integration of knowing and doing. It is distanced, both physically and temporally, from students' off-campus sites, and because it is interdisciplinary, it encourages the student to view abstractly the transferable aspects of what and how they are doing at their sites (ibid., 64).

True interdisciplinarity through confrontation of disciplines: through the confrontation with real-life problems during the course, the need for the pluralistic approach becomes obvious, calling for an interdisciplinary problem-solving methodology. But at the same time it gives the students a much-needed focus

for their continued disciplinary approach. It is a situation parallel to multicultural as well as cross-cultural education, which, as emphasized by Darnell and Hoëm (1996, 15), requires teaching/learning strategies **a**nd processes that enable people to participate in and value their respective sub-societies, while providing the means to acquire the knowledge necessary to be successful members of the multicultural society-at-large.

The confrontation of different disciplines creates a forum where it is possible to establish what Reading describes as "not a generalized interdisciplinary space but a certain rhythm of disciplinary attachment and detachment, which is designed so as not to let the question of disciplinarity disappear, sink into routine" (Readings 1996, 176). It has to do with the recognition by Readings that "education, as *e ducere,* a drawing out, is not a maieutic revelation of the student to him- or herself, a process of clearly remembering what the student in fact already knew. Rather, education is this drawing out of the otherness, of thought that undoes the pretension to self-presence that always demands further study. And it works over both the students and the teachers, although in a dissymmetrical fashion" (Readings 1996, 162-63).

It is important to note that it is not argued that the field course is the only contribution to the learning process. It is the dialectic between the study activities at home *and* the field experience that facilitates the learning process, a dialectic which is present also in relation to interdisciplinarity, which requires disciplinarity as an equally important ingredient. To be able to identify a problem as interdisciplinary, you need to be able to identify the disciplinary character of its components. It is necessary to take time to build a basis of knowledge and understanding as well as time to challenge this by confronting it with real world problems that are interdisciplinary by nature.

Parallel building of experience, skills and knowledge: through the network activities all three elements in the learning process are taking place during the course activities. As Dewey (1916; 1966, 140) points out, experience is primarily an active-passive and not so much a cognitive affair, that the measures of the value of an experience lie in the perception of relationships or continuities to which it leads to, and that (ibid., 273) experience should not be put in opposition to rational knowledge and explanation. Experience is much more than a mere summarizing of what has been done in a more or less chance way. This is parallel to Dreyfus and Dreyfus (1990; 1993) and Dreyfus focusing on the apprenticeship character of learning, with tacit knowledge as an important element of the academic learning process, and tacit and unarticulated knowledge as a central part of the professionalization. The supervised visits in the field contribute obviously to this process. In this process Doherty, Mentkowski and Conrad (1978) emphasize the limitations of the autonomy of the individual learner. They focus on how the experiential learning process requires *dialogue* in the reflective and theory-forming stages, and that it is necessary to include the teaching of how to seek access to the dialogue in the "real time" situations.

The Results

Even though three years of activities is a limited background for extracting massive conclusions, a number of characteristics may be summarized.

During these three years a total of twenty-seven different doctoral students from all the Arctic countries, including a few other countries as well, have been participating, involving a broad selection of social science disciplines, including anthropology, economics, geography, history, sociology and political science. Among the students, several have participated more than once, and a few up to three times. Even though fifteen males and twelve females gives a small dominance of male students, a tendency towards equity in participation reflects the actual situation of balance in the social sciences. Learned scholars from several universities and research institutions from almost all the Arctic countries have participated as contributors.

The main advantages compared to traditional academic activities should be emphasized:
- it has proven to be an effective and valuable way of creating a formalized program in Arctic Social Science, both due to the gathering of a sufficient number of students, and due to the surpassing of a "critical mass" of professionals;
- it enables the involvement of special faculty

and resource persons from each of the participating universities in connection with the thematic programs, and also allows the inclusion of international faculty within the field, and consequently the establishing of a program of very high quality;
- it contributes to the globalization of the university, which includes qualities parallel to what Darnell and Hoëm (1996, 283) stress in relation to the school in a multicultural society, where a basic premise should be a recognition of every unit and every culture in the society as having equal importance to the people with whom they are connected. It is only then that members of each group will have the wisdom to know what is best for themselves in their local communities.

In relation to the students involved, some of the main impacts could be summarized as the following:
- it immerses the students within an international network of professors and researchers in their fields of interests or disciplines, which enrich their overall formation and experience, and their potential of being added up to represent the present state of the knowledge;
- it immerses them within a group of other PhD students, which creates the roots for a life-time international network. In fact, several students have, through their participation in the courses, made contact with others working on the same research problem in other parts of the Arctic, leading to sustained exchanges;
- it enables the students to stay at their home university during substantial parts of their research activities, but at the same time allows them to draw on the international faculty and to select themes and problems that are not covered by their home institution;
- a crucial element in a scientific career is the creation of a network of colleagues, a process that usually takes many years. Through participating in the PhD network the creation of the basis of a network exists, and friendships within, but also across, disciplines create a much more open basis for interdisciplinary research.

Last, but not least, important impacts in relation to the institutions involved should be emphasized:
- it provides information and living testimonies about research centres and programs, promoting the circulation of professors and students between universities. This bears its own impacts in each institution, in terms of exchanges, local exposures to foreign experience and international contributions to on-going projects and research, as well as courses.

It has not been possible to create the PhD Network without running into a number of problems. The major problems have had to do with getting access to sufficient funding. It has been a time-consuming activity to write proposals and applications, but luckily NorFA—the Nordic Academy for Advanced Study—the Scientific Commission for Greenland, Roskilde University, The Danish Social Science Research Council, Université Laval and Canada's Social Science Research Council have provided us with the necessary means so far. But funding has been on a year-by-year basis, so long-term planning has been—and still is—taking place with a high degree of uncertainty.

