

# ACCESSION SHEET

## Maine Folklife Center

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<b>Anniversary Oral</b>				<b>#</b>	<b>#</b>
<b>Interviewer Adam Lee Cilli</b>					
<b>/Depositor:</b>					
				<b>Narrator: Gordon Oswald</b>	

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**Description:** 4004 Gordon Oswald, interviewed by Adam Lee Cilli, November 15, 2013, over the phone, with Oswald near Cambridge, England and Cilli in Orono, Maine. Oswald talks about Scott Polar Research Institute in Cambridge, England; conducting research in Antarctica; working for various industries; his beginnings at the Climate Change Institute; his role as research professor for the CCI; his interdisciplinary research with James Fastook and Roger Hooke; and the reality of anthropogenic climate change.

Text: 6 pp. transcript

Recording: **mfc\_na4004\_audio001** 30 minutes

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

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**Narrator:** Gordon Oswald

**Interviewer:** Adam Lee Cilli

**Transcriber:** Adam Lee Cilli

**Date of interview:** November 15, 2013

**ABSTRACT:** This interview took place over the telephone, between Adam Cilli (in Orono, Maine) and Gordon Hamilton (near Cambridge, England). In the beginning of the interview, Oswald discussed his training at the Scott Polar Research Institute in Cambridge, England, his research in Antarctica, and his career working for various industries. Later, he spoke about how he joined the Institute as a result of a serendipitous moment at a bookstore in Castine, Maine. In the final third of the interview, he discussed his role as a research professor for the Institute and explained the interdisciplinary work he does with James Fastook and Roger Hooke. He also shared his views on the so-called climate change debate.

**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 November 15, 2013, and I am interviewing Gordon Oswald over the telephone... And we are going to talk about his experiences with the Climate Change Institute. Just to get us started off, I'm wondering if you could tell me how you got attracted to this interesting combination of radar and glaciers.

**Oswald:** I studied physics at university. I went to work for what was then called Atomic Energy Authority in England, on a nuclear reactor. And while I was there I saw an opportunity to join the Scot Polar Research Institute in Cambridge. That was working on a research project with the US Navy and the National Science Foundation, on the US Antarctic Research Project, using radar to measure the thickness and topography of the Antarctic ice sheet. I joined the project, went to the Institute, went to Antarctica. Frankly, I got addicted to radar, and the first thing that I got involved with was this issue of measuring the thickness of the ice, but I found in the course of it that you could use the radar to do other things, like decide whether the ice was lying on rock or whether it was lying on a water interface. And that just fascinated me that you could be flying thousands of feet in the air with this instrument that basically looked through the ice, and could measure things under the ice. And that's where the addiction to radar and where the connection with geophysics and arctic ice happened to me.

**Cilli:** Gordon, when were you in Antarctica?

**Oswald:** The northern hemisphere winter, southern hemisphere summer, of 71-72.

**Cilli:** So, you were there for what, a couple of months?

**Oswald:** Yeah.

**Cilli:** Were there any physical hardships that you can remember experiencing while you were

there?

Oswald: Ten hour flights in a C130, where your head is about 80 degrees and your feet are about minus 40. That wasn't very pleasant. Nothing really serious, in terms of the sorts of things that happened to Scott and Amundsen and the other Antarctic explorers. We were served food at six hour intervals, and you could have steak or you could have Corn Flakes or salad at any time. So, frankly, there weren't great physical hardships. Except for the flying, and I would say that that took a lot of endurance.

Cilli: So these flights were basically you travelling from one part of Antarctica to another?

Oswald: Well, not really. We were based out of McMurdo... we were flying two, ten hour sorties in a day. That is, one half of the team would do one and the other half would do the other. We would take off. We would fly for eight to ten or more hours, and then we would fly a pattern across the ice sheet; so our survey was a well-organized set of flight paths. And then we would return to McMurdo. So, no. It was point A to point A.

Cilli: So, the actual research you conducted while on the plane itself.

Oswald: Exactly. The instrument, the radar, is mounted on the aircraft. As you fly along, at some identified height above the ice sheet, the radar looks down through the ice. And as you fly along, you record the results of what the radar is seeing. And the things it sees are a first reflection, a top reflection from the upper surface of the ice, then the radar signal travels through the ice, reflects off the bottom of the ice, and back up through the surface to the aircraft. And the recording system records all of the information that the radar generates, and as the aircraft flies along, it tells you what the vertical profile of the ice is. But it also tells you information that we didn't expect about the nature of the interface between ice and the rock beneath.

Cilli: And what was it that you didn't expect?

