Bret and Heather Dark Horse Podcast 36

Mon, 10/11 1:47PM • 1:17:21

**SUMMARY KEYWORDS**

point, math, subway, fact, virus, verification ism, history, louisville, people, density dependence, immune system, viral particles, put, curriculum, question, find, reported, attacking, dangerous, model

**SPEAKERS**

Bret, Heather

**Bret** 00:07

Hey folks, welcome to the Dark Horse podcast live stream. I believe this is our 36th. Is that correct? That's right. 36. That's hard to imagine.

**Heather** 00:17

I have to say too.

**Bret** 00:18

Yeah, it is hard to say harder that you've tried at home, you'll see. I'm sitting with Dr. Heather Hein, as always. And we have, as always too much to discuss for the allotted time, on account of it being 2020. And things just keep happening,

**Heather** 00:32

do they ever?

**Bret** 00:33

It's, it's almost too much to keep up with, of course, a lot going on today. And we will get to it in due course. Where shall we start?

**Heather** 00:44

You wanted to start with a summary of the three big ideas that you have been talking about in the last couple of live streams and bring them all together just to remind us at the top of the hour verification ism, autoimmunity and group psychosis,

**Bret** 00:58

right. So these are three concepts that I believe are at least very useful, if not necessary, in cobbling together a mechanism for sense making in this moment where our sense making is becoming increasingly deranged. And in fact, the model, in part explains why sensemaking is becoming so deranged. So I'm actually going to start with auto immunity. Auto immunity is a process by which the body which is supposed to recognize an absolute distinction between molecules that you yourself make, and molecules that you yourself Do not make, and therefore, if they are organic molecules, the body assumes are hostile, and it attacks them with the immune system. So that system develops when you're very young, your system recognizes every molecule that you yourself are producing, and eliminates the cells in your immune system that react to it, leaving only cells that react to other things. So this is a an analogy for the situation that we find ourselves in, where we see many in our midst attacking the very structures on which our system depends, and they are attacking them with various rationalizations claiming that these structures are so broken that they could not possibly be rescued. But the result is just like a body that is rejecting its own tissue that we are putting ourselves in mortal Jeopardy as a result of this misunderstanding. I would also just as an aside, point out that many of the food sensitivities that some of us have, I have a very severe sensitivity to wheat, that these things are like auto immunity, except instead of reacting to your own tissues, you're reacting to foods that you yourself consume. So something has caused me For example, to become reactive to wheat molecules. When I eat them, my immune system reacts and I get sick as a result, not of the wheat, but as a result of my reaction to it. So autoimmunity is a key concept. The second key concept for sensemaking in this moment, is verification ism. So verification ism is a process whereby instead of trying to find reasons to disbelieve some hypothesis, you look for reasons to believe it. And the problem with verification ism is that one can often find some evidence for a wrong idea. And therefore if you are looking for evidence that confirms the hypothesis, you will very often validated even though it is false. Whereas if you try to falsify a hypothesis, and you fail, that means there isn't a strong evidence against it. And the hypothesis probably has a good degree of truth in it. So the claim is that most of what people are doing as they are trying to make sense of the world at the moment involves verification ism, that they have a perspective and they are looking for things that validate it, and they are finding a tremendous amount of support for wrong ideas on the basis that they are looking only for those things that support them rather than things that negate them, which results in what we are arguing is group psychosis. psychosis is essentially the result of incompatible programs running simultaneously that one cannot reconcile two things are cannot find a mechanism to compartmentalize them and keep them part. What happens is the programs keep tripping over each other. And so what ends up responding to a a view of reality that is false and disruptive of the ability to to function properly. So much of what we see is the result for example of two perspectives, both of which are wrong, being simultaneously deployed to different populations who find each other increasingly understandable. These incompatibilities are resulting in us, at some level, literally becoming crazy, some of us as individuals, but all of us as part of this group that cannot figure out even in what language to approach each To discuss what we face and what our overwhelmingly common interests clearly are, we can't figure out how to protect them because the incompatibilities between these worldviews are too great, the gap is too big for us to look past it.

