Bret and Heather 4th Live Stream\_ Collapse in Guayaquil - Da...

Sat, 10/9 12:52PM • 1:22:57

**SUMMARY KEYWORDS**

fact, point, question, virus, places, bodies, masks, science, live stream, people, populations, ecuador, paper, crisis, problem, data, culture, system, genes, arguing

**SPEAKERS**

Bret, Heather

**Bret** 04:58

Hey folks, welcome to the dark chorus podcast, this is the fourth in a series of live streams with Dr. Heather Hyang. sitting to my right, we are going to shoot for an hour today that is an hour of us discussing topics that are arising and answering your super chat questions. So try to get those questions in early and we will try to get to all of the good ones in some kind of proper order. All right, so I believe we have no corrections this week. Is that right? It's hard to believe it's hard to believe. Yeah, yeah, cuz we said a lot of stuff.

**Heather** 05:35

We said a lot of stuff. I'm sure there were minor minor things. As always, when we're talking about developing situation with new news that's emerging daily. There are things that we will believe to be true. That turned out not to be true. But I don't think that there were things that we said that are an absolute need of correction right now. Yeah.

**Bret** 05:55

And usually we get really good feedback where people point us to things. And I must say one of the delightful parts of this horrifying situation is that you and I have gotten to interact with our audience a bit the way we did with the classes when we taught at evergreen, and the interaction is great as with evergreen, we are constantly learning things that we didn't know by virtue of the fact of a very engaged audience who is fanning out across all of the things one could be looking at, and they bring us useful information all the time. So in fact, comments coming.

**Heather** 06:29

In fact, I got a text from a former student yesterday, the day before, I think I read it to you saying that it reminded him of his time with us both in the classroom and in the field. So that was nice. Yeah,

**Bret** 06:40

it's good. It's nice to have that back in our lives. All right. So I think we should probably start by talking about the situation in Guayaquil, Ecuador. Now, for those of you who don't know why kill Ecuador is Ecuador's most populous city. And it's not the capital. The capital is Quito, and Quito is high in the Andes. guac Hill is on the coast on the west coast of South America close to the coast. It's, it's on Yeah, it's on the whale River. I guess.

**Heather** 07:14

I don't remember but it's not it's not exactly on the coast, but it's it's in the humid lowlands,

**Bret** 07:19

humid lowlands, and it is a major port city. So somehow, maybe a bit like Portland, things are coming up the river and docking in Guayaquil. But, in any case, Guayaquil broke into the news, late this week, as an absolutely horrifying situation began to emerge with respect to the fragile healthcare system in Guayaquil, and the system that deals with the dead, became overwhelmed. And bodies are now lying in the street. Some families have ended up living with their own dead, many of them have died of covid 19. But irrespective of what people die from, there's no mechanism for dealing with the number of bodies that are emerging. And so people are keeping them inside as long as they can. Often these families are living without air conditioning. And then at some point, the smell of the decaying relative, it has forced people to drag these bodies of people they loved outside. And so there are many, many instances of by bodies just simply lying in public. Many of them not in a casket, just simply lying in the open. And it's a tragic and certainly psychologically devastating situation for the citizens of Guayaquil. So, I we have spent a lot of time in Ecuador, I have not been to Guayaquil you have been

**Heather** 08:47

there I was I went through there in 2014, with my study abroad class, my first study abroad in Ecuador, just just went through, I had to stop to get our bus cleaned out. And, you know, I wasn't impressed with it as a city. It wasn't someplace that I wanted to live. Whereas there are a lot of places in Ecuador, that I do feel like I would, I would love to spend a lot of time there. But it was as every place that I've been in Ecuador, a bustling, vibrant, culturally, deep, rich and historic place. And seeing these images, you know, we all we all will relate most to those places that we have a personal relationship with. And so while Yes, I've been to Guayaquil, it's more that this was happening. This is happening in Ecuador, where we have both spent considerable time it's a country that we love. And seeing, seeing these signs of utter horror in Ecuador, brought home what might start to be happening throughout Latin America throughout the rest of the developing world in a way that probably will not manifest In the in the weird countries in the developed countries, only because we have a slightly thicker margin, we aren't quite on such a razor thin margin with regard to our health care.

**Bret** 10:11

Well, I actually, this is all making me wonder a bit. So when you first ran across a tweet from a friend of ours on Twitter, mentioning the situation in Guayaquil, the images were almost beyond belief such that you and I both felt very nervous about saying anything because what if somehow, anyway, we were both quite concerned that maybe there was something about the story that couldn't be right. And then it turned out an hour or two before the LA Times had published a story that reflected the very same pattern. So we knew that it was it was real. But in understanding the story, it couple things emerge. One, you some of you will remember that in our last live stream, I mentioned a particular concern about the role that homelessness is going to play. And we in the United States, if you're not an American, maybe you don't know but we in the United States have a an absolutely terrible problem with homelessness in every urban center I can think of and it's become a part of the landscape. It was always there, to some extent, but the degree to which there are homeless encampments all around Portland, LA, every,

**Heather** 11:25

especially on the west coast, which don't have such harsh winters,

**Bret** 11:28

right? It's a battle survive. People who are homeless can survive for quite some time. But I raised the question in the last live stream about what happens, you know, I don't think we think very much about how it is that homeless people function in their daily lives, mostly the you know, if you become preoccupied with how the homeless are living, it takes over your mind. And so anyway, we all become more practice than we should in ignoring the problem. But what it means is that we don't really have a deep understanding of, for example, how it is that these people eat, right? What is it that they're eating? And as I've thought about that question, more and more, I realized that probably the places that they are, are largely chosen, because they have proximity to places where people throw away lots of food, like, near, you know, food courts and fast food restaurants and things like that. And I've been watching those places shut down, and wondering if there is not a brewing crisis amongst homeless people of starvation. And if it hasn't been, you know, going for a couple of weeks now, I don't know if that's true, but certainly it could. It could be true and my question really is, the situation in Guayaquil reveals a pattern that we've seen with respect to other things non human things which is that there are many things which can fluctuate in their availability or their commonality up to some point at which they cross a threshold at which point you notice that something has happened so for example, I don't remember in my lifetime when toilet paper or beans or rice or any of the things that people have been hoarding have been unavailable in a store and

**Heather** 13:22

in the US we've we've we've traveled places we've and we've lived classes where these basics were not available sometimes ever in some but but in the US or in in Europe we've never seen this before.

**Bret** 13:35

And likewise I'm a huge fan of ice propyl alcohol I usually have a lot of it on hand to clean with because it's non toxic we have an evolutionary history with the molecules in question and so it's, I consider it a very good cleaning product but we didn't have very much when this started and suddenly it was unavailable everywhere.

**Heather** 13:54

So you want to say something about what you bought in instead.

**Bret** 13:57

Well, I've branched out I've gotten some everclear is very high proof grain alcohol 190

**Heather** 14:07

proof reminiscent of bad college days.

