**Eric.mp3**

**sam** [00:00:00] Is would it be okay to consent to use your organization's name used as part of. I am not attached to your answers necessarily, but as a kind of general list in our palm.

[00:00:15] I possibly know that when I need to hire, I'll probably need to ask.

[00:00:20] Okay. [00:00:21]That's absolutely no financial that can. Yeah, we can we can check out that afterwards. Okay. [5.2s] Okay. Excellent. So I don't know if you've got any questions for me before we get kind of started.

[00:00:34] I [00:00:34]don't know why you interested in it. I mean, how do you how did you get interested in [3.2s] it?

[00:00:38] When I start. [00:00:39]So I joined McGill to study climate change communication. And I just had a general [8.0s] kind of interest in it.

[00:00:50] I think I think I learned a lot of the climate information through kind of interactive tools. And I've personally found them helpful for learning about climate models, that kind of stuff. So that kind of sparked my interest. And then, yeah, we've just we've we've kind of started this research project and looking at how how kind of effective interactive tools are for communicating climate change and relative to other media and what kind of advantages and disadvantages do they have. So yeah, I don't know if that gives you a kind of flavor of how we kind of got to where we are.

[00:01:27] Yeah. Sort of curious about the other thing that you're looking at, but I don't want to waste your time on just chatting though. Where are we? We get through it.

[00:01:37] Okay. Thanks so much. So to start off, could you tell me a bit about your kind of background and how you found yourself in this in your current field?

[00:01:47] Sure. Sort of accidentally, I guess.

[00:01:52] A I was at Time magazine and started doing stories on reliable power.

[00:02:03] I think around 2000 maybe.

[00:02:05] Mm hmm. And it started running through the technology and doing stories and let interest wider interest in the energy industry and within a few years of doing that. But also Time magazine, general Interest magazine. So everybody works on everything.

[00:02:24] And so just let me have this sort of broad set of questions about, you know, in some cases it was just as simple as got a read about this climate stuff. But it's complicated. Money better. I understand it myself.

[00:02:40] So just kind of went whole hog on it just because it was hard to understand and I wanted to understand it. So naturally, I like I did a book, a work policy a little bit and then a bit blurb. Bloomberg for a long time now, about eight and a half years, focused on climate, energy, sustainability.

[00:03:07] And thinking about some of your these big articles you've done.

[00:03:10] I'm thinking that the Warming the World article and the carbon clock article. Could you describe you? I know you work with and Blackie McGee. Yeah. Easy on those. Could you describe you and your particular and kind of responsive responsibilities as they relate to those projects?

[00:03:30] Sure.

[00:03:34] Both of those.

[00:03:39] Let's see what what's really warming the world came about. Just because I felt like once the next thing we should do at that time think it was like 2015. And you know, it's still there's this sort of legacy climate denial in the US.

[00:04:03] And so we wanted to just like get at the core question, and I knew that just because I'm a glutton for punishment and you know, I've read IPCC reports for years, I know that the way scientists describe how they know, you know, is in this sub specialty called attribution, where detection and attribution, you know, those who like to to sort of, I don't know, practices or methodologies, baskets of questions at the core of how we know this is happening.

[00:04:40] Yeah.

[00:04:41] And so detection is like a you know, it just how do you how do you know what's happening? And then attribution is sort of trickier. And that's where you get into this sort of weird cognitive blockages whenever people have about. Some people have about climate change. Yeah. And the way they do it is, you know, there's only there's only one earth, obviously. So that's of limited value in some ways. And so instead of having multiple earths, we have these very sophisticated.

[00:05:27] Computer models, which are always limited. But if you look at the history, they do a pretty remarkable job of getting the big picture right. And so these models, they, you know, they can approximate or estimate the contribution of different factors in the earth's system to to the observed temperatures.

[00:05:55] And so you do that and you run the models, you know, sort of breaking out each of the main factors. And those are the items that are is built into the graphic itself. And you can see that. Well, you know, it's because of this. You know that. No, I you know, I think the.

[00:06:22] This is sort of fun. I guess the that sort of tempo is the way we went through it was really derived from the children's book where spot.

[00:06:35] All right. Yeah. I love that book. I've been reading for reasons you can imagine I'd been reading a lot of at the time. But you know, you've got your where spun is where spot. This spot under the rug. Know it's five in the closet. No, it's bottom of the stairs.