**Heather** 05:15

In the language of sensemaking, we literally do not find any sense in those who are on the other side, we do

**Bret** 05:21

not find any sense and increasingly, we regard them as some anomalous phenomenon, right? In fact, I would argue that one of the outgrowth of a psychotic collective sense making is the verification this belief that in fact, you've got it right, and the other side is simply insane. And if one can for a moment to step out of your own sensemaking bubble, and realize that the likelihood of that is actually quite small, right, it's certainly possible for a small number of people to be simply insane. But the idea that half the population has simply lost its mind while you have retained a perfect grasp of what's going on, is indeed, quite unlikely. So the trick, the thing, which actually, I swear, if you'll try it, you'll find it rewarding, and maybe even reassuring. But the trick is to figure out who you can talk to in that group of people who you probably regard as batshit. Crazy, who might be able to convey to you where to stand in order to see through their eyes. Now, many on your own side will tell you, don't you dare, right, to the extent that you even humor them as if they are making some kind of point you are putting the thing that we must do right away in jeopardy. And you must ignore that if your purpose is to figure out what's going on, rather than just to simply participate on a team note, no matter how dangerous its viewpoint has become, then it is necessary that you figure out how to understand what those on the other side are seeing. Alright, so that's the model. And indeed, I think you will see in many of the things that we discussed today that these these ways these concepts that help organize our thinking around the way events are unfolding in the world. Many of them are manifest in these other unrelated topics or seemingly unrelated topics.

**Heather** 07:13

on to your final point there. I would say that we hear a lot from people who say they are right of center, who say they enjoy hearing what we have to say, because we are trying to make sense, rather than simply indoctrinate. And there are a number of ways that that little little sound bite can sound but that people are coming to us despite the fact that we probably have never voted the same way they have, or would disagree on a lot of the methods by which we are trying to obtain a just world. But that so long as we do share underlying values, which the vast majority of us do, that people are heartened conservatives, good faith, conservatives are heartened to hear us as good faith liberals doing this kind of analysis. And one of the things that is so disheartening, I think we may, I guess we could start here. But I want to talk just briefly at some point today about about what's going on in Louisville, and the response to it, I mean, maybe that is the right way. I thought we would finish there. But should we maybe start there?

**Bret** 08:13

Well, I want to follow on two things. Okay. Maybe we can come back to that. One is in somewhere in I think it must have been at the end of last week, I happen to catch up Tucker Carlson monologue in which he specifically alerted his audience. He called out honorable liberals who are horrified by what's going on on the nominal left at the moment. And his exact phrase was something like, you know, honorable liberals are horrified to they exist, you know, right. And he was actually calling out the very fact that it's easy to misunderstand that such a person on the other side might exist. And he is, you know, I felt a little bit that he was winking at us and some of our ITW friends who have managed to make higher quality sense in these confusing moments. But the other thing we get is the flip side, which you called out in an early livestream, which was the inverse of Trump derangement syndrome is, and so mirror image of Trump derangement during your image of Trump derangement syndrome, which we often hear, too when we critique Trump, when we say things like, really, he must be removed from office. Right? We must vote him out. I don't feel like I'm saying anything extraordinary in the context of a democracy, right? The idea that a sitting president has demonstrated that they must be eliminated in the next round of elections is par for the course and yet we are frequently accused of being just simply blinded by our hatred for Trump and I must say, I don't actually feel hatred. I feel urgency, right. I

**Heather** 09:55

feel like that it's that critique is exactly as dumb as the response. to Trump, that he cannot do anything right and therefore anything that comes out of his mouth must be wrong. That is exactly as dumb frankly and exactly as as dangerous response, you know, every person at any position must be critical and ascribing to someone who critiques someone else. A Neo derangement syndrome as a way to get rid of their critique is you know, it's schoolyard tactics. It's, it's, it's the antics of a third grader really

**Bret** 10:30

well. So I want to, you know, the key question is, can you escape it, whatever it is, that drives you to these things, and I feel a lot of people are just being reflexive. And that the necessity at this moment, really, the only hope I see for us navigating this moment in history and coming out in any sort of decent shape whatsoever, is the ability to look past the triggers that other people have on their surface in order to be able to partner with others who are overwhelmingly in agreement about for example, values. And so this is this is what annoyed me so much about the Harper's letter was that it took great pains to stick a finger in the eye of conservatives rather than partnering with the conservatives who are clearly ready to play and so anyway, we need to stop being so triggered people who believe something that is incompatible with your worldview may be many things that are compatible, and finding the way to bridge those gaps is it is essential, it is where where hope exists. And hence hence the resonance of the concept of unity at the moment.

