



Interview with Dr. Melanie Stiassny

BILL MOYERS

Help me to understand. What do I get from an ecosystem?

MELANIE STIASSNY

Let's look at water and one of its ecosystems: fresh-water ecosystems. Water is the essence of life. It's also absolutely critical to the maintenance of all other ecosystems. So, in some ways, water is a little bit different from say forests or grassland. You can imagine a world where grasslands are depleted. You can imagine a world – we're living in it – where forests are depleted. We're also living in a world where fresh water is becoming depleted. But if we actually run out of that fresh water, we're going to be in major trouble. I think that's actually what's happening in South Africa is a really, really interesting example to pick on because it's a very, very unique to the situation that they have.

BILL MOYERS

How so? (Overlap)

MELANIE STIASSNY

In most of the world, the notion of cutting down trees to save water is kind of craziness. It's the reverse of the situation we have in the rest of the world where, in fact, deforestation is one of the major reasons that we are losing water. I think it's absolutely bizarre to see environmentalists with chainsaws but in that particular regional example, it makes perfect sense.

BILL MOYERS

What's the lesson we can take from all of this?

MELANIE STIASSNY

When it comes to the ecosystems of the world, one size does not fit all. And we to need have the scientific understanding that we're really enablers, a tool-kit that can address each of the particular situations that we're going to encounter.

BILL MOYERS

Is that what you're trying to do with this millennial assessment program? A tool-kit, an audit, a

global report card?

MELANIE STIASSNY

Yes, it's very much like a global report card. I think one of the things that makes our generation so different from any other is really this recognition that we're crossing thresholds that have never been passed before. The notion of continual progress and growth – it is not one that's quite as realistic as it has been in the past.

BILL MOYERS

Because?

MELANIE STIASSNY

Because primarily if you look at our numbers. The human expropriation of resources has been phenomenal. And, of course, it's not even. A family in North America consumes far more than say a family in India. But nonetheless, just look at the numbers of human population growth globally. And you realize that things are changing – that there just isn't a sort of limitless frontier anymore.

BILL MOYERS

I read recently somewhere that we can live without food for about two-and-a-half months but we can't live without water for more than ...

MELANIE STIASSNY

A few days.

BILL MOYERS

Right.

MELANIE STIASSNY

And that's absolutely true. Water is absolutely critical to all life on our planet. It's really what makes our planet different from other planets.

BILL MOYERS

I grew up thinking water would be taken up into the clouds and it would be recycled, so to speak, and it would come back as rain, and I could always turn that tap on and have more of it.

MELANIE STIASSNY

And that's true. The amount of water that's on our planet today is pretty much the same amount of water that was on our planet when our species entered the industrial age. Only our population then was about two billion. Today, it's six billion. It's the same amount of water. So when you talk about there being less water on the planet, you're not actually suggesting that water's disappearing from the planet, because it is recycled in the hydrological cycle. But

nonetheless, when you have more and more and more and more people utilizing that same very finite resource, the amount of water there is on our planet, then you really begin to see what you're talking about.

BILL MOYERS

Since South Africa's so different, why should I care, living here in the middle of Manhattan, about what happens to the water thousands of miles away, and whether that program works or not?

MELANIE STIASSNY

I think perhaps one of the reasons that you might want to care is really to see that there can be solutions because fresh water shortage is not a problem restricted to...to Southern Africa. Even in this nation we have tremendous water shortages regionally.

BILL MOYERS

Has the situation changed in your lifetime regarding water? Where did you grow up?

MELANIE STIASSNY

I grew up in London. A very wet, drizzly place. However, even in England, there are shortages of water primarily for a number of different reasons, but population growth is majorly important.

But also, it's been estimated that human populations now are consuming about 50 percent of what's called the useable run-off. Now the useable run-off is the rain that falls on the land that doesn't get swept off as floods, or doesn't fall into remote parts of the world, that falls basically into rivers and that replenishes the aquifers, the underground water. That's the use of a run-off.

BILL MOYERS

And the other 50 percent?

MELANIE STIASSNY

The other 50 percent is what replenishes our aquifers – or tries to replenish the aquifers – as we begin to extract more and more water from underground as well as from rivers. From the beginning of time, humans have moved water. The aquifers have been built, dams have been built. Essentially because we have to have water to live.

But when you start looking at the statistics of how much more we've been doing it since 1950, around the time of the 1950s, it's absolutely a phenomenon.

