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NA2751 George Denton, interviewed by Pauleena MacDougall and Adam Lee Cilli

George H. Denton
University of Maine

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Narrator: George Denton

Address & phone: 5773 South Stevens Hall
University of Maine
Orono, ME 04469

Address & phone: Bryand Global Sciences Center
University of Maine
Orono, ME 04469

Description: **2751 George Denton,** interviewed by Pauleena MacDougall and Adam Lee Cilli, October 2, 2013, in his office in Bryand Hall at the University of Maine, Orono. Denton talks about the beginnings of his career in geology; conducting research in Antarctica and meeting Hal Borns; finding said research unchallenging; the Climate Change Institute's contributions, particularly the discovery of abrupt climate change; and his connections with faculty at Columbia University.

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Restrictions

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Notes

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Narrator: George Denton

Interviewer: Pauleena MacDougall

Transcriber: Adam Cilli

Date of interview: October 2, 2013

ABSTRACT: This interview took place in George Denton's office in Bryand Hall. In the beginning of the interview, Denton talked about his entry into the field of geology. He began undergraduate studies at Tufts in 1957. Shortly afterwards, he was invited to join a field expedition to Antarctica, where he met Hal Borns. Later in the interview, he discussed research in Antarctica and expressed the view that it was not challenging to work there. After, he shared his views on what he believed was the Institute's most important contribution to climate science—the discovery of abrupt climate change. Denton spent the final portion of the interview discussing at length his close connections with faculty at Columbia University.

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

MacDougall: O.K. I'm Pauleena MacDougall and it's October 2, 2013. I'm here in the office of George Denton and we're going to talk a little bit about George's career in the Climate Institute. And I'd like to begin by asking you just how you got interested in geology in the first place.

Denton: I got interested in the first place when I was a student at Tufts. Tufts held a week of orientation for new students prior to the beginning of classes. And in that week of orientation they gave a series of lectures on different subjects: they had a physicist who gave a lecture and a geologist who gave a lecture. And I never knew anything about geology, so I went to the lecture and I liked it. So, I took geology and I liked it even more, so I decided to major in geology and when I was at Tufts I had the opportunity to go to Antarctica a few times, and one of the Antarctic trips was Hal Borns from the University of Maine. And he had gone to Tufts years before that. And so, I began to like it, so I decided to become a geologist. Then I went on to graduate school after that.

MacDougall: At Tufts?

Denton: No, at Yale.

MacDougall: So when was that first trip to Antarctica?

Denton: I think '58, and then again in '60. A long time ago. But Hal was along in the one in 1960. And I saw Hal again a few years later, I think in 1963 or 64, he took a leave of absence from Maine and studied at Yale for a year, and I was a student there at the time, and so I got interested in Maine. I liked northern New England. I stayed at Yale quite a while, 'cause I was a post-doc, but anyway, when I finished all that I came up here. Been here ever since.

MacDougall: Did Hal recruit you?

Denton: Yeah, he did. He met me at Yale and at Antarctica. Phil Osberg recruited me, too. Phil started the climate change group here, Phil Osberg did. Do you know Phil?

MacDougall: I don't.

Denton: You should interview Phil. He's the key person.

MacDougall: Where does he live now?

Denton: He lives down the street here at Forest Avenue. Yeah, he's the one who had the idea, and he had Hal here already, so he's the one who promoted it. He's basically the one who hired me, Phil Osberg.

MacDougall: Was he head of Earth Sciences?

Denton: He was head of…. Earth Sciences then was part of Civil Engineering and had just become a separate department. And Phil was the chairman, and he decided that climate change was something that would expand into the future. And he… when he was a student at Dartmouth had worked with the Elder Gulfway and had gone to Harvard at graduate school and couldn't decide whether to be a bedrock geologist or a climate scientist. He became a bedrock geologist but he always liked climate sciences. He and Hal together are the ones who started it here.

MacDougall: So, you were interested in geology at Tufts and went on to study it. How did you go to Antarctica?

