Bret and Heather 11th DarkHorse Podcast Livestream\_ Choose Y...

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**SUMMARY KEYWORDS**

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**SPEAKERS**

Bret, Heather

**Bret** 00:01

Hey folks, welcome to the Dark Horse live stream our 11th. In a series I'm sitting with Dr. Heather Hyang. We are facing very frustrating technical difficulties. Some of you are finding that your stream is not synced up between audio and video. Let's see where should we start. We should start with what we are not calling housekeeping but are calling maintenance. And we have a couple of announcements in the maintenance category. We will be live in a presentation for the James Madison program at Princeton tomorrow. And this is going to be done through zoom. There are a total of 1000 spaces available. I don't know how many are left. But we certainly think it would be a great idea for people to sign up, we will provide a link to sign up you can also look at our Twitter feeds. And we have each broadcast the announcement.

**Heather** 01:02

This is going to put the screen up for just a minute from my computer.

**Bret** 01:06

This is going to be I think quite an interesting presentation for people we are going to cover some deep issues in the meaning of consciousness we're going to provide a new model and because this is going to the James Madison program and is being broadcast publicly this will all be done in English rather than science ease. So people who are interested in that topic, but fear that we may end up in a mode that is difficult to understand. I think you'll be pleasantly surprised. Okay, see, we have every intention of making this presentation off the hook. And by the way for our young viewers off the hook is a reference to phones. And what it means is, in the old days used to come in the door and you would hang your phone on a hook. Also, phones were the size size of Volkswagens. So it was a very different world ultra, ultra. Yeah. By the way, we have a question, which is, what the hell are we going to wear for a presentation? For a Princeton audience when we're streaming from here? our usual mode isn't gonna work, isn't it? I don't think so. Because ordinarily, you have an audience like this, maybe you for me, I would maybe wear a blazer and a tie. Right and jeans and that way, you know, there's a kind of a formal note and an informal note, and people can see what they need to see. But online, nobody sees that you're wearing jeans, it just kind of looks weird. blazer and bandana. bandana. That's a thought. But I was thinking about was I could wear a suit. But no shirt.

**Heather** 02:43

Oh, yeah. Oh, no, no, no. Okay. I don't think anyone should try to pull that off.

**Bret** 02:49

We'll talk about this. Okay. All right. Other announcements. Now, as

**Heather** 02:54

far as I know, as far as our technical problems resolve, and we can, we can just do this.

**Bret** 03:00

Yes. If you out there on our audience believe you know what the technical problems might be, they all seem to be downstream of our PC, either our internet connection, or YouTube seems to be causing this discontinuity. Anyway, we'd be very interested to hear about it if there was a fix that you were aware of that you think we might not be. Alright, Alright,

**Heather** 03:23

here we go into it onto the content. All right, so we have we've begun doing corrections and addendums and such at the end. So we're going to save a few few of those things for the end. We're going to spend most of the time today talking about this video that many of you will have seen that had almost 5 million views from two doctors in Kern County California, Bakersfield to hatchapee area south end of the Central Valley of California which is the producer of much of the nation's produce and it was about an hour long here you can put the screen up here for a moment just set Zach just for like 20 seconds here they are This will give those watching a visual don't know if they've seen this or not. It's a Dr. Erickson these are both MD is a former emergency room physician who now co owns accelerated urgent care in Bakersfield California. With Dr. I'm gonna butcher how to pronounce his name artin. Massive, also an MD and about this video. Ilan Musk said on Twitter. Dogs make good points.

**Bret** 04:32

You on musk who has been dismissive of the aggressive actions towards the situation since early on.

**Heather** 04:40

Yep. And this is totally consistent with that. So I would say to boss Get a grip, man, get a grip. You're smarter than this seriously Get

**Bret** 04:49

a grip, not the grip.

**Heather** 04:53

Sure. But the whole video this whole video is a terrific example frankly, of motivate reasoning, and we're gonna spend some time dismantling it before we talk about what it does have going for it. The supporting players if the whole thing is about motivated reasoning, the supporting players I would say are bad math, internally inconsistent argumentation, inflammatory and dismissive language and appeals to authority. So it's got all that in just about an hour. Let's Let's go. Let me see if I can just pull up. Don't show anything here, Zack. On the subject of bad math, there are a number of places with this. Specifically Dr. Erickson, the main the main guy sitting at the end of this long table they call the press conference. So they've got a bunch of journalists off screen, occasionally interrupting, occasionally asking questions, but it's mostly these two guys. You've got Dr. Erickson specifically arguing that lockdowns and aggressive social distancing measures had no effect. And he's comparing numbers from place to place specifically at some points. He uses numbers from Norway, California, the entire state, not just current county or Bakersfield, and Sweden, who's got Norway, California and Sweden. Norway and California both have and had pretty restrictive lock downs. Of course, we know in California, they had the first three or five counties to implement lockdowns at all in California itself as a state went wet towards a pretty severe lockdown pretty early as to Norway, apparently. And Sweden did not. So we didn't have a little bit of social distancing, but kept at schools open kept, you know, kept a lot of things as normal. And so Erickson says, you have a look at the numbers. there's basically no difference between them. He says, for instance, and I'm just going to read through some of his numbers, and then later we'll come back to his numbers shortly. He says Sweden with no lockdown has 15,000 15,000 plus cases 74,000 tests, therefore 21% of the tests were positive in a population of about 10 point 4 million. He says let's extrapolate out the data. This is the phrase he uses. We've got about 2 million cases in Sweden. Okay. Leave that aside for the moment in Norway, which does did have a lockdown there little over 7000 cases, with 145,000 tests. If you're keeping track of the numbers, that's twice as many tests and only 4.9% tested positive. Now that right there right away, should be raising questions. How is it that neighboring countries with similar cultures Please forgive me Swedes and Norwegians for all of the differences? I'm sure there are but with relatively similar cultures, how is it that you had 21% testing positive and Sweden whereas only less than 5%? were testing positive but Norway? The clear best answer to this is different testing protocols. And in fact, what we see is that Norway tested way more people in a population that was basically half the size of Sweden. So they effectively tested four times the number per capita of what of what Sweden tested. extrapolating out again, to use Erickson's language. He says, well, there must have been about 1.3 million cases and only 182 deaths. Okay, so Norway 182 deaths, Sweden 1700 65 deaths, he says, Let me find the actual quote from him. He says the death count from Norway and that from Sweden is statistically in significantly different. He never shows any numbers. I mean, he never he never does any influential statistics, which is exactly what you would need to do in order to demonstrate that there was no difference between them. And if we don't have the data with which to do inferential statistics, we don't even have sufficient data to use descriptive statistics, which would be to say calculate averages and standard deviations and such. So first issue with the with the just disingenuous math that is motivated by a conclusion is Norway is testing many more people, and so is getting a lower test positive positive testing rate as we would expect. So assuming that those numbers for 4.9% positive versus 21 point 21% positive and Sweden are the actual numbers is is very unlikely to be true, one of those numbers at least is likely to be wrong. And given what we're seeing in a lot of other cases, it's more likely to be that sweetness numbers are wrong. The idea that 21% of the population is in fact infected is more likely to be wrong, but it doesn't matter. If either one of those numbers is wrong. comparing them is like comparing apples to Subarus. So

