

TRANSCRIPT

Environmental Insights

Guest: Geoffrey Heal

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Geoffrey Heal: I'm somewhat frustrated because I think that we know a lot about how to solve the climate problem. I think the technologies that we need to solve it are largely, perhaps not totally, but largely available. And so we have a lot of the pieces available. We're just not deploying them fast enough.

Robert Stavins: Welcome to [Environmental Insights](#), a podcast from the [Harvard Environmental Economics Program](#). I'm your host, [Rob Stavins](#), a professor here at the [Harvard Kennedy School](#) and director of the program. I've had the great pleasure of including in these podcast conversations over the past three years a significant number of truly outstanding economists who have carried out important work in the realm of environment, energy, and resource economics, and in many cases have been real leaders in the profession. Today is certainly no exception because I'm joined by [Geoffrey Heal](#), the Donald Waite Professor of Social Enterprise at [Columbia Business School](#), where he previously served as Senior Vice Dean, essentially the Chief Academic Officer of the School. More to the point, Geoff Heal is the author of 18 books in some 200 articles on environmental, energy, resource, economics, and related topics. He's a Fellow of the [Econometric Society](#) and the [Association of Environmental and Resource Economists](#), where he previously served as President. Geoff has also held and continues to hold some important advisory and other positions with governmental, multi-government, and non-governmental organizations. Welcome, Geoff.

Geoffrey Heal: Great to be with you, Rob. Always fun to talk with you.

Robert Stavins: So, before we talk about your research and your current thinking about environmental and climate change policy, let's go back to how you came to be where you are. So where did you grow up?

Geoffrey Heal: Well, I was born in North Wales in a small town called Bangor on the coast in North Wales. Very beautiful place, very peaceful place. That's where my mother's family were from. But shortly after that, we moved to the sort of London suburbs for a while, and then up to the northwest of England, a town called Warrington, which is where I went to secondary school.

Robert Stavins: So secondary school was up there, and then from there when you graduated, you directly went to Cambridge University?

Geoffrey Heal: Yeah, that's right. I graduated from high school in Warrington, and then I went to Cambridge to Churchill College.

Robert Stavins: Now, now you're only one of several podcasts guests who it seems started out in physics and then moved from physics to eventually wind up in economics. That's true in your case?

Geoffrey Heal: Yeah. I started off as a physics major at Cambridge, and for the first year I majored in physics, but then I decided to change, so I eventually completed what I suppose would amount to in the US terms, a major in Economics and a minor in Physics.

Robert Stavins: So, you share that with the late Marty Weitzman as I'm sure you know he was-

Geoffrey Heal: Indeed. That's right. Yes, yes, yes. Yeah, I'm one of the-

Robert Stavins: I actually, I started out in physics myself.

Geoffrey Heal: I didn't know that.

Robert Stavins: But I didn't study economics until graduate school. I never took a single economics course as an undergraduate.

Geoffrey Heal: Yeah, yeah.

Robert Stavins: You graduated from Cambridge University. Now, before you continued on there for, I believe your PhD, you spent some time in the US, is that right?

Geoffrey Heal: Yes, so I was an undergraduate. I was really very fortunate in my tutors. The Cambridge system is still a tutorial system, so you rather than going to big classes you sort of meet with a tutor one-on-one or one-on-two. And my tutor and my penultimate year there was Joe Stiglitz.

Robert Stavins: Oh, wow.

Geoffrey Heal: And my tutor in my final year was Peter Diamond.

Robert Stavins: My gosh.

Geoffrey Heal: Both of them were visiting and for the general audience, those are both very distinguished economists, both of them Nobel Prize winners. So I became quite close to both of them. And Peter at the time, Peter Diamond was at Berkeley, and he arranged for me to spend a year as a kind of visiting graduate student at Berkeley, which I did in the year '66 to '67.

