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Collection Name: Climate Change Institute 40th Anniversary Oral

Interviewer/Depositor: Pauleena MacDougall and Adam Lee Cilli

Narrator: Terence Hughes

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Description: **2756 Terence Hughes,** interviewed by Pauleena MacDougall and Adam Lee Cilli, July 11, 2013, over the phone in MacDougall's office in South Stevens Hall at the University of Maine, Orono. Hughes talks about the beginnings of his career in glaciology; conducting research in Antarctica and throughout the world; his beginnings at UMaine and the Climate Change Institute; his research on glacial shearing; the CCI's contributions; and the portrayal of climate change in political and scientific discourse.

Text: 10 pp. transcript
Recording: **mfc_na2756_audio001** 70 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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Narrator: Terence Hughes

Interviewer: Pauleena MacDougall

Transcriber: Adam Cilli

Date of interview: July 11, 2013

ABSTRACT: This interview took place over the telephone, in Pauleena MacDougall's office in South Stephens Hall. Terence Hughes could not be physically present for the interview. The interviewer, Pauleena MacDougall, was accompanied by her research assistant, Adam Cilli, who took notes during the interview but did not ask questions. In the beginning of the interview, Hughes discussed how he became interested in, and involved with, glaciological studies. He described his undergraduate and graduate education, and his first trips to Antarctica (where he drilled into glaciers), and his trips around the world. Later, he talked about his first years at the University of Maine, his experiences with the Quaternary Institute, and his own research experiences (studying glacial sheering). Near the end of the interview, he shared what he believed were the Climate Change Institute's greatest contributions and offered his views on the way global warming is typically portrayed in political and scientific discourse.

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

MacDougall: I'm Pauleena MacDougall, and this is July 11, 2012 [sic] and I'm interviewing Terence Hughes, who was a faculty member at the Quaternary Institute. So, could you tell me a little bit about how you first got interested in glaciers? I noticed on the website that you started out in metallurgy and became interested in glaciers somehow.

Hughes: Well, the very first awareness was growing up on Hughes Cattle Ranch in South Dakota, just on the west side of the Missouri River. Because the east side of the river, there grows, more fertile soil brought down from Canada by the ice sheet, and it had a lot of erratic boulders scattered all over it, which made it a lot different from the west side. And so, for a boy that's quite a mind-boggling concept—that ice 1,000 feet thick could strip off the top of Canada and bring it down and depot on South Dakota all the way to the Missouri River. So that sort of remained dormant in my mind. I went to the South Dakota School of Science and Technology after I graduated from high school, originally thinking I'd be an architect, because I always liked to design things. But my mother developed cancer in my late teens, and my dad had to sell the cattle ranch to try to save her life. It didn't; she died when I was 19. But anyway, that meant that I had to put myself through college, and the tuition was only 90 dollars a year back then, so any kid with any kind of a summer job could save 90 bucks and put himself through college, which is what I did, along with my two brothers. The reason I picked metallurgy is that, those freshmen like myself that didn't know what branch of engineering they wanted to enter were taken to the gymnasium, where the chairman of each department would be on stage and give us particular reasons why we should go into their branch of engineering. And Paul Anderson appeared and told us that metallurgists were the highest paid engineers. Well, that got my attention right away. And then he told us the secret of Damascus Steel. And anybody who's read Th*e Talisman* or any other tales of that kind would be aware of the fabled properties of