[00:06:53] And so you combine like IPCC reports and spot and that's sort of where that came from.

[00:07:00] All right. That's that's really interesting. So on that point, that kind of initial stage of designing and these these these interactive articles, what's the kind of intent the intent about and how do you envision readers using these things?

[00:07:23] It's a good question. I mean. You want to you just want to build an experience that is intuitive and that. You know, it's just where it's very clean. Clean, interact.

[00:07:40] And without much room for ambiguity, either in words or visually.

[00:07:52] And so I think with Lackey who.

[00:07:58] He's at The New York Times. I don't know if you're in touch with them, but, you know, I so he I'm not I don't come from a programing background.

[00:08:08] So it's like visually, Blackie, really, you know, I think came up with the idea of like the little labels running across the screen to give you a sense of what each of these lines is. How it performs and how they perform relative to each other.

[00:08:34] And it would be to kind of give a quick overview of that kind of development process where you went from your initial idea to the kind of and finished article with text and visuals.

[00:08:47] Yeah, it's hard to say how long it took. Mostly because I can't remember it, but also because it's.

[00:08:54] Something like this. That's not.

[00:08:56] Deadline driven, you just kind of work on it till it's done intermittently and get started and I could remember.

[00:09:08] Being with Blackie and an editor, too, and drawing on the whiteboard like, here's what this looks like. Here's how they know there are a number of the graph that the IPCC report. But yeah, there's just two graphs in their side by side. Usually. That show. What? You know, where the observed temperature line is and what the. Only the natural forces are and they don't match up. And what if you add.

[00:09:51] The estimated human climate forcing its hand to the natural 4C. Then it matches observe like exactly that. And it's just it's very powerful because it leaves you leaves me at some point with. Well, here's the conundrum. OK, if you don't think this is true. If you don't think this is true, then it's incumbent on you not only to explain what is causing the observed temperature rise, but also explain what is this magical property that allows this actual cause to make it look exactly like it's greenhouse gases.

[00:10:33] Right. Right. And it's, you know, is to some extent it's about just kind of using simple questions and logic to constrain responses.

[00:10:47] And it's like if the response to that, you know, someone responding wants to be logical, it's like you have.

[00:10:55] It's a hard box to get out of. So so after that, anything like a bunch of people work on that suit like you and me mostly.

[00:11:09] But, you know, the editor of the section and a couple other folks, four were helpful and getting such.

[00:11:18] So ah, so then I had to try to figure out how to do it.

[00:11:24] And. I think going back to in 2013, saw a working Group One IPCC report.

[00:11:34] Yeah, there is a chart.

[00:11:39] They got four or five blocks.

[00:11:43] Chart showing how the different forces perform over time. Those have been put together by, I think a team at the UK, etc. talk to them about, but and I haven't thought about this in a while, so I'll got to check this to make sure it's right.

[00:12:03] But like those those.

[00:12:10] Graphics, I think, had come from multiple sources, so I like to use those, but ultimately decided not to. Then I started. Talking with NASA's Goddard Institute for Space Studies, here you are. Yes. And that made it clear that what we should do is like all the big modeling groups who are part of the. Fear might be high if you're aware of them, but that group is officially a consortium of Earth's system modelers. Like to set up these tasks. So Candid Camera company. There are great. But one of these sort of common assignments that they set up for the whole community is what's called a historical experiment. The reason they all do the same experiments is so they could test how the models perform against one another. Right. Right. And so this historical model.

[00:13:19] It is to do just what we are looking for. To look at the observed temperature. No record and then to try to break it down, using the understanding of what the forces are doing into the contribution of those forces in the observed temperature record. And so and so that's what that is. This is bottle output is the sort of temperature records just presented visually.

[00:13:57] So it was you know, it's based very closely on NASA's historical experiment contribution to the sea bugs.

[00:14:07] Collaboration are interesting. And then we came to the visualization. Did you pick any kind of particular tools to use or is it more kind of in-house custom built?

[00:14:18] Yeah, it was all in-house. I mean, basically black. You did it. Mm hmm. You know, some of the conversations I remember having sort of cropped.

[00:14:33] Sorry about.

[00:14:37] But sort of having both technical and visual elements, like there is some question about what should the baseline be, you know, because this it doesn't matter what the curve looks like. But there is a actually I should watch it for the call and it is a while. Apologies.

