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Description: **3997 Peter Koons,** interviewed by Adam Lee Cilli, November 1, 2013, in his office in Bryand Hall at the University of Maine, Orono. Koons talks about his early research modeling the interactions between plate tectonics and atmosphere; conducting research in the Alps, New Zealand's Southern Alps; the Himalayas; and Alaska; surviving the conflict in Kashmir; his role in the Climate Change Institute; the CCI's role in the broader community; and the reality of anthropogenic climate change.

Text: 7 pp. transcript
Recording: **mfc_na3997_audio001** 33 minutes

Related Collections & Accessions

Restrictions

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Notes

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Narrator: Peter Koons

Interviewer: Adam Lee Cilli

Transcriber: Adam Lee Cilli

Date of interview: November 1, 2013

ABSTRACT: This interview took place in Peter Koon's office in Bryand Hall at the University of Maine in Orono. In the first half of the interview, Koons discussed his early research modeling the interactions between plate tectonics and atmosphere, which led him to remote locations in the European Alps, the Southern Alps of New Zealand, the Himalayas, and Alaska. He also discussed some of the political and cultural difficulties he encountered while conducting research in the Himalayas, notably when fighting broke out in Kashmir. Later, he reflected upon his role in the Climate Change Institute, the Institute's role in the broader community, and 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 1, 2013, and I'm here to interview Peter Koons about his experiences with the Climate Change Institute. Just to get us started off, I'm wondering if you could tell me about what attracted you to earth sciences.

Koons: It was a long time ago. But what attracted me to it was that I could combine what I was interested in (which was climbing mountains) with going to different parts of the earth (which, then, was New Zealand). So that's what brought me into it, and things evolved a bit, and my interests diversified. And I became more involved in earth sciences and increasingly I did lose my interest for mountains, but I came to focus more and more on the interactions between mountains and atmospheric fluctuation. And that got me to where I am now.

Cilli: Can you give me some background, in terms of your education?

Koons: I come originally from Maine, and I went to university in New Hampshire. Then, after spending a few years out of university I went to New Zealand, where I did a Masters in Earth Sciences in the Southern Alps in New Zealand. And then went to Switzerland, where I did a PhD in Zurich, on continental collision and the formation of the European Alps. And then went straight back to New Zealand and joined the faculty for about twenty years before I came back to Maine about ten years ago.

Cilli: Did you shift away from mountains when you came to Maine?

Koons: No, I already had a number of other projects that were associated with active mountain belts. So, I look at the intersection of tectonics (of actions which drives the so-called solid earth) and the atmosphere. So, I particularly look at where that's most active; and the place where it's most active generally is large mountain belts, such as Southern Alps in New Zealand, I've got other projects in the Himalayas, and Alaska, Norway. And all of those projects, which again are

looking at one aspect or another of the coupled silicate of the solid-earth system and the atmosphere. So, things shifted a bit when I came to Maine, but my interest in the genesis of mountains didn't really. At that point I had more funding from the US to work on Alaskan mountains particularly, and also some Himalayan work.

Cilli: So you had been at New Zealand quite a long time. Why come to Maine?

Koons: Well, again, I grew up here. So that had some attraction. But the larger reason was that I was interested in answering some questions which were possible in the structure here at the University of Maine, including the Climate Change Institute. In other words I was interested in not just the very long wave-length variations that occur when one continent runs into the other, but I was interested in their interaction at a much higher frequency; special frequency, that is. Shorter, steeper things. And also temporal frequency, associated with things like earth quakes and climate changes, and the influence back and forth between those. And the opportunity to do that in Maine was significant, and I was also increasingly interested in looking at higher-frequency variation as well. So that made sense from the position of University of Maine.

Cilli: So you came in 2000?

Koons: 2002.

Cilli: So, somebody from the Climate Change Institute contacted you?

Koons: I started fully in the department of earth sciences. Then, when I was here I was offered a position sharing with CCI and earth sciences. That was probably after I'd been here for a year or so. And so, I'm officially 30 percent (I think) in CCI and the remainder in this department.

