INTERVIEW WITH DR. BRYAN KARNEY

NAWAPA: A Bold, Fascinating Program That Deserves Consideration!

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He was interviewed by 21st Century correspondent Robert Hux on Dec. 7, 2011.

21st Century: Could you describe for our readers your own background, and the kind of projects you have been involved in?

Karney: I did my undergraduate degree in bio-resource engineering at the University of British Columbia. I was particularly interested in biological systems and in transfer systems, in particular irrigation. And then I had a sort of twist, at the graduate level.

I ended up making a decision to get involved in hydroelectric development, in a specialized area of hydraulic transients, which is a fairly technical area of civil engineering. And much to my surprise, doing a Ph.D. in that area as well.

When I graduated, there were almost no jobs in western Canada at that point, and when I was offered a faculty position, it was pretty hard to turn down that with a family to feed. So I decided I would become a faculty member, and I've been in that position for 27 years now.

Bryan Karney. Professor in the Department of Civil Engineering, Environmental Section, University of Toronto.

Early on, we created a consulting company called HydraTek and Associates, Inc. and we've done hundreds of consulting projects, mostly related

The North American Water and Power Alliance (NAWAPA) would transfer a portion of the run-off water from Alaska and parts of Canada into the drier regions of the continent. Shown, Canada's Yukon Territory.

to water supply systems, with a variety of different systems involved in that as well. But it has always had the connection to water resources. Some of those involved large-scale projects, and many small-scale projects as well.

21st Century: You mentioned that you had been involved in a consulting project on the Grand Canal.

Yes, a few years ago a few of us decided to really dig our teeth into that Grand Canal project, looking at the possibility of collecting up fresh water, water that is tributary to James Bay, and transferring that into Lake Superior. It was a very bold, a very interesting scheme, and it was invigorating for me, I think in the same way that NAWAPA is invigorating.

It's a project that thinks in terms of intergenerational problems. It's not thinking in terms of what the current needs are, but it's projecting. It's saying, "what are the challenges that are coming down the road?" I think that those projects need to be carefully elucidated. They need to be considered and weighed. The pros and the cons need to be looked at seriously.

So that was the first foray of looking at a major project. I was really looking at the technical aspects, but our team looked at various biological and ecological considerations as well. It was not something that was disseminated widely, or published. In fact, the person that was the force behind it ended up having some health issues, and so the project sort of sat. But I think that at some point it needs to be dusted off.

21st Century: What is your overall impression of the NAWAPA project?

I guess the descriptive is: It's bold. The project both fascinates me, in the sense of the vision of it, and, I'll be honest and say that the number of problems that have to be solved in the project is gigantic, as well. Just one aspect of it: land claims are going to be such a huge issue with respect to things that have to be sorted out. But certainly, civilization has existed because people were willing to think boldly.

I think that the fact that it's bold doesn't mean that you reject it out of hand for that reason. It means you roll up your sleeves, and you have to do some analysis, really do proper assessment of the pros and cons. So, I think this kind of project is going to need some careful consideration.

21st Century: In the past few days I have been at a conference here in Toronto on the refurbishment of the Canadian nuclear reactors. One of the things that I was circulating there is an article written by a retired nuclear engineer, Dewitt Moss, which is an assessment of the nuclear power requirements of NAWAPA—not only in terms of pumping requirements, for pumping water uphill at certain points, but also the nuclear energy requirements associated with the industrial recovery that would be required to build this . . . I was also posing the question to the Canadian nuclear industry, what are the capabilities in Canada, to be able to gear up to build something like this? If we look more specifically at the various components of NAWAPA, are there any particular elements of the NAWAPA design that you thought might pose a problem?

I guess, my gut reaction is, that the technical problems are probably the least of the concerns of the project. I think that if humans put their minds to something, we have a tremendous capacity for moving things and rewiring things.

We were reflecting with a variety of people on the possibility of fast neutron reactors, as an example. They are able to reuse spent nuclear fuel, and just that could more than fund this project. There are challenges. Every nuclear reactor that has ever been built has a lot of environmental, political, and economic considerations with respect to it.