[00:14:58] But there's no I think there is a sort of central baseline. Take a gray line that runs through. Yeah. Yeah.

[00:15:08] And it's like trying to figure out logically what would that be. Yeah. Where should we put that?

[00:15:16] And I think the answer was basically, it's the middle, there's something. So there were are questions like that about how to translate these things visually.

[00:15:26] Yeah, I've gotta say personally, your representation of uncertainty is really nice in this. Like, I haven't seen this kind of dot pattern. I haven't seen too many places, but I think it works really well.

[00:15:37] Yeah. Yeah, it's great. I mean, Blackie. Blackie. Genius there. We worked out with.

[00:15:47] Now, they sort of advised us and had a. Treat uncertainty. MBA. Numerically, there wasn't.

[00:16:01] Again, I wanted to say I think the uncertainty we use is just like two standard deviations above the line because that is enough bandwidth to just include basically weather like natural variation in climate. So. So he. I mean, you know, you know, you run. If you're running, you know, Earth's.

[00:16:31] Whatever. You know, a couple thousand times that. Yeah. Should fall within those that area. Mm hmm.

[00:16:41] Great. So maybe I will for the next few questions, if that's okay. And we can talk more kind of generally about your experiences as a journalist. I'm not necessarily on this [00:16:53]particular [0.0s] tool. But I'm wondering about the kind of different ways that you measure success Bloomberg and measure the kind of, you know, the real world impact of these kind of articles. So thinking about back to its kind of release, are there particular metrics of success? Sounds quite dry, but other there's that kind of metrics that you use to assess either formally or informally and how well the tool has kind of been received.

[00:17:26] Yeah, well, it was clear from when we published that this was very popular. Had just enormous. Social media play and attention to it. A superstar calm.

[00:17:43] Know. So with me, there wasn't much question that this was a successful project.

[00:17:52] In time, the easiest answer, the question is like, you know, is was it true? And so recently. But now, you know, how many people would see something because. Count it.

[00:18:04] So that's.

[00:18:07] That's one way to look at it, and it's never far from the mind.

[00:18:15] But there's the other categories I think, of things that. Happen that we, you know, we think are OK, like so many that, you know, doesn't have to be like a viral.

[00:18:30] You know.

[00:18:34] Project. Yeah, yeah, yeah. I well, sometimes, yeah. Yeah. It's just so gadgets more suited for professional. Yeah. Yeah, yeah.

[00:18:44] Or for people who are, you know, self selected is interested in a project for some reason. Mm hmm.

[00:18:52] I do know that it's outrageous. You didn't go ahead.

[00:18:55] No. So I mean to have to go.

[00:18:59] And I was running to do met. Do you have kind of metrics that you measure the types of people that that use particular articles or particular tools?

[00:19:09] I think that most.

[00:19:15] Media outlets like, you know, they count their heads and, you know, from the.

[00:19:25] Sort of third party tools? Well, I was getting a lot of traffic from Facebook and Twitter.

[00:19:31] Yeah.

[00:19:33] But beyond that, I think it's just I mean, at least for me and maybe somebody the company knows this, I don't know. But I mean, you can just easily get an impressionist look at social media, looking at other media who write about something that happened, you know, who's interested in it. That's what they're what they're doing with it.

[00:19:55] And then there's this other stuff that.

[00:19:57] I think some of the articles written in the last couple of years that I think about most things that were totally went under radar. I thought they were interesting. Yeah. And I learned a lot and I took it. That is exactly. You know, not everybody at that cheated for me personally.

[00:20:17] So I was wondering like a lot of the same things that other people have been saying. You're important to them in these sort of more informal methods of feedback that they've been using. Are there any kind of either in the development or post development and do you do do kind of use other people's feedback in a more informal sense to either guide the development or kind of assess the success of it?

[00:20:44] You mean just like within within my colleagues at Bloomberg?

[00:20:48] Mm hmm. It could be as simple as showing it to your colleague or as you know.

[00:20:52] Oh, yeah. Yeah, definitely.

[00:20:53] I mean, particularly as it got closer to the completion and other editors, we showed it to them. And, you know, some people. Good suggestions or observations? So, yeah, definitely, and then Twitter goes public. Then, you know, it's so, you know, it's all grown up. That doesn't.