**Bret** 14:11

Yeah, so anyway, that is available relatively inexpensively and you know, would function as a disinfectant if, if it needed to be I've also gotten oxy clean, which turns into hydrogen peroxide when it's added to water we bought some hydrogen peroxide But anyway, there, you know, we've been forced to branch out because a seemingly indefinitely large supply of ISO propyl alcohol dwindled, all of a sudden as COVID-19 emerged. Anyway, my point would be, the fluctuations in the supply chain have to be a constant fact. But if your interface with that supply chain is at the store, you don't notice that anything at all has happened even if the rate of use tripled of one of these things you wouldn't know because the store shelf is full at the point that you read. A threshold that the supply chain cannot keep up, suddenly the shelf is empty. Suddenly people understand the value of the thing. And then it's you know, the emptiness spreads across the city as people hoard what little bit remains. And that's a long winded explanation for saying the same thing is true for the capacity to deal with the dead, right? People die at different rates. And the number of bodies produced in any given month may vary quite a bit, but we don't notice that there is a maximum capacity at which a city can deal with the dead until we exceed that capacity. And then we exceed the capacity of the morgues with refrigerators. And suddenly bodies are lying in the street. And so anyway, Guayaquil has revealed that there is a threshold.

**Heather** 15:45

Yeah, and it's not just health care. It's death care, right? It's body care. It's it's the lack of morgues and ability to transport bodies. That is why we can see what we can now presumably what's going on in the hospitals there is awful as well. And we in the US are hearing about what's going on in our hospitals. But we so far do not have any scenes of horror from the streets of dead bodies in the streets. That just that proved to be a particular kind of visceral visual that I at least didn't, hadn't prepared for. I didn't see it coming.

**Bret** 16:19

I think there's another factor playing in here, which is, this is a largely Catholic country. And Ecuador is Ecuador and the prohibition against cremation amongst Catholics. In other words, the Christian need for the body to remain intact at burial for the purpose of later resurrection. That is getting in the way I presume of a rational program of stepping up cremations that might be dealing with those that's conjecture on my part, but all of the pieces seem to fit.

**Heather** 16:54

Well, there. Also, I mean, there may be a supply problem in terms of crematoria, precisely because there has been so little demand in the past.

**Bret** 17:01

That's true, although I know that the the local government has announced glass products, yes, it has announced that it is going to find a solution to the burial problem that it is going to bury people individually. And I must say, on the one hand, that strikes me as good news that they're talking about solution making. On the other hand, this might not be the time to adhere to the these traditions at this level. And you know, there are two solutions, really one people could move to cremation in the country could, you know, it's not too hard to put together. crematoria that could accommodate these bodies, or the bodies could be buried together. And it strikes me that this comes down to a question of, you know, maybe in light of the situation, the pope might step in and make an announcement about, you know, your God doesn't want you to suffer from bodies in the street. That's not the intent of these traditions. And by saying something that freed people, I mean, people are already burning bodies in the street. So these are desperate people. And to the extent that they could be given some kind of religious license to bend these traditions for these terrible circumstances, it would make a great deal of sense.

**Heather** 18:34

Well, it reminds me a bit of the quote of a question we got in the last Super Chat with regard to Don't you have concerns possibly about a fast tracked, not fully safety tested vaccine? And the answer is yes, and desperate times call for desperate measures sometimes, right? So in this case, you're not arguing I know, you're not arguing, neither of us is arguing that there is not value in a long standing tradition, to have a way of dealing with a body after death such that you can go such that you know, for sure that the person that you love has died, and that you have a way of visiting them and informing them in the future of whatever it is you need to inform them up, right. And you know, not all cultures do this, but many, many cultures, every every culture, I believe, has some kind of death ritual. And the vast majority of cultures that are known in on this planet have some kind of way of interacting with effectively the spirit of the body afterwards. So in this case, this is not to say, what the hell Why are they so focused on wanting to bury their bodies of their loved ones individually, we can understand why that is useful and helpful and, and has been adaptive. But in this case, it may actually cause more kinks in the system and may cause more of a log jam which which there's simply no opportunity to get out

**Bret** 20:01

of there's no opportunity and the situation that we're facing a global pandemic spreading At this rate, this is novel. So whatever we can say, the traditions that stretch back 1000s of years are not equipped for the modern world. And it's time to begin to alter the rules so that, you know, we're gonna traumatize people, to an extreme extent to the, you know, bodies in the street is a, it's a very dramatic thing to have children encountering, for example, I saw one film of, you know, a body that had been there six days, and a line to get in the pharmacy that went effectively right by it. And you know, this is just so devastating. But one of the other things I saw in many of these videos is that people in Guayaquil are wearing masks that you and I can't buy at any price. Now, that tells you this, this also raises questions about why is it that in this country, masks were not stored in great numbers for this contingency, they're obviously very inexpensive relative to the cost of not having them. And the thing I really am having a hard time wrapping my mind around is that we cannot bootstrap a mechanism to produce them rapidly, we should be a we should be able to produce those things on a dime. And frankly, the country that you and I grew up in could have, our country has now, you know, become so heavily based around a service economy in which all of the products are manufactured elsewhere, that we have made ourselves extremely vulnerable. And anyway, we, when we get out of this, whatever that looks like, one of the things that we should be thinking about is how this could have been worse, what we could have done that would have made it vastly better. And not having everything driven by a concern with economic efficiency to the point that every supply chain is, you know, is a coefficient away from breakdown such that it can all happen simultaneously.

**Heather** 22:18

Yeah. With a read of masks, anecdotally, I will say I was just at the grocery store shopping for our younger son's birthday tomorrow. And for the first time it had been about a week since I bought the market and still not a majority of people and masks, but a significant fraction a significant minority whereas in the past three or four weeks I've been the only or maybe one or two people in the entire store and now they're about half of the employees and a significant minority of the other patrons who were masked have some in some way so that that is interesting that that is finally spreading.

**Bret** 22:57

I agree in fact I was at a hardware store yesterday sourcing a necessary plumbing part and one of the employees recognized me because apparently I had become you know, the bandit who wanted the hardware store as a result of the bandana and he saw me coming in my bandana and it's like you're back. So anyway, yes, I am now seeing people wearing masks I saw somebody wearing a full face one of these masks that a welder wasn't dark but you know it was one of these things that covers the whole face So anyway, people are now beginning to innovate which is good but nonetheless the fact that we have no capacity to manufacture these things on a dime is amazing. Yeah.

