ACCESSION SHEET
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Accession Number: 2754

Accession Date: 2016.06.14 **T#** **C#** **PM#** **DAT** **CD#**

Collection Number: MF 192

Collection Name: Climate Change Institute 40th Anniversary Oral

P# **S#** **V#** **DVD#** **DA#** mfc_na2754_audio001

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Description: **2754 Gordon Hamilton,** interviewed by Adam Lee Cilli, September 19, 2013, in his office in the Sawyer Lab Annex at the University of Maine, Orono. Hamilton talks about the beginnings of his career in glaciology; public perceptions of science and climate change; the influence of early Climate Change Institute scientists on his career, particularly George Denton and Terry Hughes; his beginnings in the CCI; and the future of the CCI.

Text: 9 pp. transcript
Recording: **mfc_na2754_audio001** 43 minutes

Related Collections & Accessions

Restrictions

Formats Included Document: Original= .docx, Master= .odt, Access= .pdf; Sound: Original= .mp3, Master= .wav, Access= .mp3

Notes

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Date last updated 6.14.2016 by MO'Brien **Use Tracker** **To transcriber**

Previous name(s) **Completed**

Narrator: Gordon Hamilton

Interviewer: Adam Lee Cilli

Transcriber: Adam Lee Cilli

Date of interview: September 19, 2013

ABSTRACT: This interview took place in Gordon Hamilton's office in the Sawyer Lab Annex at the University of Maine in Orono. In the first half of the interview, Hamilton discussed how he became interested in glaciology and considered public perceptions of science and climate change. Later, he discussed how he read and was influenced by papers written by some of the earliest members of the Institute, including George Denton and Terry Hughes. Towards the end of the interview, he reflected on how he came to the Institute in 2000 and how he sees the Institute evolving into the future.

Note: This is the transcriber's best effort to convert audio to text, the audio is the primary material.

Cilli: This is Adam Cilli, PhD candidate in the Department of History. Today is September 19, 2013, and I'm here in Gordon Hamilton's office to talk to him about his experiences with the Climate Change Institute. I'm wondering if you can tell me about how you became interested in climate science.

Hamilton: It wasn't really climate that drew me into what I'm doing now. It was more my interest in snow and ice and the development of landscapes. I grew up in Scotland, which is a formerly glaciated landscape, much like Maine, and spent a lot of my childhood and youth years out in the wilderness, climbing and hiking and skiing. I was always fascinated by the shape of the landscape and the forces that made it what it was. And I especially love being in conditions when it's cold, when it was icy or snowy or whatever. So I was always fascinated by mountains and snowy landscapes. In high school, I always knew I wanted to be a scientist. But like most high-schoolers I didn't really have a very good understanding of what being a scientist is. My understanding in the late 70s and early 80s were images of Jacques Cousteau swimming around beautiful coral seas and looking at fascinating sea creatures. So that's what I originally went to school to be, was a marine biologist. And I went to the University of Aberdeen in the northeast of Scotland and the North Sea. I enjoyed my time in school, but in the first couple of years I realized that the marine biology you do in the northeast of Scotland is not the kind of Jacques Cousteau marine biology. It's like swimming around in cold, grey oceans and looking at slimy brown-grey creatures.

Cilli: Did you end up changing your major?

Hamilton: I ended up changing my major. In the summer breaks I used to go climbing with friends in Norway or the Alps. So, at the end of my freshman year I was at the very far north of Norway, and we'd be traversing some mountains, and we camped with another group there and they were from university. And it turns out they were there to make measurements of glaciers in the region. And they said they'd been there for a few weeks that summer and [now] they were coming back. I thought, "Wow, that's fascinating. You get to do this as a job, and get to go to these mountainous locations." That was a real eye opener. I thought, "Maybe I should just change my major, rather than do marine biology." The nice thing about entering university in Scotland is that when you enter the university you're part of the faculty,