Denton: Well, the professor who gave the lecture at Tufts and who was a professor in the department worked in Antarctica. Bob Nichols. Bob had gotten his Ph.D. at Harvard and he was teaching at Tufts and he was interested in Antarctica. One of the early explorers in Antarctica was Finn Ronne; the Ronne Ice Shelf is named after him. And Fin Ronne's father was a Norwegian; Finn Ronne's father went to the only Antarctic expedition with Roald Amundsen, who was the first to reach the South Pole in 1912. He built the tent, actually, that Amundsen left in the South Pole for Scott when Scott arrived. And, of course, Scott died on the way back. But anyway, for some reason Ronne's son, Finn, immigrated to the United States and became a commander in the U.S. Navy…anyway he was in the Navy when the war broke out and he was stationed in the Pentagon. And at the Pentagon was admiral Dotson, who was in charge of procurement of ships for the Navy during the war. And Dotson's son, Robert Dotson (who was a high school student then)… apparently, according to Bob Dotson, in those days messages in the Pentagon were passed around by runners. High school students ran from office to office with messages. Every time he came to Finn Ronne's office, Fin would say, "Sit down, young man… when this war's over I want your father to get me a ship, because I want to go to Antarctica." Lo and behold if he did! When the war was over he got him an ocean-going tug called the Spirit of Beaumont (or something like that) and Finn Ronne organized an American expedition in 1947. Anyway, as a reward for that… This is the story I'm telling you, how this whole climate institute started. No one knows this story; I've never told it to anyone. 'Cause I knew Bob Dotson well; he's still alive. Bob was in the Tenth Mountain Division near the end of the war (when I was a graduate student at Harvard)… and as a reward for getting the ship Finn Ronne made him the field assistant to the geologist going to Antarctica. And about three months before they were ready to go to Antarctica the geologist quite, and so they didn't have a geologist. And so Finn Ronne told Bob to "find a geologist." And so he went in to professor Kurt Bryan at Harvard

(and Kurt Bryan was the one that Phil Osberg had come down from Dartmouth to study with) and Kurt Bryan told Bob that he knew someone over at Tufts by the name of Bob Nichols, go see Bob Nichols. And so this young boy went over to Tufts and he said "would you be interested in going over to Antarctica" (only three years) and Bob Said, "I better check with my wife and daughter before I go." But he did and a he went, and Bob was Bob Nichols' field assistant. They made what at the time was the longest dogsled trip ever made in Antarctica. (Maybe not, because Roald Amundsen's must have been longer.) But they were out a long, long time. And that went on, and so, that was 47 or 48, and by the time I arrived at Tufts in 57 interest had renewed in Antarctica. And the IGY had arrived. And so Bob was invited back as an employee at Metcalf Engineers, as part of the IGY… that's when Antarctic research started, after IGY. You've heard of IGY? International Geophysical Year; it's what changed all of science in the United States. That's what began real research in Antarctica. That's when McMurdo Station started to be erected and planes were introduced. From then on the United States Antarctic program has just gone on and on; it's a big program now.

MacDougall: What was the draw?

Denton: The draw?

MacDougall: What drew people to Antarctica?

Denton: Science. There were a lot of scientific questions associated with Antarctica that were unanswered, so Bob went in '58, and then we went again in '60. And then I forgot about Antarctica for a while when I worked in the Yukon and Alaska and other places, and went to Yale and then ended up here. And then we started, off and on, to work in Antarctica again, then I did it for quite a few years. Brenda Hall… you know Brenda? She was my student. She's taken over for me in Antarctica. Not for me, I mean, she's doing it now; I don't do it anymore. I shouldn't say "taken over for me." She's much better than I ever was. And she's working there now. I've graduated north, where it's warmer. In New Zealand, Patagonia, and so forth. But together Brenda and I bring a lot of students; she and I worked together in Patagonia last year, and we bring a lot of students to these places. And more recently we… did you see the book we put out, *Fate of Greenland*? (By MIT Press)

MacDougall: No.

Denton: Oh. It won the Phi Beta Kappa. Science book of the year. Just last year. Yeah, I didn't think it was much of a book, but Phi Beta Kappa gave it best science book of the year.

MacDougall: Congratulations.

Denton: Well, not to me. Four of us wrote it. But the reason I brought it up was we wrote if for a fella that's been helping us for the last decade. The guy who owned Lands End Corporation. You ever hear of Lands End?