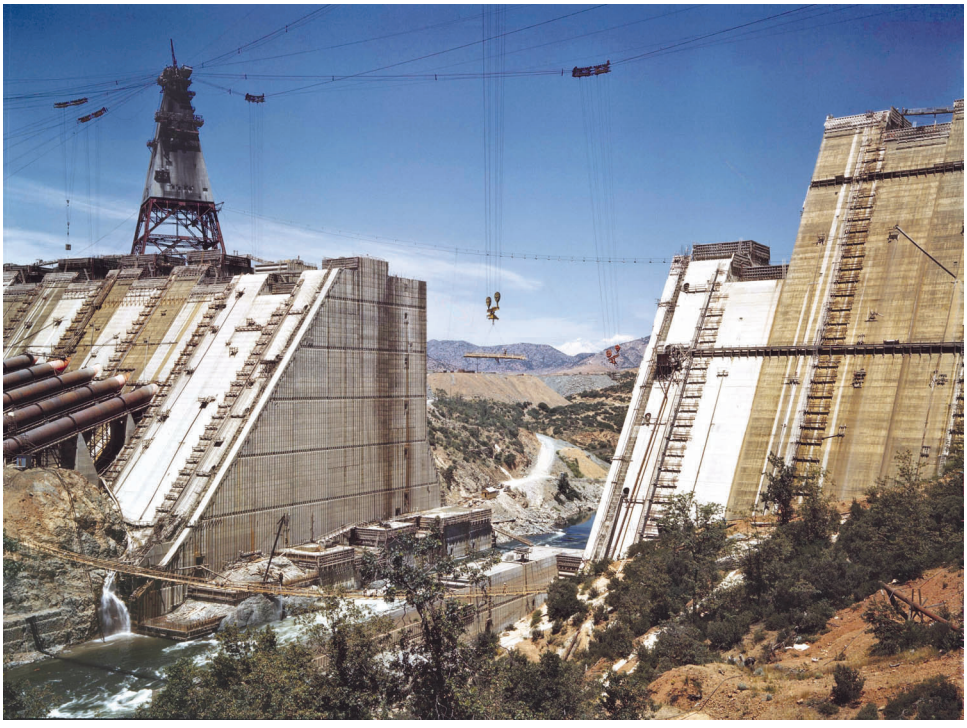
My guess would be that issues of land claims alone are potentially able to jeopardize the project. I mean that one link that can't be resolved, to a certain extent has implications for the whole project. It is not like there are a lot of ways around certain of the bottlenecks that are going to arise. I think that the ecological concerns with respect to fisheries, and moving parasites or invasive species across watersheds, inter-basin transfers, are very sensitive issues. And those are going to have to be handled well.

The other aspects of this are certainly going to be the economic issues. I think to a certain extent that we have lost the vision of government-supported infrastructure as a way of facilitating and creating large-scale and long-term possibilities. That is one of the aspects that we have got to work to rethink. We think that any government money is always a tax-dollar, and not something that facilitates economic development.

That's a hurdle, and I think that's one that we have to overcome in a variety of ways. We tend to think of water supply systems, and transportation systems, and energy systems as some kind of dirty necessity rather than something that opens possibilities.

So, I think that's something that is very important for us as a species to come to grips with again. You know: What are the implications that infrastructure creates for economic development? And that is one of the areas that I do have some resonance with the kind of agenda that you folks represent.

21st Century: Clearly, it's the kind of project that is impossible to do in the existing collapsing international financial system. It's the kind of thing that would require a shift like that which occurred in the 1930s with Franklin Roosevelt, with protection of commercial banking ... a directed credit policy that, initiated from the United States, will become the basis for these kinds of policies globally.



Shasta Dam under construction, June 1942.

Certainly it's going to need visionary planning. I guess the question in my mind is: do we have the will or the courage to have visionary finances? It's going to take the coordination of a reversal overall, where at the moment we're afraid of making mistakes.

21st Century: Are there any elements of the NAWAPA project that you have any insights into how you would approach? For example, the idea of a transcontinental navigable waterway across Canada?

Again, I think the attractive thing is really the scale of the vision. Very few people think in terms of water and energy problems on a continent-wide basis, and an inter-generational basis. There is a visionary scope to this, which I think is extremely attractive. As I said, the range of problems that are going to be encountered are enormous!

But, you visit a place like Rome, and you look at the kinds of things that were created by a society that didn't have our technical advantages. I don't think this is a non-commensurate scale. The Roman aqueducts that were hundreds of kilometers long were built when only the barest essentials of hydraulics and surveying were understood.

I don't know if it's more visionary than that; I don't actually think it is! But certainly, it's more visionary than we have become accustomed to think about for a long time. And therefore, again, I genuinely think that I sit on the fence now. I haven't made a decision in my mind that says absolutely we must do this, or we must declare that we don't want to stage certain segments, but I am totally convinced, that it's worth really putting on the table and having this whole open debate about it again, which, I think, is one of the agendas.

