Conversations from the FRONTIER CENTRE FOR PUBLIC POLICY

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WITH ROSS McKITRICK AND CHRISTOPHER ESSEX, AUTHORS AND CLIMATE CHANGE CRITICS

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Christopher Essex and Ross McKitrick are co-authors of the book "Taken by Storm" which examines the troubled politics of climate change in Canada. **Essex** is a full Professor in the Department of Applied Mathematics at the University of Western Ontario. He is the author of publications in academic journals such as the Journal of the Atmospheric Sciences, Pure and Applied Geophysics, Geophysical and Astrophysical Fluid Dynamics, Nature, the Physical Review, Physica, The Journal of Physics, the Proceedings of the Royal Society, and the Astrophysical Journal among others. He specializes in the underlying mathematics, physics and computation of complex dynamical processes such as climate. **McKitrick** specializes in the application of economic analysis to environmental policy design and climate change. Professor McKitrick holds a BA in economics from Queen's University, and an MA and Ph.D. in economics from the University of British Columbia. He was appointed Assistant Professor in the Department of Economics at the University of Guelph in 1996 and Associate Professor in 2000. He has published scholarly articles in The Journal of Environmental Economics and Management, Economic Modeling, The Canadian Journal of Economics, Environmental and Resource Economics and other journals. Both were interviewed after speaking to a Frontier Centre audience on December 4th in Winnipeg.

Frontier Centre: After all the evidence is considered, what conclusions can we reliably make about global climate change? Are temperatures rising?

Christopher Essex: I am not even sure what this means because the atmosphere doesn't have a temperature. You asked if temperatures are rising. The answer to that is, "No." Some are rising and some are falling.

Ross McKitrick: If you are going to try to group all of those different temperatures together and say that in some aggregate sense they are rising, then you have to have some way of saying that the areas where the temperatures are falling don't count for as much as the areas where the temperatures are rising. But there is just no way to weight those values.

FC: Winnipeg just had the coldest October since 1887, the coldest spring since 1889 and the winter before last was the coldest ever. Yet even as we shiver in our boots, we are asked to believe that global warming is real. Should we trust in authority or the evidence of our senses?

CE: One of the problems is that people look at really hot weather—it started out in 1988 when the summer was really hot—and then use that as a springboard to talk about global warming. You can't really judge climate by looking at two or three annual records one way or the other. Climate is not something that you can actually see out the window or you experience directly. It is something you experience over generations.

RM: The fact that you have had these very cold seasons should at least get people thinking and give them the license to ask some questions. When people say, "Oh, we are having global warming and we are not going to have winter very soon," it's okay to use your head and say that just doesn't pass the common-sense test. At least use that to keep the discussion going and keep questions coming.

FC: In a study that appears on the Frontier Centre's website, New Zealand climatologist, Vincent Gray claims that estimates of global warming have been skewed by the closing of remote weather stations and increased reliance on monitors that are close to urban heat islands. Is he on the right track?

CE: We point out in our book, *Taken by Storm*, that there really isn't any such thing as a global temperature. This is a consequence of the fact that the atmosphere is not in thermodynamic equilibrium. The actual differences or trends we are looking for are smaller than the normal deviations that the atmosphere experiences. So it doesn't make physical sense to talk about any particular average. There are an infinite number of ways of replacing the temperature field, which defines the temperature at every point in the earth at a given time, by a single number, which is what we are doing. [Because] there are an infinite number of ways to define this, you can get different definitions which will give you different answers, and we have exactly that happening now. We have the satellite record, which shows no increase whatsoever, and the surface record is showing an increase. You could create different weighting schemes where you would show a decrease in the statistic you use. But none of those things are physically significant because those numbers are not the things that we actually live with in the end.

RM: Dr. Gray makes a good point. The way in which surface temperatures are sampled has changed quite a bit over time. Over the 20th century, there have been dramatic changes in the way that temperatures are measured, and just over the last two decades the placement of thermometers has changed quite a bit. Even if the people putting together the temperature statistics try to argue that it is not really a global temperature, that it is just an index, the difficulty is that it doesn't even pass the basic definition of an index, which is that you have to take the same sample in the same place each time. What we have is a series of indexes all being stitched together, where people try to deal with these discontinuities with statistical methods. It makes it very hard to know what to make of these so-called record-breaking years, because it could just be that we are not doing a very good job of stitching these different indexes together.