Robert Stavins: And then from there, after the two years there, then you went back to Cambridge University to study for the PhD in economics. Can you tell us about your dissertation topic and your dissertation committee for that matter?

Geoffrey Heal: Yeah, sure. My dissertation was about resource allocation with increasing return to the non-convex production possibility sets. And it was about whether non-price mechanisms could perform better than price mechanisms in such a context, and about the type of information that had to be communicated between agents to get an efficient allocation of resources in that context. I was advised by, there wasn't a formal committee at Cambridge in those days, but my advisors were Jim Mirrlees and Christopher Bliss, two very able economists. I was really fortunate again then.

Robert Stavins: This is quite a stellar cast of people who contributed to your education. So, you graduated from Cambridge University at 1973. What was your first position out of graduate school?

Geoffrey Heal: No, I graduated. I got my PhD in '68 or '69.

Robert Stavins: Oh, I'm sorry. Yes, you're right, of course.

Geoffrey Heal: And I got a teaching position at Cambridge. First position I got was a slightly unusual position. I was hired to teach linear algebra, specifically linear algebra, and I ran a course on linear algebra for economists and engineers and people like that for a year or so. Then I got a more general purpose teaching position in economics.

Robert Stavins: So, you were a fellow and a lecturer? Are those the titles that you-

Geoffrey Heal: Yeah, I was a fellow of Christ's College and wasn't a university lecturer. I was sort of an adjunct really, I guess for a year, a year or so, and then I got a regular position.

Robert Stavins: So that was teaching linear algebra?

Geoffrey Heal: That's right, yes. Believe it not, yes. Yeah,

Robert Stavins: That actually, that was my absolute favorite school when I was first... My absolute favorite course when I was first studying economics, which was at Cornell for a master's degree before I came to Harvard. I just loved my linear algebra course. I've never forgotten it.

Geoffrey Heal: It's a fascinating subject. I still like it today. And I wrote a textbook on it actually, when I was at Cambridge.

Robert Stavins: Oh, is that right?

Geoffrey Heal: Yeah.

Robert Stavins: My professor, and I think he was author of our book, but I'm not sure, was named Searle, last name Searle. S-E-A-R-L-E. I think he was from-

Geoffrey Heal: Oh, yes, yes. I know that book. Yes.

Robert Stavins: Yeah. Yeah. So he was my instructor. He was just fantastic. So, then after Cambridge, then you went on to very quickly become a professor of economics. That's remarkably fast path, if I have that correct.

Geoffrey Heal: Yeah. I got a chair at Sussex University in 1973, I guess. Tony Atkinson and I, we were close friends and partners, and we both got chairs at the same year in '73, I think it was, he at Essex meet at Sussex. We were known as the infant professors in the UK in those days.

Robert Stavins: So, you were at Sussex, and then you went on to Essex. Do I have that right?

Geoffrey Heal: Yeah, I went on to Essex for a year or so, and then I was offered a position at Columbia, which I'm in now, and I came to Columbia.

Robert Stavins: And you've never left. Well, I guess you've taken off periodically for visiting positions?

Geoffrey Heal: Yeah, yeah. I've spent time visiting various places, but I've been based here for 40 years now. Joined here in '83 and it's now 2023.

Robert Stavins: So, you're obviously a happy camper. You've voted with your feet.

Geoffrey Heal: Yeah, I like New York and I like Columbia, and it's been a good place for me. We've got a very good group here now.

Robert Stavins: So now that we've gotten up to date, what I'd love to do is to turn to your work in the world of environmental, energy, and resource, economics scholarship. I'm going to start by saying for the record that the book, which changed my own scholarly life and became the foundation for my interest in resource and environmental economics was your pathbreaking 1979 book with Partha Dasgupta, ["Economic Theory and Exhaustible Resources."](#) I've never asked you this, so this is my opportunity. How did your collaboration with Partha and that book come about?

Geoffrey Heal: Well, it began a long time before the book was published, and we were both graduate students at Cambridge in the late '60s.