**Heather** 11:41

So to to this point, and I don't think we should spend much time here because we have so many other things we want to do. It has been It has been reported just a couple of places that what is the something very, very bad is going on in Louisville, Kentucky. So Zack you can put up my screen and actually keep it up while I scroll through a couple of tabs. The Louisville courier journal, which is the local newspaper reported on I was updated yesterday was reported first on August 1, the Cuban community plans rally at the new restaurant in response to Black Lives Matter demands and some of you will have heard what what the story is but basically this guy Fernando Martinez, who is himself an immigrant from Cuba, and has become successful as a restaurant group in Louisville, basically received what he described as mafia tactics, Shakedown requests from the local Black Lives Matter movement and they they were requiring things like X percent of the purchases be made from black owned businesses and X percent of the employees be black to reflect the underlying demographics of Louisville and this this is sort of as we have come to expect at least the two of us and many many people watching from the we would like to think the fringe parts of the Black Lives Matter movement but of course this these sorts of things are described and to some degree celebrated on the black on the official Black Lives Matter website so once again, Black Lives Matter is not what it seems just because it's wrapped up in a bow with words that sound like words we all should and need to be able to get behind doesn't mean that it is what it claims to be so the courier Journal reported this and Fox picked it up and used you know added a little bit of reporting but mostly I think just picked up picked up the story. So we've been looking at the story for a couple days here's the here's Martinez, the Cuban restaurant owner with a statement and your rather than focus on Oh my god, here they go again, here goes black lives matter again. I thought I just look I was actually hopeful. So this morning 11:30am our times just about an hour ago, I just went to five of the major media outlets and searched on Louisville, figuring that anything else might be to you know to fringe but I just searched on Louisville. So when I searched on Louisville after this story has been in the news that we're seeing for three days. The New York Times. Its last Louisville story is from two days before the Louisville paper first published this and in which Louisville has declared racism a public health crisis. So nothing there. wapo on the Washington Post, sorry, my computer crashed just before airing just four days before is Louisville receive an extension to respond to NCAA allegations so nothing there's something from longer ago about the Brianna Taylor protest nothing there. CNN. Again, nothing we apparently have a polar bear dying at a zoo, which you know, it doesn't please me but it has nothing to do with the actual news. That is coming out of Louisville. Here we have msnbc. Similarly, absolutely nothing about this story. And I went to Time Magazine as well. And again, nothing. So that's just the I figure you could do this for almost all of these stories. And this was simple because there was a city where there have been protests, there has been action there has been reporting of late. Let's see, if as soon as the narrative switches we get any play at all, and apparently the answer is no. So

**Bret** 15:34

I want to take a little victory lap here for ITW style sensemaking. Because the story clearly reflects a pattern and I think actually some of the demands were even more onerous than the ones that you reported.

**Heather** 15:53

Yeah, actually, I might be able to don't switch to my thing here. But you know, nonprofits in the newly district will submit to a voluntary external audit of their board of trustees and take necessary steps, quarterly roundtable discussions to be held accountable for their commitments to these demands all business owners and nonprofit leaders. Yeah, and our dress code policies, it the claim is dress code policies inherently discriminated against black folks within the transgender community, you must eliminate dress code policies. And we will not waver while the black community continues to be destroyed. So some of them,

**Bret** 16:34

I would just like to point out, you just went through a series of mainstream press outlets that failed to report the story entirely. earliest prediction of such a thing I would say is Eric's coining of the term intersectional Shakedown goes back years Yep. I have argued

**Heather** 16:58

that well, and of course, is Jen gated institutional narrative.

**Bret** 17:03

Both of those things are resonant, why do you not see this because the gate has closed and this narrative will not be breached by that inconvenient fact. I have said that this movement is interested in reparations, 24 hours a day, seven days a week, 365 days a year at every context, in every scale, every interaction, right? This is beginning to be that you have pointed to the prolific proliferation of things like Black Lives Matter signs in store windows that you have called, don't hurt me, displays. And I believe that Michael Tracy, who to the point about bridging divides with people Michael Tracy, who has tangled with various people in the ITW at various points, nonetheless put together a report apparently, where he goes through he was on the ground here in Portland, and he released some very dramatic video of him being attacked by an Tifa members. But he apparently shows what you and I know from being downtown here in Portland, which is that there is yes, the protests were concentrated around the federal buildings, but there's damage extensive and there are many businesses that effectively plea not to be injured on the basis that they support. Black Lives Matter. And so what this all does is a it makes it impossible to know how much organic support there actually is because there's a whole hell of a lot of inorganic support that people recognize that whether it's the question of their personal reputations being destroyed, and their livelihoods being wiped out, or whether it's the businesses that they have built in their ability to continue to function in place. You know, we've seen years of this kind of nonsense where, you know, women were attacked for making burritos while not being Mexican. And so anyway, the point is,

**Heather** 19:04

and this and this is all directly predicted by the hovel essay that I read from last time.