FC: The media have recently carried reports that the world's glaciers are dramatically shrinking in size, yet they also make the disclaimer that this melting has not yet raised sea levels. Could both be true?

CE: First of all, glaciers are not good thermometers. If you want to know about temperatures, just look up the temperature records. But we get into this problem of people looking at indirect measures and assuming that that is telling us something about temperature. We do talk in *Taken by Storm* about some of the difficulties in understanding sea levels. We talk about how complicated glaciers are and how their behaviour is determined by many things. People have really gotten sucked into this idea. A lot of the public reports have involved certain glaciers that happen to be retreating but I think that there are glaciers which are not.

FC: How about man's role in generating climate change? We have increased our output of "so-called" greenhouse gases, but what can we say for sure about their effect on the earth's condition?

CE: I don't think there is really a lot that we can say for sure. We can speculate and create computer models which are academically interesting, but there is not enough material to make sensible policy. There really isn't even a basic definition for climate, let alone talking about what our effect is. If we removed human beings from the earth, we would have no way of knowing what the atmosphere and the oceans would look like.

RM: In one chapter of our book, we talk about the methods used for this so-called "signal detection" problem and try to figure out if carbon dioxide and gases like that are affecting the climate. These are interesting academic exercises, but the literature is very young and the methods are very new. They haven't gone through the sort of ordinary

winnowing process you would expect for a scientific method. There are many unresolved questions just within those particular methods. One of the big concerns I have is taking certain studies using brand new methods and building expensive policies based on these conclusions. That is premature.

FC: Do you think Canada should ratify the Kyoto Accord? If we did what would be different for Canadians? If we didn't, would we be sorry 20 years from now?

RM: No, I don't think Canada should ratify Kyoto and I don't think we should implement it. If we do, we will incur economic costs. The fundamental question for this, or any other policy decision, is what are the costs and what are the benefits. There are no certain benefits to implementing Kyoto, either for Canada or the world as a whole. Consequently, any costs that we incur are going to be a net loss. Will we have regrets in 20 years? I think we can ask that both ways. Would we regret in 20 years the economic losses associated with Kyoto? Yes, I think we would. In 20 years, though, if we were to look at what's different about the climate that would not have been there if we had implemented Kyoto, problem is we would have no way of identifying what's different about the climate from having implemented or not. We can't measure that even after the fact, so we are not in any position to have a serious discussion about the benefits of implementing.

FC: The CBC news department often repeats the uncritical statement that man-made global warming is a proven fact. No rebuttal or disclaimer ever balances that assertion. Why has there been such a lack of balance in media discussion of climate change?

CE: In our presentation, we talked about how the sciences have overwhelmed our institutions and one of these is the media. They are caught up in the very complex dynamics and they do not have the ability to reflect critically on these things. They are caught up in their own agendas and they are not a suitable forum for addressing the problem.

RM: In this situation, the issue came along and it was much more complicated than people were prepared for, but we are using the methods and approaches that worked for much simpler, smaller types of issues. Climate has to be fit into a comfortable category for the purposes of reporting, and it is a very comforting thought to think that there is a consensus and everything is all figured out.

CE: I was interviewed by a reporter yesterday and I was telling him about some of these complications. He said, "How am I supposed to know? You have lots of qualifications and there are other people with lots of qualifications who say something different. How am I supposed to decide? How is Joe Lunchbox supposed to decide?" I find this to be so arrogant. We want to get as many people thinking as possible, but the whole response that society has had is to count hands. How many of the experts say this? This is a really dumb way to deal with complicated problems. If they don't have to vote on it, then let the experts handle it. But if there is going to be a position where they are actually going to talk about it politically, and they are going to make political decisions, then we have to inform people. We **can't** resort to these kinds of dismissals of the people as being **mere** common folk and so beneath being fully informed. I find this offensive.