Robert Stavins: I see.

- Geoffrey Heal:** And we were both greatly influenced actually by James Meade, who was a senior professor at Cambridge at that point, who had some interest. I mean, he never actually specifically written on environmental issues, but had some real interest in environmental and resource issues and sort of pointed us to look at these. And I think our interest was very strongly peaked by the oil price rise in 1973 and the oil crisis. Said, look more closely at exhaustible resources. And we initially, we wrote a paper together, which was published in the *Review of Economic Studies* in I think '74 on the optimal depletion of exhaustible resources, sort of updating the telling paper. And then we decided that really this was a bigger area. It needed a lot of work, and there was some merit in actually spending a lot of time writing a book, which integrated a very wide range of perspectives on natural resources, both the exhaustible and renewable. So that's where the book grew out of. It started in the early '70s and finally evolved in '79, as you said.
- Robert Stavins:** The two of you realized when you were working on it, how important that was. I mean, it was really pathbreaking in the scholarly world... of the quantitative scholarly world of environmental, resource, energy, economics.
- Geoffrey Heal:** Well, I couldn't speak for Partha, but I don't think I did, no. I think we really had fun writing it. We both really enjoyed it, and we enjoyed collaborating, and I think it's something that we just felt sort of intellectually compelled to write because we felt the time was right and we felt that we could make a contribution there, particularly acting together. But I don't think we had any sense of the impact it would have, quite frankly, because as you said, it's had quite a big impact. And I find students still reading it today, which is quite remarkable.
- Robert Stavins:** I suspect that around the world when you're delivering lectures, whether it's in Singapore or in Brussels, that frequently someone probably comes up to you after your lecture with a copy of that book and ask you to autograph it.
- Geoffrey Heal:** That has happened. It has happened. Yes.
- Robert Stavins:** You may not remember it, but I did that. It was actually inside my office before you made a seminar presentation.
- Geoffrey Heal:** Oh, really?
- Robert Stavins:** One time, yes. And I value it on my shelf. I'm not sure if I've ever gotten Partha to do it, because I typically have not seen Partha. I guess I did see him at Harvard when he was visiting for a while. I'm not sure if I have his autograph in there as well.
- Geoffrey Heal:** Oh, that would be fun.

Robert Stavins: As you mentioned before, it's 40 years, it's four decades or more that you've been working in this area. You've seen some very significant changes, I assume, in the scholarly world of resource and environmental economics. Are there particular changes in the scholarly world, not the policy world, that stand out to you?

Geoffrey Heal: Yes, a lot. Really. I mean, the change, the field has been transformed, hasn't it? I mean, in the last decade or so, it's been transformed into a much more empirical field than it was before that.

Robert Stavins: Yes.

Geoffrey Heal: So, what they call the credibility revolution in economics has taken hold in environmental and resource economics too. So we've got a vast number of papers using interesting novel data sets to look at climate impacts or regulatory impacts, and I think they've increased our understanding of the impact of environmental issues and environmental policies very considerably. I also think that at a more abstract and conceptual level, it's become much more integrated into the whole of economics. When it started, I think the Association of Environmental and Resource Economists was founded in the '70s, if I remember rightly.

Robert Stavins: That's right.

Geoffrey Heal: And it was sort of an outlying field without an awful lot of overlap with the rest of economics. And I think it's become a much more mainstream part of economics, over the ensuing decades, and it's been a cross-fertilization in both directions. I think we've taken ideas from economics and we've given ideas to economics.

Robert Stavins: I think it's fair to say that back then, the period you were describing when environmental, resource economics was first emerging, it wasn't so much from economics departments, but from the land grant institutions, these departments of agricultural and resource economics in the US. That's where a lot of the action was before mainstream economics departments even hired in this area.