**Heather** 23:43

Do you have more that you want to say about glad kulish should we move into this question of how we how we assess the information we're getting which is which is

**Bret** 23:51

related which is related well why don't we go there Yeah,

**Heather** 23:56

I don't we don't have the screen visible You want it? Can you show that tweet that we were talking about from the sky? Yo it says that it's the length that says yo yo posted the first video you won't be able to see it. Okay, so we do not have the screen visible. I'm going to trust that you're going to get it done Thank you kiddo. So really one of one of the things that this is pandemic and societal response to it has revealed is how for information she is and not just how poor it is, you want to keep that up. I can't is the audience messing up Give me one second, okay. Not just a poor inflammation is but how unprepared most people are including the people who are delivering us that information to assess the quality of information. So almost no one seems to be sort of in real time thinking Hmm, well, let's see its health workers for whom these masks are generally made. But we're being told that they have no efficacy. How could that possibly be true, right? Like, it's just the obvious one, right? When you know the who and the, the World Health Organization and the Surgeon General are telling us things that are patently the opposite of what of what these masks are for in the first place. So so this is this is on Twitter, this is posted by this. It's an anonymous account. But this is a person with whom both Brett and I have interacted over a couple of years. And I trust that this is a real person who has proven himself to be I think you'd Peruvian. Born and raised. And also someone with a deep understanding of evolutionary biology is how we sort of end up in each other's spheres on Twitter on so he posted this this video, which is the one that Brett was referring to. And, you know, I saw last night that Oh, holy hell, this is really bad. What do you I just responded in line and said, Do you have anything else? Do you have any other sources of information, and pretty quickly, someone else not him posted this LA Times article, and I've since seen a very good article in the Miami Herald. Yo, so we've got these multiple points now that are effectively verifying the la times the Miami Herald or big masthead papers, and not that they can't be wrong. Obviously, all these big papers have been wrong sometimes. But big papers with a lot of depth of their research teams and reputations to uphold, are unlikely to be totally wrong, right? About about this, this shared structural information about factual information. So that doesn't mean though, that necessarily all aspects of this video, for instance, are true. And someone in fact, responded in line to this tweet by saying, You know what, I saw part of this video a few days ago, and it was tagged as being in spin. And so you know, don't don't believe what you see. And you respond to this by saying, Look at the architecture, listen to the accents. This is Latin America, it's not spin. Now, as soon as he said that, I thought, Yep, that's right. And my our Spanish is terrible by comparison to certainly our native Spanish speaker, who grew up in in South America, but that claim right there told me Okay, yes, this is this is almost certainly coming out of where it claims to be coming out of now we've got these independent, these these different data points, two articles, both with First Person account start the same first person accounts. This is all feeling like, like it's real. And this is part of how we are needing to assess our information bit by bit, so you can you can take it down now. Thanks, kiddo. So let me just go through a couple of other pieces of information that we've gotten over the last couple of weeks.

**Heather** 27:58

Just as the schools were closing down here in Portland, we'd already been quarantining, and close to quarantining for a bit. I read an account of a hospital in Seattle, that was already under such duress, they were so slammed, that they weren't giving ventilators to anyone who either had any underlying conditions are had a BMI over 25 or is over 40 years of age. That's shocking. And it's totally untrue. As it turns out, it's completely not true. But at the point I, I saw this, I had no way to verify there was there was just this one claim. And I probably stupidly mentioned it at the dinner table, and we talked about it with with our kids with our 13 and 15 year old boys. And I'm sure that didn't help the level of fear and concern that we were all experiencing. Why did anyone spread that Why? Why is someone fearmongering right now there's plenty of legitimate fear to go around. It's a it's a totally awful thing to be doing. It's, you know, at least borderline sociopathic if not full on sociopathic to do that. By comparison. There is can you put up the letter from F Scott Fitzgerald suck. Compare this to the equally false letter from F. Scott Fitzgerald. written during the Spanish flu, this has been going around also completely false. This is not written by F. Scott Fitzgerald 102 years ago. This was written by someone a couple weeks ago. But it's charming. And it has this literary giant writing about something that is so like what we are going through right now that we can we can be heartened by we can take hope he takes a dig at Hemingway, there's a reference to the need to stockpile various kinds of alcohols. And it just it feels like it gives hope it's it's false. And the author of the letter has talked about it and you know, there was no ill intent and in fact, I think it's other than people being a little embarrassed if they shared it. Thinking it was true, I think it actually does does a service to humanity, ultimately. So there's there's these at least these two different kinds of misinformation going around. And then just one more example that I want to mention. And here's Zach is this, the screenshot it at the top of the second page I gave you the screenshotted article that was posted then removed from the site of a scientific journal. So this, this, again was a tweet that I would not have seen but for the fact that someone in in replying to it tagged me and said, what do you what do you think of this? And it argues it's the so if you can go into the screenshots themselves, let's so this is presumably and just hold off for a second. This is the first page of the preprint that was supposedly up on this scientific site, and it was taken down next page. This is the the first full page of text, next page. And then it's a very short article, but it's got a whole list of references. And it argues for us when we were talking about our last livestream, which is this sort of, you know, it's not incidental that this happened in Wuhan. But that doesn't mean that it was an intentional bioweapon, it could have escaped from a lab that was doing legitimate work into viruses. And that's what this paper is, is claiming. But there's something about this paper that doesn't ring true to me. And, you know, the idea that it went up, and then it was pulled. No, why was it bold? I don't know, the formatting is really unstandard for a scientific paper, the language is weird, it's like it's it reads like, what a native English speaker would imagine a native Chinese speaker would sound like as they translate themselves into English, it doesn't sound quite right to me now. And I may be wrong, like maybe this is a legit paper that really was pulled in here. These these found it, and it's a piece of information that allows us to, you know, to really think carefully about whether or not this is an escaped virus. But regardless, regardless of whether or not this paper is legit or not, it has all these references at the bottom, which are legit. And so you can use that to pursue more information. And so one more thing before I stop with this. The references in the paper include something that was referenced in our Super Chat, which is this one more link here, Zack the monetary at all, 2015 paper. And that's all I have written here. So I'm gonna have to look at the screen. It was I'm getting a signal that I'm not sure what the signals mean. Great, that's too far away from you to see though. So this is

**Heather** 32:54

this is an article from five years ago as a totally legitimate article from five years ago, saying, look, there's there's a real problem with Corona viruses, they're probably latent in bats. And we need to be thinking more about what the risks are. So this we've seen this from a number of places. Now, this is this was a real risk. So the the moral there is, I don't know if this 2020 paper that that supposedly got pulled down from a site a couple months ago, did or didn't exist was created for the purposes of, I don't know what, but it has a legitimate list of references, which are actual real papers that exist in the scientific literature. So how are we assessing information right now you have to follow a lot of different threads and often do backup for yourself.

**Bret** 33:45

Alright, this raises two issues, one of which I realized is a correction I wanted to deliver that we missed up top okay. We said in a earlier live stream that it was likely that something like the hunting of deer in North America yes was safe. Several people responded to us, reminding us of wasting disease, which is a prion disease that is now ravaging the deer population. And prion diseases are very interesting. These are transmissible, communicable diseases that do not have a DNA or RNA component. They're basically a mis folding of a protein that triggers the misfolding of other like proteins and then is the cause or prion diseases are the cause of, of mad cow disease, and Kuru. So these are prior examples. So anyway, it may indeed be very dangerous at the moment to be eating. deer are certain parts of deer and so our. Our sense that deer we're probably safe is is off enough that that bears mentioning here,

**Heather** 34:59

but when we were talking about this, you predicted to me you hypothesize that the fact that deer have now become dangerous to eat is almost certainly going to be the result of something that humans have done to change the relationship between humans and deer, that it has not been dangerous for humans to hunt and eat deer for the call it 18,000 years or so that humans have indeed been hunting deer and eating them in North America.