Cilli: How do you see your research fitting in with what other scholars in CCI are doing?

Koons: My tools that I use are mostly solutions of numerical equations which describe these processes. So there may be one set of processes flow in the mantle (which is a very viscous fluid). So I model that numerically. But I also model the interaction between that flow and the atmosphere, which again I have numerical models for. So, my contribution here is to work with modeling of various systems, particularly coupled systems, and therefore I can work with people who look at level of glacial fluctuations. I have several funded glacial projects. Or I can work with people who deal more with the longer-term geology. People like George Denton and Brenda Hall and so on, who deal with that. Increasingly I've become involved with the other aspects that are associated with modeling systems, such as with bird migration and other things, which again it's relatively straight-forward for me to work with people who actually know something about it. Whereas I know something about the fluid behavior, fluid dynamics, they know something about phenomena themselves. So it's easy for me to work across those boundaries, and that's one of the things I enjoy about it.

Cilli: In speaking with members of the Institute, one of the things just about everyone as stressed is the interdisciplinary character of the Institute. Have you worked with members of CCI that are in a different field?

Koons: Well, I mentioned bird migration, which is sort of a different field. But it makes good sense in a way, [when you consider] the way birds fly through a fluid atmosphere. I can model

the fluid atmosphere, so that makes some sense. I've worked with Brian Olsen and his students there, Gordon Hamilton and his students on glacial flow, George Denton and others. My discipline bridges many of those, so it's easy to at least contribute something to them and to work with them. And so that's one of the things that attracts me about it. I have associations with the other institutions, and they're very good institutions: University of Washington, or University of Colorado. They have good climate groups, but they don't quite have this cross-disciplinary view of it. Maybe it's because they're so large. They're very active; very good. But that's one of the things that attracts me about this [institute]. I can go see Dan Sandweiss on a regular basis, or I can deal with glacial people, or biological people.

Cilli: Had you heard of the Institute when it was still the Quaternary Institute? (You would have been in New Zealand then.)

Koons: Yeah. They've had a very long association with Antarctic research. And almost all Antarctic research from the US used to go entirely through New Zealand. So, I was regularly seeing people from the University of Maine (it always was a surprise) going through the New Zealand Antarctic program. So I was aware of their contributions, and certainly of the contributions of people like George Denton and others who had a long association in New Zealand and also the Antarctic. Sort of the founders of the Institute.

Cilli: What would you say is the most difficult place you ever worked?

Koons: The difficulty, it was a cultural difficulty, and that is northwest Pakistan, and the Pakistan Kashmir against the Afghan border. And that's mostly because people were shooting everybody right, left, and center. There's a serious difficulty working in the mountains, but it pales in comparison to dealing with the local tribes and the tribal differences. So that would be the most difficult.

Cilli: Can you think of a specific incidence or anecdote that comes to mind?

Koons: There were plenty. But they were mostly associate with arguments which, while we were in Gilgit at the end of a field season (I don't know if you're familiar with it, but Gilgit is at the edge of the Indus river and is sort of the center of the Pakistan Taliban). There was a riot in the town; they instituted martial law. We were stuck in it for about seven days. In getting out there was lots of heavy machine gun operation, sometimes firing, sometimes just covering. It wasn't really fun. So, my colleagues and I moved our research program to the other side of the Himalayas, which was where the Sang Po runs through the Himalaya on the eastern side. And [we] looked at similar interactions between climate and the earth at the other end of the mountain range.

Cilli: Had you ever worked in Antarctica?

Koons: I hadn't, no. I avoided it. Particularly in New Zealand, there was a large time commitment… and I decided I would do other things.

Cilli: You said that your work contributes, say, to the work of George Denton and Brenda Hall. Did you publish any papers with them?

Koons: I haven't, no. And I may or may not. When I say my work contributes to it, the things that I do, that is, the tools that I use, for determining glacial rebound and those kinds of things, are relevant to what they do. Brenda and I have submitted proposals to National Science Foundation; they've been unsuccessful, but we've done that together. So that's where I've contributed.

Cilli: What do you think has been the Institute's most important contributions to our understanding of climate?