An additional element of uncertainty has been connected to the fluctuations in exchange rates. With fixed amounts of funding beign based on applications made when the exchange rates were at one level, changes in exchange rates have in more than one case caused problems, and so far we have not experienced a positive exchange rate change. And last, but not least, the idea of involving students from all the Arctic countries and from different disciplines has from time to time been hampered by the lack of updated inventories on active Arctic research centres with information about PhD students. There is no doubt that the idea of a University of the Arctic could contribute to solving several of these problems, and enable the planners to concentrate on curriculum and pedagogies.

An important ingredient in the curriculum development has been the constant involvement of the students in the improvement of the course. One of the last activities in each course has been an evaluation where the students and faculty members give their evaluation of the activities, and give suggestions for improvements. These suggestions have been taken into account in connection with the arrangement of the following year's course.

Perspectives

The experience described above relates to social sciences, and is closely connected to the scientific field between anthropology, sociology,

geography, history and economy, an area of study where concepts of *time* and *space* are crucial for theory building, just as they are crucial for the understanding of the contemporary world. It may be argued that the positive outcome of the PhD network is due to this characteristic, but it is the general impression, however, that many of the lessons learned may be directly transferable to science, as well as to humanities. The generality of the experience is summarised by the following remarks from Dewey that may stand as a concentrate of our experience:

> Thinking is the accurate and deliberate instituting of connections between what is done and its consequences. It notes no only that they are connected, but the details of the connection. It makes connecting links explicit in the form of relationships. The stimulus to thinking is found when we wish to determine the significance of some act, performed or to be performed. Then we anticipate consequences. This implies that the situation as it stands is, either in fact or to us, incomplete and hence indeterminate. The projection of consequences means a proposed or tentative solution. Then the suggested solution—the idea or theory—has to be tested by acting upon it. If it brings about certain consequences, certain determinate changes, in the world, it is accepted as valid. Otherwise it is modified, and another trial made. Thinking includes all of these steps, the sense of a problem, the observation of conditions, the formation and rational elaboration of a suggested conclusion, and the active experimental testing. While all thinking results in knowledge, ultimately the value of knowledge is subordinate to its use in thinking. For we live not in a settled and finished world, but in one which is going on, and where our main task is prospective, and where retrospect—and all knowledge as distinct from thought is retrospect—is of value in the solidarity, security, and fertility it affords our dealings with the future (Dewey 1916; 1966, 151).

To date, this experience and these results have already contributed to the changing role of universities. Along with other initiatives, such as the development of new international science associations promoting international cooperation, especially in the field of research—for example the International Arctic Science Committee and the International Arctic Social Science Association)—the initiative provides a channel for the organization of international cooperation in higher education in a way that a single university could not do, and at the same time matches the internationalization of the problems to be solved.

A major difficulty for development in international cooperation in the past has been to go beyond the personal networking capabilities. These initiatives are going far beyond this, as they are based on the institutionalization of the exchanges for learning and research planning purposes. In other words: the PhD Network is not only circulating a message in learning, where experience contributes to knowledge. It is creating a medium that in itself is international, bringing the international dimensions into any thought and discussion—and potentially into action—about Northern Development. This could make a contribution to a future different from the past!

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22. Without a campus: the University of the Arctic

Richard Langlais
Asgeir Brekke

Murmansk is quiet. The air is fresh with the smell of the sea and last night's rains; a ship's horn pierces the still morning air. The group of doctorate students from around the circumpolar north is boarding the bus for their trip to Kirkenes. A prototype for the University of the Arctic is leaving town.

The course participants have been up most of the night, not only discussing questions of development related to Arctic fishing villages, to be sure, but definitely engaged in intense educational activities. Today they will drive through one of the most discussed areas in the Arctic, travelling along the northern edge of the Kola Peninsula, always near the coast of the Barents Sea, but never seeing it, for all the access roads leading to it are off-limits. This is due to one of the reasons for the region's fame: the military presence in the area remains one of the most intensive anywhere on Earth. Nonetheless, the students will soon be passing through parts of that zone.

The students are part of the Circumpolar Social Science PhD Network[1], which has run a two-to-three-week course somewhere in northern regions for each of the last three years, including this trip. With at least one participant from each of the eight Arctic countries, this year's course has the title, Conflicts and security: conditions for development in the Arctic, with its geographic focus on northern Norway, the Kola Peninsula, and Svalbard. The activities of the PhD Network have often been described as a model for one of the ways in which a University of the Arctic might operate.

This year's PhD Network course began with introductory lectures at the campus of the University of Tromsø, then flew on an Aeroflot turboprop—an experience in itself—to Murmansk. The program there was arranged by the course's participants from the Apatity offices of the Kola Science Centre, a branch of the Russian Academy of Sciences. After several days of lectures and an excursion to the industrial complex at Monchegorsk, among others, the field trip would continue on by bus from Murmansk to Nikel, across the Norwegian border to Kirkenes and westward across northern Norway. Before returning to Tromsø, the group would follow the Tana River to the Norwegian Sami Parliament at Karasjok, then travel north to Alta and Finnmark College, to eventually arrive at the Skibotn Field Station of the University of Tromsø for the most traditionally academic part of the otherwise unorthodox program.

At that point, after a week on the road, hearing presentations by a variety of local and regional representatives in both Norway and Russia, everyone in the course is

The above description is meant to convey the kinds of things that should help to make the University of the Arctic become a unique contribution to higher education in the circumpolar north. The University should not rely on the construction of new buildings or the purchasing of tons of new equipment. Instead, by the strengthening of cooperation at the circumpolar level, it will develop shared programs and collaboration networks among already existing institutions, as well as supporting its own activities. The PhD Network is an excellent example of those kinds of activities.