**Bret** 09:45

let's be clear, though, you are conjecturing that what we have going on here is motivated reasoning. We clearly have going on here is unjustified comparisons of two data sets. are not alike. Yes, why we have that we don't know. But we do know that the video and many of you will have seen part or the whole thing. In fact, many people asked us to comment on it. The video very clearly advocates for a relaxation of the restrictions that we are living under with locked down on the basis that it is not justified by the numbers and in fact points to a, an analogy with the flu and makes the argument that this is not so much more serious than the flu, that we ought to be taking drastic action.

**Heather** 10:35

Right. So just the other The only other particular math point and there are several other points that that we want to get through here. But with regard to the math, there are many concerns. He doesn't acknowledge what false positives positives are going to look like and how they're going to be revealed in the data and such. But the different very different results from Norway and Sweden suggest that at least one of those numbers is wrong, and therefore we can't be doing the comparisons. He's trying to do them exactly as you just said, Brett. And then we have this death count in Norway being 182 versus the death count in Sweden being 1765. With different background population numbers, Sweden has roughly twice the number of people as Norway does, quote, Dr. Erickson, Erickson, the bottom line is from those of us who study it and have a background in this is lockdown versus non lockdown didn't produce a significantly different number of deaths. That is the bottom line. Wow. So that is bad math and appeals to authority. So no, NO and NO. Right? So we bad

**Bret** 11:38

math, appeals to authority. And it's all plagued by small n. Am I wrong about that?

**Heather** 11:48

No. You mean you're not you're not wrong, inherently, they didn't do a tiny number of of testing. Let me see if I can scroll back to find you know, 145,000 tests in Norway. 74,000. In Sweden. It's true. It's true, that we're still pretty early in this but i don't i don't know that the small one is particularly there are a lot of problems with the math here. But I would put small and pretty low

**Bret** 12:11

on ways to complain maybe better would be suspect. And because we don't know the protocol that generated right, these numbers. So that's,

**Heather** 12:18

that's that's why you can't trust the comparison between the the positive testing rates. But in terms of the death count, and I've seen people argue, oh, there's some some places where deaths are being missed. And there's some places where deaths are being mis attributed to COVID-19, where they should be attributed to something else, maybe in both cases, but I that looks like more noise than some kind of a systemic error, or a systemic systematic error error. So fact is he didn't do any statistics. So he has no basis on which to say that there's no significantly different number of deaths. And I did just a little bit of simple math that you can do with the numbers he's provided us and he also then talks about California. So let's just talk briefly about deaths per capita that is deaths using his numbers per capita using numbers that I found on world population review calm for, you know, how many people are in Sweden. Now, how many deaths were they? What's the death per capita in Sweden, Norway, California? Well, in Sweden, 1.75 times 10 to the negative fourth is the desperate capita, it's tiny, right? But in Norway, which did have lockdowns in place, it's 3.36 times 10 to the negative fifth. And you don't actually need to remember any math to know too much math to know that that different exponent 10 to the negative fourth, versus 10 to the negative fifth means that Norway actually had an order of magnitude fewer deaths almost than Sweden did. Similarly, California's deaths per capita was 3.05 times 10 to the negative fifth, Sweden's California is Datsun, Norway's deaths that put down lock downs early had death rates per capita in the 10 to the negative fifth range, and Sweden in the 10 to negative fourth range, both pretty small, but these doctors are not arguing that we, I could see an argument I could see a doctor saying you know what, we just have to put up a certain amount of death and the lockdowns are costing us too much. And we are going to have to come out of lockdown and and deal with the fact that people will die. What they are claiming is that there's no difference in the death rate between situations where there were locked down some situations where there weren't and all you have to do is take the very numbers that they presented, but they failed to do the actual analysis, the simple calculation that needed to be done and see that actually of the three examples that they provide. Sweden with no lockdown had about an order of magnitude more deaths per capita than either Norway or California did which implemented lockdowns earlier, so

**Bret** 15:00

We don't know that they failed to do the calculation. We know they failed the presented. And we don't know why. But we we are left with a difficulty that I have now begun to see comparisons that correct for all of the hazards in these sorts of comparisons emerge. In fact, BuzzFeed, of all places, not my favorite publication, but BuzzFeed presented a pretty good comparison between Sweden and Denmark. And what it did was it focused on I guess the term is excess deaths were in a particular time period from one year as compared to the next within the same population. And the question is, how many people would be expected to die during let's say, January? And how many people died during this January?

**Heather** 15:44

And this controls for the Oba? Did they actually dive COVID-19? Right,

**Bret** 15:47

it actually controls for almost everything because it compares two years, and you could have two years that were wildly dissimilar, but they won't tend to be wildly dissimilar all over the globe in the same direction, you know, to the extent that the weather is harsher or something and it has some little effect, it will tend to be swamped out and it will go in different directions in different places. But these the comparison between Sweden where my understanding is there basically was voluntary measures, social distancing was widespread. There was no lockdown. But people were basically making some effort not to transmit the disease, but they were not being required to behave in particular ways. Compared to Denmark, where there was a lockdown actually shows a strong preference for Denmark's model based on excess deaths that show up in Sweden and not in Denmark. So this kind of comparison is really important also. I mean, it's not all clean. New York has shown a massive rate of excess deaths, like a shocking number six times the number of deaths expected in this time period, something like that. And, you know, what this points to is all that we don't know about what the factors are that are causing this. So

**Heather** 17:07

there's also a question of when the virus actually showed up in a particular place. Right. So one of the nice things about the comparison with like Denmark and Sweden, as you were just talking about, or or Norway and Sweden set, the US are geographically close enough that we can expect that more or less. The virus showed up there at the same time, the climatic and weather conditions were more or less the same, etc. Whereas in New York, it seems New York like LA, it seems to be increasingly apparent that actually the virus was there much earlier than anyone knew. And so even though California experienced pretty stringent lockdowns and New York City still does, probably those, those lockdowns just came too late to stop the spread to the degree that they needed to stop it. And so I mean, we'll get back to this. But there was a question last time about India and what's going on in India? And one of the one of the likely answers is, it got there late. I got there far later than it did. For much of the rest of the world after the rest of the world was already seeing it responding to it, India could see the responses. India could implement stricter lockdowns far earlier in a process even though it was later in the calendar year, then other countries were doing it. So you know, time is not absolute with regard to responding to a virus because it shows up in different places. At different times. Yeah,

**Bret** 18:27

actually, the map you showed last time, gave you a time series for where it jumped which gap at what point and, you know, in some places, it jumped gaps multiple times, in fact, that will have been commonplace. So yes, the clock didn't start at some moment.