rather than a particular major. So, I was accepted into the Faculty of Science, which means you take a core curriculum of basic sciences, which allow you, up until the end of your second year, to choose any number of majors. Although I'd gone with the intention of being a marine biologist, it wasn't like you're in a particular biology track until you get to the third or fourth year. So, it was actually no problem to make the switch. It didn't put me any farther behind in my studies. So I did that, and when I was nearing the end of my undergraduate studies I really wanted to take it further. And I started looking at graduate programs where I could get out and do work outside, you know, experimental work. Rather than sitting at a computer all day. And did a project that was based (well, I did my PhD at the University of Cambridge) but working on glaciers in the Arctic Archipelago…So that was a chance to work with glaciologists in Cambridge and Norway. I really enjoyed that; it was a great experience for me, working in remote conditions. Designing equipment to make the kind of measurements we wanted, dealing with all the problems that happen when equipment doesn't work.

Cilli: What would be an example of some of the problems you encountered?

Hamilton: Oh, you know, taking up radar to measure ice thickness and some component (like a transistor) blowing on the first day and having to either look around for a spare or [doing] a "make-do" kind of repair; take a wire from some other component and put it in the transistor to make it work. We didn't have a lot of money for the project, so we would be dropped off by a helicopter at the start of the season and left alone for eight or ten weeks. Whatever we got dropped off with was whatever we had, so you can't just go back into town and get a new resister or whatever.

Cilli: So, all the food, you had to…

Hamilton: All the food; all the equipment. So if anything broke we either had to fix it or fashion some replacement out of something else. It was a great way of learning how to be independent and resourceful. So, I'd been studying glaciers in the Alps and the Pyrenees and the Polar Glaciers in Svalbard; of course they're much bigger, but reading the literature at the time all the focus was on the stability of the west Antarctic Ice Sheet. So, like anybody, you just want to go study the biggest and most pressing problems of the time. So, after I did a postdoc in Norway, I met a colleague who was from Ohio State on sabbatical. He did a lot of work at Antarctica, and he invited me after my postdoc to go to Ohio State and work on Antarctic glaciology for a while, to see if I liked it. So that was pretty much how things really got started, and once I moved to the US, did a postdoc at Ohio State, went to Antarctica. There was a lot of opportunities for new scientists to join the field at that time. So I wrote some proposals that were funded; also wrote some that were in Greenland. That same time there was this growing public awareness of how ice sheet change can influence their lives, in terms of sea-level rise. I hadn't really got into the field to become a climate scientist….Ice sheets change because of the way they interact with the climate-system, so I sort of became a climate scientist by default.

Cilli: Sure. It was a natural segue.

Hamilton: It was a natural segue, right. Although I'm still a glaciologist, what I'm studying is the ice sheets' response to climate forcing, be it from the atmosphere or from the ocean. Thinking about how these changes might impact the lives of societies over time scales of 5 to 10 years. Whereas, when I was in grad school, thinking back to the stability of the west Antarctic ice sheet, people thought it could collapse, but it would probably take 500 years or so. Well, our whole understanding of how ice sheets change has been turned on its head over

the last decade, and we see climate forcing applied to an ice sheet and rather than change happening over the course of 500 years, it happens in a matter of months. And so, immediately, whatever we observe happening in places like Antarctica or Greenland, in a few years' time we see the effects on society, in terms of things like sea level rise or changes in ocean currents. So, all of a sudden it's become a field that's very relevant to the general public, even though it seems like a very esoteric branch of the sciences.

Cilli: Speaking of the general public, it seems to me that within the scientific community there's no debate about the human role in climate change, but outside the scientific community, particularly in American political culture, it's still very much an issue up for debate. Can you speculate as to why that might be the case?