**Bret** 35:25

Yep. Okay, um, the second thing I wanted to address has to do with the fact so you were talking about the evaluation of sources. Yeah. And that is basically, you know, is the paper real? Does it say what, what is being claimed about it, there's a deeper problem, which has to do with the quality of data. And we've talked about this a number of times, but one of the things that is causing the situation to be far worse than it otherwise would be, is that we can't actually say for sure, what is taking place because the data itself is so low quality, it's, in many ways, extremely noisy. But worse than that it contains systematic biases that may come from the fact that different countries, report things differently, record them differently, that the political interests of leaders and the countries that they represent, may cause them to bias the data in one way or another, which is blinding us to what is actually taking place. And I raised this because many of you will have heard an important story were an admiral who had been told to keep his aircraft carrier at sea docked in Guam, chastising his superiors now he did this in a letter that I believe was supposed to be private, and it was then leaked, and he has now been relieved of duty. But I wanted to make the following very difficult and uncomfortable point. I can't say one way or the other what the situation on an aircraft carrier is and what the wisdom of keeping it at sea would have been. I'm sympathetic to what I read in this letter that sailors were being put in grave danger. For reasons that might make sense during wartime but didn't make sense during peacetime. That set the point at which that aircraft carrier docked in Guam and started offloading the crew was a lost opportunity of immense proportions. At the very least, that crew should have been thoroughly documented samples of their blood should have been taken as they left the ship before they interacted with anybody.

**Heather** 37:40

Even if the test don't exist. Now, there are ways to preserve blood so that you should be able to do retroactive, both antigen both molecular testing for current infection and serology testing for past infection.

**Bret** 37:53

Yeah, in fact, all three tests could be done on blood that had been stored even if the tests aren't available at the moment. Also, very likely, people should have been asked to document their everything they could remember about who they had interacted with what rooms they had been in, the data would surely be flawed. But if it was noisy, rather than biased in any given direction, this would give us some ability to assess how the disease had moved through the ship. And indeed, there was something more than 100 sailors were sick with COVID-19 at the point of docking. So that information, the idea that there had been an isolated population that had been infected with covid 19, and it was circulating on the ship provided a you know, something very close to a natural experiment, that I'm not suggesting anybody needed to be left in danger in order to preserve it, but at the point that that isolation was broken, and you know, it's an aircraft carrier, maybe helicopters had gone to and from or airplanes could have. So maybe it wasn't perfectly isolated, but it's probably as close as we would, as close an example as we would have available to us. And the opportunity that was lost at the point that it docked and they just started going ashore is potentially a mess. Yeah,

**Heather** 39:12

no, it's it's it's a tremendous loss and this distinction that you've made that I think we've made here before, but it bears repeating over and over and over again, that okay, the data wouldn't be perfect data are never perfect, but the data wouldn't be clean, but the error in them would be would be noise will be random error. Whereas the error in the data, for instance, around COVID-19 cases across almost every country with the possible exception of Iceland, I think they may have done total 100% testing I'm not sure about that is systematic error. There is systematic undercounting of cases in every single country. And there's no you can't swamp you can't just take more and more and more data and get rid of systematic error. That's not the way systematic error works. random error can be fixed with more data collection. But systematic error cannot.

**Bret** 40:03

Yeah, that's a really vital point that we've taught in our classes many times. But it has a potentially life and death implication in this circumstance.

**Heather** 40:15

All right, well, maybe we should move to Super Chat. Are

**Bret** 40:19

you? Well, I have one more topic I wanted to raise. It's not specifically COVID related, although I can't help but see it as connected. There are other things going on. There. Some of them? Yes. Did you catch Whoopi Goldberg taking Bernie Sanders to task and suggesting that he needed to step out of the Democratic race?

**Heather** 40:39

I didn't, is there there's a presidential election going on? There is a presidential

**Bret** 40:42

election in which we will elect a president. So that is happening, I'd be less. But anyway, you did not catch this now. So for those of you who didn't see it Whoopi Goldberg, and was interviewing Bernie Sanders, and essentially argue that he had a patriotic duty to step out of the presidential race. You have any thoughts, though? I don't care to voice not really not right. All right. Well, I want to say, I was stunned by this. I actually think he's half right. I think he needs to step out of the race. But it's the wrong he, Joe Biden needs to step out of the race, because obviously, you know, the man is losing his marbles. And in the era of COVID-19, the idea that we would elect somebody who has, I think, clearly a condition that is known to get only worse and not better, and would potentially put him in charge of this crisis as it continues or the next crisis that emerges. This is an insane mistake.

**Heather** 41:47

Well, if I may quote you, when we when we were talking a month and two months and three months ago, about Biden, and what a vote for Biden would mean, not that either of us were imagining voting for Biden, what you said was, given that he seems increasingly incompetent, and he wasn't always but given that he seems increasingly incompetent about for Biden as a vote for party rule. This, this was your language. And I think that's right. And not

**Bret** 42:13

even just party rule. This is a vote for DNC rule, a completely non transparent, non elected entity that has demonstrated time and time again, it's wanton disregard for the well being of the American people, and indeed the world. This entity is not fit to rule. And the idea that it is now going to cause the Democratic Party to rally around Joe Biden, who I wouldn't be voting for Joe Biden, even if he was fully in possession of his faculties. But in his current state, they've actually delivered the one thing they could deliver that, in my opinion, would make an argument for Donald Trump viable, right? The idea that you would put somebody who's losing his ability to think in a position where he would have to manage these crises. That is an argument for Donald Trump. Now, I'm not going to vote for Donald Trump. But why would democratic

**Heather** 43:15

you're also not going to vote for Joe Biden,

**Bret** 43:18

I won't be voting for Joe Biden, I can't vote for Joe Biden is unpatriotic. I didn't like Joe Biden to begin with, but it is unpatriotic to vote for somebody who cannot possibly be caused to manage a crisis because he doesn't have the capacity to do it.

**Heather** 43:34

So I will say, we have been thanked a few times in various comments for not going political with these live streams have totally broken that at this point. I

**Bret** 43:43

don't think I have Hold on, hold

**Heather** 43:45

on. I will say that 2016 just laid bare what the DNC was capable of, and the fact that they don't appear to have learned anything in 2020 is extraordinary.

**Bret** 44:05

Yes, let me say in my defense, I do not view what I have said here as the least bit political. I view it as the opposite of political. This is my own patriotism coming out. And my patriotism says that well above party is my duty to my country and my duty to my country forces me to challenge the idea of putting somebody who is losing his ability to think in a position to manage crises that we all need to be managed. My patriotism to the US and to the world requires me to point out that we have arrived at a place where these parties cannot be trusted. And at some level, I think mutiny is the only option if this is the direction they insist on going

**Heather** 44:53

do you want me to follow that up by asking what you mean by money or should we go to Super Chat?

**Bret** 44:56

No, I didn't meet me is self explanatory. Okay, we can talk about What various mutinies might be available to us? at some other time?

**Heather** 45:04

Maybe next time?

**Bret** 45:05

Yeah. All right. All right. So Super Chat.

**Heather** 45:10

All right. Our single pipe, so this is, our single people living alone, more or less at risk.

