Unconfuse Me with Bill Gates

EPISODE 07: Hannah Ritchie
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HANNAH RITCHIE: The key message of my book is that air pollution, climate, food, biodiversity, these are hard problems to solve. But I think we are capable of solving them, and it's just not the case that it's too late to tackle this.

[music]

BILL GATES: I had great teachers that I've learned from. I had a librarian at my elementary school. I have a great tennis coach. And, you know, the best way to get unconfused about something is to find somebody who really deeply understands it. I call that, 'getting unconfused'.

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Welcome to *Unconfuse Me*, I'm Bill Gates.

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BILL GATES: My guest is Dr. Hannah Ritchie, a Data Scientist and Researcher at the University of Oxford, also Head of Research at Our World in Data. She's just coming out with a fantastic new book called *Not the End of the World*. Welcome, Hannah.

HANNAH RITCHIE: It's a pleasure to be here.

BILL GATES: Hannah, when you did your TED talk, was the book written by then?

HANNAH RITCHIE: The book was written by then, yes.

BILL GATES: Oh, okay.

HANNAH RITCHIE: The TED talk is a little bit of a squished down version of the book.

BILL GATES: Yes, that went very well. Did they give you 15 minutes for that?

HANNAH RITCHIE: It seems like a long, long time ago, and it went by in a complete blur. I actually don't remember what I said when I was up there, but I watched it back and I said most of what I wanted to say.

BILL GATES: Tell me a little bit about how you came to write the book.

HANNAH RITCHIE: Yes, thanks. So my background is environmental science. I did a bachelor's, a master's, a Ph.D., all in environmental sciences. And I think by the end of my degree, despite having studied environment for a long, long time, I felt, to some extent, quite helpless. I felt

like the number of problems we were facing were huge. The problems were massive. And, to me at the time, it seemed like we weren't making any progress on these problems. So despite having done all of this work, I felt kind of helpless on how do we tackle these issues. And then I started working at Our World in Data. And my work led to a much more data-driven approach where rather than focusing on news headlines, which are coming at us all the time, it's stepping back to look at the data to understand these problems and how we solve them. So what I've done at Our World in Data for the last six or seven years is to study these environmental problems amongst health, poverty, other problems that we face, and try to understand where we are on these problems and how we tackle them. So what I do in the book is I take seven different environmental problems, so air pollution, climate, food, biodiversity, and try to paint a picture of where we've come from, where we are today, and what that tells us about what we need to do next.

BILL GATES: There's a large group of people, I'd guess you could call them doomers, who are feeling a sense of despair about, "There's nothing we can do, should we have kids?" that type of thing. How do you think that got to be such a common way of looking at the environmental issues?

HANNAH RITCHIE: Yes, I think it's a growing problem. And I should say that a decade ago I was probably in that very same position. I was studying all these environmental trends and they all just seemed to be getting worse and worse and worse. And I think what I was also doing at the time is that I had no understanding of how human wellbeing trends were changing, so what was happening to poverty, to health, to education. And what I did is I just simply extrapolated and said, "Well, I'm seeing all these news headlines saying look at the number of people in hunger, the number of kids dying," all of these trends, and I just assumed all of these were getting worse at the same time. So to me it seemed like we were incapable of solving any problems. And I think then a big turning point, for me, was discovering the work of Hans Rosling, who really brought to the front how the world has changed on these human wellbeing metrics. But I think one of the reasons why so many people feel a sense of doom now is that we fail to also recognize the amount of human progress that we've made over the last few centuries.

BILL GATES: One great thing about your book is that, although climate is probably the problem that gets the most attention, you talk about other environmental challenges we face. Talk about a few of those.

HANNAH RITCHIE: Yes, the first chapter is on air pollution, which I think, for me, is just an underrated problem. If you look at the number of premature deaths from air pollution, it's actually much higher than climate change today. Now, that might change in the future, but, for me, air pollution is one of the biggest health challenges we face. The WHO estimates that it's around 7 million premature deaths every year. You have outdoor air pollution, which is what we see as the emissions from cars and power stations, et cetera, which is a big problem. But there is also a vastly underrated problem, which is indoor air pollution, which is basically people, mostly in energy poverty, where the only fuels they have are wood or charcoal or crop waste. And they're basically using this to heat and cook in their homes. And the amount of air pollution that you get from this is really, really damaging to health. Now, on air pollution we have achieved a lot there. One is the ozone layer, which I just learned about from history books, because I kind of missed the whole ozone layer period, but at the time, that was a massive problem. Countries came together and we reduced emissions of these ozone depleting gases by more than 99%. Acid rain is another one, especially in Europe and North America, acid rain was a massive problem and we've basically solved that. And now you're starting to see it in middle-income countries. So China, for example, has seen

really stark declines in local air pollution. But when you take rich countries, so London or Edinburgh where I'm from, you've seen really dramatic reductions in local air pollution, which has saved a lot of lives. So there are a range of problems that we have solved. Which I guess pushes back against this narrative that we're incapable of solving environmental problems.