Hamilton: You're right. In the scientific community there's a consensus and it's not really disputed by any mainstream scientists. You're comment that in the political realm there's been a debate… I wouldn't really call it a debate. It's more like an argument, or a one-sided yelling match. So, we have a group of people who have pretty much chosen to ignore all the specialist expertise on the topic, and come up with their own ideas about how the climate system operates. Which to me is pretty ridiculous. It's like everyone claiming their own best cardiologist. You wouldn't ever think of trying to diagnose your own heart problems; you'd go to a specialist to have it done. So, I don't know why in the political realm people suddenly feel that they're more qualified to talk about the climate system than the people that are actually doing the work every day of their working lives. The problem is sort of magnified in the US because there's a pretty low public understanding of how science is carried out. People on one side of this argument have been very effective at using uncertainty in science as a way of obfuscating the real problem, or the real message. To me as a scientist, uncertainty and errors is something that we deal with every day. And just because something's uncertain or just because something's in error, doesn't mean to say that our overall result is wrong. The terms "uncertainty" and "error," to the general public, start ringing alarm bells. You know, "scientists don't know what they're doing or they're just making it up because they can't figure it out." And people on one side of the argument can be very effective at exploiting these terms. Looking at the papers we publish, every one will have some discussion of uncertainties and errors. Some people are very good at exploiting the results and sort of turning them on their head, saying the uncertainties overwhelm the results, which is not true at all. And because the public doesn't really know how science works, they don't know where to stand on this debate. They just hear people yelling, "oh, scientists are uncertain about this."

Cilli: I think a lot of American conservatives would agree that climate's changing, but they would argue that it's more of a cyclical…

Hamilton: Right. That's not really an argument, because we know that climates are cyclical, for a whole number of reasons. One of the common arguments, they'll say, "oh, it was warmer 120,000 years ago, before the Industrial Revolution, so how can humans possibly be causing climate change?" We know why the climate was warmer 120,000 years ago; there's a series of astronomical effects that perturb earth's climate. The climate on earth is a result of a lot of factors, one of which is the composition of the atmosphere (the greenhouse gas problem). And the other one is how the planet gets its heat from the sun, and that is a function of how it orbits around the sun. So, these so-called astronomical effects, they operate on well-known cycles. And so we can explain why climate was warmer at times in the past. It's just that that never gets mentioned. They'll just say, "oh, look. It was warmer 120,000 years ago," and not say why.

Cilli: How do you see the Climate Change Institute in that (what you called) an argument about global warming? Do you see it as having a role in affecting public attitudes?

Hamilton: I hope so. I mean, a lot of what I do is go out and give talks to a whole range of audiences. Mostly because the kind of work I do is visually stunning: pictures of icebergs in Greenland or people sailing around them in small boats… it makes for good science theater. But what I want to do is sort of give people an idea of how science works…. and lay that out in terms of "this is what we know the climate-system to have done in the based, based on ice core records or coral reef records, or whatever." And then talk about the recent changes and how we can attribute the recent changes to human influence, and [I] go through some of the arguments that the other side is putting out there and give a simple (maybe just a one or two sentence) rebuttal to each one, to show how ridiculous some of them are. So, getting out into the community is a great way to educate people about climate science and the whole process of science itself.

Cilli: Where are some of the places to which you've given talks?

Hamilton: Well, I've given talks from 2nd graders in Old Town to the Rotary Club up in Waterville, to the US Congress, to the Parliament of Finland, to the Spanish Congress. I mean, it's the whole range of audiences: policy makers, interested neighborhood groups. They always ask me, "well, that's sort of a pessimistic picture that you're painting." I'm always careful to say, "I'm a scientist. I'm trained as a scientist. I'm not here to give you my personal opinion. I'm here to show you what we're observing and give you our best understanding as a scientific community of what is causing these changes." So, I had my own opinions as a citizen of earth, but that doesn't affect what I present in the talk…. I always have to be careful not to cross that line between objective reporting and advocacy. But I think an important part of the Institute is objective reporting and getting that out to audiences beyond the academy.

Cilli: Besides yourself, do you know of anyone else in the Institute who's tried to go out and give talks?

Hamilton: Paul Mayewski's always out giving talks. Greg Zaros hosted a year-long seminar series down at the Bangor Public Library, on the broad theme of climate. George Jacobson, the State Climatologist, is always giving talks to outside groups. I'd say most of the faculty are out there a number of times during the year giving talks. Those of us who are doing research in more exciting places probably get more invitations, because people want to see the pictures of far-off lands and people doing adventurist things. We all get out there. And then we all have a climate change science day where we invite high schoolers and middle schoolers to come for the date and meet with a whole range of research groups, get a flavor of what's going on, the excitement we have in our dayjobs as scientists—you know, trying to encourage them to think about science as a career as well.