**Bret** 45:21

are single people living. I mean, it would seem that single people living alone to the extent that they are self isolating, they control more

**Heather** 45:29

of the variables in their environment. Alright, then, yeah. Anytime you. Anytime someone whom you live with walks in the door, and you don't know fully where they've better health, careful, they've been, you are being exposed to risk that you can't control. So I think in general, single people living alone are less at risk. At least one caveat being if someone were to become sick suddenly, and not have an ability to get help. That is a concern. Of course,

**Bret** 45:59

that is a concern. And you know, there's also this looming question about psychological well being Yeah, and I have the sense of this is still early days, that the isolation does not show signs of becoming less necessary at the moment, and therefore it may last quite a bit longer. But you know, thank goodness for the internet. And what it allows us to do in these cases where we have to be physically isolated, How marvelous is it, that there is a way that we can actually be the next best thing to write in front of other people, and having these social gatherings without the danger. In fact, I know my parents have initiated a tradition amongst their friend group where they meet every night, and they have a cocktail hour where everybody is at home. And that is one example. And I've

**Heather** 46:57

no one has

**Bret** 46:58

to drive afterwards. And no one has to drive. That's true. Yeah, so that's great. We also know, somebody pretty well, who has put together a virtual Piano Bar. Anyway, we will say more about that later. But, you know, crises are terrible, but they often reveal depths of character. And I'm watching a number of people innovate things, both social and practical. And it it does restore one's faith in humanity, among other things,

**Heather** 47:32

I would say for single people, as for people living with others, though, getting getting out into nature, if you possibly can, will be helpful for the psychological effects as well. is why. Next question, if water is transparent, why do things get darker when they get wet?

**Bret** 47:51

That is a very good question. Get. I haven't Yes, I have a guest and I reserve the right to start next live stream with the correct okay. But there's a lot to be said for thinking about reflectivity. And, for example, I used to torture my classes with the question. If whiteness is the reflection of all colors of light, and we're not gonna be a social justice story, no, no, I'm not talking about that kind of work. I'm talking about the color white. I guess the whiteness is the reflection of all colors of light. And mirrors reflect all colors of light, why aren't mirrors white? So anyway, it's gap turns out to be an interesting little puzzle. But I think this has something to do it to do with it, too.

**Heather** 48:40

So I guess what one thing I was looking at you and your shirt when I read the, as I was thinking about the question, and I was thinking, well the shirt, make it darker, because it is now denser. And it is about absorbing, I can't quite, I can't quite get there,

**Bret** 49:00

I think it's going to have to do with the fact that the light is bouncing off the surface of the water in concentrated places, which is then denying the light to other places. So if you imagine the ripples on the surface of the water, so it

**Heather** 49:15

effectively correlates the surface rather than having it be a smooth reflective sheen.

**Bret** 49:19

Again, let me just reserve reserve some time in the next live stream to walk this back when that turns out not to be the answer. But yes, I think that the concentration of light, if you think about a curved water surface, a ripple a curved water surface is going to send the light depending upon where the light is coming from it is going to angle of incidence equals angle of reflection. And so the light will end up as a stripe of light and if you imagine like a brick, and you pour water on and it gets darker, it gets darker but you will see places that have the light reflecting off of them. So I think it's going to be same number of photons but they're concentrated in some places and Tonight, okay, why we got asked that I have no idea? Because they can't because they can't.

**Heather** 50:05

Do you think viruses co evolved with species in order to avoid certain species to mix or predate on one another? And can really relate that to the advantage of being an omnivorous species

**Bret** 50:18

co evolved with species in order to

**Heather** 50:22

not quite sure what this means. I don't know what it means, like, neither of us can parse it, it feels like there's a misunderstanding. Yeah, something evolutionary in there, but I can't, I at least can't parse it enough to figure out what I know, here's where here's where this is not like the classroom or the campfire. Where if we could have better if we could ask you directly, and have a little back and forth, we could figure out what the question was and address it, but I just can't make sense of it as it is.

**Bret** 50:50

Yep. All right. Hi, Brad,

**Heather** 50:54

good to see you. How will the Omega principle drive human responses to COVID-19 and the associated loss of life and economic fallout in 30 seconds?

**Bret** 51:05

Well, the Omega principle is we needed an analogy for the relationship between genes and culture that expressed the same obligate nature that one finds in the relationship between the diameter and the circumference of a circle, which we call pi. So my claim is that culture evolves more rapidly than genes. That's uncontroversial. Anybody who understands cultural evolution would agree. But that culture is inherently subordinate to the objectives of the genes. In other words, culture is not as Dawkins presented meme theory in The Selfish Gene, it is not an independent new evolving realm. It is a subordinate realm in which the culture does the genes bidding subordinate and specifically downstream. Yeah, subordinate because it's downstream, the genes are in a position to shut down culture. And anyway, I'm not defending this, I don't like it one bit, I would much prefer that our culture was independent of our genes. And I've advocated that we essentially free ourselves from the obligation to pass our genes into the future in the obsessive way that our genomes would have us do it. Because I think it's pointless and results in a great deal of tragedy. But nonetheless, that's the Omega principle. How do I think the Omega principle will drive the human response to COVID-19 on the associated loss of life, and economic fallout? Well, there's one way in which it will automatically happen to the extent that humanity is a long lived phenomenon that we continue deeply into the future, we will face more of these crises and those of us who come up with coherent cultural responses will have an advantage in doing so. And those cultural responses will be passed down by the populations that have that have deployed them now. There is a a frightening possibility built into that question, which is, we do not want a situation in which we figure out how to deal with COVID-19 and we deploy it and deny it to our antagonists. What we would like is to ban or something like COVID-19 by getting the world to collaborate in a way that our individual populations might might prefer. We didn't worry at a genetic level they would be better off if we didn't In other words, let your enemies suffer from COVID-19 while you protect yourself is an obvious if diabolical strategy so I very

**Heather** 53:44

much hope we should be viewing this as a planetary threat, not a cultural threat, we should be viewing

**Bret** 53:48

it as a planetary threat. COVID-19 is the wake up call and the question is how can we restructure the way we interact on planet earth so that this doesn't happen to us again, and likely worse? Alright.

**Heather** 54:05

Ah, could you look into our Ask colleagues about this paper uncanny similarity of unique inserts in the 2019 novel Coronavirus, Spike protein to HIV one gp 120 and gag

**Bret** 54:19

Yes, I've actually run you know this before I know that it exists, and I don't know what its meaning is but I will say yeah, is in light of the correction I delivered at the beginning of the last live stream. It is a very curious claim that HIV the correction

**Heather** 54:35

being that, that COVID that SARS cov. Two is not a retrofit, not

**Bret** 54:41

a retrovirus. HIV is clearly a retrovirus and the idea that you would find components of HIV conspicuously in COVID-19 raises all kinds of questions. Now I must say my guess would be the result is erroneous or it doesn't mean what we think it means but Who knows, I will also say, in learning something about non retrovirus RNA viruses. The third category of them actually does involve a mechanism for genetic exchange the flus. influenza is able to exchange components. So there's a kind of analogue to set exchange components between virus instances, yes. Now you can have two different lineages of flu and they can exchange components, which is why you have this like h one n one, it's like it's a, it's a Lego set that you can mix and match parts. So anyway, I don't think that that capacity exists between something like HIV retrovirus and Corona viruses. But you would have to have something like that in order for true components of HIV to show up in a Coronavirus context without human meddling.