[00:21:14] No change anymore. But. But he is you know, the reception was gratifying and surprising and, you know, it really makes me happy that people attended. You saw.

[00:21:32] Were there any particular surprises? Were there any particular surprises that you had when the when it was kind of received by the public?

[00:21:42] Well, it was it was quite popular.

[00:21:46] And so, you know, you've got a lot of attention on social media. So watching that happen, it was surprising that, you know, in the best possible way. And. Yeah, but really. I just I'm so interested in this. And, you know, the people confront climate maturity for other reasons. It's just for me, it's like part of it is just it's just it's such a comprehensive way package, so much study and.

[00:22:30] And so I feel. You know, very lucky to have that.

[00:22:37] You know, I've worked on a project that some people so share that. Share information with people who are seeking it. There's no need to let people go to CBS.

[00:22:53] And I think with that comment, you've nicely transitioned over to the kind of third part of this interview. We're interested in your opinions about the effectiveness of interactive media and interactive tools in general and the kind of arms you were just talking about and being able to use these things to condense information. I'm thinking in this broad, broad kind of sense. And what do you think are the key advantages of these more interactive types of media?

[00:23:26] Well, I think that.

[00:23:29] It's just good to have diversity in storytelling.

[00:23:34] And.

[00:23:35] You know, not everybody likes reading articles. Not everybody understands graphic. But just having the ability to tell a story that has.

[00:23:48] The visual dimension in that time to boot. It just it just opens up the possibility for. You know, new kinds of work.

[00:24:02] That.

[00:24:05] Yeah, you just need to find new ways to tell stories.

[00:24:11] I think it's a little like. A lot of great graphics.

[00:24:16] He to cheer the other leading publications.

[00:24:23] Know really great graphics like recreate professional conventions that tell a story that happens every day and work with graphics works often.

[00:24:33] So. A novel create anything informative.

[00:24:40] You know, not everybody, not everybody absorbs information, but the safe way is just better ways to do it. And that have been done before.

[00:24:51] And do you think there are particular audiences that find this type of information sharing particularly effective?

[00:25:04] It's hard to say. Mm hmm. Yes.

[00:25:09] And there is really there's conjecture on my part, a happy answer to that question, like, you know, people who grew up tech savvy will probably.

[00:25:22] You know, be more comfortable with. Web based media and. I don't know, like a 19th century script.

[00:25:33] Yeah.

[00:25:36] And I don't if you see any other kind of any key disadvantages or kind of limitations of this kind of interactive media in general.

[00:25:51] A good question.

[00:25:53] Well, there's always everything is always limited somehow.

[00:25:56] I'm trying to figure out how this would level it. Well, if we do that, we try to look graphic. We really just try to cram as much useful information in as you can. Yeah.

[00:26:11] And that the leaving out. You know, nuance and know like here we were able to treat uncertainty is not always easy to treat uncertainty. But here we were actually able to do that.

[00:26:32] Yeah, I have to promise everything I'm not sure is applied to this particular project.

[00:26:39] Mm hmm. Okay, interesting. And do you think there's anything. So thinking about the topic of climate change, which I know you work work primarily on. Is there anything that makes. Is there anything in the topic of climate change that makes interactive tools more or less useful for telling those kind of stories?

[00:27:00] Yes, climate is the original big data issue, and in the.

[00:27:07] This economic uncertainty. It's like the Earth's just a model that they started building about. But you're probably the 70s, 70s, 80s now than when things really got rolling in the 90s. There just is a very complex and a lot of equations.

[00:27:32] Parameters. You just.

[00:27:39] Hundreds of thousands of lines code probably in some cases get shut up, but so be the output of your models.

[00:27:50] You know, it's just phenomenal and it takes a lot of computation. And I think the big story we're seeing. Increasingly is the time. I would say it's just get better. The more competition there is. I mean, you know, like I sort of stated flatly, but a. That was not totally true, but in some ways climate scientists like a subsidy or the computer science because.

[00:28:27] Because the study of a dynamic system, you just need equations and computation to do that.

[00:28:37] And these interactive media are a particularly useful kind of condensing those big right, because they do it because you can you can crunch data.

[00:28:45] Find friend of mine said. A picture is worth a thousand words. The ground is worth a thousand pictures.

[00:28:56] OK. I was just in terms of the information delivery.