**Heather** 18:41

Exactly. I mean, it did the original clock, right, you know, the original virus, either left from a bat or escaped from a lab, you know, whatever it was at some moment. But beyond that, it is now spreading, we've got effectively an adaptive radiation of this virus. And each fork is at a different moment in time in a different place in space. Yes, comparing

**Bret** 19:01

populations to each other the clock start at different moments, but as your original point here was if you take two countries that are close together and have close contact, and it makes sense that their clock would start similarly. And so therefore, comparing one to the other might tell us something about behaviors. At the very least what this seems to be telling us is that it is not a clear cut case, the way these doctors have presented it that argues in favor of the relaxation of these measures exactly how I would say, we do have to do the analysis, the kind of analysis that they are doing, as many people are asking us to do the analysis that says, at what point are we willing to accept an excess number of deaths in exchange for the reboot of the economy, for example.

**Heather** 19:52

So that is not the analysis they're doing though, as you know, as I was trying to point out, they could be saying at what point do we need to accept an excess number of deaths because otherwise, there's so many other things are going to happen that are going to cause excess deaths in other areas. But they are actually hiding behind fake math and claiming that the the measures that have already been implemented are not effective. And that is quite a different, a different approach. And the reason to walk us through some numbers was to demonstrate that it's actually just not true. And then if these guys are MDS, and now successful entrepreneurs, I hope that they actually can do the very simple math to know that in which case, they're lying. And we don't know that. But it seems pretty clear that they could do the basic math that I just did.

**Bret** 20:42

Yeah, I mean, we obviously have to be careful, we have no idea what's motivating them. The fact that their reasoning appears motivated is an indictment of the analysis that they're doing. And the fact that this was seen by some 5 million people or so is important, because let's put it this way, lots of us are waiting to hear some message that resonates with our priors, what we expect is going on and there we know, there are millions of people waiting to be told the dangerous past or it wasn't real to begin with. And it is time for us to go back to doing what we did. And you know, frankly, I think we have to be sympathetic to that perspective. You know, you and I are lucky, we live in a place where this isn't so terrible, but we can easily imagine the desire to get back to

**Heather** 21:31

me. But this I mean, I'm going here, like I said at the beginning, like like with the Santa Clara County paper, the surrogate, the serologies paper that we've talked about in a couple of live casts already. I think that the methods and in this case, the the message, and the analysis and the message are crap. But that doesn't mean that I disagree with everything in it. So we're gonna we're gonna get here to the many ways that I think, actually some of what they're saying makes sense. But the really undercut their message by going about it in this disingenuous way.

**Bret** 22:08

Well, so we need a rubric. And I would say, my rubric, I would guess it is yours is that to the extent that somebody provides you a, an analysis that appears motivated to a particular conclusion, trying to sort through it and find the wheat and separate it from the chaff does not make sense, one should assume that a source that is motivated, may be able to say things that you won't spot. So I would just say, to the extent that what we're finding is that this analysis does not stand up to scrutiny, that already sends up enough red flag that even if some of the points are right, we should probably find other sources for it.

**Heather** 22:46

So let's talk a little bit about hypothesis driven versus data driven science. And which one of those this analysis is if either we've, we've alluded to both in this live stream a few times on in past episodes, you want to, you want to just riff a little bit about hypothesis driven science and what it is, why we need it, and what data driven science is by comparison.

**Bret** 23:12

Sure. So first of all, you should know that you're about to be dragged into a kind of inside baseball discussion. But you should probably stay interested because virtually everything that matters depends on getting this right. And we've lived in an era where we have increasingly gotten it wrong, this is a perfect moment to discover the error. Science as you all remember, from the chalkboard in grade school, or wherever you first encountered, it is a method. That method has one value, and then it has a lot of costs. And the argument of anybody who believes in the method is that the costs are worth paying in order to get the value. The value is that it corrects for human biases. And what that means is that if you think something is true, and you run a proper scientific experiment, you will discover whether or not you were correct. So to the extent that you are biases, it's true, you will discover it's false if it's false, if you do if you apply the method directly, but the method actually has deep philosophical underpinnings and the philosophical underpinnings basically require, you will remember the method is you observe a pattern, you hypothesize an explanation for the pattern. The hypothesis makes predictions about what else would be true if the hypothesis was correct. And then you run an experiment to see whether the predictions show up in some place that you look for them. Then the part that doesn't frequently get sad is if the test turns out to reflect positively on the hypothesis if the predictions are right, then the model that generated it, gain strength in our belief in it, and so on. Basically, there are a lot of ways this can go wrong. We've seen the replication crisis take down entire fields who have generated a whole library of beliefs that aren't true, because there are ways that you can apply the method badly. And what you do looks like science, but it doesn't function like it, it doesn't correct for biases, it reinforces them,

**Heather** 25:18

especially in an era of really complicated statistics, where most of the scientists doing analyses don't actually understand what the math is behind the physics that they're using are. So they're black boxing, whole pieces of the research, being pleasantly surprised when out pops the outcome they were hoping for, and they don't ask too many questions.

**Bret** 25:36

So the upshot of this is the method is incredibly sensitive to whether the people deploying it are actually going through the motions, in which case it won't work, or working hard to discover their own biases by applying this method to the patterns in question. And so hypothesis driven is, I would argue it's the final it's the ultimate discovery about how science needs to work. Do we need to tinker the methods and the assumptions to get it to work a little better? Yes. But if aliens step off the spaceship someday and say, we'd like to talk, they will have a version of the scientific method. And we will be able to map our version onto there's maybe an interesting discussion to be had, but they will be hypothesis testing, they will be falsifying hypotheses, rather than validating them, they will do all the same things. Why? Because it works, and you can't expect anything to replace it. So I expect you'll then go to its challengers.