**Heather** 55:56

Yep. Good. Next question from the steel man podcast, we get question from Steam and podcast each time, I think has anyone applied the observations of supple skis forced to trip to humans. That is, these are baboons. In Africa that is mapping the role of tuberculosis ridden meat in calling the aggressive baboons the role war has played in calling our most aggressive members. Fascinating.

**Bret** 56:21

Yeah, I wouldn't say that war calls our most aggressive members, I do think it has been deployed as a kind of calling force. And I've talked about this elsewhere that basically, lineage level selection results in populations that have reached a limit to the resources available to them, engage in behaviors that alleviate those limits, from the point of view of the population in question. And one of them, you're certainly coming up with a reason to make war on some population that can't defend itself.

**Heather** 56:55

But for instance, absent the draft, the people who who enroll aren't inherently the most aggressive, they may be more desperate than the average people who don't enlist. And so it's a calling of people who don't have as much opportunity in society, not necessarily people who are more aggressive or who started out more aggressive.

**Bret** 57:14

Yes, in fact, I think our society neatly separates these things where the most aggressive people are the people who know that they can get away with it and don't pay the price of having to personally fight, right. Okay,

**Heather** 57:27

Heather, Where can I buy your book thanks. Antipodes seasons with the something something, wildlife and cultures of Madagascar, it's out of print, I'm sure it's available places still on the web. Our agent is trying to get the rights back. So maybe it'll go back into print at some point after our next book comes out. But I imagine it's available out there somewhere, but I unfortunately don't know exactly where at this point. Thank you for asking. We had a store of PBE. That's personal protective equipment, I think is what the acronym stands for. That was depleted during the Obama years. So we're talking about we the the country here, I presumed after creating a pandemic response team, why wasn't the first order of business restocking our supply of PP just goes to show even the best minds in the field commits the obvious. You Yeah.

**Bret** 58:20

So I would say yes, but I'm even more disturbed that we don't have a manufacturing capacity that can be caused to produce that which is needed. The personal protective equipment is one thing that one can obviously need. But the list of things one might suddenly need are indefinitely large, and the fact that these things are all being produced in one region of the world,

**Heather** 58:47

we've become a nation of buyers rather than makers.

**Bret** 58:51

Right? And it is an incredible vulnerability. And it's needless The fact is, as the manufacturing capacity of the US was being offshored. It was known, it was actively discussed that this was dangerous to us as a nation. And so I think those those discussions have been forgotten. But nonetheless, people understood this was dangerous, it now clearly is dangerous. Let's undo it.

**Heather** 59:19

Yeah. And really, so this this one should be obvious now to most people. How many more of those how many more things have been allowed to lapse, that we actually need not to lapse? That's what we need to be thinking about. Thanks for doing these. How confident Do you feel that this crisis will spur national reinvestment in the sciences in the five to 10 years scale? Can scientific institutions responsibly leverage this and how

**Bret** 59:46

you want to take it

**Heather** 59:49

you start well last the question would say the

**Bret** 59:52

part of the problem is that our scientific institutions are not healthy and this has been addressed Difficult point for you and me to make because somehow any issue that breaks down to two sides, to the extent you want to introduce any nuance at all, you are seen to be the enemy. So as champions of science for us to say, actually, our scientific institutions aren't healthy, they're not trustworthy, and they need to be fixed, is taken as an attack on science.

**Heather** 1:00:22

But so part of the problem, I think, and I think you started here, you implied it, is that higher ed is broken. And the easiest target, when talking about what's broken in higher ed is not the sciences. It's obvious to almost everyone who's outside of the the so called grievant studies fields, that those fields are ridiculous, right? That they that they are doing great damage, and they have no business being in higher ed. And if you contrast them simply with the sciences, and that's not a fair contrast, because you know, where did the art show up, which are important, unnecessary, as well, and the legitimate humanities and legitimate social sciences. But if it's sciences versus grievant studies, obviously you're going to pick sciences. But what if we, you know, if we start talking about p hacking in the replique, and the replication crisis, and you'll every end the fact that NSF and NIH are effectively funding most scientists in the in the US anyway. And so it's, you aren't actually allowed to ask the questions you want inherently, and you aren't encouraged particularly to do low tech research, because then your university doesn't get the 40 to 80% overhead from the grants and, you know, on and on, and on and on. It's not a healthy scene. So will the science departments want to make hay out of this? Sure. And should we have more better science? Absolutely. 100%. How to turn this how to make the science, healthy and robust and rigorous, though, is

**Bret** 1:01:54

tough. Well, not that gets tough, we're a long way from the system functioning, and most of the people who inhabit our scientific system wouldn't know what to do, which is part of the problem. So that's that's the tough part is it's going to take time to repopulate the system with people who have the correct instincts to you know, I mean, a lot of people in the system could switch if the incentives changed on them. And they were actually being rewarded for challenging things rather than for doing brick in the wall science and keeping their mouths quiet. But

**Heather** 1:02:28

and, and being a bit authoritarian as well, you know, well, I, once, once I have a PhD in the science, you're supposed to trust me, because now I'm wearing the lab coat. And I'm a scientist like no, that's that's exactly the opposite of what science is, you're not supposed to trust someone on the basis of their scientist, you're supposed to at some point, after they have demonstrated over and over and over again, that they are doing good science begin to say, Okay, I will listen to that person more than I listen to this other person, because I've seen that they actually know what the scientific process is, and that they are constantly trying to falsify their own most precious assumptions. And that is not what most scientists do. In fact, to me, you see this quite clearly over and over and climate change space, right? Where too many climate change scientists, most of whom are presumably rigorous and careful, will say, we don't question the models, you know, no one can understand them. But us. Of course, we have to question the models, of course. And of course, there'll be some bad science, it's coming out of that, just like this bad science coming out of every single field. There's bad science, there's bad, x coming out of every y. That's just the way of the world.

**Bret** 1:03:32

I think the thing people should do is imagine that the systems that they are capable of observing, you know, politics, journalism, these sorts of things, they can see how sick they are. Now imagine science is just a sick, right? That's a really frightening thought, but it for those of us who have seen it from the inside. There's a lot that is wrong. And many of us have been trying to raise the alarm and just to no avail. So anyway, it's a big problem, and it must be addressed because it's making us incredibly vulnerable. Yep.

**Heather** 1:04:06

One hour, okay. Well, we said we were going to stop at one hour, let us who what do we do?

**Bret** 1:04:14

I think we should finish up with the questions.

**Heather** 1:04:15

We've got finished the questions we've got. Okay, so we're gonna go we're gonna finish the questions we've got. We're gonna try to do it quickly.

**Bret** 1:04:21

And I'm gonna let you read so that they never realize I'm dyslexic.

**Heather** 1:04:26

They'll never know they'll never know never know. The uncanny paper was unvetted and swiftly retracted from preprint server where it appeared. This is the paper. I think that I was talking about that screenshot at article. So that's just a comment. Oh, wait, did I know what Okay, we got that one. Could an infected person get long term negative effects. To start over? Could an infected person get long term negative effects from COVID-19 even if no noticeable symptoms were present? quite possible. We don't know. And it's not just But we don't know the world does not know the answer to this. So that there is nothing to suggest that it is impossible that an asymptomatic carrier could not end up with long term effects.