[00:29:01] I did condensing it down. Now, I've got a question here from. This is one of the last ones. So I appreciate you taking all this time to speak to me. Sure. But yes, one paper in the field, I think was published 10 years ago now by Steven Sheppard, a professor at UBC. He had the title. The paper was Can Visualizations Save the World? So in your opinion and do you think visualization can save the world?

[00:29:33] Well, it certainly hasn't.

[00:29:40] It's a big pedal, big claim.

[00:29:42] Yeah, I think that. It's just. Journalism is so much richer now that we can tell these stories in a new way. And know I can't.

[00:29:58] I don't know.

[00:30:00] Saving the world works for what that looks like if it were saved.

[00:30:05] But but we just have so much more opportunity to tell important stories because. We can. Be visual about it. End.

[00:30:24] And offer interactivity variable so that people can. You have to do it in front of the ground, right? It's in their own interest.

[00:30:40] Interesting. Great. So those are actually the questions that I have for today, but I'm not sure if you have any other thoughts and you'd like to share about some of your art schools or about kind of interactive tools in general.

[00:30:56] I don't know. You mentioned the carpet cloth. That was fun because the goal there was one of the most important numbers in climate science is expressed in. Parts per million. Yes.

[00:31:12] Which the abbreviated CPM, which nobody understand. So. Like the impetus for that was to just make it pretty. Yeah.

[00:31:22] So if we just make a big number and make it pretty. Then maybe people will think it's pretty and inquire about what it means. Mm hmm.

[00:31:34] And that was so that was fun. That's still. You know, that's still lives. Yeah, sure to keep that up.

[00:31:44] That's interesting, that idea of kind of athletics and prettiness. Do you think is do you think the kind of reason for that that it's effective is because it draws in a bigger crowd? Or is there some other aspect of the kind of nice aesthetic.

[00:32:00] You can do a different. Speaking to a different part of the audience, maybe to a different kind of audience.

[00:32:09] And.

[00:32:10] It is very difficult to get science out of. The conventions of science and to some extent it's not desirable, but to some extent it is. And for something like how much CO2 is in the air. It just seem like a good idea to go out on a limb and try a new way to explain that people.

[00:32:36] Yeah, we actually really enjoyed that one.

[00:32:39] Yeah. Yeah. I was under work on.

[00:32:45] And this more personal last question. Are you working on any other and interactive climate projects in the near future?

[00:32:54] Yeah. Yeah, I could really talk about you.

[00:32:58] But I guess you in a couple of weeks oh, I'm just not like it's not a major one like the ones we've been talking about. Fine. I'll just be able to send you an e-mail.

[00:33:10] Probably like a couple weeks of me with the like, oh, great idea.

[00:33:18] Great. Okay. I'm looking forward to that. Yeah. Thanks again for agreeing to share your time and experience.

[00:33:25] Yeah, sure. You know, I'm glad you're doing it. It sounds like a important project. I hope people get a lot worse, but I do get to do that.

[00:33:32] Thank you. So the plan is to to write this up. It will actually form a portion of my master's thesis and that we're planning to publish potentially general schools as well. And. And write research summary. So if you are interested in any of those findings and we'd be very happy to share and any of them.

[00:33:55] Definitely. Yeah. Yeah. You're talking to all principals you're talking to. But if it. But it's probably inappropriate to talk about.

[00:34:05] So although I can tell him just in terms of who. Because we'll be a lot of them, are we? Yeah. It's a mix of data journalism, of science, outreach organizations, of some of them. Classroom interactive classroom tools. Yeah. And so yeah. It's just really interesting. You know I won't name particular organizations, but it's a really interesting mix of and different people who are all using this kind of technique and you know, slightly different, slightly different goals and slightly different reasons. And so, yeah, there's there's I find it really interesting to kind of talk and speak to people from these different kind of places, I guess. Different kind of perspectives.

[00:35:01] Yeah. Not like a ton of fun. Mm hmm.

[00:35:04] Yeah. No, I've I've enjoyed it. Mm hmm.

[00:35:09] All right. Cool. Well, thanks for getting in touch. And do the, you know, swap swap. Would it work?

[00:35:16] Mm hmm. Excellent. Okay. Thanks so much again. We really, really appreciate it. It's been a pleasure chatting. Yeah. Okay. Thank you. Thanks. Have a good day. Bye.