**Bret** 19:11

Exactly, screen crusher is greengrocer who puts the sign in his window. So if you're paying attention to the mainstream sites, you will have no idea that this is even going on, you will not understand that your sense making is missing this very important piece of information about what this movement is. And so when you see people like us, troubled by the idea that this movement is partnering with the Democratic Party, and what does that mean for the future of the country? You'll think we're overreacting, right? Because you've been fed a verification of slate that will lead you to believe that things aren't nearly so troubling as they actually are.

**Heather** 19:46

We are for instance to believe that now the feds are out of Portland, everything's fine. And of course what has happened is that the that the writers have moved to the east side of Portland to a local police press. st where they are making trouble. They're, they're no longer in front of the Federal Building. They have they've moved their activities. So all those go into the federal building and looking for confirmation that it was the feds who were causing this can find that that is the verification ism and action. So it's

**Bret** 20:15

like willful blindness. Using verifications, you will be provided a set of evidence that is safe for you to navigate and say I don't see the problem. And it's very, very dangerous. Yeah. I guess one final point I would make is something emerged. I believe yesterday, body cam footage from the George Floyd arrest. And I must say, back when I was on Joe Rogan's program last month, when would that have been? June?

**Heather** 20:44

July? June,

**Bret** 20:45

July, somewhere on the cusp of the dawning of July? I won't one of the things I talked to him about

**Heather** 20:55

was the Age of Aquarius. I'm not sure.

**Bret** 20:58

No, that's a boomer thing I'm not into. But anyway, I talked to Joe about the troubling hints that the George Floyd arrest was a very complex thing that would require a court to sort out the details, which I still feel very strange about saying, given what everybody seems to believe, about this arrest, in the intervening time, a transcript of the body cam footage emerged, and I read it as you did, and it is full of complexities that reflect Yes, the need to actually sort out what the police policy was what the state of George Floyd was lots of things, including that he insisted he couldn't breathe before he ever had the ground that he actually requested to be put on the ground that he refused to be put in the in the vehicle. But in any case, the body cam footage emerged yesterday, and it does reflect the same complexity that requires sorting this out in a court. But then today, CNN released an edit of that video, which seems to strongly suggest the alternative interpretation that everything is exactly as you've been told, and it's just as dire as you think.

**Heather** 22:13

So are you saying that it was released yesterday is unedited that we have access to what was released by the police department presumably is unedited? Do we have reason to believe that that's true?

**Bret** 22:21

I am saying that, first of all, I'm not sure what I'm edited means there's obviously a start and a stop point. And we've got

**Heather** 22:28

between the start and stop point, are we seeing everything that was recorded?

**Bret** 22:33

That's a good question I'd like to know the answer

**Heather** 22:35

to so an edit of an edit is obviously devious, but an edit of a non edit is even is far more devious.

**Bret** 22:41

And here's what I would caution our viewers, I think you should see the whole thing. And before you formulate a judgement on what you've seen, you should look at all of it in context. If you assume that cnn is presenting you with the salient bits and you make you formulate a judgement based on it, I think you will come out somewhere very different than you would come out if you just simply looked at whatever it is that the body cams recorded as they were operating. So this is, you know, incredibly uncomfortable to talk about this. But the complexity of what unfolds is substantial. And you should not let anybody tell you what it means. The answer is this does require a court and in order to have a court that functions properly, it requires that citizens who sit in that court as members of a jury understand that they are entitled to reason based on evidence rather than based on the threat of violence that clearly exists if the verdict does not go the way the public expects and most of the public hopes it goes so anyway, it's a caution about verification ism and about the fact that the gated institutional narrative is inclined to deliver you something that your verification this mindset is likely to accept and that this can actually Marcus into great danger of historical proportions.

**Heather** 24:07

Okay, should we move on to getting rid of history and math? Oh, please. Yeah, those are irritating. Yeah, all of us had some moments at least if not, you know, totally ridiculous classes. So let's just get rid

**Bret** 24:17

of them. Yeah, chalk on the sleeves are lots of things that are very troubling about math.