**Bret** 1:05:10

So there are things we can say, Yep, one of the things that is true in general of something like a respiratory virus is that what happens is you get infected, you get a lesion, some colony of cells that has been overtaken by the virus, that then starts malfunctioning and spilling out virus that creates essentially a wound. And that wound is a large part of the pathology that you are experiencing, the reason you may have a lingering cough after something is that you've got a lot of these wounds, and it takes a long time for them to heal. So your nerves are being stimulated badly. So it is likely that the less symptomatic you are, the less damage you've sustained. But it is not certain that the damage is zero. That you know, there are a lot of places in your body that aren't innervated, for example, because you would have no ability to act on the information that they were harmed. So you just don't have nerves there. And you wouldn't you wouldn't necessarily know.

**Heather** 1:06:06

And this is just a mechanism. We know, we don't know all of the ways that this disease may be affecting us just like we don't know, all the ways that any of these diseases that we think we have nailed are affecting us. But

**Bret** 1:06:17

if we can continue to beat the same drum that we've been on from the beginning of our livestream series, the necessity of good data to being able to answer a question like this, if your tests aren't high quality, so you can't even say for sure who has had the disease or who hasn't had the disease and you're not testing enough people. So the same problem exists. And we can't figure out whether, you know, an asymptomatic person has lost some of the capacity of their lungs and has had their potential lifespan shortened right or not, because

**Heather** 1:06:55

not long term, or you know, if if we got widespread serology testing now, we might know in 40 years, whether or not even those who are asymptomatic carriers of COVID-19, had, on average, shortened lifespans by three years totally making this up. It's not a prediction. But there's no way to know that without a better data now and be a lot of decades to pass. Yep. See, which one are we on? Can the virus survive for significantly longer? If on plastic packaging in a

**Bret** 1:07:30

freezer? Almost no doubt.

**Heather** 1:07:34

That feeling longer compared to what how do you read that?

**Bret** 1:07:36

either not on plastic packaging or outside the freezer?

**Heather** 1:07:40

You think you think it'll survive for longer in the freezer than outside of the freezer?

**Bret** 1:07:43

I mean, the thing is, there's a reason that freezers play the role they do. It's just that they slow down every chemical process, and they also kill

**Heather** 1:07:49

some things. I mean, they kill you know, the reason they can kill these things,

**Bret** 1:07:54

cells that break apart as a result of the fact that the water in them expands. But for something as inert as a virus, I can't say the possibility of it is zero, but I think the chances that you can preserve this virus in the freezer are high, presumably somebody presumably that is well understood. amongst people who study COVID-19

**Heather** 1:08:15

and Coronavirus, is I mean, they all have the same sort of Is it a lipid coat? Yep. And so yeah, I think to be safe. soap is soap is magic. And you know, it's actually magic is actually chemistry. But washing anything that you're going to put in the freezer that's wrapped in plastic, plastic and soap First, it costs you almost nothing. It doesn't put the stuff inside the plastic at risk. And then you know when you pull it out, then it's it's clear.

**Bret** 1:08:40

Yep. And if the stuff went in, since the COVID-19 epidemic and it hasn't been washed, just treat it since before. You mean no if it went in since Yeah, oh, it could have virus on it. And nobody washed it before it went in. treated a suspect the way you would a package that arrives at the door. Yeah. Stay safe. Think they say no, it's not how we roll. Safety third is I want to my students, right, there you go.

**Heather** 1:09:05

Have you seen the FBI reports from last September of Chinese nationals flying to the US with unclaimed vials containing viral strands? No, I have not have you? Nope, nope, haven't encountered it. How should the worldwide fragility we are now witnessing influence our relationship with new technologies? a gray goo? Yep, extinction event comes to mind and love the stream. Stay safe guys.

**Bret** 1:09:28

Yeah, read more about this in our book when it comes out. There is clearly something about the precautionary principle that drives people crazy. But those of us who have thought deeply about the overwhelming novelty of the technology that we are encountering, know that some version

**Heather** 1:09:47

not so sorry to interrupt but not just the overwhelming extent of novelty, but the overwhelming rate at which novelty is evolving.

**Bret** 1:09:53

Yes, the novel rate of novelty is a lethal threat to humanity, which means that we have to know Navigate a path, we cannot be paralyzed by some sort of sense that the organization of the sand in any particular vacant lot is a, you know, can't be altered. But the principle I've used is one of reversibility. Yes, you should not engage in anything that you could not reverse. If absolutely necessary. Can you make a golf course? Yes. But could you reverse a golf course if you had to? Yes. So the point is, the danger of the golf course is limited by the fact that if it had to be undone, it could be. So this is a problem. There are lots of things that we can't undo. And those are the ones that we can worry most about the release of a novel pathogen is something you can't undo the release of a species into a habitat where it invades is something you can't undo. So the danger of these things is immense relative to things that you think are safe could turn out not to be and if absolutely necessary, humanity could roll them back.

**Heather** 1:11:02

Good. Someone says he can. He's willing to have his brain picked on the topic of him having served in two different us aircraft carriers, and it's closely followed the story of the USS Teddy Roosevelt cool. Someone else pitching Yang gang? Awesome. Zach, the next one down, we got one that we can read. But then there's a next one that we can only see the bottom part of the line ends with Eric 23. A Yep, there. Yeah, perfect. If you had to be quarantined with Biden or Trump, which would you choose? Oh, Biden, for sure. I think falling into dementia would be much easier to deal with and then Trump, for me, you're gonna find it more interesting.

**Bret** 1:11:42

Yeah. Well, it's vastly more interesting. At the moment. Yeah,

**Heather** 1:11:46

I really I just feel like I could have silence with with Biden that.

**Bret** 1:11:51

That question is from Melania. No, okay.

**Heather** 1:11:58

Please take him. big fans of both of you. Do either of you use the term atheist to describe yourself Why or why not? I tend to, yes,

**Bret** 1:12:08

I don't. And the reason I don't is that I am. Although I don't believe anything supernatural is going on in the universe. The affirmative connotations of atheism have become so aggressive, and frankly, so illogical with respect to the obvious truth that religion, long standing religions that are expensive, must have paid their way, by benefiting the populations that believed in them, that I don't want to be associated with that crowd. I would much rather navigate a new relationship in which we deal with the, I would argue, major in compatibility between ancient religious beliefs and our modern circumstances, which they are incapable of addressing. And, but also the fact that these things have historically played many roles, some of them terrible, but also some of them were key ingredients to human success. And until we acknowledge that as part of a improved atheism, then I'm whatever that third category is.

**Heather** 1:13:17

Yeah, so I guess, in answer to why, since there doesn't seem to be a word for this, this other category that bread is searching for. And you know, I am too and many of us are I still I still own the term even though I don't tend to say it to people. No, I don't I don't have faith, I don't believe hoping for another hand holding smile and wanting to support you. This is this is the same person who asked for one less time.