Cilli: Do you see the kind of resistance to the idea of global warming that exists in the United States elsewhere in Europe?

Hamilton: It's been a while since I've lived full time in Europe, but I'd say no. Most people in Europe are much more in tuned with the scientific consensus. Yes, climate is changing. Yes, humans are responsible for it. And so they're a little bit farther ahead in trying to mitigate some of the effects that we might see in the coming decades. I'm not saying they've had that much success, but they're a little bit more open to doing something about it, whereas in the US it's very much the opposite I think.

Cilli: Why do you think it's been a harder sell in the US?

Hamilton: I would say, as somebody from Europe living in the US, people in the US are probably more individualistic. They care a lot about themselves and their own property, rather than the communal good. And so they see any signs that seem to point to them as a human, as the cause of a problem that we somehow have to fix, is an affront to their personal liberties. In Europe they think more of the good of the collective community and they take more responsibility for doing things. That's probably what made the US great; they all came here and wanted to assert their individual rights. If people here are told they need to reduce their carbon budget, they'll say, "Don't tell me what to do. I'm going to live my life the way I want."

Cilli: Shifting topics, can you tell me how you first got involved with the Climate Change Institute?

Hamilton: Well, the Institute's been around for a while and obviously has a great reputation. So, I was reading papers from some of the original faculty members back when I was an undergraduate and then in grad school. I was always very aware of the work that was going on here.

Cilli: Can you give me an example?

Hamilton: Yeah, so Terry Hughes and George Denton were part of a group that produced this fantastic book (which is sadly now out of print) called *The Last Great Ice Sheets*. And it essentially mapped the distribution, and sort of reconstructed the geometries of the big ice sheets that covered the Northern Hemisphere at the last glacial maximum. And that was based on a lot of the expertise here in Maine and mapping the former limits of ice sheets (you know, George Denton and Brenda Hall's glacial geology work). And then, Terry Hughes, who's a glaciologist like me, was able to use the outer limits of some of these ice sheets to reconstruct what the ice sheets would have looked like and how they would have flowed. So, great, ground-breaking work that they were doing. I remember seeing this book at the University of Aberdeen, and I'd spend hours just pouring through it. And Terry's also written a number of papers. Terry's kind of a maverick kind of guy, but he had a lot of pretty revolutionary ideas. And he would give his papers pretty outrageous titles, like "Deluge II: The Continental Doom," [laughs] which was pointing to the possibility that the marine margins of the present-day ice sheets could retreat very rapidly and could cause a very fast rise in sea level…. So this was a paper published in 1972 or 1973.

Cilli: How was it received?

Hamilton: Well, it was not in one of the most well-known journals. I guess probably because it had this crazy title it probably took a while to have it accepted. But because of its title it kind of stood out. Everybody read that. I remember reading that and thinking, "wow, what an incredible paper. It's fascinating." It was sort of a theoretical idea. Nobody could say one way or the other whether it was realistic. It didn't really conform to how people thought ice sheets responded to climate back them. [Rather than] a centennial to millennial-scale response… this paper was arguing for something much shorter, decades or shorter. It was always an idea that was out there, and I would say that now, almost 40 years later, a lot of what we're seeing in Greenland and Antarctica is exactly as it was predicted in that paper. So, a lot of the things we're observing now and a lot of the ideas we're testing go back to papers that were written by Institute faculty 30 or 40 years ago.

Cilli: So you had known about the Institute for quite a while.