Geoffrey Heal: Yeah, that's absolutely right. So Berkeley and the University of Maryland and so on. Yes, in Wisconsin. Yeah, absolutely. It was a long time before mainstream economics departments started hiring this area, and some of them still don't.

Robert Stavins: Yes, you're right on both counts there. So let's turn to the policy world a bit. But first, before I do that, I do want to ask you one other thing about your research and your writing. And I know this might be asking you to identify your favorite child, and perhaps I've prejudiced it by my comments about your 1979 book. But is there a particular research publication, let's say other than that book that you're really most proud of?

Geoffrey Heal: Oh boy, that's not a question I've really focused on very much. I sometimes go back and look at my early publications, and I sort of, they get a blank stare from me. Did I write this? Did I write this?

Robert Stavins: Did I do that?

Geoffrey Heal: Yes, exactly. Not there was anything wrong with it. It's just that I don't feel the first personal connection with things I wrote back in the '70s very much these days.

Robert Stavins: Sure.

Geoffrey Heal: You probably have the same feeling though, you-

Robert Stavins: Oh yeah.

Geoffrey Heal: The '70s up through the '80s and '90s.

Robert Stavins: Yeah, absolutely.

Geoffrey Heal: Yeah. There's a slightly obscure paper that I wrote in a volume that I believe was edited by Bob Pindyck, a very early volume on climate change and economics. And I wrote a paper about, I forget what it was called exactly, but it was about how economists should go about modeling climate change. And it didn't get into a lot of specifics, but it raised sort of conceptual issues about what was unique and what was difficult about climate change from an economic perspective. And I think in retrospect, actually, was a very prescient article because it put my finger on a lot of things that have subsequently turned out to be important – how you model uncertainty, how you model discount rates, whether you use a partial or general equilibrium framework. Oh, a bunch of issues of that sort.

Robert Stavins: That's interesting. And you said you believe it was edited by Bob Pindyck?

Geoffrey Heal: I believe so, yes.

Robert Stavins: When we finish chatting, I will take a look at your CV, which I have, and search for the word Pindyck in order to look up that article and then get hold of that article so I can read it myself. And I imagine many of our listeners will in fact, want to do the same thing. So, with this, I want to turn more to the policy world and actually start by what is in a sense really the interface between research scholarship and the policy world, which is the [Intergovernmental Panel on Climate Change](#), the IPCC. Now, you served as a coordinating lead author of the chapter on adaptation, I believe in working group two of the Fifth Assessment Report. Everyone in our audience around the world for this podcast knows about the IPCC, but they may not know about the distinctions between coordinating lead authors, lead authors, contributors, reviewers. There are a whole set of different designations. Can you give us some insight into that?

Geoffrey Heal: Sure. Happy to do so. So, for each chapter, there's a writing team. The team could be typically somewhere within 10 and 20 people. Most of the members of the team are lead authors. So, they're the people who are responsible for writing a piece of the chapter. The coordinating lead authors, and typically there's two of them for each chapter, are responsible for putting all of the pieces together and editing the entire thing, and sort of divvying out the space between the various aspects of the problem. So, the coordinating lead authors have to essentially decide what the agenda for the chapter will be in consultation with the lead authors, and then decide who will write which part of the chapter. And then when they're drafted, you have to try to meld them into one reasonably coherent piece. Make certain the arguments get passed off from one section to the next and make them into a readable overall whole.

Robert Stavins: Now, I actually had the experience several times of being a lead author, and then in AR-5, actually in working group three, the mitigation report of being a coordinating lead author. And in my own case, there were parts that I found interesting, even enjoyable. And there were some aspects I found painful. Can you say anything about a high point and a low point of your service as a CLA, coordinating lead author?

Geoffrey Heal: Well, the low point is that it was a lot of work, very time-consuming. Spend an awful lot of time reading through the sections, and then maybe in some cases reading the material in which the sections were based to see exactly what they were trying to say. And that took a lot of time. And as academics, we're already always very busy anyway, so you don't get any teaching relief or anything like that for being an IPCC CLA. So, you have to fit this time into everything else you're doing. And now that I think was difficult. I think what was fun was really cooperating with a group of people, many of whom I didn't really know very well beforehand, and who brought very different perspectives to the issue of adaptation. So that was intellectually a voyage of discovery for me.