Damascus steel. One story is that Richard the Lionhearted and[?] Prince Saladin [?] used his broad sword to slice through a small tree. And Saladin responded by having a eunuch bring a silk scarf to him on a pillow, and motioned for him to toss the scarf up in the air. And when it floated down he sliced it into little pieces with his scimitar, made of Damascus steel. So it's quite impressive. So anyway, it kind of had a romantic element, in metallurgy, and I have a kind of romantic streak in me, so the practical streak (good money) and the romantic streak sort of came together and I decided to be a metallurgist. Well, when I went to graduate school at Northwester, a new department had been created called material science, which was metallurgy expanded to include polymers and ceramics. So that was a larger field with more job prospects at the end of the line and I picked that, as opposed to other places where I could have gone. And while there I liked to browse through the Deering Library, just a short walk from the technological institute that housed all the engineering departments, and I always had a lot of other interests besides science and engineering, so I saw a book called Astounding Ice Ages. It was written by Dolf Earl Hooker, who was a retired architect (and that was the profession I would have preferred to have entered if I could have afforded it). So I checked it out and I kind of had a crazy idea about the origin of ice ages, which I won't go into. But I showed it to Hans Wordman who was a faculty member of the geoscience department, and knew that he had written some theoretical papers on ice ages. So I showed him the book and he got a letter from Collin Bull, who was the director from the Institute for Polar Studies, asking if there is a graduate student there who would be interested in going to Antarctica, on one of the glaciological expeditions. Well I had just spent a year travelling around the world, right after I finished writing my doctoral dissertation. I went with my advisor… took a year off and traveled around the world. So I thought, well (I had kind of got hooked on travelling; saw 64 countries I think, in a space of a year, traveling mostly overland, including both Americas, Europe and Africa) this is a chance to visit Antarctica. So, I was still single and I didn't have any real responsibilities; I had finished one part of my life and was ready to start another one, so I was at a period when I could do something unusual, so I said well, I'll give it a try. I'll take this opportunity to go to Antarctica. So I accepted that job, for 12,000 dollars a year, where I could have got 18,000 at Los Alos laboratory, but the whole bug to see the world trumped the extra 6 grand that I walked away from. On that occasion, there was a graduate student named Jerry Holesworth who had done his masters on a reserved glacier in Antarctica. It's a cold-based glacier; ice was frozen in the bed. Unlike the warm-based glaciers that you have in the Alps and the Andes. And he wanted to drill holes through the glacier, along the center line. But they found a spot on his chest x-ray and they wouldn't let him go down, so I was the only one on the team; the others were students and I had just gotten a Ph.D.. I didn't know anything about drilling; I didn't know anything about glaciers. But because I had that magical Ph.D. I was put in charge. I went down and we succeeded in drilling holes through the glaciers. The original proposal didn't work; so I tried to other ways of doing it and the third one worked. So I got the holes drilled. Then I got a chance to go by way of the South Pole to the old plateau station, which was the most remote research station the Americans had in Antarctica, to log a hole in the ice that had been drilled a year earlier (log temperatures in that hole). And so I did that and on the way back from Antarctica I took about 6 months travelling by way of New Zealand, Australia, and up through southeast Asia (Singapore, Malaysia, Thailand, Laos, Cambodia, Burma, India, Nepal, southern Asia, Afghanistan, Iran, Iraq, Egypt, Libya, Tunisia, Algeria, Morocco, and all the way up through western Europe, through the Scandinavian countries, on a fishing boat to Greenland, and returned on a flight over the North Pole to Alaska. And I came back to the United States by that way, stopping off along the way to see the Grand Canyon (hike down to the bottom). And when I came back I told the director who hired me at the old Institute of Polar Studies that I'd like to do this. And I still had one or two of those job offers being held over for me. So, if he thought I was being too irresponsible, it was okay, you can find someone else for that job, and I'd pick one of these other two jobs. But when I returned he had the job still kept open for me. I had fun. It was fun trying to find a way to drill a hole in those glaciers, logging the temperatures and the inclination. And the challenge, and it gave me a chance to see a lot of these other countries on the way back, and I thought, well, if a glaciologist's job allows you to do this, and do other sites to and from these places, I'd be crazy to take a job where I'd be in some lab for the rest of my life. So I stayed there; it's just a research appointment, a research scientist. But then there was an opportunity to come to the University of Maine, teaching in what at that time was the geology department as one half of a joint appointment in what was then called the Institute of Quaternary Studies. And Hal Borns was both the director of the Institute and the chairman of the department, and I met him and George Denton at a meeting in Skyland, which is in the Blue Mountains of northern Virginia, where the National Science Foundation held orientation week each year for people going to Antarctica.