FC: The history of the world contains a long, sorry record of the suppression of scientific knowledge by religious authorities. Has the debate on global warming taken on a theological aspect with environmental extremists acting as the church?

CE: The theology aspect is a nice metaphor, although I don't know if I want to use the word. In the sense that people have this unshakable faith in things and they want to believe they are doing something virtuous and truthful for the world, in that respect, yes.

RM: A lot of the environmental movement in general is motivated by the sort of warm-glow feeling that people have. They want to be doing the right thing and be on the side of the angels. Kyoto has come along as a sort of touchstone for people that way. You can assure yourself that you are a good person if you support Kyoto. At that level, it becomes very hard to carry on a discussion. One of the important points that we try to make is that we shouldn't think about this as a motherhood issue or a badge of good citizenship. People should, to whatever extent they can, get informed.

CE: I have a friend in Europe. He's a climatologist and we were having a conversation about his hobby of reading 18th century newspapers. What was happening in the 18th century were crop failures and the break out of plagues. Some of them were associated with climatalogical effects and extreme cold. The editorializing in these newspapers basically blamed humanity for these things. Of course, they were really associated with a volcano in Iceland. But it was humanity's fault and you know what the reason was? Because we are sinners.

FC: Various studies of the state of Canada's environment show slow steady improvement in indicators like air and water quality, yet the public seems to believe that things are getting worse, not better. Why?

RM: I teach environment economics. Every year, I have about a hundred environmental science students come into one course. We spend the first week or two looking at data on air and water quality data from around the world. I am always struck by the fact that students in a lot of different disciplines have never been shown this data before. They are carrying this idea in their head that everything is getting worse. For some of them, it is quite a shock to show them air pollution concentrations in Toronto going back to the 1960's and how most of the common air contaminants have dropped quite a bit. Some of them even get a little upset to find this out. There is a strange kind of comfort in thinking that this is a well-defined problem that is getting worse and that they can go in a make a difference. When I tell them that air quality is getting better in the cities, they will often twig and say, "Well, actually, I have noticed that. I remember when I was a kid things did seem much worse." So, it is a matter of just showing people the data and they can be easily convinced.

FC: Are improvements in environmental indicators the sole consequence of previous laws that mandate low emission levels or are other factors at work? Is it legitimate to question new regulatory initiatives if the previous ones have been successful?

RM: Certainly we can credit some of the pollution control laws that we have for accelerating improvements in air and water quality. We have also found that, in Third World countries such as Indonesia, there will be long periods where there is effectively no enforcement of any pollution control whatsoever. But there are still areas within the country that will on their own enact a sort of informal pollution control, and even firms on their own will enact pollution control standards within their operations. That has a lot to do with the characteristics of the community. Where you have higher income levels and especially higher education levels, the community itself seems to exert a preference for cleaner air and water and that tends to be effective.

FC: A kind of commonsensical thing—even without laws, as our society got wealthier, we would have improved it anyway.

CE: I think people have their own preference for clean air water. Even if we had no environmental controls at all, we would see some improvements. That said, you can't really coordinate pollution control just based on people taking their own voluntary actions.

FC: The problem is social cost?

RM: Yes, and the fact that it is easier for a firm to be willing to incur the costs of a pollution measure if they know that everyone else on the block is going to be doing the same thing. They are not going to be put at a competitive disadvantage. There is certainly a role for policies that are designed and implemented to control pollution. That is what the whole field of environment economics is about.

FC: Canada's Species at Risk Act imposes fairly severe consequences on rural communities if any life form seems to be threatened by human activity. What limits should such laws contain? Hasn't species change been a fact of life for all of the earth's history? Is it realistic to lock the door on all further extinctions?

RM: The problem with the legislation is that we are copying one of the worst features of the U.S. Endangered Species Act, which creates an adversarial system between land owners and the regulator. In effect, it creates incentives for landowners to make their land inhospitable to

endangered species, which is the exact opposite from what you want them to be doing. The U.S. Act has not been successful in controlling the loss of habitat and protecting species, but it has created a lot of costly battles between landowners and the government. It wouldn't take much to fix these problems, but it does mean a change in thinking. Instead of imposing the cost of species protection on private landowners, we have to start from the position that, if society at large wants these species protected, society at large has to bear the cost. We then build in proper compensation and cooperation that can be very effective. It doesn't cost a lot, but the key is that it corrects the incentives for landowners so that they then look upon habitat preservation as something that's going to benefit them.