BILL MOYERS

I was born in 1934. The landscape of this country has been transformed in my lifetime just by what you said. I hadn't thought of it until you said it.

MELANIE STIASSNY

Right. Sixty percent of the earth's total flow have been diverted. Many, many rivers now – as we all know – no longer reach the sea: The Nile, the Ganges, the Colorado River.

BILL MOYERS

I just recently saw an assessment by a reputable, credible environmental leader who said that we only have about 30 years to turn around this kind of trend. Now is that an apocalyptic, unscientific statement?

MELANIE STIASSNY

Absolutely not. I mean I think that's actually a very insightful statement because it's a wake-up call, but it's also a call that gives us some hope. You could have different trajectories of predictions of what the future's going to be like in terms of how many people are going to be on the planet. But if you look at those trajectories and projections, you'll see that just about now, or within the next 30 years, that's the time when they really diverge. That's the time when the future is being determined. How we deal with the situation now is really going to make a huge difference 50 years down the line. So it really is up to us now to be thinking about these things and trying to build the kind of scientific knowledge that we need to enable us to really respond in a meaningful way.

BILL MOYERS

Is it conceivable in your mind, and you're a careful scientist ... is it conceivable that the earth could lose its capacity to sustain life?

MELANIE STIASSNY

Yes. It's very conceivable. And I think when you really delve into the statistics about fresh water on the planet I think there's one of the key areas where we really could run out of water to basically grow the crops and feed our population.

BILL MOYERS

And isn't irrigation widely subsidized around the world by governments?

MELANIE STIASSNY

Irrigation is widely subsidized throughout the world and, in a sense, it's kind of silly because you're giving no incentive for farmers to be efficient in their use of water.

BILL MOYERS

Do you think there's an apprehension on the part of the scientists of the world that we are reaching a breaking point in the ecosystem?

MELANIE STIASSNY

I think that's true. I think there is an understanding now that thresholds are being passed that have never been passed before, and a sense that really all is not well and we need to understand exactly what's going on. Because we need to be able to develop a rational system

of management. We basically need to be able to manage the ecosystems of our planet in a much better fashion if we're going to survive.

BILL MOYERS

What has happened in your lifetime that concerns you? What are some of the stunning facts about the fresh water ecosystem?

MELANIE STIASSNY

In my lifetime, I think we've seen the transformation of fresh water ecosystems on the planet. Since 1950, we've seen a 700 fold increase in the amount of fresh water that's stopped from getting to the sea. Humans are prodigious dam-builders. We have built thousands and thousands of dams in water systems all over the planet. Most of these dams are over 30 meters high. So I'm talking big dams. We've actually held this water on land and we've redistributed the weight of our planet.

BILL MOYERS

What do you mean?

MELANIE STIASSNY

Our planet no longer has this water evenly spread out on it. We've put it up onto the land. And that's actually changed the geodynamics of the planet in a measurable way.

BILL MOYERS

Tilted it on its axis?

MELANIE STIASSNY

Exactly! It's actually changed,

BILL MOYERS

You're kidding!

MELANIE STIASSNY

No, I'm not kidding! That's the actual fact is we have redistributed the weight of our planet. And one of the ways we measure that is in what's called length of day. And we've actually measurably changed the length of day of our planet by redistributing the weight. So that's all happened in my lifetime.

BILL MOYERS

What else? Damming?

MELANIE STIASSNY

Damming has caused fragmentation of river systems all over the planet. You don't have rivers running free. In the United States, less than two percent of our rivers actually run free. Ninety-eight percent of our rivers are canalized. They're dammed. They're fragmented. They're profoundly changed. And with that change, you have a complete reorganization of all of the life that lives in those rivers.

BILL MOYERS

You described very well what is happening and ... and you paint very graphically from your scientific experience what ... what the implications are. What should we do?

MELANIE STIASSNY

Be very aware of the situation. I think examples, like the examples that we're seeing here, and like the South African example, really show us that there are things to be done at a local level. So we obviously think globally and we act locally. At a local level, there are things we can do. For example, take a city like Phoenix. A family living in Phoenix ... they've got a lawn, sprinklers, maybe they've got a swimming pool. They've got all sorts of appliances in their home. They're probably sucking up about 700 gallons of water in doing that.

BILL MOYERS

They're drinking a lot of water, like the trees in South Africa...

MELANIE STIASSNY

Exactly ... just like the trees in South Africa.

BILL MOYERS

In fact, I saw satellite imaging of Phoenix at night taken over months and then over several years, and the darkness disappears with every picture because the lights from the city at night are spreading out. Is that a problem?