**Heather** 26:46

Yeah. So just to pick up your example, those aliens are not going to have gotten to Earth by using data driven science. And I always want to put Scott science in scare quotes when it follows data driven, right. It's what modelers and data scientists tend to be pushing in this era of big data where, where we have so many numbers generated at all moments of every day, that can then be queried for what it is that they might mean by our supercomputing powers. That it seems like asking the numbers that already exist for the patterns within them must be a fine, and maybe even a better replacement for hypothesis driven science. But, but it's not, right. data driven science is asking data to reveal reveal patterns that you did not predict. And therefore what you get out of such queries is a hypothesis. It is not a result, it is often treated like it's a result. And this is how data driven science actually makes makes its living. It queries it queries, data says, What do you see, and then whatever is seen ends up being promoted as this is what we've found. And it is a kind of found, but it's found that hasn't been tested yet. That is effectively an observation, which is something you've said here before, right? So if you query data, using an algorithm, and you end up with Oh, I think this pattern, this pattern revealed itself, now what you need to do is go with that hypothesis that there's a pattern that exists into a different data set, and ask those data if this pattern exists.

**Bret** 28:25

So I think this is going to be very mysterious to people until we unpack it a little bit. Okay, first data driven when people say it when they assert This is data driven science, let's see what the data say the data are King, right? When people do that, it sounds to somebody who has not been in the trenches, like an obvious appeal to the empirical, right? Oh, that is almost synonymous. If I say data driven science, I'm really just saying science with some kind of emphasis on the empirical. This is not what it is at all. It's actually a kind of coup

**Heather** 28:57

from empirical meaning the countable the quantifiable,

**Bret** 29:00

yeah, the quantifiable and very often the the experimental. And we are not arguing against experiment or empiricism. In fact, it is absolutely essential for hypothesis driven science to be tested against the empirical that's what makes it work. But if you sideline the hypothetical, and you simply go to a series of experiments, what you are doing is you are taking all of the parts of the method that aren't observation and eliminating them, which then fails to account for bias. Now the one or two correct for bias, the one caveat that I would make, and people like you and me hate this point. Absolutely. hypothesis driven science could be done by a machine. Okay. It could be done by a machine on giant data sets, and it would work. Now I don't think it would be artful. I don't think we're in a place to do it. But I don't want to say that this requires people to generate hypotheses. It could be done in a, in a mechanistic algorithmic way it

**Heather** 30:09

could although many of you know famously, many of these are big name, early 20th century scientists, like Einstein and others are on record saying things like, I don't I don't have any of the quotes on hand. But you know, we, we do our science with logic, but we invent the the generation of hypothesis is invention. It's creativity. It's Dreamspace. You know, it's something that you can't teach, that you get experience in by going out into the world and looking for patterns and trying to explain them. And the the, you know, sort of rinse, repeat, you know, wash, rinse, repeat part in which you're testing your hypotheses, having generated predictions that necessarily follow from them, and then doing experiments or careful observations to assess whether or not they're true and doing the analysis and going in a circle there can be taught, and people get better at it over time. But the Where did the idea come from is more ineffable. And yes, you could teach machines to do some of those things. But many people who actually generate hypotheses yourself included, myself included, will I think still hold on to the idea that humans yet at least with the kind of AI we have now are better are going to be better at generating new explanations for patterns? in complex systems?

**Bret** 31:38

Yes. At the moment, humans have a huge advantage in the creative part of this endeavor, which we under emphasize, you know, people don't understand how much of really high quality science is dependent on the creative process in the, what would be called the theoretical part of the endeavor. The theoretical part does not, however, generate theory, it generates hypotheses which can mature into theories if they're right, and that shows up in experiment. But in any case, this is probably more than you need to know, the key thing to understand is that when somebody decides to take a shortcut, they are always taking a shortcut in the direction of empiricism. And that empiricism on its own is prone to all the errors that science is a cure for. In other words, it reflects the biases of those making the shortcut, and that is in effect, what we seem to have found in this case

**Heather** 32:34

is I was just gonna say, What is it? What is it that we have here? Are they doing hypothesis driven science, data driven science, neither of the above?

**Bret** 32:42

Sort of sounds like they are pretending to do data driven science. Yep, they are accidentally acknowledging that they're not doing hypothetical deductive science. But in fact, it doesn't look like high quality data doesn't either. It's not

**Heather** 32:59

even data driven. Right? It seems you know, this is I ever thought that anyone else is calling it this. But the three part solution set that I was thinking of and watching this video was, well, it's clearly not hypothesis driven. They clearly, I'm not sure they would recognize a hypothesis of it hit them in the head. But they seemed to have facility and really liked the idea of data. But this looks like it's conclusion driven. They have a conclusion they like their fitting what they find it that conclusion, no matter what, excluding stuff that doesn't fit, talking about the things that does fit that is actively anti scientific. It, it couldn't really be farther from an actual scientific approach. Yep. Okay, so let us just walk through a little bit more in the video, before talking a bit about what points they make that the do makes sense or that are related. What important things we know about what this is what kind of habit This is reeking that are related to points they're making. They just asked it. They're making internally inconsistent arguments. For instance, they say that not everyone should wear a mask because you won't get your good flora. You're not going to get your immune response. Yeah, they did. So. So they argue that we need exposure to pathogens in order to strengthen the immune system quote, that's just basic immunology.

**Bret** 34:26

Sort of, but not on that timescale. I'll tell you that much.

**Heather** 34:28

Yeah. So I kind of made a point of not telling you that particular thing from the video until somebody would have that reaction on on film. Yeah. And then they say, when this this is really totally remarkable to me, and I'm imagining a goal and what they're doing, it may not be fair, but they predict that because they're saying everyone's masked and so no one is getting the immunity they need and therefore when the lockdowns are lifted, everyone's going to get sick. So they predict Did massive sickness having nothing to do with COVID-19? by claiming that that's just basic immunology when that isn't basic immunology, not on that scale,

**Bret** 35:10

not on that scale, and you have two competing things, even to the extent that your immune system might be able to pick up exposure to some things at a level that you don't get sick, you're also being exposed to many things that do cause you to get sick that you won't be exposed to if it moves to summer, and those things aren't circulating, and you're not wearing a mask at that point. So anyway, that's, that's certainly I would say, consistent with the hypothesis of motivated reasoning, because they just cherry picked the part of that argument that they like, and excluded the part that goes in the other direction.