MacDougall: He gave us quite a bit of money.

Denton: In fact we're going out to his place again (Brenda and I, and the students go, too) the end of next week, in Wisconsin, where Lands End is.

MacDougall: I'd love to ask you a few questions about going to Antarctica, if you don't mind.

Denton: I haven't done that in a long time. I'm not even really that interested in it now.

MacDougall: But from your memories of those trips, was it hard to work there?

Denton: Oh, no. It's simple.

MacDougall: I mean, it's so cold and you had difficulties with instruments there…

Denton: It's not cold. It's much easier than working in Maine.

MacDougall: Why is that?

Denton: Oh, it's wide open; there's no vegetation. It's not very cold, and it's dry. There's not much to it. It's in fact too hot there to do a lot of work.

MacDougall: That's funny because I thought it was icy…

Denton: Not in the summer. It's the easiest place to work in the world, I think. That I've ever worked…much easier than Patagonia or New Zealand or Alaska. Antarctica is a very easy place to work. Hell, they give you everything there! They give you helicopters, food, tractors to ride around in… I mean, it is simple. Everything's provided. The U.S. taxpayer pays for everything. It's unbelievable, actually. Everywhere else we have to make do ourselves. No, Antarctica is a snap.

MacDougall: So it's very well-supported.

Denton: Ships, ice breakers, helicopters, ski planes, C-130s… you name it, you have it. It's unbelievable; just money piled on top of money to work there.

MacDougall: Political. Well, it's not just political; it's science, too. But it's the only continent on Earth that's not owned by anybody. So every country keeps a foothold, and the only way they're allowed to do that is through science… scientific stations.

MacDougall: So, no one has been able to claim it.

Denton: They all have claimed it, but the claims are set aside now with the treaties that allow international cooperation and that sort of thing. Sure… no one's going to let it go, 'cause it's a huge continent. It's science as well, but the reason they keep at it is because of politics. And they spend a lot of money, because these stations are very expensive to maintain. The South Pole and McMurdo… for scientists, what a deal! I've done field work in lots of places, but this is the easiest field work on the planet, is to work in Antarctica. It's not cold. They provide you with enough gear so that on the few days it might get cold, it's no problem. Most people down there don't go outside. They work in buildings. And even if you are outside, it's place. There's no rain… you don't get wet, and therefore you don't get cold. I can't tell you how easy it is.

MacDougall: So you didn't find any particular challenges to being there.

Denton: None. Not working in Antarctica. Hell, that was the easiest work I've ever done in my life.

MacDougall: Now, you mentioned a number of early explorers. So, you're very aware of the exploration literature from the early explorations of Antarctica.

Denton: Well, 'cause I've been to all the places and seen all the spots they were at.

MacDougall: So, when you went there did you feel a kinship with those early…

Denton: Oh, no, no, no. It was a totally… they didn't have planes and helicopters and radios and GPS's and satellite phones and anything else they wanted to help them out. Oh, it's lush now. I'm not sure how hard they actually had it, because it's hostile an environment. The Norwegians made it look simple. They just rushed to the Pole and back. The British made it look harder (they died). But, they probably had it hard; I suppose they did. But you can't believe how straightforward and easy it is. People think it's cold and hostile. Hell, we've had I don't know how many students go down, and they think it's a vacation. Compared to a Maine winter? Puh.

MacDougall: Give me a sense of what a typical day would be there when you were down in Antactica.

Denton: Well, you get up in the morning, have breakfast, go out and, everyday you would be looking at a different part of the surface, looking at the terrain, mapping it and collecting samples, which we brought back for dating (isotopic dating).

MacDougall: Samples of ice?

Denton: No, these were samples of rock and materials within the rock. Cause we were studying the glacial history of Antarctica. And we just systematically did that in various valleys along the trans-Antarctic mountains, trying to reconstruct the glacial history of Antarctica. Brenda's the one who does that now. I haven't done it in fifteen years. I used to do it a lot, long ago.

MacDougall: What surprised you about Antarctica?

Denton: Nothing.

MacDougall: No? No surprises?

Denton: No. You seem to think it's someplace special.

MacDougall: Well, I've never been there.