So, let's bring this forward and let's truly discuss it.

21st Century: Obviously, from the standpoint of Americans looking at NAWAPA, there is a very clear need for getting water into the Western, very arid part of North America. We have done interviews with engineers, geologists, all kinds of people who are very interested in this. What do you think the impact of this will be on Canada, in terms of water for irrigation and other benefits?

Again, if I can give an honest comment. I think that some of the current literature, the movie that was produced,[1] was very much targetted to the U.S. audience, and not to the Canadian audience. I think there's going to have to be some significant nuancing of that messaging, because, there are some aspects to which an average Canadian is going to react negatively, although an average American might react positively. To my mind, it's a matter of careful, and very strategic, and creative positioning in the way we do that.

We have deep-seated reactions as Canadians. We view our identity very strongly in terms of our water. That has to be viewed as a way of positioning this carefully, not to create negative reactions. But it could also create positive ones.

We are also very positive about our health-care system. But our health-care system is having funding problems. If we can position this in such a way that allows some of the net Canadian transfers of water to the United States to be directed toward funding our health care, I think, the view of that could be very different.

Certainly, in terms of economic stimulus, there's a potential here; certainly in terms of agricultural aspects. But, Canadians don't think of themselves as farmers as much as they used to. I'm not sure that's a healthy thing, but farming is very low on the political agenda at the moment.

1 NAWAPA 1964: http://larouchepac.com/nawapa1964

So, I'm not sure the average Canadian is going to respond more to the agricultural side. I think the healthcare issue is more the way to position this to a Canadian.

21st Century: You are aware that a group of graduate students from the University of British Columbia did a study on NAWAPA in 1966. Basically, they limit their study to NAWAPA's impact on British Columbia. However, it just struck me that it was a much more straightforward assessment than you would think possible from a Canadian province to such a great project. Maybe that has to do with the fact that it was 1966, compared to today.

I read a lot of literature that comes from the 1960s and 1970s. I think there was, on average, a much higher degree of collective vision than we have today. We understood what we could do collectively, more effectively than we do now. We tend to think even of voting as a kind of consumer action. We don't think collectively. We think only as individuals.

My feeling is that the world has changed. You take something like natural gas, which we all have delivered to our house. I wonder if the world has changed so much that, if we didn't already have the delivery of natural gas, whether you'd actually be able to sell that idea now?

In this case, you've got this inflammable, explosive material that you are bringing into a home! Could one actually do that? To a certain extent it's improbable. So the question is now: is there enough political will? And I don't think anyone has pushed hard enough to know yet. But it's an interesting question.

Along these lines: in your video, the one that's on the website, one of the things that I think you would want to edit out, particularly for a Canadian audience, is the talk of doing the tunneling process with atomic weapons, or atomic bombs, if it were cheaper. I don't think that as a selling point will help. In the 1960s, there was still a sense of, "wow, this is powerful! This makes things cheaper." Now there is a great deal of reluctance and skepticism about using these things.

There are many facets. Many people are involved. I am sure there won't be a consensus position on a great many things for a while. But, then again, I think that for me this is a perfect opportunity to maybe seek a serious academic study of the project again. Like the 1966 study, but with more participants and broader dialogue. And to really, vigorously develop the public debate over what the pros and cons of the project are.

You know, academics don't always have a lot of credibility. And sometimes we deservedly don't! But, what other group could do that and be accepted? I think it's bold enough that it deserves to be considered seriously.

21st Century: You said one of the areas you are looking at is energy systems, and also water management?

We, like many others, are thinking a lot about the energy side of things. And certainly, one of the things I think needs to be done is the whole role of—what I am calling and doing a lot of work in—"water-energy systems," where water and energy come together. This is of tremendous importance to cooling systems, to hydroelectric systems, and even to water supply systems.

Almost all of our major power systems, whether thermal or nuclear, have cooling requirements. The possibility of climate change in what may be happening to the planet long term, have really important implications. Certainly, I would say that the issues of the 21st century are water and energy, and probably food and health, and how those things go together. I think that the future of civilization is going to depend very much on how we answer those questions, but first we have to face them.

21st Century: The assessment of the hydroelectric potential of Canada is more than 100 gigawatts. But, not many large hydroelectric dams have been built anywhere in Canada in the last 20 to 30 years. Is Canada putting itself in the position of not being able to meet its energy requirements, by not developing large hydroelectric projects, by not going aggressively ahead with nuclear energy?