**Heather** 24:21

Yeah. Okay. So could you show my screen here? This is actually reported by NBC. Chicago area leaders call for Illinois to abolish history classes to state rep. LaShawn K. Ford, said the current history teachings overlook the contributions of women and minorities. That may well be true. But from that starting point, he then says third paragraph here before the Ford asks the ISP and school districts to immediately remove history curriculum and books that quote, unfairly communicate history until, quote, a suitable alternative is developed. He is asking for a change to the history curriculum. Schools statewide and a temporary halt for all history instruction until an alternative is decided upon. How is it that you think the new history curriculum is going to be decided upon I'll bet this guy gets to make some of those decisions and maybe even gets to populate the committee that makes those decisions. So Zack, you can you can take that down. Now. That's at some level, more of the same defund stem, defund history that he does not use the word defund. But we do have an academic. Right, Rochelle Gutierrez, who suggests in a tweet, I'm not going to show it, but I will just read from it, that we should defund math. She is saying sorry, let me pull it up so that I can see it. I think that we should be literally defunding math from K 12k 12 curriculum requirements and testing and literally defunding math from society parentheses stem funding and salaries, but also figuratively, from our minds, parentheses giving the current version more value than other subjects or gifts. So hat tip to James Lindsay, for bringing this to light. He is as always on top of the stuff so I just I went and looked at who this person is. She's, she's tenured that appears to be at one of the Illinois State Universities and she has degrees in education taught in math, but her profile makes it look because she is interested in curriculum reform of math that she's she's somehow involved that she somehow has expertise in math, maths education. She doesn't have any degrees in math, she has degrees in education. So we have pointed out you can just show this super briefly Brett This is their This is her CV This is our curriculum VIP day, which is the fancy resume for academics so she said, Illinois at Urbana Champaign and wow she got her degree at University of Chicago important school but it's a school of head she got her PhD in education and curriculum and instruction and she is confusing everyone who is listening to her into thinking that someone who knows math who does math who thinks in math thinks also that we need to get math out of the K 12 curriculum. We then she expansible need to get stem all of STEM science tech engineering and math out of salaries and like just basically start defunding

**Bret** 27:32

all of all of STEM but I felt shut down stem was just for one day. Yeah, no,

**Heather** 27:36

it was except for it's it was except for except for Oh, except for it was

**Bret** 27:40

that was the mot it was actually get rid of stem that was

**Heather** 27:45

the that was the mot so you know one level this is just same old same old more of the same stuff right? But the same moment that I saw this I also was looking at because I'm foolish enough still to subscribe to the hard copy of the Sunday New York Times which you have been suggesting we dropped

**Bret** 28:03

for years now. We don't even have a bird to line the cage with

**Heather** 28:07

no we don't we don't but the front page of the Sunday new york times this week, August 22. What month is it? Oh, my God was headlined, writing subway might not pose an ordinate risk. So this is actually related to this motto of Oh shutdown stem per day, actually, we want to defund stem. So here we have show this for just a moment while I read the first two paragraphs here Zack, is the subway risky, it may be safer than you think. So slightly different headline than what's in the hardcopy, which I just showed you. I have here five months reads the beginning of the article five months after the coronavirus outbreak in Gulf New York City. riders are still staying away from public transportation in enormous numbers often because they are concerned that sharing enclosed places with strangers is simply too dangerous. But the picture emerging in major cities across the world suggests that public transportation may not be as risky as nervous New Yorkers believe nervous New York nervous New Yorkers scared little New Yorkers. Okay, give me my screen back. Thank you love. Nervous New Yorkers simply too dangerous. She uses the word the author uses the word scared later on. Find you will find in this article buried far deeper. They buried the lead, of course. But not only did they bury the lead, I don't think the author and certainly not the headline writer knows what the lead is. Here's another quote from the article which actually is accurate. Once too many people pack onto a train. The ability to provide proper ventilation diminishes significantly when riders are standing shoulder to shoulder any viral particles or sick passenger exhales could be readily inhaled by another passenger even if both are wearing masks. So I'm going to put that into No I've lost my I'm going to put that into math speak biology speak. This is this is going to be a strategy do you decide to go on this Whether or not, that is density dependent, it is density dependent. What you find in this really long article that again was the front page of the Sunday, new york times this week is all sorts of, you know, we looked at, we looked at places worldwide and no one has been able to track outbreaks to subways since the pandemic is broken. And they do mention that MIT article that found specific transmission risks on the New York subway, and the one little nod to that is that many people questioned its methodology. And there's no link I can't see who question its methodology. I'm sure people did. But we talked about that article in some depth back, I don't even know what Episode 13 I'll make it up. Something like that. And you know, it looked it looked good to us it was compelling. But what was the big difference between the New York subway in March versus Now there were many, many, many more people riding on it. And nowhere in the world is mass transit. Does mass transit have the ridership that it did pre pandemic, so, a it is difficult to do track and trace with subway ridership, because most people aren't tracing their own movements that way. And, and, and it's just not being done at that level. But even if it weren't, even if the track and trace data were fully reliable with regard to subway ridership, it's not the same, we expect exactly for transmission of this virus to track with density of the virus being transmitted as droplets and aerosols in packed spaces. And because ridership is way down, of course, of course, running sideways is going to be safer, which means that this is actually a kind of like journalistic medical malpractice. Yeah. Because the lead that they give is actually guys you be nervous Nellies, you're kind of scared you shouldn't you should probably get back on your subways now. Well, you know what, if everyone takes their advice, suddenly the subways are gonna get a lot more dangerous again, because they're going to be densely packed again.