At the time of writing, the Senior Arctic Officials—SAOs—under the Arctic Council are busy preparing for the coming meeting of the Ministers of the Arctic Council to be held in Iqaluit, Canada, in mid-September, 1998. It is anticipated that at that meeting the University of the Arctic will be welcomed as an institution that is seen to be in the interests of communities in the north, and that in connection with that, some of the Ministers may announce that their countries are willing to support the University in some tangible way. The Arctic Council is made up of the eight Arctic states; its Permanent Participant Indigenous Peoples Organizations—the Inuit Circumpolar Conference, the Association of Minority Indigenous Peoples of

the North, Siberia and the Far East of the Russian Federation (RAIPON), and the Sami Council—and a number of Observers, some of them states and others nongovernmental organizations. What is this University that seems to be able to arouse agreement among such a diverse body?

Emphasizing flexibility and mobility, as well as innovation and responsiveness to the needs of the people of the Arctic, the University is envisioned as striving to provide as many aspects as possible of higher education even to communities that as yet are too small and remote to support a more conventional institution. The basic model for its structure that is emerging is that there will be a number of University of the Arctic centres, or nodes, located in various locations all around the Arctic, with each of them focusing on a particular component of the Universities functions, while still representing the notion of the University as a whole for its respective region.

A mix of techniques, methods and courses that shifts according to the availability of resources and in response to demand will attempt to provide what no other fixed University can provide by itself. It is possible that at any given time there will be a number of activities underway, ranging for example from distance education and Internet-based functions to the development of Arctic-specific teaching resources, traditional classroom sessions and student and teacher exchanges. One thing that is certain is that it will depend a great deal on the perception of it by the Arctic community as a good idea that is worth supporting.

Some of the background of the initiative

Althouth the history of the initiative to create the University is brief, this should not belie the intensity of the process. This has been fueled by the conviction that, as people all around the Arctic get to know each other better, there is a growing sense of shared needs and opportunities. This has increased noticeably during the last decade, as international dimensions of economic, social and environmental issues have become better understood, not least in the Arctic. In parallel with this, education, training and research have also become more focused on the merits and necessity of circumpolar collaboration. With these characteristics of the post-Cold War Arctic in mind, this most recent conception of a university of the Arctic, a circumpolar university, was presented to the Senior Arctic Officials under the Arctic Council in Kautokeino, Norway, in March 1997. The Arctic Council eventually invited the Circumpolar Universities Association (CUA) to proceed with developing the initiative and performing a feasibility study. To perform these tasks, the CUA in turn created a Working Group with membership from the circumpolar academic community.[2]

The vision of the circumpolar university that has persisted from the beginning is that it would be consistent with the reality of life in the Arctic. In other words, a sensitivity to the characteristics of the Arctic is helping to determine the university's characteristics. Just one example of what this means is derived from the understanding that since many Arctic issues are complex issues, interdisciplinarity will often play a role in dealing with them.

Another example is that, in recognition of the vast distances that people of the north are accustomed to, the university is being seen as a dispersed institution with its activities spread all around the Arctic, wherever they are needed. This implies not only the use of information technology, but even more importantly, the need for increased face-to-face education, which in turn implies mobility. Understandably, and as just one example of the details of what is being envisioned, all forms of educational mobility have a high priority. Mobility of teachers and students is being emphasized, as is an emphasis both on courses that travel *with* their participants, as in the PhD Network field course model, and courses that travel *to* their participants in the communities where they live. One of the strongest recurring examples of what the univiersity is not imagined as is as a huge collection of buildings on a fixed campus located in one place somewhere. Investment is sought in creating access, rather than in pouring concrete.

More is said about the vision below, but it is important to mention first that, now, slightly more than a-year-and-a-half after its introduction, the initiative has taken on impressive strength and considerable momentum. It has been met with interest wherever it has been presented and it appears to make most think that it has

something for them. Although this has no doubt also proved interesting for politicians, this clear response has also been seen in a broad range of respondents, in small communities around the Arctic, in both large and small institutions of higher education in both the north and south, and from indigenous peoples organizations. Reflecting this interest, and as an indication of the seriousness with which the circumpolar university is now being considered, the Arctic Council—as was indicated above—has placed it on its agenda for its Ministerial meeting in Iqaluit. This is in itself felt to be a momentous achievement for those who have been working with the concept.

For the champions of this initiative, the Iqaluit meeting has indeed been an important milestone. Recognizing that the political "window of opportunity" at such a high level is small, the Working Group entrusted with performing a feasibility study of the concept worked intensively to prepare as solid a proposal as possible for that meeting.

Some countries have chosen to participate more strongly than others in the initiative. This is part of a number of delicately advancing processes of cooperation among the Arctic countries, of which the *Rovaniemi process* is one of the better known examples. With many common features shared by the circumpolar countries, bilateral and regional connections have expanded so that the strength of the case for a circumpolar university lies in the benefits from exchange of understanding of the many facets of sustainable development. These, combined with meeting the educational needs of Arctic residents and indigenous peoples, increase the opportunities for cost-sharing in otherwise expensive facilities.

Before going on with a more detailed discussion of the current state of thinking about the concept, it is appropriate here to provide more of its history.

As the original concept began to take form after its introduction in Kautokeino, it included the idea of a geographically dispersed institution combining the strengths of existing establishments and bringing students and staff together. To undertake the initial planning, a small group of individuals formed a Task Force, combining representation from several circumpolar regions and the Circumpolar Universities Association.