Koons: There have been several, and they belong to different people. But certainly Paul Mayewski's involvement, before he came here, with abrupt climate change. And since he's come here, too. That was the first recognition of the rapid changes that global circulation patterns can go through, from his Greenland work. That would be a huge contribution. The contributions that George Denton has made working out why these big fluctuations that led to ice ages; I think that's a major change in the understanding of the way the earth works, that wouldn't have existed without someone like George driving it. He's driven that program for the last 30 years pretty much. And so I say that's a major change. And there are a bunch of others which are important but they don't necessarily show up quite as distinctly as those two do.

Cilli: It seems to me that in the scientific community there's no debate about climate change and the human role in it, but in American political culture it is still up for debate. I'm wondering if you can comment as to why that might be the case.

Koons: There is a tendency to think that, wherever we live, conditions are steady. I don't know why we think that. It may be that fluctuations don't usually occur within our lifetime. We're usually wrong about that, of course. But I think there's a tendency to think that, well, it's November; there should be ice forming in Maine. Until we start looking at the record and see of course that it hasn't always been like that…. But I think the real reason is that there's been a concerted effort (financially) to obscure the processes, the facts, and the communication by scientists. And it's characterized pretty well in several reputable publications. *Merchants of Doubt* captures this pretty well. The authors point out that the hydrocarbon industry employs methods that were used previously for holding up tobacco legislation, often by the same groups. Their goal is to seed some kind of doubt about whatever the science is. Well, all science is uncertain, so it's an easy thing to do. Particularly if you're clever about, one can destroy the confidence that society has in the findings. Scientists are only recently coming to grips with how do deal with uncertainty, and getting uncertainty across the population, and we don't necessarily deal with it well. And that's been taken advantage of by groups who would rather not see climate change be recognized.

Cilli: What role should the Climate Change Institute play in informing public opinion?

Koons: I guess that would be a role which is similar to sciences responsibility to society. I think CCI comes underneath that broader umbrella. And that is that we have a role to provide truth (as we know it at the time) to society, and not just to sit on it….Not communicating it is a mistake, and I think we have a responsibility to continue to search for the truth as it appears, and secondly to communicate it.

Cilli: What are some of the things the Institute has done?

Koons: From a scientific perspective, some of the things I mentioned before are important. Certainly the ice core work, a big chunk of the Institute, records changes in the atmospheric chemistry which are absolutely critical to understanding the way global circulation patterns are affected, and how the chemistry of the atmosphere is affected. Getting that information out is a really critical piece of what the university does, and what CCI does on behalf of the university. There are a bunch of other things, too, which are important. But the stability and reliability of the information that comes out of CCI for global records of atmospheric circulation are hugely important. So, many of the these records and these data points are critical to understanding the ways these global systems work, and they lend themselves to building up a framework which we can understand the way systems are changing. So, it's very valuable.

Cilli: If we were able to convince everybody that we need to reduce carbon emissions, what would we do then?

Koons: In terms of what we would actually do to cause the carbon to be reduced, or what would we do in terms of observing the earth?

Cilli: Yeah, what would we need to do to really address the problem effectively?

Koons: As you're probably aware, the economies are set up so that they don't favor the reduction of carbon production. So, in order to make a difference one would have to… If you can convince people, great. But one still has to make the changes in the way our economy petitions funding for one system versus another. And there are an awful lot of toes to be stepped on. We are dealing with systems which, changes which would require petrochemical changes, or hydrocarbon changes, which is the largest industry probably the earth as ever seen, in terms of finances. And to make changes to that industry would be very serious. So, it's a matter of convincing people that it has to be done, and then actually doing it. We have communications through CCI with US Congressional Representatives, and they're not trivial. It turns out, much to my surprise, Maine has a lot of influence on Congress (the Senate, and to a lesser extent the House). But it's such a dysfunctional body right now that it's hard to say whether that would work. However, people like Collins and so on do have some influence. It so it may be that that is the only way that changes will come about. Through people like Susan Collins. But the alternative to saying they have some influence is to say there is no future for climate as we see it. The grassroots exercises, which are things like project 350, are probably very, very useful. And probably a requirement to make the general public aware of the need of some sort of change.