FC: What strategy do you recommend to counter the steady drumbeat of propaganda from the "greens"? Isn't the battle lost in our public schools where children are regularly indoctrinated with the claims of radical environmentalists? Is it possible to reverse the trend towards more regulation and imposed mandates in the midst of such a powerful trend to the contrary?

CE: I think the "greens" have a role in society. I'm not going to say we shouldn't hear from them, that would be unfair and inappropriate. But we have to be careful. A good part of the population who knows something about these things and have something to say have not really had a chance to put their arguments on the table. A lot of people in elementary schools are getting some very silly things as far as basic science goes. For example, in those pie charts of the relative contributions of greenhouse gases that are used in schools, one of the most important, water vapour, is not on the list. How could students really understand the greenhouse theory, let alone the teachers, without it? This is part of a general lack of scientific awareness which makes it possible for activist groups to come forward and spin what is being put forward. There is a general lack of respect for technical knowledge, which makes it almost impossible to present it.

RM: The "greens" have a role to play, but good intentions are never enough. I have two young children, and it is astonishing that environmentalism creeps in everywhere in their curriculum. My daughter's language arts class suddenly turned into a "save the rain forests" campaign. I met with the teacher and informed her about data on rainforests, but I think it is a slow process of making sure that we get the information out in forms that are available to kids and teachers and the general public. Underneath these good intentions, I do think that people are receptive to finding out accurate information when it is made available to them and that is just a slow process.

FC: Is there a correlation between sunspots and climate? How closely does sun spot activity track temperature trends? If the sun is the culprit behind global warming, what does that say about the greenhouse theory?

CE: The correlation issue has been tested on a statistical basis in many ways, but the real issue is mechanism. What is the mechanism? This is really unknown. There is a kind of dismissal of the idea of the role of the sun in the UN panel's reports, purely on the basis of energy amounts. We deal with this in the book and point out that, in fact, the real issue is mechanism. The whole global warming thing is not an issue just based on energy amounts, because the contribution of CO_2 is itself very small. They have constructed a scenario where there is this long chain of cause and effect, and some of them are pretty shaky links. In the book, we compute the number of tons of CO_2 produced by soft drinks that is put into the air every year. Once you add it up over the whole planet, it seems like a lot. We really don't want to say that sunspots are the alternative. What we want to say is that there are many possibilities, of which that is one, among other things we haven't properly considered and that we probably don't understand.

FC: Chris was asked today, "Doesn't this make you all very depressed?" He said, "No, I find it riotously funny!" Are you both optimistic about the outcome of all these debates? Do you think they will be settled in your lifetime?

CE: I don't know about in my lifetime, but I do think that this will pass. I think people will eventually get to the point where they will look back on it and say, "Why did we do this?" I don't know when, but I think we will look back on these things and laugh. Hopefully, if you look at the book you will get to laugh right now because we really had a good time writing it. We were getting to the point where we were trying to get our co-author to laugh as well.

FC: Ross, your side is the "dismal" science. Are you dismal?

RM: Well, actually, the term "dismal" science was coined to describe Malthus who really was dismal. Nowadays economists are slammed by people in the whole international development area as being "cornucopians"—we are far too sunny and optimistic about things. In the case of climate change, it is discouraging – not so much about Kyoto. If it were a case where you had a fully-informed public saying, "We have considered everything you say, and we are going to do it anyway", I wouldn't have a problem with that. What discouraging is seeing a process where you know that the information isn't out there and that decisions are being made without it.

CE: Every deck has been stacked and everything has been rigged in advance in good old-fashioned political ways. It is so transparent and obvious what's happening and it is completely missed by everybody who should be catching it.

RM: As Chris said, there is a lot of stuff in the book where we would start working on a section and try to be as serious about it as we could, and then we just couldn't stop turning it into a joke. So, some parts of the book get kind of funny.

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