The original Task Force was chaired by Professor Bill Heal and produced a report entitled, *A University of the Arctic: Turning Concept into Reality; Phase 1—A Development Plan,* which was presented to the Senior Arctic Officials of the Arctic Council in Ottawa on October 9, 1997.[3] As a result of the enthusiastic response at that meeting, a letter of invitation from David Stone, at Canada's Department of Indian Affairs and Northern Development (DIAND) was sent to Outi Snellman, Secretary General of the Circumpolar Universities Association, asking the CUA in association with the Permanent Participant Indigenous Peoples Organizations of the Arctic Council to assess the feasibility of establishing a geographically dispersed institution, committed to ìthe environmental, cultural and economic integrity of Arctic Regions.[4]

Reasons for the subsequent selection of the Circumpolar Universities Association included the fact that the CUA had been active in the Task Force; and that it was a clearly circumpolar organization, whose members consisted of institutions of higher learning. This aspect of circumpolar, academic representativity was felt to lessen the chances that it would be a victim of nationalistic in-fighting among the different partners to the Arctic Council.

The CUA called its Task Force to the latter's final meeting in Tromsø, Norway, to plan the next phase of the work. Among other decisions, the Task Force dissolved itself and appointed the initial members of a Working Group to carry out the Feasibility Study. It proposed a number of candidates to make up the rest of the Working Group and produced guidelines for how the Study would be undertaken.[5] The Working Group's activities have been well underway for some time now, as the activities described in this paper attest.

Envisioning a circumpolar university

It is now more appropriate to explore in more detail what is being envisioned for the circumpolar university. The concept, as a collaborative partnership between the northern countries and the indigenous peoples, reflects

the increasing internationalisation of education and the recognition of the growing integration of the circumpolar region. As such it is not an entirely new concept. There are many examples of successful international collaboration elsewhere that build on the existing strengths of numbers of academic institutions to meet perceived needs. The noteworthy feature of the proposed university is that it extends academic internationalisation to a different *region* of collaboration. It is a logical development and is a counterpart in higher education of the cooperative networks that have emerged in recent years.

To assist in meeting the global challenges of sustainable development in the Arctic effectively, comprehensively, and on a long-term basis, the University of the Arctic represents a concerted effort to integrate existing circumpolar education and training on a circumpolar scale. In this it needs the collaboration of as many individuals and institutions as possible, especially of the small colleges and universities that are often overlooked in broad overviews. The challenge is to increase understanding, at all levels, of the global scale of the environmental, financial, and political issues that Arctic regions are currently facing, and to develop genuinely transnational educational responses to them.

The concept of a circumpolar university is being envisioned as a higher education institution committed to the environmental, cultural and economic integrity of Arctic regions through scholarly excellence and broad, yet diverse, cooperation in education and research. The University is being designed to overcome the limitations of project-specific agreements between universities. It constitutes a formal, flexible and long-term forum within which to focus the diverse interests and capabilities of existing institutions, and to provide an innovative framework for completely new ones. The university is thus an essential structural requirement to support realization of the vision of sustainable development in the Arctic.

The University of the Arctic has relevance within the context of the major circumpolar and global issues identified above. It can provide opportunities for economies of scale in shared provision of high cost sophisticated facilities for post-graduate training and research, whilst reaching out to the most remote communities in the extension of undergraduate studies. However, there are currently limits to collaboration, because maintaining the resource base of a university is often tied to results that an individual university has achieved, not to its collaborative efforts with other universities. Furthermore, agreements on collaboration often involve too few universities and are too specific in their agendas to meet the broad mission of sustainable development that is envisaged for the University of the Arctic. This is being partly addressed in the way that some universities and colleges have already developed community networks to address the circumstances created by community structure, cultural issues and the needs of indigenous groups, and attempts are being made to further link these networks through the University of the Arctic concept. The enthusiasm found for such methods in many Arctic countries suits the networking and regional cooperation paradigm of development often advocated by many scholars. The universities themselves are important employers in the Arctic and can have a significant impact on local and regional economies.

The link between environment and higher education in the University of the Arctic concept is not accidental. Environmental issues and concerns are of both local and circumpolar dimensions, and addressing them is understood as involving students, staff and facilities from many educational establishments and institutions, working in partnership with their communities. But the need for more integration in higher education remains much wider than the polar environment. As identified by the existence of the Circumpolar North Ministers of Education conferences, the environmental, social, economic and political imperatives in northern affairs have been felt to require a broad forum for academic development and education. Appropriate systems are required to share experience and understanding; to explore the implications of new and old solutions; to identify the similarities and differences within the circumpolar region; and to strengthen the knowledge base from which the northern regions can be related to other regions of the globe.

After arriving at the University of Tromsø's Skibotn Field Station, high in the mountains at the top of the fjord and very close to the Finnish border, the graduate students spent four days presenting their

papers and receiving critical response from faculty and students alike. The schedule of presentations was packed, so that everybody would have their chance. Their topics ranged from health and socio-economic issues of Inuit communities, for example, to the shifts in the fishing industry in the Barents region; from the crisis in forestry on the Kola Peninsula to gender balance in traditional occupations on Iceland, to name only a few. The collegial atmosphere was provocative and stimulating, and the packed schedule was the result of needing to create time for the last component of the course, a nearly four-day visit to Longyearbyn, on Spitsbergen. The course participants would use the facilities at the UNIS centre—UNIS stands for University Courses on Svalbard—for listening to lectures and taking some of their meals; UNIS is another of those outstanding collaborations that the University of the Arctic is learning from.[6] The excitement among the students and faculty in anticipation of the trip was tangible.