**Heather** 35:43

Yeah. So then they also say, we also are complaining about, you buy things at Lowe's, so you can go to Lowe's, you buy things and you bring them into your home, and you're not blocking transmission of all the fomites fomites being their jargon, they like to use jargon, of course, to fomites being all of the little viral particles that might get you sick. So they're complaining about the things that you might bring home that have viral particles on them. And at the same time, saying that everyone being messed up is going to prevent them prevent you from getting any kind of immune response that you need. So I would ask them, which is, which is it guys? We shouldn't we shouldn't wear masks because they're not fully protective? And or because they're too protective? Like, if you're arguing both? And I've, I've seen what looked like good faith arguments on both of those, you shouldn't wear masks? Well, actually, I've not seen because they're too productive. But because they're not fully protective. I think it's a stupid argument. But I've seen people make that argument in good faith. But these guys seem to be making both arguments simultaneously. You shouldn't wear them because not protective enough. And because it's you productive than if you're arguing for both of those positions, it seems pretty clear, then you're arguing for a conclusion rather than trying to figure out what's true. So that's just one example of internally inconsistent arguments. And let's do one more set of things, reasons to distrust. What's in this video before we talk a little bit about things that that makes sense. They are consistently using inflammatory and dismissive language. They call COVID-19. a seasonal flu. It's not, it's not helpful. It's not helpful at all to call it that. We have no reason yet to know if it's seasonal, and it's not a flu, quote, unquote, I'm following the science. No. And he says this a lot. He keeps on saying I'm fine. I'm just following the science. And he basically is dismissing the journalists who would ask questions of him and saying, like, I'm the scientist here. I'm the doctor, trust me, I have the background. And boy, do we know a lot of people like that

**Bret** 37:49

you this co opting the authority channel by pretending to follow science that he is then violating if you follow the claim?

**Heather** 37:58

Yeah, exactly. He's extrapolating the numbers in ways that are useful to his conclusion is picking and choosing data. And appeals to authority don't make your right. You may be right. If you appeal to authority, it makes you look like a jerk. And if you were wrong, and you appeal to authority, it makes you look like an even bigger jerk. Quote, the truth changes every two hours. No, it doesn't. what we think is true, is changing. Right? The things that we understand to be true or change what actually is true is not. And also, furthermore, truth has actually a timestamp. So this is like putting out that spread into say, the Scandinavian countries happened a different time than spreading to New York on spread into India. So whereas His truth is about what we think we understand, and that is a kind of a dicey use of the term truth, I would say that week could argue, for instance, that humans didn't exist 600 million 6 million years ago. And our most recent common ancestor, which was something some proto chimp, bonobo human thing, did, saying that 6 million years ago, we didn't exist doesn't mean that humans don't exist now. So, you know, this virus had never met us six months ago. And that's true. But that doesn't mean that it doesn't exist now.

**Bret** 39:21

So I don't think the truth changes every two hours, I think is a cute way of saying what we believe to be true, is rapidly changing, which so I think

**Heather** 39:33

it is to it's wrapped in this appeal to authority. Yes,

**Bret** 39:37

and I would say, to the extent that he's making that argument, that argument goes in the other direction, which is, you would err in the direction of caution with something this potentially lethal where the truth had not settled down to the point that we could even formulate a high quality consensus on lots of the basic issues about how it's transmitted. Why It's particularly virulent in some people and asymptomatic and others why it can be asymptomatic and you don't seem and you, you can still have damage sufficient to show up on a CT scan of your lungs, weeks later, things like that. So the basics have not been established, that suggests we should be very, very cautious. There are some extremely dangerous possibilities that we have yet to rule out here. And until we have ruled them out, we should behave as if they are still live possibilities, because they are so the truth changes every two hours, maybe. But if so, then the argument you're making doesn't fit because the conclusion would be lethal, or potentially so.

**Heather** 40:43

He also says, Who knows what say for you, you are the government, they are trying to control you. Well, they may be trying to control you, they certainly seem to be trying to control us in some regards. But this, again, makes this error that we alluded to in our last live stream of conflating the individual with the population. Public Health is inherently about the population. And we are asking the population and all of its members to do something to protect everyone in the population. individual decisions cannot be the only thing that we are behaving based on. That is this is what government is for in order to make decisions that are that, that affect more than individuals. And that can be used to get us to do what we need to do when the problems are bigger than individual level problems.

**Bret** 41:37

So another way of saying that is that if everybody makes the decision that is right for them, it does not produce the same thing that we would come to if we did an analysis over what's best for the population. And it's particularly dangerous when different people face different hazards. In other words, it might be that some doctors in Kern County would actually be much better off if the lockdown was to be lifted, but it might cost lots of lives in other places. And so I would imagine, most doctors would not consciously accept that trade off. But they might talk themselves into an argument that would result in that kind of transfer of well being from one population to another. And so the one force that can deal with that conflict between the individual level and the population level is a government built to speak for the public interest. Now, the problem is, our government is not very well equipped to do that our government has become corrupt and inept. And so it has done a terrible job with COVID-19. But that said, it has done a much better job than it might have.

**Heather** 42:52

Zack, could you give me my computer back? Thanks. Sorry, I lost track there. No, that's all right. more technical problems. Okay. Let's talk a little bit about some of what they bring up that, that maybe make some sense. So

**Bret** 43:10

can I ask you a question? Yeah, I think we need to be careful in doing this. We'll just say it is not actually the obligation of an analysis that discovers a motivated set of reasoning to find the good. At the point, you found a motivated set of reasoning, it may be just simply the right thing to do to walk away. Now maybe you have reasons to raise things that they raise, but I don't think

**Heather** 43:36

I mean, as you already did, like you were you already doing a lot of this. And I want to make sure that I get to the rest of the points that you've already brought up here. All right, right. So they point out that people delaying other medical procedures may cause an increase in mortality, morbidity, for other medical reasons, we actually brought this up on one of the last two live streams. Yep. It's probably true that they have a financial interest in making this point. Because what they do is they own and run seven urgent care clinics, which mostly are dealing with COVID-19 patients, and mostly other people are staying away from health care at the moment. And so they're probably taking a financial hit. I'm, I'm imagining that that is true. But even even if this is a message from which they would personally financially benefit of people could hear it. That doesn't make it untrue. People delaying other medical procedures may put them at greater risk. And certainly most people are avoiding other medical procedures. Another thing that is true and this is exactly where you were going earlier, is that slowly lifting lockdown makes sense in many regards. In many, many places at this point, I would say I'm including where we are in Portland, Oregon. But there's this question that I'm wondering about and have been since since people have started talking about study lifting lockdown is schools or close to the fall in many, many places, including, I think In the entire West Coast of the United States. So what? If other expectations around work and such resume? What are parents with school aged children going to do with rural care? Kids are old enough, they're in school, but we would do fine. So I'm not actually arguing at this point for you, what are we going to do, but a lot of people with young kids, if the lockdown start to lift, and these are, you know, people with jobs that haven't been able to go to work for four weeks, or six weeks, wherever long it is, and now they're expected to and of course, they have to because they need to start making money. But schools aren't open. And maybe camps aren't open and daycares aren't open was they're going to do. So I would raise and this isn't anything, anything that these doctors were talking about at all, but I'm just in. It's possible. And this is you know, like I cross my fingers, whatever that's supposed to do. Maybe children aren't actually transmitting the virus. So there's a an article, it's not even a preprint. But your schools are going to be hotbeds of contagion if, if children are transmitting the virus. And so how are we ever going to normalize fully given that kids are not just packed together into small rooms a lot, but they're also terrible at keeping track of where their fingers in their mucus and such as. But there's an article from today, actually, no, yesterday, April 27, between the science director of the Science Museum group in the UK, and Kari Stefansson, who is the CEO of the Icelandic company. Feel like I don't have the entire length there. But suggesting that this is Steffensen, who did a lot of the testing in Iceland, he says what is interesting is that even if children do get infected, they're less likely to transmit the disease to others. other adults, we have not found a single instance of a child infecting parents. Now Wow, extraordinary of true and such like such a ray of hope. But it was really bleak glance extraordinary