BILL GATES: One nice thing about that is that going from coal to solar or wind, you can clean up local pollution from coal. And so there is a little intersection with climate there, where for the local pollution people and the greenhouse gas people, coal is the primary enemy.

HANNAH RITCHIE: Yes, I mean, on air pollution, you tend to see what is called the Environmental Kuznets Curve, which doesn't apply to every environmental problem. But you definitely see it with air pollution where it's almost like an upside down 'u'. So air pollution tends to be lower at very, very low incomes, and as countries industrialize, it goes up and reaches a peak at middle-incomes. And then rich countries, once the countries get rich, they start to decline, and so it's like an upside down 'u'. Now that is in itself promising. That just means once everyone gets rich then the problem is solved. But I think the challenge we face, and what we need to push for, is how do we accelerate that trend much, much faster. Because if we wait, the number of deaths under that curve is really, really big. So the question is, can India or other middle- and low-income countries go through that trend much faster than the U.K. or the U.S. did, because doing so will save a lot of lives.

BILL GATES: I was stunned that of the plastics in the ocean, the portion coming from, say North America, is actually pretty small. And so that's another one where it might not be that expensive to see a big reduction.

HANNAH RITCHIE: For me, plastic pollution is one key area where I think the tension is kind of lopsided. I think we think of plastics, and we immediately think to stop using them. And all of the treaties are based on how we reduce plastic use as much as possible. But, actually, the problem of plastic pollution, like plastic going into the ocean, is not about using plastics, it's about how it's managed. And when it comes to the oceans, around 0.5% of our plastic waste ends up in the ocean. So it's actually much more effective to tackle that 0.5% than to tackle the 100% way at the top of the chain. When you look at maps of plastic use across the world, yes, plastic use and plastic waste per person is much higher in richer countries. We use more of the stuff, but what's different is we send it to landfills where it's closed and managed, or we recycle it, or it's incinerated. And most of the plastic that is leaking into the ocean is more in middle-income countries where they've seen very fast growth and very fast industrialization, but waste management has not managed to keep up. But they're using lots of plastic, but there's not the waste management infrastructure there to gather it and to keep it. So, yes, it is a very tractable problem. If you invest a little bit of money in waste management, you can actually put a massive dent in that problem.

BILL GATES: When you look at environmental numbers, have we actually reduced them anywhere? Are there examples where our greenhouse gas emissions have gone down?

HANNAH RITCHIE: Yes, so on greenhouse gas emissions, I guess, across the world, it's a very mixed picture. On a global level, we did see a very rapid rise in the 1990s and early 2000s. Over the last decade or so we've kind of seen a bit of a plateauing, emissions are still increasing a little bit, but they are going up very, very slowly. So rich countries in particular have managed to significantly reduce emissions over the last few decades. In the U.K., for example, emissions have approximately

halved, and some of that is because of offshoring, but not all of it is because of offshoring. So even when we account for that, emissions are going down. Middle-income countries are a bit of a mixed picture where some are starting to see a decline. And then in lower-income countries, as people are gaining access to energy you would assume the emissions are going up, and they are.

BILL GATES: Yes, the U.K. number was quite striking to me because, of course, the whole energy intensification with Industrial Age coal starts in the U.K., and yet they're one of the countries in that area that has made the most progress of all.

HANNAH RITCHIE: Yes, I mean, the story of carbon emissions in the U.K. is basically about coal, like most of our electricity used to come from coal. So when I was born, it was between one-half and two-thirds, and now we are basically coal-free. So we've just cut coal completely out of the electricity metrics which just makes a massive difference to your carbon emissions.

BILL GATES: Yes, the challenge is getting people to understand each of the sectors and what's in the pipeline in terms of innovation that might allow that sector to get its numbers down without having the cost be so gigantic. People know about electric cars, and they know about wind and solar, but most of the rest of it is probably pretty opaque to people in terms of emissions and what we might be able to do.