MacDougall: Tell me a little bit about that first trip to Antarctica. What was that like?

Hughes: Well, at that time, it wasn't so much different from the Heroic Age of Antarctic exploration and discovery. We went down by plane, but once we got down in the field we were pretty much on our own. We were serviced by helicopters, and that still is the case today, but it was in its infancy, that kind of research. That was the first cold glacier that had ever been drilled through, in Antarctica or anywhere else. It was a pioneering study. And back then graduate students could write research proposals and get funding from NSF. Jerry Holnsworth wrote the proposal that got that project funded. That doesn't happen anymore. And if you read any of those accounts by people who were in what I call the founding generation of glacial ecology… reading their accounts of what they did isn't so much different from reading accounts of (John Behrendt, is a fellow, University of Colorado), the accounts Scott Malison and Mosen and all these other early explorers of Antarctica. I told you there is a romantic streak in me, and there I was able to live it to some extent; and now it's still there (I think it will always be there because Antarctica is an unforgiving environment) but it's become kind of routine now. Whereas back then it was still high adventure.

MacDougall: Were you already aware of the history of the exploration that took place before, you know, some of the Scott, Shackleton things, before you went down there?

Hughes: I was dimly aware of it, but not as I am now. I was aware of it, but the details: no. But I knew they were a special breed of people. They still are.

MacDougall: You mentioned that the first method of drilling didn't work. You can tell me a little bit about that? Was it because of the harsh environment you had to try different ways of drilling?

Hughes: It was the drilling technique that geophysical prospectors use when they have to drill through rock to get down hundreds or even thousands of feet and take out cores of rock (and basically use for oil, petroleum or oil, natural gas and that sort of thing… anything that has value deep down below the earth's surface). Why that didn't work in Antarctica was because the drilling technique was through solid ice, which melts when the friction of the drilling head is turning on it. And that would eventually clog the core coming inside the pipe and also between the outside wall of the pipe and the hole—get clocked with these ice chips. And so there had to be a drilling fluid used that would melt the ice and the chips and allow the drilling to continue. And no one had done that before so we didn't know if it would work; it didn't work. Well, the streams did not really get rid of the chips of ice; the nuclei would enlarge and eventually clog the plumbing system that was used. So the pipes with the drilling fluid would eventually burst, especially at the elbows. So we just had to abandon it completely. There was a mechanical drilling approach, basically what's called a CIPRI Ice Augur. And there you can, it's just a one meter tube that has aluminum rods that connect to it, that are each about three feet long, and you just turn it with a handle at the top. And you never go all the way down; usually you go down two or three feet and then you have to pull it all up, take out the core, and do it all over again. It's a very slow process, but when you're going some hundreds of feet into a glacier, that had never been done before. Quite shallow drilling that was used. We found that we had the same problem when we got down to a certain depth, the chips would make it impossible to continue to turn the auger. So we had to abandon that. Well, at the warehouse at Merto Station there was a set of flight augurs, which is nothing but steel rods that have an inclined plane wrapped around them. They're quite common everywhere. They had a set of those; a couple hundred feet of them. And I talked to people at USARP, US Antarctic Research Program, that's what it was called back then, and so I had the machine shop build a connector that would turn the flight augurs so we didn't have to do it by hand. 'Cause they're quite heavy; they're steel, not aluminum like the CIPRI ice augur. And that worked.

MacDougall: So, did you do all of that work in Antarctica, or did you have to go back and forth?