Hamilton: Right. And then, after my postdoc in Norway… I became a research faculty at Ohio State. This was in the mid to late 90s, when a whole bunch of us around the country were getting together to form a project called the International Trans-Antarctic Scientific Expedition (ITASE). And the guy who was the driving force behind that project was Paul Mayewski. He was at the University of New Hampshire back then, in the late 90s, and so we spent some time in the field, driving around Antarctica in tractors, and having time to talk about this and that, and get to know each other and get to know each other's science programs. And in 2000, when he was offered a position here at the Institute, he was offered several other positions to go along with it. Having worked together in Antarctica, we knew that our research programs were a good match for each other; they weren't directly overlapping, but they complemented each other very well. He asked me if I was interested in going to Maine back then. And I was ready for a move. Ohio State also had a good polar climate center, [and] it was a good place for me to be, but it's exciting to be part of an Institute that's been around a long time and suddenly has an infusion of four or five new faculty members. That always makes it an exciting place to join.

Cilli: That's how many Paul brought with him?

Hamilton: Yeah, it was Paul and there was four of us that joined at the same time.

Cilli: Who are the other ones?

Hamilton: Karl Kreutz (who's still here), there's Greg Zalinsky (Greg's now gone), and there was one other I think. I can't remember who that was. But it was a good time to be here. We all sort of came as a cohort on the first of August in 2000.

Cilli: Was that one of the stipulations Paul had made before agreeing to come here, that he wanted to bring some faculty?

Hamilton: Well, I think he wanted to… I think anybody, whenever they move to a new position, want to make it attractive to them. So bringing extra people (especially people who had established research programs like I had over at Ohio State) is a very quick way to either build or augment and existing program. You bring, not just the faculty member, but the faculty member's students and their research grants and so on. It worked out for us back then, 13 years ago, because a bond issue had been passed by Maine voters. I think the story goes, Maine had a very low ranking in per capita federal R & D money brought into the state. Maybe bottom of the list. And one of the ideas to improve that ranking was not to hire regular tenure-track professors, but to hire what are called research professors. They don't have a formal undergraduate teaching obligation, but they advise graduate students. But their primary task is to bring in research grants. And so when this bond issue was passed, which was to provide money for research infrastructure, the state spent it pretty wisely (in my opinion). The state didn't just give a whole bunch of cash to University of Maine and say, "spend it." They said, "we're going to focus on key areas where we think we can make a difference or where we already have a good reputation." Forestry got some, Agriculture, Marine Biology, and the Climate Change Institute (because it had such a good reputation) also was a focus for some of this money. That's what hired Paul, and it provided the salary money for me and Greg, who were brought on as research professors. And so we got half our salary from this bond issue. And whoever argued that this would be a good idea to bring research professors, said "I bet if you give them half their salary they'll raise a bunch of extra

money that will more than cover the cost." They said, if we could get $5 for every $1 we give for salary support, we'd be doing well. We've far exceeded that amount.

Cilli: Was it somebody from the Institute that had lobbied Congress?

Hamilton: Well, there was this group of senior faculty at the University of Maine back then. George Jacobson was one of them. Steve Norton from Earth Sciences was another. And they were very well-connected to the governor at the time, Angus King, and the legislature. And they'd also been around long enough that they could see colleagues at other universities, more research-intensive universities, to see what it was that made them successful. And one of the things that makes research universities successful is giving some support to research faculty. When I was at Ohio State, I was in the same kind of position, except that I had to raise all my salary myself, from grants. Which you can do, but it's hard to do it year after year, especially if you have to raise the money to pay your student's salaries or postdocs and so on. Here at UMaine they said, "We'll give you about six months of your salary straight off the bat," and so that only leaves you having to raise the remaining six months. It means you can be much more productive and more invested in bringing in more money. So, it actually turned out to be a real winner. I think when we came there was very few research faculty on campus. Now there's a lot, both in the Institute, and in the School of Marine Sciences and other departments. And although I've moved on to a tenure-track job, just having those ten years of support was a really good thing. Good for me personally, but also good for the university, because we were able to be so much more productive in proposal-writing.

Cilli: It sounds like that was yet another area in which this Institute was cutting-edge, particularly here within the university.

Hamilton: Well, the Institute, because it's been here so long, probably was the original research institutes on campus. So, it's always had a focus for research.

Cilli: Have there been instances in which you participated in interdisciplinary research with other members of the Institute?