That's a big question. It raises all sorts of issues. But certainly, I think humans are very bad at solving problems that we think we have already solved!

One of the things that has happened is that we were very aggressive about building power capacity, particularly in the electrical system, through the 1970s, and '80s, even petering out into the '90s. And in many jurisdictions, we have had the issue of: "We've got enough!"

We don't recognize that energy is not a problem that you can solve once and for all. Any more than human health is a problem that you can say: "Okay, I was once fit! That's all that matters."

No, I think these systems require continuous assessment. I don't think we have lost the ability to solve it, but we certainly will if we continue to be complacent. I think there are many things that characterize modern society, and one of them is that we want the good things, but we often don't want the associated cost!—This is true in a great many areas.

We want a healthy food system, but we don't really want food processors or feed lots anywhere near us.

We want power consumption, but we don't really want power production near us, whether it's wind power or it's hydroelectric, or whether it's nuclear. All of these things so easily become, "not in my backyard."

If we don't get a little bit more realistic in this, then we are going to have drastic problems!

But, certainly there are a lot of energy options that we have, and a lot of things we can do. The question is re-

ally what we are prepared to do as a priority, what we are prepared to afford. As the price of oil goes up, more and more options come onto the table as economically viable.

Certainly, Europe has been looking seriously at the Sahara as a source of solar thermal.

Within Canada, there is hydro development, and also with a variety of other countries, We have the capacity. We have the technology. We have the ability to do it.

The question is do we have the will? And are we prepared to pay?

21st Century: You mentioned that you are interested in presenting NAWAPA to your graduate students in civil engineering to study. How would a feasibility study of a project like NAWAPA proceed?

I think it's a matter of trying to start to create some basic models of what the transfers would look like, what they would involve. I know some of that work has been done, but again, I think the current generation of students has not really been challenged to think about larger issues, and issues where you really need a multi-component team to get them.

I love that aspect of it, to get the students involved in all the aspects. You know, prairie irrigation, the hydro transfer issues, bulk water transfer. Can we recover the electricity used in pumping?

Again, looking at this in the context of China. China is rewiring its whole national hydrology. It's doing it quite aggressively. I think we should be watching that! And to a certain extent, taking an interest, learning the lessons they are paying for.

What kind of problems arise? They are doing systems where they are pumping a lot of water and they are recovering a lot of the energy on the other side. So there is net transfer in the individual components. Those are intriguing approaches.

21st Century: Do you have any other comments on NAWAPA?

It's certainly going to be something that I'm going to play around with and think about. I would like to try to maintain a degree of academic interest and a degree of neutrality with respect to where this thing goes, because I think it's going to be very important to have interested people who are asking both the really exciting questions, and the tough questions. Certainly, I think that's something that we can do.

The Grand Canal project was intriguing. It had so many interesting questions, and it was similar in terms of scale. That was about a 13-gigawatt project, just for the James Bay transfer component of that. But, downstream you can recover that energy again. You enhance the hydroelectric capacity of the Great Lakes.

I'm involved in another project that's looking at the various possibilities of rethinking what we have been doing with the Great Lakes power. And I think those considerations are important. I think that the 21st century is going to progressively be not a business-as-usual scenario. We are going to have to roll up our sleeves and think really seriously think about what's worth doing and what's worth avoiding.

21st Century: When NAWAPA was proposed originally, there was a U.S. Senator, Frank Moss, who had said that the International Joint Commission should be commissioned by the United States and Canadian governments to do a feasibility study on this. One of the problems which the International Joint Commission is concerned about is the lowering of the levels of the Great Lakes: this is something which NAWAPA could resolve… How do you see the process that would have to be undertaken in Canada to get the go-ahead to do such a project?

I am not sure if I'm politically astute enough to make the best call. I have certain models in mind, but they are strongly academic. I think the idea of International Centers of Excellence, that would look at large-scale water transfer issues, would be the kind of model I would have. The International Joint Commission has a variety of people who weigh in on that, but it's become very significantly driven by political urgency.

I think you need a group that is a little bit more removed from, sort of, tomorrow's policies in this. That's why I think that a Centers of Excellence model might be something worth considering, where you consider projects of this kind. To me it would be almost more of a kind of a Rand Institute applied to water, where you've got a bunch of good people.

For doing anything that's feasible, that's technical, it's worth considering. I think you need something that's got a wider scope on the agenda than the way the International Joint Commission has tended to evolve more recently.