Hughes: We went down two years later to re-log the ice, because the ice is flowing and it's shearing at the bend, so that the ice at the surface is faster than the ice at the bend. So the holes will get bent to match the deformation of the ice. And there's an inchromometer, which is kind of a compass with a pendulum that points away from the bullseye on the target to tell you the inclination of the tube that contains this pendulum. So, we had to re-log those, cause it takes a while, when you drill a hole like that, for the temperature to become equilibrated to the surrounding ice temperature. So, the original temperatures we got were fine; they were as accurate as you'd get a year or two later. Well, Jerry Holesworth went down a year later and was unable to get those measurements. Well, I got down… and Deception Island had been… that was '68. In October of 1970 there was an eruption down on Deception Island, which is on the other side of Antarctica, and a group of us went down there to study the results of that eruption. That was my second glaciological project. But Owan Morheim [?] was a Norwegian graduate student at the time and I was signed on to be his field assistant for his doctoral research. And then afterwards he and I took a supply ship to McMurto and we were able to re-log those holes that I drilled two years earlier. So, I took a third trip back to the United States, which was, I went to New Gunnei. I wanted to see the Sepik River, where the most recent cannibals are supposed to live. I took a canoe about three miles up the Sepik River, then went to Bismarck… and the natives performed what they called a sing-sing for tourists. And then I went to Macau and Hong Kong and Yokahama by boat and then took another boat to Nakootka on the Russian Pacific coast, and then a train to Moscow and then another train to Luxemburg. And then flew back to the United States from there. So I did another trip on that occasion as well. It was the third time I had been around the world. Again, because I picked glaciology and at the old

Institute of Polar Studies they allowed me to get away with that kind of thing, as long as I finished the projects I was doing. So, Deception Island, the part that I had there was… (the eruption in August blew the end off a glacier there). Deception Island is a horseshoe-shaped caldera and it's flooded through a breach called Neptune's Bellows. And the interior breach is full of sea water. It's called Port Foster. And the Brits and the Argentines and Chileans all had stations there; they all three claimed that part of the Antarctic pie. But I was interested in ice dynamics, and the eruption had blown the front off of a glacier and created an ice cliff a hundred meters high, where slabs of ice were calving. And I thought this would be a chance to study calving dynamics. It was the first one that had been done in any really detailed way; it was quite a dangerous part of glaciology to study, because these calving events are quite unpredictable. And if you're going to be working on the calving front, you could be there at a time when some of it breaks off and you and it go down together into the sea. But anyway, I did. I dug about 30 meters of tunneling, three different tunnels, at different heights on this ice cliff to see the sheer dynamics that was causing these slabs to calve. It was sort of like holding a deck of cards vertically and then bending the deck… the process of bending the cards forward causes it to sheer. And as the leading card bends forward, the gravity will want to peal it away from the sheer face. So, we wanted to tunnel into the wall and see how much sheer was taking place between the slabs as they moved toward the calving front. And we did that; no one got hurt. That was my first project that I got funded myself. Drilling on the reserved glaciers in the dry valley, that was Jerry Holnsworth's work. I was just put in charge of it because he couldn't go down that year. This was the first one that had been funded, and the one who funded it was Dick Cameron. I think he was the program director manager of glaciology at the time, and he was also at Ohio State. So I knew Dick personally. Sorry, I take that back. It was James Wally who had funded that. Dick was a program manager, but I think he came on a bit later. He was still at Ohio State at that time, Dick Cameron. He's still around, you know; I still with Dick by email, and James Wally. Well, that was a two year study. So I put in a lot of stakes, stray networks with the people who went down with me, who were graduate students down at Ohio State. And one of them was Clair Parkerson, who was a grad student in the geology department, so she was the first woman to go to Antarctica on a mixed male-female expedition. And she was hired by NASA after that to be a glaciologist; she specializes in sea ice and climatology and has written several books on that subject. And she's still there; a very highly respected scientist at NASA with a world-class reputation. I keep in touch with her, too. She's received many prestigious awards; I haven't gotten any myself. I did get a Golplate metal from the Bird Fellow Research Center through the old Institute of Polar Studies. I do like that one, because it's named after Dick Golplate, who founded the Institute. And he was still there when I was hired in 1968, so I had a kind of personal connection with that particular award, which I wouldn't have had with any other award. Which I didn't get; I didn't get any other ones. But that one, I treasured more than any of the other ones that might have come my way (for the reason that I knew the man for whom the award was named). I might have left it there in the Climate Change Institute. I think I gave it to the Institute to put in its showcase. I'm not sure about that; you can check on that.

MacDougall: And we will. We'll ask about it. Can I ask you a more general question about why it's important to understand ice sheet calving?