**Bret** 46:58

of true. very unlikely to be general, it could be a pattern, but just like,

**Heather** 47:06

Are you saying it could be just Iceland or

**Bret** 47:08

No, no. I mean, maybe but let's put it this way, the radical variance that we see between localities between environments, you know, indoor versus outdoor Look, there is no way it is possible that this thing is very hard to transmit outdoors, it's not possible that it never happens. Right? Right. So just even the fact that it's hard to define outdoors in a precise way that absolutely takes everything out of the gray area means that this, this cannot be true. So children may be unlikely. A rare case may have a lot of people downstream of it, and so we can't ignore it. But I mean, there, there are two things, I think need to be said here, one, the issue of is it time to lift the lock down in some places. I am so worried about this. And as you've pointed out, we're in Oregon, Oregon has a very low infection rate, and a low death rate.

**Heather** 48:08

But sandwiched between two states with high right high rates. But

**Bret** 48:11

I guess the point would be if you were going to raise if you're going to lift the lock down somewhere, we'd be benefiting from it, because we'd be one of the states where it made the most sense. But I'm really worried about the game theory that unfolds as part of the country remains in lockdown. And part of it is not, I must say, I don't know what happens when a state is locked down and its adjacent state isn't locked down. I mean, what happens to the States, in and around New York, if New York remains on lockdown for I don't know, who knows six months or something because of its massive rate of infection, which is presumably related to the very different way that people in New York City live just the density of people, people stacked on top of each other in a way that they aren't almost anywhere else. That and then coupled with no lockdown in states nearby that might be in a very different circumstance could result in people flooding out of New York, do you close the borders between the states? What do you do with the fact that human beings by their very nature, are constantly checking in with how well their neighbors seem to be doing in order to figure out whether it'd be happy or dissatisfied? Are we going to create massive waves of dissatisfaction in the parts of the country that are unlucky enough not to be able to have their lockdowns lifted, this this could turn into a disaster if we do not get very careful about how we do it and start recognizing, as you keep pointing out the difference between individual level population level if we start, we need to get in touch with the idea of what a race to the bottom looks like a tragedy of the commons. And we need to start figuring out how we're going to address this so that

**Heather** 49:56

we don't just take a minute to define tragedy in the comments before we move

**Bret** 49:59

on. Tragedy of the Commons is a situation in which the individual has a large effect on their own well being and a small effect on the ability on the collective. So in other words, if your factory decides not to dump waste into an adjacent body of water, it will pay a massive cost to dispose of that waste properly. It will not save an ocean because so many people are delivering their waste to it. So and it's

**Heather** 50:35

it's based on. I mean, I'm sure the idea predates this but Garrett harden, a biologist in 1968, wrote in Science or nature science is American biologist wrote, I think it was called it the tragedy of the commons, right and and so his sort of allegory almost from which he then generated this more general case, is that you have a grasslands that is common, and people living around the edges of it, who have cattle, they want to graze. And you can easily over graze grassland, and everyone can see when the grass side is being over grazed. But those eight or nine cattle owners who recognize that the grass has been over grazed and who pull back their cattle in order to protect the commons, will suffer relative to the one cattle owner who lets his cattle do whatever they want, the grassland does get even more over grazed than it would but his cattle win, and therefore he wins relative to everyone else.

**Bret** 51:38

Right. So this is a a classic game theoretic hazard. Almost all environmental problems mirror this in one way or another. And for us, for us moderns, the solution to this involves rational regulation to protect the comments. We should point out as long as we're going here, a Nobel Prize was earned by Elinor Ostrom for excellent work that demonstrated that many cultures have found ways to protect against tragedies of the commons. So they have basically traditions that play the role of coordinating a population around their collective interests. So they basically have something that substitutes for regulation. But nonetheless, in the absence of regulation, or some force that you're substituting for it, you can trigger these hazards. And the catastrophe that could unfold could be spectacular in this case. So we need to be really careful. Now I should also say lots of people were connected to our asking online for their saying lots of people there they're reading are of the mindset that things never go back to normal, they'd like to read some people who think it is going to go back to normal, I would ask them to give up on the idea that things are going to go back to normal. And I don't mean that they should give up on the idea of things being good again. But the idea that anywhere we need to go his back is a terrible error. this epidemic has been a an amazing lesson. And as terrible as it is. And as destructive as it has been, it has been a lot better than it might have been. So in other words, this was awful. But it has also been a gift because it reveals many, many things that we needed to know many things that some of us were trying to alert the world to, and had a very hard time because it wasn't tangible to people. Now it's tangible. And the question is, what are we to do to solve this crisis? And what are we to do even more importantly, to make sure it never happens again? If we go back to normal, it will happen again. That's coming. That's right.

**Heather** 53:47

All right. One more thing, the doctor Massa says late in the video, why can't you go to the park outside and walk around, but you can go to Home Depot, and nobody's wearing a mask. It just doesn't make sense. So this is me trying to find the good parts of the video. And of course, this has been our drum beat from the beginning, that being outside is almost certainly one of the best things that you can do. And the number of you know, backwards thinking and nuanced regulations, and they're enforcement's that are happening all over at least the Western world, as far as I've heard around people being locked in their homes, effectively because they're told they can't go outside. They're not allowed to kiss. Children in Spain, were actually not allowed to leave their homes, including if they live in apartments for six weeks that just got lifted yesterday or the day before children under 14. That is appalling. What what just an appalling way to have to spend that amount of time if you're a child, when actually getting outside in the fresh air as long as you're not standing right next to some people and yelling and singing is almost certainly healthier for you. Okay, so I was in the middle of watching this video yesterday on and broke for dinner and we had had our delicious dinner and I think you guys were finishing cleaning up and I went to Joe just finish watching it. And this is what I found. Zach, you want to pull this up? So there we go. YouTube's added again, this is choose your own Black Mirror episode time. This video had at this point 4.9 million views or so it's been removed for violating YouTube's community guidelines now have since found its replacement on. Remember where its bid shoot? That's right. So you know we'll post it in a we'll make a pinned comment at the top of the link to this to this video so that you guys can find it if you want to. So it's not that it was actually last as censorship tends not to do. But what kind of worlds are we choosing between here? You can take it down as needed. Thank you.