**Bret** 31:56

So let's demonstrate this with a reductio ad absurdum. Let's do it right at the point that nobody is on the subway subways become perfectly safe by this rubric.

**Heather** 32:06

And you and what you see at the end of this, there's an economic imperative here, right? subways, need riders in order to to pay their bills. And you know, across the board, every sector in the economy, there's probably a few that are that are growing right now. But almost every sector in the economy is failing as a result of this pandemic, and the responses to it. And so presumably, New York subway needs needs more riders in order to make revenue. But once they get more riders, they're going to be it's going to be a more dangerous place for those riders. And both of those things need to be in writers heads when they're receiving information, especially from so patently innumerate journalists, as this person as

**Bret** 32:46

well. I'm not even I mean, in a numeric journalist, but it's serving a larger function here. Yeah. And I bet you that this is an analogue for what we went through with masks, where the idea actually that's that's one thing has decided that you need to believe that subways are safe in order for New York to go back to functioning because nobody's got a plan B for what you do if people stop writing the subways because they know they're not safe. Right. So this is gated institutional narrative, which is now feeding you the following pieces of information with which you can use your verification as model to get back to riding the subway. What you need to know is, yeah, people thought subways were dangerous. You probably heard that methodology of the study that said that many people have questioned it. Many people have questioned so many people, right? And people on Twitter, people at the supermarket. And my five

**Heather** 33:33

year old question that study well, that's

**Bret** 33:35

even more people. Yeah. So anyway, you've got that study was questionable, newer, better information. You know, take the software update, actually, the subway is much safer than you think people who say otherwise are cowards. And lo and behold, you riding the subway again, when in fact, you don't need that study to tell you that the subway is dangerous, right? Because what we know is that the reason that the subway is dangerous matches everything else we know, right? It's almost zero UV light environment, it's enclosed. It has a circulation system that is based on keeping people alive with oxygen, rather than keeping the air purified.

**Heather** 34:13

This article does claim that the air circulation system on the New York subway is is equipped to deal with with viral particles. I don't know if that's true, but it does make that claim

**Bret** 34:25

right. But it's a simple question of rate which goes back to your exactly about density dependence. Exactly.