Hughes: Well, you see, it was a neglected part of glaciology for two reasons. The first one is the inherent dangers that I already mentioned. The second one, calving is when ice left the glaciological system, so glaciologists generally didn't have any interests in that. You know, once the ice was gone it's off the radar screen. So, there wasn't any serious work done until I did the work on Deception Island. But since then, it interested me because ice dynamics, it was more of a direct application with my background in material science and metallurgy, was studying the deformation of crystalline solids, using sheer deformations localized on discrete planes. And I had become knowledgeable about how that's done with metals and metal alloys and other materials. So that's where my interests took me, rather than the mass balance branch of glaciology. When I moved to Maine, the big sweetener was having a joint appointment at the old Institute of Polar Studies, now the Climate Change Institute, and the department of geology, now the school of earth and climate sciences. There was always a connection, there at the University of Maine, between glaciology and glacial geology and archeology and anthropology and ecology and climate, because climate and climate change was the common denominator that tied all those things together. And when I was hired by Hal Borns, George Denton had just taken on the responsibility for CLIMAP at the University of Maine. CLIMAP is an acronym for Climate Long-Range Investigation Mapping and Prediction. And it was a project of the International Decade of Ocean Exploration, from 1970 to 1980. And John Himbry of Brown University and Milda Kipp, his chief technician, she primarily had come up with a way to get climate records from the concentration of microorganisms in ocean-floor sediments. The skeletons of diatoms or forams and other single-celled plants or animals of that kind that lived near or at the surface of the ocean, they died their skeletons went down to the sea floor. And either made it silica or calcium. They all have a distinctive skeleton; they're like fingerprints. And they all thrive at temperatures and salinities where they live, that are known. Those temperatures and salinities are known because a lot of these organisms are still in the oceans today. And so their skeletons can be examined to learn about what those temperatures and salinities were in the past. And so it was a way to map ocean temperatures in the past, going back 20,000 years or more—the time span for accurate radio carbon dating. So that's what they wanted to do. That time-span included the last glacial maximum and that was the main thing CLIMAP wanted to map, was the earth's environment at that time. And they needed someone who would—they had very primitive computer models at that time—they needed someone who would reconstruct the ice sheets that existed back then. And because the ice sheets provided the major boundary conditions for the climate of that time, that are different from the conditions today. Specifically, the height of the ice sheets forced service winds (especially the westerlies, but also the jet stream) to be diverted around the southern margins of the Northern Hemisphere (but also partly around the northern margins). And that's different from what it is today. The other thing was the volume of the ice could be used to calculate how much the sea level lowered at that time in the past, therefore the area of the shelves that were exposed then that aren't today. So the volume of the ice sheets were something needed in these computer models, because they made your driving force of the ocean and atmosphere heat exchange for climate, and still is. And so the area of the ocean's surface is a very important variable to keep track of, because that's where that heat exchange takes place. The more area of that kind you have, the more exchange there is. Also sea ice coverage is important, too, because that also puts a lid on that surface and suppresses that exchange. The third thing was area extent: what area of the Earth's surface was covered with ice sheets? The ice sheets are a white surface that reflects most of the incoming solar radiation, and so the fraction of the areal extent of ice sheets on the Earth's surface reduces the fraction of solar radiation. It actually gets absorbed by the planet to support life. And if you have all that heat reflected back into space by ice sheets the habitable parts of Earth for plants and animals is reduced. And that includes the sea surface, too, where you have creatures that live in the ocean. To get those boundary conditions with these primitive atmospheric circulation models, it was necessary to know the elevation, and the volume, and the areal extent of former ice sheets. Well, that needed a glacial geologist, to get the areal extent, and it needed a glaciologist to get the vertical height and the thickness mapped over the areas that were glaciated. Well, George Denton was a glacial geologist who took on that responsibility for CLIMAP, but he needed a glaciologist to calculate the thickness and elevation of ice over the areas that he mapped in conjunction with other people, primarily Bjorn Anderson from Norway. And he still remains collaborating with Bjorn to this very day, I believe. And Bjorn and Hal collaborated on a book called The Ice Age World. So that connection with Bjorn Anderson includes both Hal and George. And there were other Scandinavian Glacial Geologists who were also contributing to this. So, Paul Mayewski took on the responsibility of determining the area which the ice sheet lowered over America at that time. We published all of that work, but first we presented it at a conference in Ottawa by the International Glaciological Society. And the referees rejected it; several papers rejected all of them. So, George arranged to have all of our work published as a book, called The Last Great Ice Sheets. A name suggested by John Emery. And so we did, and that book is now considered a classic—but was rejected by the best and brightest in the glaciological community at the time we first presented it in Ottawa.