Oswald: We didn't expect to find that there was water under the ice.

Cilli: Water between the ice and the rock?

Oswald: That's correct. And what that means is that the bed of the ice was found to be melting in places where it wasn't expected to be melting.

Cilli: Was this an early sign of global warming?

Oswald: No, it wasn't. The ice is two, three, four kilometers thick. It would take 100,000 years for a temperature signal to travel from the top of the ice to the bottom. What it is, is a sign that the ice sheet is not as simple, and possibly not as stable, as might have been thought. The American models of the Antarctic ice sheet...suggested that the temperature at the bed would be somewhere in the minus ten, minus twenty, minus thirty degrees region. And we were able to prove that that isn't the case. The ice is actually much closer to melting, and in some cases is actually melting, at the base. But the outside world, the atmosphere around it, hasn't had time to climb yet to affect the temperature at the bed. If climate change moves in a certain direction, then we may find that the conditions at the edge of the ice sheet change quite quickly, in which case the stability of the ice as it is will come into play. The question will be, how quickly will it

respond to changes at the edge and at the surface.

Cilli: And did you learn anything interesting from the radar images of the ice itself, aside from what you didn't expect to learn?

Oswald: We found extreme topography. We found how deep we could look through it. We found that in previous years, although sometimes the bed of the ice, the rock, or the water, was difficult to see, we found that we were able to measure the thickness pretty continuously through the flights. We found mountains, many of them were thought to be there, but the sensation of flying along in an aircraft (5,000 feet above a completely white, flat surface), you looked out of the window, there were no features on the ice; and yet the radar was telling you that there were 10,000 foot mountains buried beneath it. So, from a personal perception point of view, I was learning things every flight.

Cilli: Interesting. So, how did you come to get affiliated with the Institute?

Oswald: It is quite a long story. I did my PhD at Cambridge in the UK, at the Scott Polar Research Institute. And having done that, I worked for myself for a while, developing electronics music equipment, and then I joined a company called Cambridge Consultants, which is a technology development consulting company. They do a lot of innovative engineering of new products: communication systems, medical products, some government work. All sorts of things that need innovation in their development, and I felt at home there. Most of the work I did there was on radar of one sort or another, be it for government, oil companies, exploration in the Arctic, industrial customers. After that I found myself working for car companies, because short-range radar is very useful for warning of impending collisions between vehicles. I worked for those companies for several years and then found that the thing that made new technology accepted or not accepted in industries like that was not necessarily how good the technology was, but the structure of the industry, and the companies in the industries, their supply chain, and whether they're ready for what they think of as disruptive technology. The truth is they don't like disruptive technology. So, working for them was very interesting, but also very frustrating. So I decided that I wasn't quite finished with the work I had done at the Scott Polar Research Institute, and that I liked the idea of going back to do some more of it. And I happened to visit a town in Maine, which is near Orono, which my wife had identified as a good place to visit, because we were living in Boston at the time. To explain that, Cambridge Consultants was owned by an American company (Alfred D. Little) in eastern Boston, and I was working at the head office there. Now, in Castine I went into a bookshop and bought a book by Paul Mayewski, and he was the director, of course, of the Climate Change Institute. And I thought, well, this is very interesting stuff, and this relates to things that I worked on (at that time it was 30 years before). So I decided to get in touch with him, which I did. And he offered me the opportunity of a part-time position at the Institute, whereby I could pursue a further interest in the use of radar to identify the state, and behavior, and possible future behavior of ice sheets. I took him up on that offer; I agreed to change my working contract with Cambridge Consultants, and since then have been working as a part-time faculty member at the Climate Change Institute. That's the story as far as it goes, at this point.

Cilli: What was the book?

Oswald: It was *The Ice Chronicles*. That's Paul Mayewski's book.

Cilli: What are your specific responsibilities within the Institute?

Oswald: I'm purely a research professor. I do research work, I write proposals for research funding, [and] if I get the research funding I work on the funding. And if I don't, then I work on my own nickel. I've also done some supervision. I've given some talks in the Institute. I form a link. Because I have a collaborative research program with the University of Kansas, I form a link between the Institute and the University of Kansas, and particularly the Center for the Remote-Sensing of Ice Sheets (or CRSIS, as it's known). So that's the story, and in fact I'm currently writing the final report for the National Science Foundation Research Grant that I have at the moment.

Cilli: And are you currently working with any other members of the Institute?

Oswald: I work with Roger Hooke. I work with Jim Fastook.

Cilli: Are you currently working on something now together?