Robert Stavins: Because your writing team was no doubt international from quite a few different continents?

Geoffrey Heal: Totally. Yes. Yes. I think our team came from every continent.

Robert Stavins: Right. That's a fundamental tenant of the IPCC, is geographic diversity. So with that, I want to turn to current times in particular in regard to climate change policy. What are some of your greatest concerns today, Geoff?

Geoffrey Heal: I'm somewhat frustrated because I think that we know a lot about how to solve the climate problem. I think the technologies that we need to solve it are largely, perhaps not totally, but largely available. I mean, I think that, as you obviously know, wind and solar power are widely available and they're very inexpensive. And we have increasingly the facet to store energy through batteries or maybe through developing making hydrogen. So, I think we know how to move to an electric grid which is powered entirely without fossil fuels. And I think we can do this, and I think we can do this relatively cheaply because

fossil fuels, as I said, are more expensive than wind and solar, even allowing for the need to build out the grid and invest in storage. I think we also know how to decarbonize light transportation. And electric vehicles are doing very well these days. And so, we have a lot of the pieces available. We're not just deploying them fast enough to reach the targets that we think we need to reach. And so I find that frustrating. We're very close to being able to achieve the goal, but we're not actually doing what we need to do to get them.

Robert Stavins: And is that because of not understanding what kind of policies need to be developed? Or is it because it's the politics block the policies being enacted or implemented?

Geoffrey Heal: It's the politics.

Robert Stavins: The politics.

Geoffrey Heal: It's politics. Yeah, absolutely. It's the enormous influence of the fossil fuel industry and the sense of mostly some conservatives that this is a plot to increase the powers of the state. And of course, the Ukraine war has really been a major problem too, because it's caused Europeans to move away from natural gas and in some cases back to coal, which is a terrible piece of backsliding, and it's understandable under the circumstances, but it's very regrettable from the climate perspective. There's a variety of things, but I think that the Ukraine war, I hope, is a temporary phenomenon whereas the power of the fossil fuel industry and the sort of conservative misapprehensions about what climate change is all about, I think are more real and more enduring.

Robert Stavins: So, some observers have said, and from what you just said, I think you would agree with this. Some observers have said that in the short term, the Ukraine War will retard diffusion of higher levels of renewables, but in the long term, it will increase it because of lessons learned about energy security, particularly in Europe. Do you go along with that?

Geoffrey Heal: Yeah, I do. Absolutely. I think that's exactly the right way to put it. I mean, Britain, for example, has moved away from natural gas to some degree, and everybody's moving away from natural gas to the degree that they can, in Europe, deploying wind and solar rapidly. A couple of countries are deploying nuclear as rapidly as possible. That's not an easy thing to deploy quickly.

Robert Stavins: Now in the United States at least, there's much greater attention. I'm struck by this over the last few years, to what is referred to as environmental justice or just transition in terms of the economics, essentially the distributional implications of climate change and of climate change policies. What's your reaction to that increased attention?

Geoffrey Heal: I think it's very appropriate. I think that it's a fact that climate change is having its greatest impact on people who are poor, both within the country and across

countries. And so it's clear that, for example, what happened last year and what's beginning to happen this year, that people in low income areas of India and Pakistan are suffering quite seriously from massive heat waves and other consequences of climate change. When we saw this extraordinary flooding, for example, in Pakistan last year, I guess it was, with something like estimates just at one third of all the buildings in Pakistan were affected by the floods and huge numbers of people displaced. We've got to remember that these are very, very poor people with very little in a way of resources to fall back on. These are not people who can turn to an insurance company and file an insurance claim to get their house replaced. It's a part of the world where you just don't have insurance. So, it's very difficult for us to put ourselves in that position, I think. But these are the people on whom the burden of climate change is falling primarily. And people who don't have air conditioning, for example, are being exposed to temperatures of 95, or 100, 105 degrees and humidity, high humidity as well. Very painful combination.