MacDougall: Was CLIMAP funded by the United States or was it funded by more than one country?

Hughes: The International Science Foundation primarily…. So that's what made the University of Maine an irresistible magnet for me. It was a chance to expand my interest in glaciers to the big continental ice sheets, where most of the glacier ice is located now and in the past. And also to link whatever I would learn on the big ice sheets to climate dynamics in general, through all these other people in the old Institute of Polar Studies and the geology department who were interested in geology and archeology and botany, and all these other cooperating departments that were also interested in collaborating. And that's the main reason why the name was changed from the Institute for Quaternary Studies to the Climate Change Institute.

MacDougall: So, how long were you at the Institute?

Hughes: 36 years. I joined it almost right after it was founded. I'm frankly one of the charter members. The ones who were there before I showed up was Dave Sanger in the archeology/anthropology department, and I think Rob Onesen came on just a bit later but almost the same time, and George Denton, of course Hal Borns, Ron Davis was a paleoecologist, and a historian there (Dave Smith) came on later. I think the ones I named were the original ones.

MacDougall: So what do you think is the most important contribution the Institute has made over the years?

Hughes: Well, it's world famous, for one thing. So there's a lot of contributions in all of these fields. There are several disciplines tied up in the Institute, and everyone who represents one of these disciplines would like to think that their disciplines made the major contributions. But I would have to say it would be understanding in the history and dynamics of climate change would be the biggest contribution, because that's the one discipline that ties all the others together. And that only really became that after Paul Mayewski became director, because that was the niche he carved out for himself as a scientist. He was a graduate student in the old

Institute of Polar Studies when I was there. In fact he was in Antarctica working on his doctoral dissertation when I was down there drilling holes in reserve glacier. So, I've known him for my entire scientific career. There were others looking at climates and ice cores, but they were looking at stable isotopes, oxygen isotopes, and hydrogen molecule. And what Paul did (he wasn't the first but he was a pioneer) was looking at all of these trace elements that all have climate. Carbon dioxide which is in the atmosphere gets trapped when snow compresses into ice; it produces air bubbles in ice that get recovered from ice cores. So you have a record of, not just Co2, but of all the elements in earth's atmosphere that existed at the time that snow fell. So, it allows storm tracks to be tracked, not only over the ice sheets but as they exist today, but also over the past…. So it was quite important work what he's doing. And I would say that would be the one thing. At the time, Paul proposed changing the name to the Climate Change Institute, I was one of the few who voiced a reservation. And the reservation was this: I thought it had the potential, concentrating on the climate science, of sucking all of the oxygen out of the other scientific disciplines that made it the Institute. I compared it to one of these long hot dog balloons you can buy at carnivals, where you could squeeze all the air out of one end of the balloon and have it all at the other end, so it looks like a lollipop on a stick. That didn't happen. I wasn't the only one aware of that possibility, so I think Paul and others made a conscious effort to make sure that didn't happen. I've been gone there since 2010, but as far as I can tell it hasn't happened. All these others are still quite active. And nobody knew what Quaternary meant anyway, and everybody knows what climate is. So there's a visibility dimension to changing the name for marketing purposes, which was important. Very important, in fact.

MacDougall: We've almost spent an hour and I don't want to keep you on too long. But I did want to give you a chance to tell me anything that I didn't think to ask you that you wanted to be on record.