HANNAH RITCHIE: Yes, if you split up the world's emissions, there are the power sectors, so electricity, there's transport. Now, those two combined are quite big, but they're not everything. I think the way I see it is with these sectors we now actually do have economic solutions there. Over the last decade or so we've seen plummeting costs of solar, wind, batteries and electric cars, and I think for those sectors, it's now about deploying these technologies very, very quickly. The last decade it was getting the cost down, and in this decade, it's building as much as we can, and as fast as we can. But there are other sectors where we still do need innovation. We need cement, we need steel. A big one, for me, that is often overlooked, is the food sector. I think decarbonizing food and agriculture is going to be very, very difficult. So we have this two-end approach where we need to go fast on the stuff that we have now, but we also need to be putting money and research into innovations in the other sectors such that by 2040 or 2050, we have affordable solutions for those sectors as well. I think the rich countries have a few responsibilities. One, they need to get domestic emissions down, but I think the other role that they play is that they need to drive down the cost of these technologies for middle- and low-income countries. Middle- and low-income countries cannot face the dilemma of, "Do I lift people out of energy poverty?" Or "Do I keep my carbon emissions low?" But the role that rich countries can play is to drive down the cost of these technologies such that there's no trade off. The cheapest technologies are also the low-carbon ones. I mean, that's one additional way by which rich countries contribute beyond just the climate finance mechanism.

BILL GATES: Yes, I totally agree with that. In fact, I talk about the cost as the so-called green premium. That obligation not only to get to zero, but to drive those costs down so the trade-offs for say, in India, allow them to say, "Okay, we're going to build basic shelter," while not dramatically increasing their emissions. The solution that helps with basically every environmental issue is as you get richer, your population growth tends to go down, and then your ability to detect forest fires, or build buildings that, when there are natural disasters, the death toll goes down. And you had that incredible graph of how, particularly in rich countries, the deaths from natural disasters comes down so dramatically, which is actually not about reducing the tornadoes, floods, earthquakes, but rather, it's about having some warning systems and resilience to those negative effects.

HANNAH RITCHIE: The declining trend in disaster deaths was really surprising to me. I thought that to be an informed citizen, I had to be watching the news all the time. That's how I kept up with the world. But when you watch the news, all you see is disaster, disaster, disaster. And if you had asked me to draw the trend of what was happening to disaster deaths in the world, I would have said that they were at the highest level ever. Actually, when you step back to look at the data it is the opposite. Because of increased resilience, we've seen a really, really dramatic decline.

BILL GATES: If you look out at 2100 a lot of the models look pretty hopeful because during that timeframe you have a lot of economic growth.

HANNAH RITCHIE: Yes, I mean, the way I see it is we do have the capacity to adapt. We have the capacity to make our buildings, our infrastructure, more resilient. I think the key there is that we need to make sure that this is inclusive globally. It's going to be the poorest who are going to be hardest hit by this because they don't have the resilience to build back.

BILL GATES: Yes, so to be clear, your message is although being a doomer is not the right way to look at this, the sense of urgency about all the different areas that you talk about in the book is still super-high. You would love to see us making even faster progress.

HANNAH RITCHIE: Yes, I mean, the whole point of the book is that these are big and urgent problems, and we need to really get moving on them. What I'm trying to push back against is more the message of, "It's too late, we can't do anything about it." I think, for me, we've seemed to have flipped very quickly from this area of fringe denial, where the denial sphere was actually quite loud and quite big, and we've suddenly seemed to flip straight into, "It's too late and there's nothing we can do about it." And the key message of my book is that these are hard problems to solve, but I think we are capable of solving them. And it's just not the case that it's too late to tackle this.

BILL GATES: Well, I'm certainly going to be sending it to lots and lots of people. Just like in global health we need to tell the stories of how great progress has been because there are lessons out of that, and we keep people engaged, even though the pandemic was a big setback. It's easy in any of these areas, including global health, to feel really like, "Oh, we're not making that much progress." And so to have the positive data points be in there and have it be kind of comprehensive I think is fantastic. I'm looking forward to all the debates that it will generate.

HANNAH RITCHIE: I wouldn't have an impactful book if everyone just loved it and just loved everything about it. It's meant to generate discussion. If we're having discussions based around the data, which I've tried to present in the book, then I think I'll have achieved something. A cool part of the book is not just saying, "Hey guys, everything's fine, we can just sit back." It's a call to action. It's about trying to show where we are, building on the momentum that we've gained through tackling some of these problems, but also trying to show what we need to do next. Well, I hope that it will inspire more action rather than reduce the pace of it.

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BILL GATES: I've got a turntable here, and like I do with all the guests, I asked if you could bring along a record that means something to you. So tell me about it.

HANNAH RITCHIE: Yes, I mean, I should caveat this by saying this is not mine. If you're under the age of 30 and you have vinyl, you're cool, and I didn't meet the cool criteria. So, I had to raid through my dad's collection. But the one I have here, the track is called "Life is Grand" by a band called Camper Van Beethoven. Do you want me to play it for you?