**Bret** 56:05

Yeah, this is an amazing, an amazing turn of events. And I will say totally unexpected. Well, I wouldn't say unexpected. I

**Heather** 56:13

mean, for me living this right now watching this video watching it get 4.9 million views in a matter of days. Sorry to interrupt, but I didn't see that coming. Yep.

**Bret** 56:23

So I should just point out, look at where we are. Neither of us like this video at all. We think it contains a destructive viewpoint. And what's more, it is seductive. For all of those people who are looking for someone with authority to tell them, it's a fine time for us to go back to normal. So the video, I think is very negative. I know you think the same. But YouTube taking it down is so incredibly dangerous as a precedent. And I mean, I have a number of things to say about what I see the dangers and maybe I'll just start there. We have a situation in which YouTube and Twitter and Facebook are the public square, but they're not public. They are managed by people a who have fiduciary responsibility to their shareholders and be who have a political perspective on things. Now the problem is what they are trying to do if we take them at their word. Am I right that the community guideline they violated was they said things that are in conflict with what the World Health health organization has stated

**Heather** 57:35

that is apparently on a need to know basis you need to know and I don't need to know you don't Okay. All right.

**Bret** 57:41

But the problem is that you have probably heard that the cooks are always right. And this is an ironic thing that said amongst sophisticated people. Now when people say the cooks are always right, they don't actually mean the cooks are always right, because most of the cooks are wrong most of the time. But what they're even wrong all the time. Some of them are wrong all the time. Some of them seem to specialize in it. On the other hand as a bonafide Kook, let me tell you, some of the cooks are not wrong. Some of the cooks are trying to tell you something new that sounds so wrong, that it's difficult to distinguish from all of the other stuff that just is wrong. Now, if you decide that your organization YouTube is going to pull all of the stuff that conflicts with some authority, what you're effectively doing is inscribing orthodoxy as the permanent state of affairs, you are saying, This is the gold standard, nobody's ever going to beat the who with respect to analysis, I don't mean that who the rock. I mean, it's hard to beat the who they were awesome, but but nonetheless, nobody's ever going to beat the World Health Organization in terms of the quality of analysis. Well, you know what, that's garbage, the who has already screwed up multiple times on this front, the who is compromised by corruptions and ineptitude. And all of the other things that we see plaguing government these days,

**Heather** 59:08

and and even if it weren't, it has a model that was really effective 30 years ago, and the world is changing,

**Bret** 59:14

right? And, you know, the other drumbeat that we have been on since the beginning here is look at the comparison between the establishment and its navigation of this novel hazard. And the upstarts who are working quickly working in the open publishing stuff that hasn't yet been peer reviewed. And, you know, I certainly think that what I'm seeing is higher quality in the non establishment places, the the Wild West as it were. And what's more, I'm seeing things on the establishment side, that are clearly motivated by things other than a desire to get to the truth. You know, the the belief that masks didn't work, and we should not wear them. That was actually an official conclusion that it seems to have been generated by people who really privately were trying to preserve those materials for medical professionals. And then those same people told medical professionals don't make your own mask, because it will cause unevenness in the workplace or something. So we've already seen these people make terrible errors that kill, right? in such an environment, the last thing you want to do is tell people like us, frankly, you can't discuss things that that are in conflict with the World Health Organization,

**Heather** 1:00:33

we don't trust you to hear other people's ideas. Right? Right. We don't, the idea that this video was taken down, it's a video that I find potentially quite dangerous, it's going to fuel some fires that already exist, that are putting people at risk. And yet it absolutely 100% needs to be available

**Bret** 1:00:54

that needs to be available needs to be have. And the correct response to it is this one, which is Alright, let's look at those claims. Let's see what they're based on, do they stand up, they don't. On the other hand, let's look at the idea that you should be sheltering in place, and you should not be going to the park or the beach or taking a hike, right? Maybe that's incredibly destructive, and we could afford to lift that one universally. So these are things that need to be discussed and navigated and shutting down viewpoints cannot possibly be the right way. This censorious instinct that these corporations have is so lethal. And especially given some of the crazy beliefs that are now circulating inside these entities, you know, there's no difference between men and women, right? That's a dangerous belief, you want a corporate entity that seems to believe that's true, that will kick somebody off their platform for saying otherwise, you want them in charge of deciding what kinds of medical positions or medical claims we can make. Now we want the truth to come out by virtue of the fact that it is open to critique, it is happening in the open.

**Heather** 1:02:01

And having heard a critique, any person can go back to the original source, and compare the critique with the original and with their own emerging understanding of the situation. critiques can't stand on their own. And original sources need to be able to be critiqued, you need both sides of those things for human knowledge to progress.

**Bret** 1:02:21

Absolutely. Yeah. Where are we timewise? An hour in five minutes? No, five minutes. Okay.

**Heather** 1:02:28

Can I just do a very quick reading,

**Bret** 1:02:32

you can do a quick reading. And then I have one final note.