Hughes: Well, here's one thing I want on record. I'm not one of those people who sees this man-caused global warming as some kind of a disaster for mankind and for planet earth. The kind of global warming we see in climate records of prehistorical periods, over which climate records have actually been measured (as opposed to computer models that simulate climate in the past, present, and future); those records are not very old, you know. The further you go back the more sparse the data become. And it's a very incomplete sampling record, and therefore unreliable…. But nonetheless it's better than nothing. But what my real reservation about this global warming business is that it's not a disaster at all; it would be a great boon for mankind. And these are the reasons why: First, carbon dioxide is oxygen for plants. And so the more carbon dioxide there is in the atmosphere the more vigorous plant life will be, which means agricultural productivity. If you want to see the most prolific vegetative times on earth, it's when carbon levels were higher than it is today. So that's number one; it will be a great boon for agriculture and therefore as a food supply for us. And two, it would thaw the permafrost in Alaska and Arctic Canada and Siberia, which would increase the habitable and productive area of the Earth's surface substantially, because about one seventh of the earth's land now is frozen ground. But all that land could be highly productive. You could have two harvests a summer because you'd have 18-20 hours of sunlight for the growing season. And there's enormous petroleum and oil wealth in those regions; and the shipping lanes would be opened. And there would be important sea ports, then, that would open all along the coasts of Alaska and Russia. Now, there's no way you could look upon that and call it an impending disaster. So, my biggest complaint about this global warming hysteria is that it's being presented as a man-caused calamity that will upset the Earth's ecology in a very harmful way, when the exact opposite is the truth. But you never hear that spoken.

MacDougall: That's a very interesting perspective.

Hughes: And I'll tell you the reason why. And this is something that you might find even more odd, but it's the truth. There is a political reason behind presenting it as a disaster, and that is this: Since origins of the legalization of abortion and contraceptives, the countries in the developed part of the world, which means primarily the part of the world where white people live, have stop reproducing themselves. They would prefer to spare themselves the time, money, and energy needed to raise children, when they could enjoy the good life you could have without those burdens. And the reason children aren't valued is because they've accepted the Darwinian explanation of human origins and destiny. We came from worms; we'll be eaten by worms. End of story. And well if that's the end of the story, what's the point of having children. We'll just become extinct like a lot of other species have anyway, so why not enjoy the good life while we've got it. Well, the rest of the world hasn't bought into this ideology, are still having children in those parts of the world that are not white, primarily. And so there has to be some way of reducing that part of the population and give it the appearance of saving the planet. Rather than a racist ideology that is aimed at preventing these people from having babies and becoming so numerous that white people will no longer run things. And you will never see this presented anywhere in the scientific literature and certainly not the political literature. But I'm telling you, that is what is behind a lot of this presenting global warming as some kind of disaster to mankind when in fact it would be a great boon. Now I think that the scientists like Paul and others in the Climate Change Institute are probably not aware, and would think it's fantastic, to be told that this is what's behind it. But I'm someone who's spent the better part of my life trying to expose the underside of legalized abortion. I've been arrested in six states just for doing simple sit-ins where the next generation was being killed. But anyway, I know what I'm talking about, and ultimately it's a racist attitude. And the Darwinian explanation of human origins and destiny is itself a racist explanation. The full title of his magnum opus is On the Origin of the Species by Means of Natural Selection; or the Preservation of Favored Races in the Struggle for Life. That's the full title, which you will never see printed any longer, but that's it. Just Google it and you'll see it there. And that was written at a time when Brits were the great imperialists of the world, subjugating lands all over the world inhabited by people who weren't white.

MacDougall: Well, thank you for that. I do appreciate your perspectives. I do have to stop the interview now because I have some people waiting for me, but I really enjoyed talking to you and hearing about your experiences with the Climate Change Institute. So thank you again.

Hughes: I lived a wonderful life.

MacDougall: We will contact you about the release form.

Hughes: Okay.

MacDougall: And thanks. If you have any other questions

Hughes: Okay. Enjoy your time there. It'll be the best time of your life, if you don't already know it.

MacDougall: Thank you. Bye now.

Hughes: Bye now.