BILL GATES: Sure.

[music – "Life is Grand" by Camper Van Beethoven]

HANNAH RITCHIE: I think part of why I chose it is, if you ask me, at any point in human history, when I would want to be born, I would still choose today. Despite the environmental crises we face, I think this is the best time to be alive as a human. I want to make people feel more hopeful about the future that we can build. And I know that that will get some pushback from environmentalists, but it's fine. I'm trying to create discussion. That was why I chose that track. My dad would play vinyl when I was younger. It's quite poignant that I brought one of my dad's tracks, because I think he's played a big role in shaping, not necessarily what I think but how I think. I remember as a kid he would always play devil's advocate. So regardless of what opinion I took, he would counter that with a different opinion, even if he agreed with me. And at the time as a kid, I found it really annoying and frustrating. But I think he really taught me how to think about things in different ways, and I think that's part of how I think today. Like, the problems that we're facing are complex, they're not one dimensional. You need to look at it from different angles and through different disciplines to tackle them. I think the way that he set me up of how to think has been really important.

BILL GATES: Fantastic.

HANNAH RITCHIE: So when I'm delving into a new topic, I always try to be really curious about it and come into it with an open mind. And I think from that needs to come a willingness to change your mind when the evidence changes. I mean, that's what science is. Is there something that you've changed your mind about recently?

BILL GATES: I spend a lot of time in the technology world, and I have to say, I was very stunned how the AIs went from basically not being able to read or write at all, to doing that in a very facile way. Still very imperfect, but it kind of blew my mind. I had challenged people to pass a test and thought they might never, or at least it would take them years, but within a few months, they were able to do it. So now I'm thinking about, "Wow, how do we use this in education, in health, and in various environmental challenges?" So the power of these AIs, I missed predicting that, and I'm reformed.

HANNAH RITCHIE: Do you think AI will play a role in climate action?

BILL GATES: Well, absolutely, because our ability to model complex phenomena, the AIs are helping a lot with that. For example, looking at the genetics of cows, and saying, "Hey, some cows emit a lot of methane, and some emit very, very little and some cows survive in hot weather very well, and some do not." And with our ability to edit genes, one of the most dramatic sources of emissions, that at one time I wasn't sure the path forward, now we can see either making the cows better, or various techniques where they create meat without the cow. So the power of AI to look at those genes and see the patterns, even the weather modeling piece, now AI is being applied to that,

both the long term, which is kind of those climate models, but say, telling the farmer in Africa based on the weather, should they go ahead and plant now, or is it going to be so dry. They used to always plant at the first rain. But if you know that's anomalous, then you shouldn't plant. And so the AIs are really starting to help us with very practical problems. For you, what's an area where new data kind of changed your view of things?

HANNAH RITCHIE: My general framework for change on many of these technologies is that if you generate alternative technology, which is as good as the original and is cheaper than the original, then people will just adopt it. I think that's true for energy sources. I think people are not that bothered about what actually goes into the plug, they just want reliable power. I think one area where I'm a bit more skeptical of that framework now is in food. Now, I'm a big fan of meat substitutes. I love Impossible Burger and Beyond Meat burger. I'm a vegan, so I eat this stuff all the time. I think I had this framework in my head that if they just got cheap enough and tasted good, that people would just make that switch. I'm now becoming much more skeptical that it will be as easy as that. I think there will just be this inherent resistance for many people that it's not meat so I'm not going to make the switch. So, to me, I'm leaning more towards, I think if we're going to see this large-scale change in dietary habits, you basically need to generate meat, which would be lab grown meat, for example, where it's not just a plant-based substitute for that, but it's the actual thing, just without the cow or the chicken.

BILL GATES: Yes, you've got three ways to solve that. Make the cow better, but even then, you have the ethical issues there, or people who use plant material where they haven't succeeded in matching the taste or the cost. I know they have new generations coming, so I'm hopeful that it will improve. But as you say, the cell-based approaches, they're not going to have a problem with the taste. Their challenge is very much the cost. But there are some great companies, including one called Prolific, and it looks like we may get there. Sometimes the path is a lot longer and we underestimated how easy it would be for people like Beyond and Impossible to become mainstream, but they're out there doing new versions. So I'm still hopeful. In this meat substitute area, is there a product that you've found attractive?

HANNAH RITCHIE: I was a vegetarian for years, and last year I went vegan. I'm a big fan of meat substitutes. I think the one that's my ultimate favorite is the Impossible Burger. And I had it, must have been 2019, when me and my team were in San Francisco for a few months. But you can't get it in the U.K.