Denton: Oh, well I've been there 30 times and I tell you there's nothing special about it. It's interesting scientific problems about how the ice sheets might control sea level, how it controls southern hemisphere climate, and the katabatic winds that come off it that drive the circulation of part of the southern ocean. But if you're thinking about adventure, it's not adventurous. That's not adventure. Not at all. It's not exploration. Hell, you can see every rock on it on Google. Why is that exploration?

MacDougall: But that's only recently.

Denton: Even then…

MacDougall: In the 60s…

Denton: It was very easy. Oh, yeah. The terrain was very easy to walk on, and there aren't any big rivers to cross. There's no rain, no mosquitoes, there's nothing. Working in the woods of Maine is far harder. The perception that it's hard is ridiculous.

MacDougall: So, when you went there I'm sure you saw yourself more as a scientist than as an explorer.

Denton: I never saw myself as an explorer. That's ridiculous. To think of oneself as an explorer… no, I was interested in scientific questions: the origin of ice ages and the background for climate change. No, I wasn't an explorer.

MacDougall: So, when you were hired, were you hired into the Institute at the time or did you have did you have a separate post?

Denton: I got hired into the department. There was no Institute at the time.

MacDougall: Okay, so you were full-time faculty in geology.

Denton: Yes I was.

MacDougall: And then, so how did you come to be part of the Institute?

Denton: Well, then Institute was made up in, I think 1978. Yeah, and we were just assigned into the Institute at that stage: part of the Institute, part of the department. There weren't that many of us. Maybe six or seven. So, that's how I became part of the Institute.

MacDougall: Now, I understood (from talking with Hal and others) that the Institute set things up so that half of the faculty time would be in research with the Institute and half with the department. Is that how it worked with you?

Denton: Yeah, it was a bit more than half with the Institute, but that's roughly correct, yes. The appointments were split between the two departments.

MacDougall: Did that cause any problems with the geology folks, in the department?

Denton: No, I'm still a member of the geology department.

MacDougall: Right, but I meant at the time. Did they have any issues about losing some of you to the Institute?

Denton: Hmm…I'm thinking back a long time…. Let's go on to the next question.

MacDougall: O.K. What do you think the Climate Change Institute's most important contribution to our understanding of climate today?

Denton: I suppose the most important contribution was made before Paul Mayewski arrived. The Greenland ice core would have been the most important contribution.

MacDougall: What did the Greenland ice core reveal?

Denton: It carried on after what was called GISP 1, Greenland Ice Project 1—which suggested the presence of abrupt climate change. That was run by Chester Langley at Cornell. And then, Greenland Ice Sheet 2… but that wasn't done through the University of Maine; that was done through one of our members earlier. And a number of other institutions really firmed up this idea. Along with Europeans; they did a study at the same time called GRIP, and they showed abrupt climate changes in Greenland. And that's taken off now. A lot of people have discovered those in various parts of the Earth. So I would say that is a major contribution. I can't really think of any others.

MacDougall: That's been brought up by others as well, as being significant.

Denton: Oh, yeah… it is. It was done by a group of about 20 universities.

MacDougall: And that was funded by the National Science Foundation?

Denton: Yeah, our part was through the Science Foundation…. And that's what happened in the early 90s. And I would say that, amongst people here, that would be the most important contribution. Paul's here now, but he wasn't here then. Other than that, it's been a lot of here and there…

MacDougall: Putting the pieces together…

Denton: Yeah.

MacDougall: How does your research contribute to the Institute's goals or mission?

Denton: Not that much.

MacDougall: Well, in the past.

Denton: I don't know that I actually did. The goals of the Institute now…I'm not wired into the Institute now.

MacDougall: Well you're certainly one of the foundational members.

Denton: At the beginning I was, but not now. I think what we did then was to establish enough of an Institute so that we could build what it is now. That would be our contribution. But nothing spectacular. And allow people to move here, so now it's huge. So I guess we held it together for 20 or 30 years.

MacDougall: I think you're being overly modest.

Denton: I don't think so. There's a lot of people who…. What was your question again?

MacDougall: Your personal contribution.

Denton: My personal contribution would have been to help it in the beginning and to get expeditions going when it was small in various places, and to help (along with George Jacobson, Dan Belnap and others) run it for a bit after Hal stopped running it. But it was small then; it wasn't very big.