Oswald: They are currently expecting a new product from me, which is a new set of maps of the water beneath the Greenland Ice Sheet, and that should arrive in the next couple of weeks. And I believe that when they have that one of them will be able to review that and consider what it means for the physical nature of the ice sheet. The other will be able to make use of it in determining how... Jim Fastook is involved in computer modeling of the ice sheet, and he'll be able to use that to compare with his model outputs.

Cilli: And what about Roger?

Oswald: Roger is retired. He takes a broad interest in the structure of ice sheets and the flow of glaciers and what the bed of the ice is like. And he will review what I produce and tell me whether he thinks it makes sense, in terms of the physics of the ice.

Cilli: Before that day in Castinne when you found that book by Paul, had you heard of the Climate Change Institute?

Oswald: No, I had not.

Cilli: Because, you had been out of academia for a while.

Oswald: A long time. In fact, it was just over 30 years.

Cilli: When you were in academia, that was the early '70s, I take it?

Oswald: Yes, that's right.

Cilli: Had you heard of the Institute for Quaternary Studies?

Oswald: No, I hadn't. I did know of Terry Hughes, because he was engaged in the same area as myself and Chris Harrison, who was one of the other research students at the Scott Polar Research Institute. And there were various publications that dealt with similar subjects. But I did not know about the Institute for Quaternary Studies.

Cilli: It seems to me that the human role in climate change is not debated with the scientific

community; it's fairly well established. But in American political culture, it's debated. I'm wondering if you can comment as to why that might be the case.

Oswald: That's a very good question. In fact, on television at the UK last night there was a program called Question Time, in which a panel of politicians answer questions to an audience on the subject of moment. And the question of the recent IPCC report came up, and what action should be taken, and one of the politicians was a venerable British politician (who was Chancellor of the Exchequer, which is the equivalent of Treasury Secretary in the US). And he is a denier of climate change, so we have them here as well. It's very hard to know how to deal with people who take that view, because it's difficult to see it as rational. And it's mostly taken by people who don't understand the need for a scientist to say, "Here is what I found to be true, but these are the limits of certainty of my knowledge." And when you say that you admit that the alternative explanation could be true. And that's different from the way that uncertainty is presented in non-scientific circles. I think part of the problem is about the difference between political circles, in which certainty is everything, and scientific circles, in which the degree of uncertainty is the important thing. Unfortunately it is not a rational analysis, that weighs the level of uncertainty with the other side. Always 50 percent must be given to both sides of an argument. I think what really lies under it is that people don't like to hear what they don't like to hear. They don't want to believe that they've caused a problem, and therefore threatened future generations and the cost of trillions of dollars to try to recover the situation. I've always felt that that's not a rational way to approach things. You have to measure what you can measure. You have to make the best judgment you can according to the models you have. I decided in my own mind that things like this were happening at least ten years before I even heard of the Climate Change Institute.

Cilli: Have you noticed any differences between the UK and America, in terms of how much of the population does not buy into the idea of human-caused climate change?

Oswald: I really don't know. My impression is that it is well-understood in the coastal regions of America, but in the middle of America it's not. But that's just an impression; it has no basis in fact at all. In the UK, many, many people have a good perception that things aren't what they were. The US is a big place, and it has a climate that is quite well defined from coast, to center, to coast—from near arctic North to tropical South. The UK's climate is completely wrong for its geographic location. We are on the same latitude as Labrador, and the only reason that we have a survivable climate is because of the Gulf Stream. The Gulf Stream keeps northern Europe warm, much warmer than it should be. And therefore we are dependent on a climate feature whose stability we have no knowledge of. There's no reason why it should be particularly stable. So I'd say there is a perception in this country, [since] the weather is always changing, there's no particular faith that it will always stay warm and damp.

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

Oswald: I would say it's the linking together of the physical issues of climate change with social, medical, historical, a whole range of fields of human interest that will be affected by a change in climate. Paul Mayewski has brought all those things together, developing from the Institute for Quaternary Studies, into something that is avowedly the Climate Change Institute. And insured that the focus is spread, not just confined to geological or geophysical studies, but to a much

wider range of activity.

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

Oswald: Okay, thank you. I think if there is anything further to say it is that I believe that Paul's objective in instituting the Climate Change Institute was to make this clear, to make it that that is the issue, that anyone in this sort of field should be addressing. That we need to engage many scientific disciplines, and medical and other disciplines, in that activity. And its success is tightly bound with the political struggle to respond to what are the driving features of the development of the human occupation of the world.

Cilli: Well, thank you for your very interesting remarks. I will go ahead and stop the recording now.

Oswald: Okay.