Robert Stavins: Now, that leads me to think about, really a final question for you, which is that something that's been observed in the United States and in Europe, and certainly in the United Kingdom over the last two to three years have been increased youth movements of climate activism. Most prominently, of course, Greta Thunberg, but it's been much broader than her and any single coalition. What's your reaction to those? Are these youth movements of climate activism playing a constructive role? Are they neutral and not having an effect, or is it in some way actually counterproductive?

Geoffrey Heal: I think they're having a productive role personally. I mean, there's some disagreement, and it may be a little bit early to tell, but I think that essentially I'd say that anything that draws attention to the seriousness of the problem is good. And these youth movements are causing parents to think more seriously about the issues, and parents vote and make donations and so on. I mean, I've heard of several cases of example, senior executives in big corporations who have had big rows with their children over issues of climate change and reaction to climate change and say they've been forced to rethink their positions because of their children on this. And children have a sort of, what's the phrase? They look through a dark, I mean, we look through it glass darkly. But when you're a child, the glass is clear, to paraphrase it, rather ineloquently, something from the Bible. I think children do have a clear perspective on these things unfiltered by political interests and so on. And they also take a long term view. And I think then the UK, in addition to the climate movement, you've got, I think, called extinction rebellion.

Robert Stavins: Yes.

Geoffrey Heal: Which is picking up the issue of biodiversity, which I think is in many ways as important and as tragic as climate change.

Robert Stavins: And indeed, we haven't had a chance to talk about it. But so much of your work, in particular, the work that I'm familiar of yours with NGOs has been focused on conservation and biodiversity.

Geoffrey Heal: Yes, absolutely. I mean, I think that's a hugely important topic, and it's one that economists need to work on more. We don't really have a hugely good model of biodiversity and what it is and how it works in economics yet. I think we know enough to know that it's important, but we don't really have enough to really, I mean, I'd have difficulty, for example, teaching a really coherent course on economics and biodiversity

Robert Stavins: Right now, your mentioning about young people and looking through a clear glass or not. That leads me to ask you whether you think with young people this is a cohort effect or an age effect. So, as this current generation of youth activists, as they get older, will, when instead of demonstrating on the outside, will they be the negotiators on the inside and still be activists? Or is it an age effect, and many people, of course, that glass gets darker as they get older. They become more conservative? I know this is asking you to predict the future, but what do you think?

Geoffrey Heal: It's a tough question. I mean, so, I was a grad student in 1968 when there was sort of something of a revolution amongst students. And I was a student at Berkeley, for example, when Reagan was first elected governor at the height of the anti-Vietnam War movement. And then back in Europe it was 1968 was the year of a student revolution in France and in Germany. And I know a lot of the people who are involved in that and as they've aged their perspectives have changed, but they're still liberals and they're still on the left politically, but they're nothing like as radical as they were when they were in their teens or early 20s. So my guess is that there will be some moderation as people age, but they will remain devoted to these issues and remain concerned about these issues and other, they'll take that concern with them as they move up in the hierarchy.

Robert Stavins: So, I think that note of optimism is a good place to draw our conversation to a close. Thank you very much, Geoff, for having taken time to join us today.

Geoffrey Heal: Well, thanks for your interest, Rob.

Robert Stavins: Our guest today has been [Geoffrey Heal](#), the Donald Waite Professor of Social Enterprise at [Columbia Business School](#). Please join us again for the next episode of [Environmental Insights: Conversations on Policy and Practice](#) from the [Harvard Environmental Economics Program](#). I'm your host, [Rob Stavins](#). Thanks for listening.

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