MacDougall: So you were director for a while?

Denton: Of the Institute? Yeah I was, for five years.

MacDougall: I remember when I was here you were graduate coordinator.

Denton: I could have been. But those were years ago, but other than that, that's it. And when Paul took over when he came, it's exploded since then.

MacDougall: Obviously it's been very successful, no question. But I'm wondering if there were, along the way, were there obstacles that had to be overcome?

Denton: Actually, overall it was a pretty good run. University of Maine's treated us well. And we've treated them well, too. We've taken a lot of students from the University of Maine all over the place. If you take any student in this building, just ask them were they've been. I'm talking about Climate Change students… we take undergraduates, too.

MacDougall: And, obviously, a lot of students have gone through here.

Denton: Oh, yeah. They've done well.

MacDougall: Do you have any students out there that you could point to that were particularly successful?

Denton: Well, Brenda.

MacDougall: Oh, she was a student here?

Denton: Oh, yeah. Well, we have students at a lot of universities: Chicago, BU, Maine, Stockholm, Chile, Victoria University. They're all over the place. Everywhere I go I see them; I ran into them in Chile. I just got off the airplane at the airport and I ran into three or four of them. So we have them in quite a few places; that's satisfying. Oh yeah, and Aaron Putnam just got to be an assistant professor at Columbia University. So they're doing well.

MacDougall: Now, what about state and federal support for the kinds of work you folks do? Has that been…

Denton: For us?

MacDougall: Yes.

Denton: Well, state support comes through the university, of course. Our support for all the expeditions and so forth comes largely from the Science Foundation and from NOAH. And we've been helped a lot by Mr. Comer, of the Comer Science Education Foundation at Lane's End. He's brought a lot of students here…a lot. And he's brought a lot of students here. And we have another group in Portland (that doesn't like to be named) but helps us a lot. So we have private and public funding. We don't get money directly from the state to do research, but we don't expect that. At least we don't; I think Paul does.

MacDougall: Yeah, what about the MEIF?

Denton: I don't even know what MEIF is.

MacDougall: Basically it's research funding that was set up by the legislature for university research.

Denton: Oh yeah. I think Paul gets that. I don't know; you'll have to ask Paul.

MacDougall: Have you been involved in any way in policy relating to climate change? Are you interested in that? Do you follow it?

Denton: I'm so busy in this other stuff. The one who does that, again, is Paul. Paul is a man of incredible energy, and I'm not. I concentrate on… Brenda and I concentrate on glacial history. That's all we can handle. She's leaving for Antarctica in a month with a number of students and will be gone a long time. We just got back from Patagonia at the end of the spring. And then I'll be leaving for New Zealand in early January and will be down there till middle-March. It's just busy. I think the policy decisions would be in Paul's hands. He's an expert at this; I'm not…. You should talk to Paul; he's the leading light of this whole thing. Without him I don't think there would be much here.

MacDougall: Well, thank you for seeing us. And I'd like to ask you just one last question, and that is, is there something that you'd like to put on record that I maybe didn't think to ask you about?

Denton: No. That's fine.

MacDougall: Anything.

Denton: No.

Adam Cilli (AC): Could I jump in with a question, if that's alright?

MacDougall: Yes.

AC: You had mentioned that Paul has had a pretty profound impact on the Institute. I understand that you played an important part in actually getting Paul here. I'm wondering if you could tell us that story.

Denton: Well, Paul's first job was with me. Yeah, that was a long time ago. He was a post-doctoral research fellow here when he finished at Ohio State for a few years. So I think that's why he grew to like Maine, and then he went on to New Hampshire. And I did help him to get the job at New Hampshire, too. So, I've known Paul a long time. He was indirectly involve in the first expeditions we took to Antarctica, too, because another person from Tufts (was a fella by the name of Parker Caulgin) was a student of Bob Nichols and went the same year I went in 1960. And Parker was at Ohio State then and he took Paul either the next year or right after that. I'm not familiar with the details, but somehow Paul was associated with Parker, who was associated with us.