**Heather** 1:02:35

And I wanted to say a couple things about India as well. So I started reading and I don't know if I'm actually going to get very far into it because it's a it's dense and long. It's Boccaccio is that the camera, which was written about an the Europe emerging Europe, being in the plague in the 1400s, I believe. And early in the book. He is writing about what people's responses are. Another plague is obviously a much deadlier disease. It's much, much more virulent than COVID-19 that we are experiencing right now. But with regard to how people responded to people falling dead, falling down dead around them, the author writes, in which circumstances not to speak of many others have a similar or even graver complexion, diverse apprehensions and imaginations were engendered in the minds of such as we're left alive, including, including almost all of them to the same harsh resolution to wit, to shun and a poor all contact with a second all that belong to them, thinking thereby to make each his own health secure, among whom there were those who thought that the lib temperately and avoid all access would count for much as a preservative against seizures of this kind. Wherefore they banded together and dissociating themselves from all others form communities in houses where there were no sick and live to separate and secluded life, which they regulated with the utmost care, avoiding every kind of luxury, but eating and drinking very moderately of the most delicate Viens and the finest wines, holding converse with none but one another. Less tidings of sickness or death should reach them and diverting their minds with music and such other delights as they could devise. Others, the buyers of whose minds was in the opposite direction, maintain that to drink freely, frequent places of public resort and take their pleasure with song and revel, sparing to satisfy no appetite, to love to laugh and market. No event was the sovereign remedy for so great and evil. And that which they affirmed, they also put in practice so far as they were able, resorting day and night now to this tavern. Now to that, drinking with an entire disregard of rule or measure, and by preference, making the houses of others isn't where their ends if they put saw on them off that was particularly to their taste or liking, which they were readily able to do because the owner seeing death imminent, and become as reckless of their properties of their lives, so that most of the houses were open to all comers and no distinction was observed in the stranger who presented himself and the rightful Lord. Thus adhering ever to their inhuman determination to shun the sick as far as possible, they ordered their life and this extremity of our cities suffering and tribulation, the venerable authority of laws, human and divine was a beast and all but totally dissolved for lack of those who should have administered and enforced them, most of whom, like the rest of the citizens were either dead or sick, or so hard bested for servants that they were unable to execute in the office whereby every man was free to do what was right in his own eyes. Not a few there were who belonged to neither of the two side parties, but kept a middle course between them, neither laying the same restraint upon their diet as the former, nor allowing themselves the same license and drinking out there. dissipations is the letter, but living with a degree of freedom sufficient to satisfy their appetites, and not as recognizes.

**Bret** 1:05:44

Wow, yeah, yes. Well, before the discovery of the germ theory of disease, right. All right. Well, that's fascinating. I have a feeling that that's going to create a great many fans, we're going to ask you to read, we're as fond of hearing your read to them as I am.

**Heather** 1:06:01

You experienced me reading quite a lot. Yes,

**Bret** 1:06:04

I do. Well, you're delightful to listen to. Alright. So the final point that I wanted to make before we take a break prior to our q&a, is a follow up on the discussion we had last time about the mystery surrounding the origin of the virus that causes covid 19. And in particular, the question of the various hypotheses surrounding how this virus got loose in will harm. The establishment has continued from before our live stream and has continued after to rally around the idea that all responsible voices who are informed on this find the idea of the virus having escaped from the Wu Han laboratory, preposterous. Sure, this is actually an NPR story has that can you put this up? This is an NPR story. It's well worth a three minute listen. And basically, this is from April 23. So before our last live stream, maybe before Yuri Deegan wrote his excellent analysis, which we spent time on last time. And their point is that they have looked into the question, first of all, they blame Trump for the idea that this virus escaped from the lab when, of course, lots of people who are not Trump fans, including us find this hypothesis credible. But their point is, this is clearly a false story. And their analysis comes down basically to two points, one of which isn't compelling, and the other one is a lie. The first point is, these laboratories are so very careful that the virus could not possibly have escaped. Now that's garbage. And you probably know enough to know it, you know, that in trying to maintain protection from the possibility of a virus on something you've touched or this or that, that it is very hard to juggle all of the things necessary. So that in trying, you know, if you're wearing something protective, you need to get that off, you need to you're touching all kinds of things. And the successful protocol reduces the likelihood of you encountering a particle to some number that's very low, it can't reduce it to zero, because of all of the things that you can't control for. Now, the laboratory may be so good that it maintains discipline, and only very occasionally does any particle escape, but you're talking about people walking into a cave, capturing bats that are flying around with potentially who knows what in the air, taking samples, swabbing them, you know, fecal swabs or whatever, getting them into a vial, etc, etc, you can't reduce the chances of some particle making it onto something that escapes notice to zero. Okay, so you can reduce it low, but you can't reduce it to zero. And then there's the part of the analysis that's just dead wrong. They say, by the way, these viruses are immediately frozen, a live version of them is maintained, but rarely accessed. And when it is accessed, it is often no longer viable. That part may be true. But then they say that these labs are just studying the genomes, right? that these aren't viral particles they're studying, they just sequence the genomes to look at. I mean, this isn't true. The analysis that we talked about last time, talks extensively about this gain of function manipulations, these cameras that are designed actually to produce highly infectious viruses.

**Heather** 1:09:53

Kamera being effectively a hybrid created

**Bret** 1:09:55

in a lab. Yeah, combination two things fuse together. So these labs produce these cameras, specifically because they think they may be highly infectious and ostensibly for the purpose of figuring out what to do if one of them escapes into the world. So they are creating viable viruses. And they're testing them on various things, including live cells. So the idea that we can all just relax about this hypothesis, because scientists have looked at it and it's not credible is nonsense, trust them. What isn't nonsense is that there is a spectacular coincidence about this virus having emerged in Wuhan, and the laboratory being there, that is very hard to dismiss. So could it have come through what market? Maybe, although the evidence for that is pretty weak? Is there some other reason that might have emerged in Wuhan, there could be natural explanations, somebody could be framing the Wu Han lab, there are all kinds of ways that this could have unfolded. But the idea that we can all just simply put that one to rest because scientists have looked at it and you don't need to look any further is just garbage. Alright, so let's just connect that up with the last thing we were saying. The establishment wants you to think you don't need to worry about whether this might have escaped from muon. Of course, we need to I mean, escape from the lab. And, of course, we need to worry about it because it has implications for what we do. Right? If this was a chi mera that escaped a lab that was studying it for the purpose of protecting humanity, then it isn't the bioweapon, we need to know that. Frankly, if this lab screwed up, and this thing got out, I'll be angry that the regulations and these are frankly, world regulations or regulations that the world's scientific community imposes on such labs, I will be angry that those regulations were not sufficient to protect humanity from an accident like this. But I would defend the lab assuming that they followed the protocols, I would defend the lab as having made an honest accident that yes, has a huge cost to humanity, and will have killed a tremendous number of people. But an honest accident is an honest accident. If this is something more than that, we need to know yesterday, because we need to understand what it was that the person who created it had in mind. And if this was natural, and it's really just a coincidence that it emerged in Wuhan, then we need to know that that this requires us to be able to discuss it. And if YouTube can decide that we can't discuss the possibility of lifting the lockdown until the who says that it's okay for us to discuss and they could also decide that it is not okay for us to discuss the possibility that this virus was a laboratory made synthetic Chi mera and we could be eliminated from YouTube. And I'm telling you, this hypothesis exists for a reason, because it's a hypothesis. It makes predictions. It is falsifiable. If it didn't come from a lab, we can learn that but we have to be able to discuss it in the open in order to do all right. All right. So we are going to be back in 15 minutes. In the meantime, we would ask you if you want to support this podcast, please hit LIKE subscribe, notify you can make a comment. And we will be back in 15 minutes to answer your questions on a live stream whose leaked link will be in the description of this live stream. See you then.