**Heather** 34:30

And that's I mean, that's, that's, that's why we tie it in here, right? Like, we got people right now who are making headway with, not just shut down stem for the day, but defund math, take math out of the schools, take math, take people who use math out of the salary, faculty pool, and take it out of your everyday assumption that it actually might be a way of describing the universe that is better than other ways of describing the universe. We've got people like that making those claims at the same moment that we've got the New York Times publishing yet another piece that doesn't get a, you know, it's not the simplest mathematical concept density dependence. But it's not that hard. And yet most people have probably never heard it in those in those terms. I mean, everyone has actually, I think, an intuitive understanding of what it means like you all, everyone knows that if they're trying to do the grocery shopping quickly, they should go when there are likely to be fewer people in the store rather than more, right, that's kind of density dependence. So everyone knows that. And probably everyone who remembers any of their, like high school biology will remember, Bateson, mimicry, right, in which you've got a toxic model organism, that's just the language biology a toxic model, which is out there paying the price of having both the coloration to warn predators, and also the toxicity that will be the punishment for predators should they should they tangle with the model, and then you have a mimic species. That is that looks like the model, and so pays the price of having to build those colors and such, but doesn't have the toxin, which is itself a big metabolic cost, like toxins are expensive to make and to maintain and to carry around. And so the mimic, can be really, really successful. We have like kingsnakes, mimicking coral snakes, for instance. And, you know, there are many examples of this. And we could, we could spend hours talking about this as we as we have in the past. But for now, let's just say that probably when you learned this in high school biology, or even college biology, you weren't taught that that strategy isn't simply good. That strategy depends on the mimic being rare relative to the model. Because if predators are out there, looking for food, and they take a little taste before they're old enough to know, or because they you know, they're in a species where they're taught by their moms what to eat, they take a little taste, first of the brightly colored species, that happens to be the non toxic one, then they're going to extrapolate that they're all non toxic. And so the non toxic mimics need to be rare relative to the toxic models in order for this to work. That is density dependence. And guess what? being safe on the subway with a virus that transmits through airborne particles is density dependent. Masks don't inherently make you safe whenever you wear them, right? We're not we wouldn't be safer right now wearing masks because we live together and have been in isolation with each other and our two kids since March. being outdoors, not around other people at this point in the current evolution of this virus doesn't it wouldn't make you safer to be wearing a mask. When you're indoors. with strangers. Yes, you should be wearing a mask, it will make you safer, because the density of viral particles that are likely to run into is higher.

**Bret** 37:44

So looting also fits a density dependent model. Yes, you know, using when there's nobody else looting, and you will find yourself under arrest, if you do it when everybody else is perfect. Yeah. So anyway, there's lots of places where this concept is useful. And yes, it is totally abused here in order to create a false story. I would point out also, I believe it was an MIT study that did the original work on the subways. And one of the things that was really good about it was it wasn't just like, well, the data suggests it was subways, it actually drew a distinction between local trains and express trains. That is the model and the model was the local trains are actually more dangerous, because you spend more time on them, which actually matches what we have learned about the way this virus transmits. I think, Well,

**Heather** 38:31

I think it was impossible to know why they were more dangerous. And I think there were two hypotheses, both of which seemed Right, right. So it's, you spend more time on them, if you're going from point A to point D, and you don't stop at B and C, you spend less time on an express drag and counter, but more people are going on and off. And therefore there's more opportunity for transmission because there's a greater chance that someone who's infected has gotten on and

**Bret** 38:49

they're not mutually exclusive, right? You get into a box, and people are exhaling virus, if they have it into the box, and the box retains it even when the person gets off. Yeah, more people are getting onto that box and you're in contact with that air for longer, you're going to get more virus. So the point is, it wasn't even like, we don't know if that methodology was any good. The fact that that methodology revealed, it's not that subways are dangerous, express trains are better and local trains are worse. That actually gives you a model for transmission. So this is high quality work, not low quality work. For the New York Times to take up arms against it actually matches what Eric delivered in his most recent intro essay to his most recent portal podcast, in which he builds a model one of the manifestations of which is the headline is the story. Right? This is about optics. And the idea is what are you supposed to take away from this? subways are safer than you think? Yeah, what happens to be scared, you might get COVID you might give it to somebody who's gonna die, you might end up facing much longer term harms than you otherwise would. And so you know, this is directly putting people in danger. And if you're a devotee of the New York Times, you won't know any better.

**Heather** 39:58

That's right. And I think it's It's also related to a culture that I've been commenting on for years, which is that it's, it's sort of widely considered in the intelligentsia, you know, at like high end cocktail parties in the likes. To be cool. It's like cool or funny to be innumerate, right to be like, Oh, I suck at math, I never did well in math. Whereas obviously, in the same circles, if you admitted that you were illiterate, you would not be invited anymore, right? This this wouldn't be acceptable. And you know, the one sort of, you know, partial carving out is, you know, people who are dyslexic can say, like, actually, I really struggle with that thing. And you need, you're still forced to jump through different and some of the same kind of hoops in order to demonstrate that you can do everything that I was like sort of fully literate folk are doing. And yet, US fully numerate folk are not even allowed to celebrate the fact that we actually have a way of understanding the world that is, guess what, guys better than the way that the enumerate folks, people, the numerous people have of understanding the world, it is at least numerous way of understanding the world that allows for things like density dependent transmission of viral particles, will keep you alive for longer and safer for longer than a numerate way of viewing the world. Therefore, it's better that's what better means.