MELANIE STIASSNY

As demand increases and supply remains the same, that's a major problem worldwide. But there's tremendous inefficiencies currently into how we use water to irrigate crops.

BILL MOYERS

Is part of the problem that we simply don't scientifically know enough?

MELANIE STIASSNY

I say this almost frivolously, but we know more about water and the history of water on Mars than we actually know about water on our planet today – how it's distributed, how much of it we can use, how much of it we can take out of an ecosystem and yet let that ecosystem still function. We really don't know that. And that's exactly the kind of information that we need to know if we're going to be able to manage the system.

So I think clearly there's a real wake-up call to start some detailed global analyses to really try to understand, for example, where all the dams in the world are situated. Believe it or not, we don't actually know that. We also don't know where all the wetlands are situated on the planet.

We just don't know. And that seems to me to be absolutely amazing in this day and age when we know probably more about the dark side of the moon than we actually know about even a simple thing like the location of wetlands on our planet.

BILL MOYERS

Well, in the preparation for this millennium ecosystem assessment, there have been pilot projects test runs, you might say at various ecosystems around the world: grasslands, forests, coral reefs, coastal areas, topsoil and water. Have you learned anything from this test run that surprised you as a scientist?

MELANIE STIASSNY

I think one of the most important things we've learned from this pilot project is really how criminally lacking we are in information. For some regions we do know what the state of what the true state of the ecosystems are. But for other parts of the world, we don't.

BILL MOYERS

I'm glad you said that because it does seem that the journalists we keep getting bad news about the environment. One problem that is happening is that there's been so much bad news people turn off, they just don't want to hear anymore.

MELANIE STIASSNY

And that's a very understandable response, particularly if you feel personally that there's nothing you can do about it. But I think one of the messages from this pilot study is that there are lots of things we can do about it. We just need to organize ourselves to really understand how to take action, and what's the most appropriate action on a particular regional scale.

BILL MOYERS

Are there some personal things that I can do?

MELANIE STIASSNY

Yes. Personally, you can be very thoughtful about your consumption. I mean I don't want to tell you that you have to stop eating meat. But if you actually think about it, it takes a thousand metric tons of water to produce one metric ton of grain.

And then imagine how many metric tons of grain a cow, for example, is going to eat until it's big and fat enough to go to market, and then you eat it? That's a tremendous consumption of water for your beefsteak. Think about what you're doing, and what the cost of it is. And other things. In your home, they seem like trivial things but if we all did it, it would have a tremendous impact.

Don't leave the tap running when you're cleaning your teeth, you know? Wet your toothpaste,

turn the tap off ... brush your teeth. Little things like that also. Look very carefully at the appliances in your home. There's tremendous economies to be made by making sure you using energy-efficient appliances. Again, an indication of how important water is. I'm talking about energy. You know, what's that got to do with water?

BILL MOYERS

Yeah. Does it seem absurd to you that fresh drinking water is used to flush toilets?

MELANIE STIASSNY

Yeah. Absolutely. That's another point: we need to recycle our wastes. There's no reason at all why we just use rivers as great diluters so we can just pour pollution into it, and it'll all get diluted. There's a very, very important role that we can play in ensuring that we recycle water. We recycle our waste water and in some parts of the world, this is already really being done very effectively.

BILL MOYERS

You know, I grew up thinking of water as free. The best things in life are free, but water is not free, is it?

MELANIE STIASSNY

No. Absolutely, it's not free. And it's extremely expensive, in fact. And in some ways, it's kind of outside of the global economy but increasingly, it's going to get drawn into the global economy. Increasingly as more and more and more people begin to live in cities, our planet's threshold is going to be crossed.

BILL MOYERS

Aren't you saying, in effect, that if we're going to change our behavior, whether it's beefsteak or brushing our teeth, that we have to shift from a short-term strategy to a long-run strategy, and if that's the case, have you seen human beings do that before?

MELANIE STIASSNY

I think we have to learn to be more like insurance salesmen. I mean insurance salesmen seem to manage it. They make people, do something in the short term that's painful for some future event. That's indeed what we need to do. We need to really be able to convince people that ultimately, it's in all of our interests to maybe suffer a little bit of change, suffer a little less profligacy, a little less consumption. And I think increasingly, as that message comes home to us, more and more and more, I think people will understand what's at stake. And when they understand what's at stake, they tend to be willing to change, particularly if each of the change is incremental.