MacDougall: That reminds me of something else I wanted to ask you. Many departments are closed and they don't necessarily want to work with other departments. What's kind of amazing

to me about the Institute is how you're so interdisciplinary. You've got glacial geologists, ethno botanists, archeologists, and so on, all working together. Why is it working, with this group.

Denton: I think Hal started that. Hal's an easy-going fellow, and he's not threatening to anybody, so he can arrange all this. And Paul's done the same thing after that. And I think one of the keys was that Hal had the salaries paid from both the department and the Institute, so a more sense of loyalty to both. And the departments cooperate. This department likes it. Geologists in other disciplines work with us quite a bit of the time. I don't sense any resentment at all.

MacDougall: So having loyalty to both groups has helped. Do you think the level of research has had something to do with it?

Denton: Well they're every bit as good researchers as we are, if not better. So I don't think there is any sense of jealousy on one side or the other. They are excellent. This department's good. I mean it's very good.

MacDougall: It just seems, knowing how other colleges and groups work…

Denton: It's unusual.

MacDougall: It's unusual, yes. But it's been very successful.

Denton: But it's real.

MacDougall: It's a great model, I think.

Denton: Yeah, I suspect it's hard to make it work. But this one, for some reason, works. There aren't many people who cause trouble here. Let me put it that way. And universities are filled with that sort of people elsewhere.

MacDougall: [Addressing AC] Do you have any other questions?

AC: Sure, I was just going to ask, could you point to any specific instances in which you conducted research with somebody in the Institute was not a geologist?

Denton: Jim Fastook, at computer science. We put a book out together (Jim and I and some others) called *The Last Great Ice Sheets*. In South America with George Jacobson, on pollen diagrams in South America. He was extensively involved there. That was back in the 90s, with a South American Student, Patricio Mario Moncadda, who came to Maine to get his Ph.D., and George and I were his co-supervisors. Patricio is now probably the leading quaternary scientist in his country of Chile. So it would be George and Jim, on specific projects funded by the National Science Foundation and that we worked on together. I worked for years with Terry Hughes. He's not a geologist; he's a glaciologist, but he's in this department.…. Right now my projects are with Brenda, probably most of them. And then also, our projects are joint with Columbia University, and so all my students (they're all upstairs) spend probably a third of their academic careers at Columbia, and we have a very unique arrangement with Columbia. I'm an adjunct at Columbia. In fact, with Wally Broker, who's one of the most famous scientists in our field (by far), he and I taught the beginning course there for a number of years. And so, the laboratory we use for what we call exposure dating was built and paid for by Mr. Comer; he built the building called Lamont. It's ranked number one in the country, Columbia department, that

I'm an adjunct at. Have been for a long time; I've worked with Columbia scientists for a long time. Those are the ones I work with mainly, not the ones at Maine. So, I've worked there since 1972. And the result is that we have a unique arrangement ('cause I don't think any other university has this kind of arrangement) with Columbia, that our students go there. They go down there for four or five months at a time… live there, do research there, and their results come out of there. I work with their leading scientist, Wally Broker. He's the leading scientist in our field. I work with him on a daily basis basically. And with their other scientists there; they have tremendous scientists. So I write papers with them, work with them; all my papers are with them. My research is with them; my funding is joint with them. It's strange you say, "Who do you work with here." I work with Columbia University. They're the best in the world. That's who I work with. We publish consistently in *Nature* and *Science,* but that's why I'm a little bit of an outlier here; 'cause I work with another university.

MacDougall: Well, that's a great connection to have.

Denton: It is, and it's good for our students. They love it. They get to see the best of the best…. I've spent a lot of time there. Sometimes more time there than I did at Maine. So I've been teaching courses there and have students there, and they put me up in a dorm and give me a car. I like it there. But I like it here better. So, it's very good for the student's education. They take courses there; they get credits there; they work in the lab with people there. They do their own laboratory work there, and it's world-class, and they like it. And Aaron Putnam from Presque Isle is now an assistant professor there and Mike Kaplan, who was here, he's there now on a permanent basis, and they want Toby Kauffman. So we have quite a Maine influence at Columbia now, through my group. So, that's who I work with; have all my life.

MacDougall: Any other questions, Adam?

AC: No, that's all.

MacDougall: Well, thank you very much. I'm going to end the interview now.