**Bret** 1:13:45

Sure, why not? Oh, all right. Even a kiss.

**Heather** 1:13:52

My question was, my question was related to exotic meat consumption. Okay, so this is Zach, if you can scroll up to the last one from this. Yeah. Okay. Do you think good Thank you. Do you think viruses co evolved species in order to avoid certain species to mix or predate on one another? career late that to the advantage of being on every species and go back down? And he said the question was related to exotic meat consumption. I can't I still can't quite make sense of it. I'm sorry. Get

**Bret** 1:14:25

it either. Yeah. Sorry.

**Heather** 1:14:27

any validity to Susan blackmores Treme theory I don't know Susan Blackmore stream theory. Do

**Bret** 1:14:33

I feel like I should, and probably a little more would help me remember what it is we're talking about.

**Heather** 1:14:38

Yep. Would it be would would? What about most likely for viruses to get into the future by never killing the host?

**Bret** 1:14:52

Depends on how they're transmitted, but almost always, yes, yeah,

**Heather** 1:14:55

classic evolutionary answer. It depends on the context. But usually Do the ends justify the means is the road to hell paved with good and fed intentions? Can we ever improve our politics if we always accept the lesser of two evils? And as the last question, can we ever improve our politics if we always accept the lesser of two evils? No, I don't think we can.

**Bret** 1:15:15

No. In fact, the less I've argued before that the lesser evil paradigm is effectively a trap that has been built to keep us in the confines established by the parties that said, escaping it has important costs that should not be taken lightly. I am reasonably sure that the road to hell is not paved with good intentions. It's paved with advertiser.

**Heather** 1:15:42

Oh, for sure. billboards? Yeah, probably video billboards.

**Bret** 1:15:46

Yeah, totally. Yeah. It's certainly

**Heather** 1:15:48

lined with videos lined, paved as well. Yeah. What came first a virus or a cell? cell, it's

**Bret** 1:15:55

got to be a sell, gotta

**Heather** 1:15:56

be a sell,

**Bret** 1:15:57

gotta be a sell.

**Heather** 1:15:58

Given failures at the state and federal level, it's a sad thing about central a devolved power. Also, universal health care systems, such as in Europe seem harder than the US generally. songs in New York. Do you agree? implications?

**Bret** 1:16:12

I don't think we know yet. It's very hard to imagine that universal health care systems are hit harder as a result of them being universal health care systems, it may be that they're correlated with societies that have some other vulnerability, but clearly

**Heather** 1:16:27

smaller, much smaller than what's going on then than the US in terms of economy. Yeah. But I don't think we have the data to know this. I

**Bret** 1:16:35

just think the fact is, if you get COVID-19, you're almost certain to be downstream of somebody who didn't have proper health care if you're in the US, because so many people have not had access. So anyway, you know, healthcare is a very important thing for us to engineer on the far side of this catastrophe.

**Heather** 1:16:58

Yeah, that there were failures at every level. Here. Yep. Including the fact in the US of, of many people not having access to good health care. Please assign mods for the chatter have Zach mods that can't he's too busy doing all this other stuff, but we're thinking about it, we are

**Bret** 1:17:15

thinking there's a there's a downside to mods, which is that you somehow end up taking responsibility for those you have chosen. And anyway, this has been raised to us as a potential hazard. But if if you the audience will be good about accepting that we will pick good people, we will do so honorably, and hopefully they will do an excellent job. And then then mods are probably the way to

**Heather** 1:17:42

go. Yeah, we can't we don't see the chat. So we don't know how it's going. But I've heard that it sometimes goes off the rails as these things do. Two more. Do you have any? Do you have any thoughts on the rat city experiments? so far? I don't know what those are. Do you think there are negative implications and mammals with high population densities? Seems like this dovetails with both pandemic and SJW issues? Do you know what the red SETI experiments are?

**Bret** 1:18:06

I do, but I do not know them well enough that I feel like speculating about them. I do think novelty is dangerous that, you know, the rat city experiments, if I've got the right set of experiments in mind, involved the production of basically colonies that were up against rat colonies at rad con. So anyway, yes, high population densities, carry various dangers, the conditions that you set up in the experiment matter a lot, but I don't think there's there's much to say beyond that.

**Heather** 1:18:46

Okay. And final question. Is it true that a mask when worn for 15 minutes or so becomes useless and protecting the person due to moisture from breath? No, can't imagine it can't not, not how it works.

**Bret** 1:19:01

I mean, one thing, this depends, even if even if there were truth to that, in some climate, in some other climate, you're going to reach an equilibrium where the thing never saturates, I would say.

**Heather** 1:19:15

So your point here is, even if it were true, that a saturated mask wouldn't be effective, yeah, the rate at which would become saturated would depend on environmental conditions, and therefore there couldn't be a number like 15 minutes, that would be the right number. But we are separately saying as well that neither of us thinks that saturation of a mask is going to render it render it useless. And in fact, this result that I said in passing last time, about masks that have have a membrane, the ceiling membrane in them are actually far more effective. Yeah. That basically when the virus hits the salt, the combination of the salt the virus in the water, basically causes the salt to denature isn't quite the right word, but the nature of the virus,

**Bret** 1:20:02

yep. Or bind it up in any way it binds it. Yeah. So I would just say there's something wrong with a claim like that. I don't know where you're hearing that claim. But even if the mask saturated, and that caused it not to be permeable to air, and so air was going around it, even forcing a viral particle to take a circuitous path means it's likely to land on your cheek rather than go into your lungs. So there's no way that useless is the right. the right conclusion. That's right. Does it decrease in its usefulness? Maybe. I think with something like a bandana, you don't have this because there's such a large surface area, I don't detect the thing actually filling up with moisture at all.

**Heather** 1:20:54

Now with something like a bandana as you said, I think our first live stream when you introduced the fact that you were wearing them, you do wash them every single time after you have gone out into the world.

**Bret** 1:21:04

Absolutely. I after I go into the world, I drop it and I pick up a new one, and I have enough of them that I can keep that going indefinitely. So it's, I think, I'm going to do another little video on these methods. But the bottom line is, don't be helpless. And when somebody hands you a nonsensical claim, like the mask becomes worthless after some number of minutes. Think carefully about whether it could possibly be right. And if it sounds like nonsense, it almost certainly is.

**Heather** 1:21:39

Yeah. I think we're there. All right. We'll be back next Tuesday. So we're gonna be doing these. For now, twice a week, Tuesdays and Fridays, 3:30pm Pacific will drop to once a week at some point, surely. But so long as we're in lockdown, the plan is to keep on going.

**Bret** 1:21:56

I would also say I know that there are complaints from people in Europe that these live streams are late enough in our day that they're already in bed. We would love to move them earlier to avoid that. The problem at the moment is that our kids are in remote school. And so in order to have Zach do the important role that he's playing here, we've had to push it to the end of the school day for him. If you cannot watch the streams live, they are being made available on the Dark Horse podcast, you can listen to the audio only version on your favorite podcast app where you can watch them after the fact on YouTube. And we greatly appreciate it if you do and if you circulate them. hit like and subscribe all those various things. And we will see you next time.

**Heather** 1:22:44

All right, be well