BILL MOYERS

Can you point to one thing in our time that makes you optimistic?

MELANIE STIASSNY

I think it would have to be when you talk to young people and to kids. Because I think that they really do have a sense what's happening, and so deeply vested in the long-term future. I think that there is more of a consciousness and there is more of a recognition that that we cannot continue in the same way.

BILL MOYERS

Would you give us an A, B, C or D on fresh water systems in the world?

MELANIE STIASSNY

I it's kind of hard just to give one grade for the entire situation, but if I had to do that, I'm very sorry to say and, you know, I am a university professor also, I'd have to give a D which is almost a grade that no American student has heard of for the past 20 years. But I would have to give a D.

BILL MOYERS

Does it ever occur to you that we are our own worst enemy?

MELANIE STIASSNY

Yes, it constantly occurs to me. But we also have the potential to make it okay. We have, I think, the window of time where we can do it. I think we're reaching a very critical point where decisions made now and probably within the next decade are going to be incredibly important.

In terms of determining what the future is going to be like, I'm not a prophet of doom. I'm not suggesting that we're going to go extinct before the next millennium. But what I am saying is the decisions that we make now will determine what our planet will be like, what it will be like for us and what it will be like for all of those other organisms that actually make it through. I think we're beginning.

BILL MOYERS

How important is it to have this baseline of data that you are trying to gather in the Millennial Assessment?

MELANIE STIASSNY

It's absolutely critical because without it we really cannot give ourselves a full report card. If we can't say, you know, this is the situation and we know it was X before, this is how much it's changed... It's absolutely fundamental. We have to have it, and I think we can get it. When we have the technologies and initiatives like the Millennium Ecosystem Assessment which is being proposed, really for the first time are going to bring together the organizations, the scientists, the governments in a global attempt to really begin to understand the global state. How can we manage it? How can we manage it so that our population can continue to grow, continue to be healthy and, in fact, in many parts of the world have a better standard of living than they have now.

But we have to be able to do that not at the expense of the ecosystems, but in a process

whereby both of those goals are attained. And I think it's possible, but it's certainly not going to be easy, and it's going to require a different kind of mind set. It's going to require a mind set that says, you know, we can't just optimize for one thing, the production of food at the expense of everything else. We have to sort of balance things out. In South Africa, they've made a decision. They have very limited resources, they have a lot of people. What are they going to do?

Well, they worked out a very nice balance whereby they're actually going to be helping a particular ecosystem, the fresh water ecosystem, they're providing for a heavily unemployed populace. So, it works out very well. In that case, you're balancing two things and it measures very nicely.

BILL MOYERS

What is the source of the passion? You are passionate about this, about fresh water and ecosystems.

MELANIE STIASSNY

Because it is so fundamentally important to everything. I'm a biologist and I study fish, so I love fish and they live in water. And that's what got me into it. But as you begin to learn about the enormity of this problem, the enormity of the change, the transformation that our species has perpetrated on this planet, when you really begin to learn about it, it's...it's almost impossible not to be hugely moved by it. And in a sense it's kind of mind boggling how powerful and amazing we are that we've been able to change the gravitational rotation of our planet.

BILL MOYERS

Don't the forces of the world conspire against doing the right thing in the long term?

MELANIE STIASSNY

What are the forces of the world?

BILL MOYERS

Procreation, acquisition, acquisitiveness, greed, competition ...

MELANIE STIASSNY

It's hard to kind of really get a handle what the genesis of those attributes are. I mean I think when push comes to shove, we will do the right thing for ourselves. If we're going to continue as a successful species, we're going to have to learn to fit our populations into this global context. I mean we've changed our habitat, we've changed our environment in a phenomenal way in a phenomenally short period of time. We really have. The critical thing is to work out how we can change our behavior, our consumption in such a way that enables our planet to keep going, to keep providing with these goods.

BILL MOYERS

I don't mean this in a clever way but the limits are almost un-American.

MELANIE STIASSNY

No, I understand. Absolutely.

MELANIE STIASSNY

But I think ours is this generation that's going to have to deal with that kind sea change in thinking because ours is the generation that is for the first time coming up against those limits. It's almost as if we are pushing our planet to the absolute limit of its ability to regenerate itself, to function. Now, that's a pretty important limit, and it's almost one that we as humans in our arrogance are not going to be able to just sidestep or ignore or keep thinking well, there's going to be a solution, it's not really a problem, it's not really my problem, it's someone else's problem.