BILL GATES: Oh, really?

HANNAH RITCHIE: Yes, so when I had the Impossible Burger, I think that was a real flip back to the sensation and taste of actually eating a burger. It really reminded me of what an actual beef burger tasted like, and I hadn't had one for years. But yes, unfortunately we don't have Impossible Burger yet in the U.K. I think my ultimate favorite there is Beyond Meat. I think the taste is really good. The texture is really good. I'm sure many meat eaters would disagree that it doesn't quite match the experience for them. But, for me, it's really good. What about you?

BILL GATES: I have to say sausage is an area where it seems to be easier for them to create something where I can't tell the difference, or like a chicken sandwich. Ground beef, they are pretty close, particularly because you have salt and sauces on it. The ultimate might be a steak, although there are companies who say that even that they'll be able to achieve something. Almost every type

of food—milk, cheese—there's interesting work going on. And so if you can get say beef or pork to be made this way, amazingly that would even help with things like deforestation because there's a whole chain of how those animals get fed. I keep trying this stuff. There's a yogurt that I think is absolutely fantastic.

HANNAH RITCHIE: I think we're pretty far away on fish. I haven't yet tried a meat substitute for fish that really matches the taste.

BILL GATES: Yes, for fish there's this big trend away from ocean-based fishing to so-called aquaculture. And that started out as a very environmentally insensitive thing, but now they're really improving what they do with their wastewater, and how they control disease. It's interesting that we're almost to the point where half of the fish come from aquaculture. And, at least in Africa, the upside to having a lot more of that is there. It's not a fish substitute, but it's just another way of growing the fish.

BILL GATES: If you had the opportunity to ask somebody who had time traveled back from 2100, what would be your top questions for them?

HANNAH RITCHIE: I think one of my top questions would be, what share of the world is living on less than $20 a day? I think, for me, looking into the future, what I want to see is a world where most people, or everyone in the world, is living a comfortable life. Now, we can capture that with extreme poverty rates, which is basically a few dollars a day. Those poverty lines are extremely low. I'd want to know how many people are able to live on $20 a day, or $30 a day, which is kind of the poverty line in rich countries. Now, if low- and middle-income countries are managing to reach that level of income, I think that would be an amazing achievement. To me, that would signal several things. I mean, one, just that question would signal, if we have made progress on health, agriculture, poverty. Because I think all of those issues are linked. I think in countries where most people are above the poverty line, you have generally good health outcomes. You probably also have really productive agriculture. I think it would also tell you something about how well we have tackled environmental problems. If that was the case, then my assumption would be that climate change hadn't had extremely devastating impacts, where agriculture was ruined and health outcomes were really poor, and people were plunged into poverty. I think if I was able to ask one question, that's what it would be.

BILL GATES: No, I think that's pretty smart because yes, in the end, it's all measured through human welfare. It's not like the end goal is less plastics or even a certain temperature. It's "Are humans thriving?", which is very much what the Gates Foundation tries to prioritize. I have to say, if I met this person, I'd sort of want to say, how are you generating energy, is it fusion or fission or some unexpected thing. And then understand how the AI was either helping them come together to be less polarized, or how they dealt with that challenge. But you're right, the report card isn't the tactics. It's the quality of life.

HANNAH RITCHIE: Yes.

BILL GATES: So what do you do to relax when you're not working so hard?

HANNAH RITCHIE: I'm really into exercise. I like running and going to the gym, and I do a lot of bouldering, which is like climbing without ropes. I think, for me, exercise is really key. I think the

caveat there is that often I'm still a little bit working. I think often when I'm running, I'm getting really good ideas. And often I'll think through an article that I'm writing while I'm running. But I guess, for me, it's a good idea generation tool. I think, for me, sport is a big thing. How about you?

BILL GATES: For me, it's tennis and pickleball. I probably should do more running or exercise things. I do some of that. But tennis is a lot of fun. I have a lot of friends that it's a healthy activity and a good distraction from work.

BILL GATES: Well, thanks for joining me, Hannah. I really enjoyed our conversation.

HANNAH RITCHIE: No, thanks very much for having me. It was a really fun chat.

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BILL GATES: *Unconfuse Me* is a production of the Gates Notes. Special thanks to my guest today, Hannah Ritchie.

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BILL GATES: I love forcing myself to write, although it takes a lot of discipline.

HANNAH RITCHIE: For me, I also have a day job. So, for me, I'm a very early morning writer. I get up at 4 or 5 a.m., and that's when I'm really productive in my writing.