Cilli: How do you think the Institute has changed since its founding?

Koons: It was founded by people who were very interested in long-term climate change and Quaternary. But now we focus increasingly on shorter-term duration. There still is the deep-time component, but much more we're focusing on the shorter term and the implications of that shorter-term to society. And that means that there's more diversity and perhaps more scattering of energy because of that.

Cilli: The membership in the Institute has grown quite a bit. Has that created difficulties in remaining cohesive?

Koons: I'm not sure it's difficulties. I'm the Chair of the Peer Committee. The membership has grown, but of course the status, or the ways people associate with it is such that some of the

people are directly associated with it (who have their salaries in it)… But the other associations with other members I think has increased the richness of CCI, has increased its ability to deal with broader issues. I don't see any particular detriment to CCI at all, of the increased membership, but I do see in the future there could be some sort of splinter…. So, I welcome the breadth of CCI.

Cilli: Shifting back to your own work… So, you've worked in Pakistan and New Zealand. What are some other regions in which you've worked?

Koons: I've worked in Switzerland, Norway, Alaska. I've got proposals accepted for Antarctica and Tibet.

Cilli: What was the longest you were ever out doing field research in one go?

Koons: Probably three months at a time. I was out in the Himalaya for two months at a time.

Cilli: You mentioned that you encountered some political challenges. What about the physical components?

Koons: Well, I have a funded project in New Zealand, and I was just talking to one of my grad students who's going there. And the physical components of this, particularly when I originally was working there, are really significant because of the very thick bush, [and it's] very steep in places, even thought the total elevation is relatively minor. Whereas the Himalayas have big changes, outside the societal ones, because elevation is a serious problem. A lot of the work that I was doing was in areas above 5,000 meters.

Cilli: So, you worked pretty high.

Koons: Yeah.

Cilli: Did you ever have any close calls?

Koons: I didn't have any altitude-related problems, although people in our groups sometimes did. But typically if you work in high mountains you will have blocks come down where you wish they hadn't.

Cilli: So, a few moments that might have taken your breath away.

Koons: Yeah. Actually, the picture on the lower left there [points to picture in his office], that's the north face of Nakaparbet [?]. It's a huge place. I think it's the largest place on earth…. The first time I went there, I was with a colleague from New Zealand, and we thought, "well, we'll go up there; it looks like a safe spot from the avalanches and so on, and we can bevy here and move on to the face and such and such." It turns out that the spot we thought was safe was the spot where 32 German Alpinists during the Second World War were killed by a massive avalanche that came off the top. And these ice falls and carrack collapses are huge compared to anything we'd seen outside the Himalayas. And they covered an area which was so much vaster, so huge compared to what we considered, that we considered ourselves safe. But we were just lucky.

Cilli: What kinds of equipment did you take with you?

Koons: For those, it was just mountaineering equipment. You take some ropes and crampons and axes and so on.

Cilli: No particular instruments?

Koons: For what we were doing there, there were two things. We were observing the rock types, but also since I am a modeler I go mostly because I like to be there. And so we were measuring the size of the moraine, how old the moraine might be, we were picking up rocks from different elevations—for a specific reasons, because those rocks had gone up faster than any rocks on earth, and as they go up they hold the signal from, in this case, about 30 kilometers deep. So they had gone up about 40 kilometers, about 6 kilometers above the surface there. As they go up, they carry with them the heat and the signal of that rapid movement, so we were looking for those particular signals. So the high mountains are also associated with… a deep-seated geological signal, which we were also looking for.

Cilli: And I take it you had to camp out there?

Koons: We did.

Cilli: And you took all the food you needed.

Koons: Yeah. So, the picture on the left there was taken at the base camp, and we had help to carry gear into there. And the two of us would go up to various individual parts. And there was part of a larger group doing work on other aspects of the same area. And that's pretty typical of work I've done in other parts of the Himalaya and Alaska.

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.

Koons: I can't think of anything.

Cilli: O.K.