The journey towards a University of the Arctic

Just as those of us who are working with creating a University of the Arctic would dearly wish that every student in the Arctic might someday be able to participate in the kind of directly stimulating experience that was made available to the PhD candidates who travelled to Svalbard, it is also important to be reminded that the entire process of creating such programs, and the frameworks to support them, is fraught with difficulties. If the aims of the University of the Arctic can in any way be deemed as being needed by the circumpolar community, then it is striking to recall how often the entire enterprise has appeared to be without a shred of a chance of survival. This is to a large degree because, at the same time as thinking in terms of a circumpolar community, or an Arctic level of reference, has its clear advantages (as we've tried to show above), the very notion of circumpolar society creates dissonance among certain of its components. This section describes just some of those difficulties, as this is not the time for an exhaustive analysis.

To move away from the abstract, an obvious category of difficulties is in the role that the concept and reality of states has in shaping initiatives such as the University of the Arctic. At the general level, one is indeed not surprised that international affairs is, among other things, about the interaction of states, but what is intriguing in this particular case is the way in which the academic community participates in that interaction. This is in turn a consequence of the University of the Arctic initiative's having been so closely linked to the Arctic Council.

This linkage has been unavoidable, since the present incarnation of the idea was first brought up at the meeting of the Arctic Council in Kautokeino, but the entire initiative could so easily have stopped right there. As it was, the idea remained unexplored until a small group of concerned academics observed that it was going nowhere and, understanding the historic opportunity before them, refused to let it die.[7]

The opportunity was, and remains, that since the Arctic Council is constituted at the level of the foreign ministries of the eight Arctic states, it is currently the highest possible level of accreditation, or agreement, available in the Arctic region. This means that the political capital created by an eventually successful launch of the University via the Arctic Council would be substantial and should assist the University in getting started. The trade-off, however, was that choosing to continue with the Arctic Council track has implied substantial conditions for the way in which the initiative has been developed. This is not to say that choosing that track was a mistake, but that once chosen it created a kind of "path of no return," and that it required a sensitivity and a way of working that is perhaps not so usual in pursuing academic cooperation.

The most obvious direct influence of the Arctic Council track has been in the pace that the Working Group for the University of the Arctic has had to adopt. This was due to the uncertainty with which the Arctic Council was viewed. While the climate in the Council during its first two-year period, chaired by Canada, was deemed favourable to the University, there was little indication that we could count on a similar climate once that period was over. So it was necessary to avoid any chance of being ignored once the Canadian watch was over. "Make hay while the sun shines," could have been our motto.

The Working Group then sychronized its activities with the pace and whims of the Arctic Council, which meant that all aspects of reporting, performing studies and consultations, and support-raising were carried out in nearly a triage fashion, with an often extreme efficiency calculation, that measured the need of all actions

in terms of maximum effect for minimum time and cost. The similarity to the conditions of life in the Arctic is not so inappropriate. In this way the University of the Arctic has passed its own first set of exams. It has shown that it can survive even the toughest of environments, that of the hard-nosed and formal world of international diplomacy that seems to have become the style of the Arctic Council.

Working in stride with the Arctic Council also has meant that the theme and concern of the University of the Arctic initiative, namely higher education, has had to survive and even thrive in a setting where the primary actors are not directly (or as some would insist, not even indirectly) involved in matters of education. Foreign ministries are the current level of reference in the Council, not the ministries of education. Some countries leave education to the sub-national levels. In structural terms, this can be an example of one of the "challenges" that the Arctic Council must cope with. At the same time that it is meant to be the ultimate forum for addressing the concerns of circumpolar Arctic society, or for assisting in creating that society, it is constituted by only one branch of one level of that society, the foreign affairs departments of the governments of countries. (Although it must be said that the legacy of the Arctic Environmental Protection Strategy means that environmental matters are given a strong hearing in the Council, but that is another history.)

What this has specifically meant for the University of the Arctic initiative is that it has been in the position of forcing the Council to "get real" in a situation where its constituents are extremely uneasy about conflicting with other departments in their home governments about matters that they themselves are not trained to deal with. This is of course a familiar situation for diplomats, and their training assists them in finding ways to overcome these difficulties. Given the measure of success that the initiative has experienced thus far, the University should be thankful that the Arctic Council is peopled by resourceful diplomats, who showed considerable skill in finding ways to work with this currently so cumbersome mechanism.

The significance for matters Arctic is that the University of the Arctic initiative, by giving the Council much to do, has also given the member states that much more of an awareness of the Arctic, and of what is involved in working with it. By pressing the Council to confront the complexities of dealing with higher education as a matter of concern for the entire circumpolar community, that body has become that much more adept at using its newly-refined procedures to deal with concrete issues. This is, we might recall, one interpretation of what the Arctic Council was created to achieve. A seperate study on this point alone would be fascinating.

It is certain that much more space could be devoted to the vagaries of working with the Arctic Council alone, but we must move on to briefly mention just a few of the other considerations that have affected the Working Group for a University of the Arctic. One of these has been that since the concept of the University is so broad, diverse and open, its representatives have experienced difficulties at times in being able to convey those same features. The dilemma has been that when one discusses the general qualities of the University, there may be accusations that there has not been much thought given to the details of the concept. Conversely, when discussing the specifics of a particular institution's involvement in the initiative, other institutions may feel that they are being left out. Or, when discussing, for example, distance education, a response has often been that we are neglecting the need for face-to-face encounters. To make this even more concrete with an example, when one enthuses about the virtues of such initiatives as the PhD Network highlighted in the present piece, a criticism of this enthusiasm might be that the Working Group is neglecting the needs of undergraduate education in remote areas.