Hamilton: Yeah. I've written proposals since I've gotten here that never would have done had I been in a small little world in an academic department somewhere else. I've done proposals with Paul to do ice core and glaciology work. I've written proposals with Andre Kurbatov to look at volcanic stratigraphy in ice sheet layering. And I've written some proposals to work with archeologists, using geophysical techniques that we typically use on ice sheets, but we apply them to sedimentary environments in Australia, for archeological purposes.

Cilli: An archeologist at a different institution?

Hamilton: No, here. UMaine. They were some faculty members who were here a few years ago.

Cilli: They're no longer here?

Hamilton: They moved on, but they're very forward thinking, in terms of using geological tools to apply to archeological problems.

Cilli: How is the setting here different from where you worked out at Ohio State?

Hamilton: It's a little bit more interdisciplinary. Ohio State had a similar research center, but it was purely focused on polar environments. It was nearly all geoscientists (so, either earth scientists or geologists). Whereas here we do work world-wide, in just about any environment, and we have people from a whole range of disciplines: archeology, computer science, marine science, soil science, paleoecology. So, the breadth of academic disciplines is wider, and the geographic spread of our research interests is wider, and I think there's more interdisciplinary connections between these different disciplines that was not there at Ohio State. Lots of universities have research institutes like ours, but I can't think of many that are as interdisciplinary as the one here at UMaine.

Cilli: What do you think has been the Institute's most important contribution to climate science?

Hamilton: Well, there's been a lot. I think the work that George and Terry did back in the 70s, the mapping of the last great ice sheets, was revolutionary in its day. And it still stands up well now. Some details of the exact shape of the ice sheets and maybe the timing of the waxing and waning has changed a little bit, but they got most of it right back then. And I think that was one of the early points of the growth of climate science as a wider discipline; you know, what was the climate like back then that was able to generate ice sheets of this size. A lot of what we've done in the past is our key to understanding the future, in the coming decades and centuries. If it wasn't for that work done 30 years ago on ice sheet configurations back at the end of the last glacial maximum, I think that was incredibly important work. There's been a lot of great work done on sediment patterns in the Americas, both in the American southwest and South America. I think the stuff that's going on today, you know, the work we're doing in Greenland looking at rapid climate change, or ice core groups who are looking at atmospheric circulation patterns in the Southern Hemisphere. It's hard to pick out just one. There's been so many of them.

Cilli: You seem to be pretty well versed on the Quaternary Institute and the work that was done in the past, but it seems to me that you and Paul Mayewski and others are really the future of the Institute. How do you see the Institute evolving and changing into the future?

Hamilton: I think there will also be a focus on colder parts of the world, because we have such a well-known reputation for that; it tends to attract people who are working in that to go somewhere where there's already a good reputation for similar work. But at the same time you have to be nimble to whatever the key scientific questions of the time are. And right now climate, ice sheets, atmospheric chemistry, sea level rise, are really important things. So that's where we're doing a lot of our work. But who's to say that in ten years' time people won't be more interested in water resources, food resources, and more on the intersections of science and policy. I don't anticipate me changing what I'm doing, cause I have so many unanswered questions, but as faculty retire and we bring on new hires they may be in different disciplines we don't have right now don't even think are the important ones. Cause science changes and we want to have people doing the best and most relevant science.

Cilli: Well, that's all the questions I have for now, but before we conclude the interview I want to give you an opportunity to add something that I didn't think to ask you about.

Hamilton: Yeah, I mean, I really love working here. I have this office in a trailer which is infested with mice and mold. But I have a great group of colleagues able to get grad students come here to work. The key to being productive is having good grad students. And we're fortunate that Maine has the kind of environment that attracts people that want to be outside in cold regions, studying ice sheets…they also like to be in places like Maine. So that's been

great. And having come from a really enormous university like Ohio State where, I was doing the same work, but essentially invisible, to a school the size of UMaine, [where] we're a very visible part of what goes on on campus. So, we are well-supported by the upper levels of the administration. We get a lot of recognition for the work that we do, and it's nice to be in a field that does get some recognition. It was not something that I anticipated when I got into this field 25 years ago.

Cilli: Alright, well, thank you very much for participating in this interview.