This need to be "saying everything all the time," although it can at times be frustrating, nevertheless can be seen as an opportunity to be reminded about the utmost importance of consultation in creating the University of the Arctic. This consultation must not stop and it should increase in effectiveness and intensity. It lies almost in the definition of a novel initiative (a tautology perhaps!) that it is not necessarily immediately understood, nor properly explained. The difficulty in this interaction can thus also be seen positively as an indication that this University is indeed something new. Having realized that much, though, it pleases us to consider a time when the University of the Arctic is something reassuringly familiar to all and,

conceivably, even a part of what we call our home in the north.

Leaving Svalbard but always returning

We come directly to the airport from the crawl space at the end of the coal mine over half-a-kilometre inside the mountain. After spending almost four days (it can be surprisingly hard to calculate under the midnight sun) exploring and learning about Longyearbyen on Svalbard we are all exhausted. We had flown there from Tromsø after midnight and since then it has been almost non-stop processing of this fascinating high Arctic community. During our stay we had been impressed by and even envious about the UNIS facilities, while several of the students, and even some of the teachers felt that they could easily stay on there. Some felt that there was so much to see and discuss that they slept no more than a few hours during the entire visit.

Excellent presentations by a number of the local authorities and scientists provided a good grounding in the range of issues that affect Svalbard. The special status of the archipelago, the potential user conflicts between tourism and research, the economic realities of the communities there and the way in which Russia has changed its use of the islands were only some of the many both unique and general range of topics that were addressed.

The flight out of Svalbard would create a dramatic transition for some in the group. They would be immediately continuing on with connecting flights that would take them home on a route that would intersect some of the world's great cities and busiest airports. At the terminal in Tromsø, some of the participants simply vanished without the chance to say goodbye, since they had to hurriedly run off to make their connections, but it didn't feel so bad, because we all new we would be in continuous touch by e-mail.

Notes

1 The PhD Network is further described in the piece by Rasmus Rasmussen and Gérard Duhaime in this volume.

2 The process is reflected in the Series of Publications in the University of the Arctic Process, as listed on the back cover of this publication. The feasibility study is being published concurrently with this anthology and is No. 6 in the Series. See: Oran Young, Richard Langlais and Outi Snellman, eds., *The University of the Arctic—The Feasibility Study; Final Report, With Shared Voices: Launching the University of the Arctic,* includes Russian language version, Publications in the University of the Arctic Process No. 6 (Rovaniemi, Finland: Circumpolar Universities Association, University of Lapland, 1998).

3 See O.W. Heal et al., *Turning Concept into Reality.*

4 David P. Stone to Outi Snellman, 18 October 1997, archives of the Circumpolar Universities Association Secretariat, Rovaniemi, Finland.

5 Asgeir Brekke, Richard Langlais, Aron Senkpiel and Outi Snellman, *The University of the Arctic—Organization of a Feasibility Study Proposed by a Task Force Appointed by the Circumpolar Universities Association: Document 1,* revised ed., Publications in the University of the Arctic Process No.2 (Rovaniemi, Finland: Circumpolar Universities Association, International Relations, University of Lapland, 1997).

6 More about UNIS can be read in the piece by Asgeir Brekke in this volume.

7 O.W. Heal et al., *Turning Concept into Reality, vii;* Bill Heal, personal communication; Outi Snellman, personal communication; and David Stone, personal communication.

Pushing the Northern Dimension

23. Extraterrestrial ice

John Moore

"Now he could see, glistening like silver bubbles in the earthlight, a group of pressure domes - the temporary shelters housing the workers on the site. Near these was a radio tower, a drilling rig, a group of parked vehicles, and a large pile of broken rock, presumably from the material that had been excavated to reveal the monolith. This tiny camp in the wilderness looked very lonely, very vulnerable to the forces of nature ranged silently around it. There was no sign of life, and no visible hint as to why men had come here, so far from home."
Arthur C. Clark, 2001: A Space Odyssey.

The quotation above, like much of Arthur C. Clark's work, is likely to be precocious and realistic. Though we have not yet operated on such scales on planets other than our own, there are parts of this planet where similar scenes to the one described are played out daily. Of course it is in the polar regions that man is most often made feel far from home, in an environment not made for life. The nature of field work on the polar ice sheets is unique in many ways, and has long been recognized as the closest one can come on Earth to simulating conditions expected on a long space exploration trip, to Mars for example. Temperatures in central Antarctica can dip to -90°C, making it the coldest as well as the highest, driest and most remote continent on earth. Even so around the edge of the continent life abounds, and in the summer if melting occurs on the inland ice, life quickly occupies the niche. Beneath the deepest parts of the Antarctic ice sheet lakes have been found which will soon be reached by ice drills that are already at depths greater than 3.5 km. Life may be found in these ancient lakes that have been covered by ice for many millions of years.

It is likely that the first destinations of man in the long term exploration and colonization of the solar system will be the polar regions of first the Moon and then Mars. This is for the simple reason that only in these areas is the primary requisite for life—water (in the form of ice)—be found.

Earth Glaciology

Before I consider ice (and water) on other worlds I should tell a little about what glaciologists such as myself find so interesting about this material that many people who live or work in the Arctic region find an inconvenience to avoid whenever possible. Ice and snow dominate the polar landscape now and, and have done so for the past several million years. We are living in a glacial epoch, the present extent of the ice sheets represents only about 1/3 of their typical extent, as we are in a rather rare warm period. To glaciologists and scientists concerned with reconstructing the earth's past climate, ice represents a great library of detailed information on the paleoclimate. Suitable ice for interpreting the past climate is found where the ice flow is very slow and not complicated by the presence of mountainous topography. The best place for such conditions in the Northern Hemisphere is at the summit of the Greenland ice cap, in the south the best places are from the interior of Antarctica. Here the ice is over 3 km thick. An ice core drilled in such places penetrates successive years of snowfall as it goes deeper. If the bedrock is flat and the ice flow rate slow the annual layers are undisturbed until very near the bottom. The layers are simply thinned by the pressure of the ice above, so that while at the surface a year's snowfall may be 0.5 m thick, half way down they are 10 cm thick, and close to the bedrock only few millimeters. I was involved in the recovery of an ice core to bedrock in central Greenland that penetrated the whole of the last climate cycle,

that is the last 10,000 years when the climate was rather similar to now, and the previous 90,000 years that spanned the last glacial age when temperatures were 15°C colder in Greenland than today.

More recently I have been involved with an ice core from Svalbard, the ice is warmer than Greenland, less thick and more subject to summer melting. All these factors lead to shorter records of climate, but the proximity of Svalbard to Europe and the northern extremity of the Gulf Stream should mean that the data we extract over the coming years will be considerable relevance to the climate debate.

During my work on Greenland and Antarctic ice cores, I developed a technique for studying the chemical composition of ice by measuring its electrical resistance at a range of frequencies. This method led to a more general understanding of the nature of electrical conduction in ice, and as an extension of this I began using radar to map internal structures in ice. Most recently I have been using a commercial radar to study the hydrology of glaciers in Svalbard. It was this combination of expertise that led to my invitation to take part in the team that is doing the initial design work for a radar that will probe the surface of ice from space.

Ice on Other Worlds

The inner solar system is very unlikely to provide a habitat for life of any kind, since water seems to be completely absent, either now or in the past. From very early in the development of the telescope, Mars has been the subject of intense observation and speculation. The 1970s Viking mission finally destroyed hopes for any large scale or advanced life on the planet, but it certainly showed that there was ample water on the surface at some period in the past. There were many dried up river valleys and features that could be interpreted as mud flows that all spoke of a wet and perhaps fertile past. Now we know that the most likely spots to look for water on Mars are the two polar caps, which have been seen waxing and waning with the seasons for many years, and there are plans underway to send a lander that will put instruments into the ice to unlock the secrets Mars past.

The Earth is the only planet known to have oceans. No one expects that oceans will be found on Mars, only Earth is in the zone of stable liquid water— too close to the Sun and it all vaporizes, too far away and it is frozen. It was therefore a surprise that the best candidate for an ocean on another planet has turned out to be on moon orbiting around Jupiter, where the surface temperature is between -170°C at the equator and -220°C at the poles.

Europa

Ganymede, Callisto, Io and Europa are the four largest moons of Jupiter. Indeed if it were not for the brightness of Jupiter itself, they would be just visible to the naked eye. Probably the most significant contribution that Galileo Galilei made to science was the discovery of the four satellites around Jupiter that are now named in his honour. Galileo first observed the moons of Jupiter on January 7, 1610, through a home-made telescope. After months of observations Galileo determined that what he was seeing were not stars, but planetary bodies that were in orbit around Jupiter. This discovery provided evidence in support of the Copernican system and showed that everything did not revolve around the Earth. For this revealing insight into the nature of the universe Galileo was imprisoned by the Catholic church, which incidentally begrudgingly accepted that Galileo was right more than 300 years after his death.

Europa is the smallest of the four Galilean moons, but it is still the 6th largest satellite in the solar system. With a diameter of 3,138 km, Europa is slightly smaller than our own Moon, with a similar surface gravity, about 13% of Earth's. Europa is the smoothest object in the solar system. The satellite has a mostly flat surface, with nothing exceeding 1 km in height. The surface of Europa is also very bright, about five times brighter than our Moon. Of the four Galilean moons, Europa was the most poorly observed by the Voyager spacecraft nearly two decades ago. It is now of proving of great interest both to scientists and the general public because of NASA's Galileo spacecraft which has recently sent back to Earth amazingly detailed images of the surface of Europa. Many scientists believe the pictures reveal a relatively young surface of ice, possibly only about 1 km thick in places.

Internal heating on Europa could melt the underside of the ice-pack, forming an ocean of liquid water underneath the surface. Galileo had three close flybys of Europa during its primary mission. Galileo is now in a extended mission called the Galileo Europa Mission, which focuses on an intensive study of Europa.

That Galileo has produced so much useful data is a triumph of ingenuity, early on in the mission, the main umbrella-like antenna on the spacecraft could not be fully opened. This has meant that all the data must be transmitted to Earth using a small antenna that can transmit only at a very slow rate. When images are taken of Europa they are stored on tape and then compressed using software developed on Earth and relayed to the spacecraft in flight. The compressed images, which are between 1/2 to 1/80th the size of the original, are then sent painfully slowly to Earth while the spacecraft is cruising between its close encounters. The power transmitted by Galileo is about 20 watts, about the same as used by a refrigerator lightbulb. By the time it reaches the Deep Space Network antennas on Earth, a 70 Meter antenna is able to scoop up only about one part in 10 to the 20th watt, in other words .00000000000000000001 watt.

As part of NASA's Outer Planets/Solar Probe Project, I have been involved in preliminary development of a mission to send a spacecraft to Europa to measure the thickness of the surface ice and to detect an underlying liquid ocean if it exists. Using an instrument called a radar sounder to bounce radio waves through the ice, the Europa Orbiter craft would be able to detect an ice-water interface, perhaps as little as 1 km below the surface. Other instruments would reveal details of the surface and interior processes. This mission would be a precursor mission to sending "hydrobots" or remote controlled submarines that could melt through the ice and explore the undersea realm.

It is fascinating to be involved in trying to design a radar antenna to penetrate a surface that no one has come close to, and in fact, of which we very little. The photographs from Galileo are remarkable, but the highest resolution image shows features down to 6 m in size. But this is still only the resolution a person would have looking out of the window of jet plane. Its obviously hard to see the real nature of the surface. The optical data is supported by some Earth based radar measurements. The radar beam from Earth spreads so wide by the time it hits Europa that only average for the whole disk facing earth are obtained, from this we know the surface is water ice and that the ice looks "clear" at longer wavelengths (about 70 cm) allowing deep penetration in the ice, and that penetration is bad at shorter wavelengths. The gross internal structure of Europa has been inferred from gravitational and magnetic field measurements by Galileo. Europa has a metallic (iron, nickel) core surrounded by a rock shell, this is surrounded by shells of water in ice or liquid form. There must be about a 100 km thick water or ice shell on Europa. This is all the data we have. Of course we cannot build a radar that will actually be the best possible for Europa, because we simply will not know until the radar sounder is used what information we need to design the best radar. All we can do is make educated guesses about what kind of ice might be there, and then design in as much flexibility as possible so that whatever is really there, has a chance of being studied.

To judge from the extremely few impact craters on Europa, the surface must be geologically young—the best age estimates are between "recent" and 100 million years, with a best guess of 10 million years. This is not exactly young when compared with any ice sheets we know of on earth, especially those that float on water. The cratering that does exist on the surface is rather different from that seen on bodies such as the Moon. The craters can best be modeled by a thin, weak crust overlying a soft interior, which implies thin ice cover over water. The tidal stresses in the body of Europa caused by the pulls of Jupiter and the other large Galilean moons, adds a significant amount of heat to the planet, which supplemented by decay of radioactive elements present in the body of the planet could keep an ocean liquid and the surface in motion. The surface of Europa, seen at any scale, seems to be dominated by long thin lines or cracks (similar to the imagined canals on Mars, these however do exist!). Current ideas on the evolution of the crust suggest that the long ridges may be the equivalent of the mid-ocean ridges seen on Earth, where volcanic eruptions produce lava flows forming new ocean floor. Other regions on Europa look very much like the break-up of large ice floes, such as occurs in the spring thaw of sea

ice. The ice floes are tens of km in size, and when put together like a jig saw, pieces seem to missing. Perhaps the missing pieces have been smashed to pieces, or recycled beneath the crust. These "chaos " regions may be where the old ice crust is destroyed, possibly as a result of warm plumes of water heated by volcanic activity deep in the planet's interior. We know that on Earth life exists near the mid-ocean ridges that is completely isolated from the Sun's energy, relying instead on volcanic heat as their fundamental source of energy.

Naturally with the cost of spacecraft being high, we are spending a lot of time and effort at the crucial planning stage forming a team of the world's best experts on the problem—but time is limited, we must complete our instrument definition by October 1998. There is a great deal of openness in the procedure, most of the documents relating to the process of designing the mission can be found on the internet, the speed of development is so rapid that very little is published in the conventional way. Our team has regular email exchanges, teleconferences and some meetings in the US. Since the radar will be an integral part of the spacecraft, it was recommended to NASA by an independent group of scientists, that the radar be developed as a cooperative instrument rather than bid for in a competitive way, as is normal practice for instruments. This has led to some interesting dynamics in meetings, with various representatives of organizations that could build the instrument advocating their team's particular design merits. But after this, the excitement of the project grips everyone and pretty soon people are just tossing around ideas without any fears of giving the opposition an advantage.

The problem really does grasp the imagination of these apparently hard-boiled engineers as well as scientific types like me. And the engineering side of things is certainly a challenge. The radiation environment in the vicinity of Jupiter is extremely unpleasant, the radiation dose rate is about 100,000 times greater than that permitted by health regulations on Earth. The spacecraft itself also suffers in these conditions, the computers must be shielded in weighty (and therefore expensive to fly) "vaults", plastic and metal can become brittle, and exposed instruments degrade rapidly. The spacecraft itself will be built on the "faster, cheaper, better" philosophy espoused by NASA. This means that that time for planning and building the spacecraft is limited, and it will fly directly to Jupiter, costing more in fuel than more efficient but slower approaches making use of gravity assists from other planets. The weight of the spacecraft is about 3/4 ton, but the whole science payload is 20 kg, the rest is essentially fuel for the trip. The radar, including antennas which will be several metres in length, must weigh less than 10 kg.

Last time I used radar in Svalbard, I collected a gigabyte of data in one month. The transmission rate for data to Earth is limited to about 1000 bits / second, this means that there is no way to send anything like the full radar data collected back to Earth. The data will be compressed using the fastest computers to be used on spacecraft (which are about as powerful as the average desktop machine today), and the satellite will have to spend four orbits of Europa just sending data back to Earth for each orbit it collects data. Add to this the environmental factors such as -200°C temperatures and limited power from a radioisotope source giving only 20 watts for science payload use, and you have some pretty stringent requirements.

Conclusion

Glaciology, the science of snow and ice, is naturally a circumpolar activity. However evidence gained in the polar regions has been seen as important to understanding the whole Earth system, especially its climate. This evidence is the best we have that man's activities are changing the Earth's atmosphere in an important and unprecedented way. Coincidentally it appears that exciting science relating to the origins of life on our own planet and possibly others is fundamentally linked with glaciology. The requirement for life to exist in close proximity to liquid water, and the lack of any surface oceans on other planets means that we must first understand the ice that either shields the oceans of Europa, or contains the story of Martian seas.

Further Information

Much of the data on Europa in this paper comes from the web site devoted to the exploration of Europa:
http://www.jpl.nasa.gov/galileo/europa/
Details of the planned mission to Europa can be found on:
http://www.jpl.nasa.gov/ice_fire//europao.htm

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