**Bret** 41:14

So better means multiple things, right?

**Heather** 41:17

That's one of the things that are asked out. It

**Bret** 41:19

also means testable, reproducible. And so to both these issues here, if we can step back to the question of getting rid of history, right, we're getting rid of history is clearly in favor of some kind of mythmaking, which will fit some narrative. But in order to fit a narrative, rather than fit what actually took place. You have to eliminate the possibility that a method will tell you no, that didn't happen. So witnessed the 1619 project. Right? It is at best well intentioned mythmaking that is designed to overwrite history so that you don't have to deal with its complexities. But that's the

**Heather** 41:56

most generous interpretation possible,

**Bret** 41:58

as well as the best Yep. But then the other thing we'll look at this, this math educator attacking math, this is autoimmunity. Yeah, that's what this is, this is the system which knows how to think quantitatively attacking its ability to act quantitatively. And look, it's the same thing everywhere, you've got things that want power, for which the thing that stands in their way is like reality, and the ability to detect it and quantify it, want to get rid of math, that's not surprising, if you want to re arrange well being if you want to redistribute it. And what stands in your way is the fact that history doesn't reflect the story that justifies the redistribution, right? Because it's murkier than that. Then you go after history. And the point is, well, we can just overwrite that with something that does work. And what do you do if you want power? And the thing that stops you from taking power over restaurant owners? Is the police who show up and, you know, arrest you for trying to extort shop owners? Well, what do you do you demand the abolition of the police. So it's attacking all of the structures that make civilization work on the basis that that gives somebody the ability to do something they can't otherwise do? That we should absolutely be horrified that they want to do? Yeah, we need to know what happened in history. We need to be able to quantify things, to be able to test hypotheses, be able to establish the counter intuitive, rather than just assume that the intuitive and pleasant is always true. That's not there's no way to navigate, you won't get very far you'll you'll you'll destroy yourself.

**Heather** 43:31

Yep. And I guess I want to go back, just briefly to this point about a mathematical understanding of even your daily life is just a superior one to an an a mathematical and certainly to an anti mathematical understanding of daily life. I want to make it clear that I am totally recognizing that most math education sucks so badly, that most people who are innumerate now are not innumerate. Through I won't say any fault of their own necessarily, but many, many people have been just betrayed by an educational system that took their mathematical their native mathematical thinking away from them. So that's, that's not fair. That's egregious. That was a massive failure of your education, if that happened to you, and I assume that happened probably to a majority of people watching even that's because while we know that we have to have engineers and scientists and such among our viewers, unless you have gone into a science and have continued to explicitly think about math in your daily life. Most people imagine that, because they didn't use it, they lost it, or worse yet, they never had it at all, because their math teachers were terrible. They didn't understand math themselves. They used carrot and stick regimes to motivate rather than Oh my god, this is fun. Look at how much more empowered you can be in your own world and in the universe. If you just have a few basic understandings of how math works, And can employ those, you know, use them and put them in your toolkit and use them when they need to be used. So one of one of the reasons at this point about math is going to be harder to make, I think is because most, most smart people, even most smart people who were paying attention to this, and we're sort of anti woke and really alarmed about what is going on right now in American society that's spreading across the world, know themselves to be a bit innumerate know themselves to be a bit scared of math, and so may not want to speak up for fear of someone going Oh, yeah, you know, prove you can do math. We don't need lots of people who can't currently think mathematically to prove it, and you shouldn't be bullied into accepting that you need to prove it. What you should be is actually angry that this happened to you, if it did happen to you, and, and be willing to learn your concept like density dependence, now you've got it. And you know, we could do a more complete job of it. But now you've got it. And now you know that actually going on the subway is safe, is an incomplete rule that is inherently going to be wrong, at least sometimes, and therefore you shouldn't put that in your in your quiver, like that is not one of the rules that you should be remembering, you should be thinking about density dependence of viral particles, is, is what I should be considering, as I decide whether or not I should go into that situation at all. And if I am in that situation, whether I should be masked, etc.

**Bret** 46:24

I should also say, much like the situation with the police, there's a lot to be said for the fact that our math education mechanism, exactly as you're suggesting here, is broken enough to disrupt most people's acquisition of the stuff they need, and that we have tools at our disposal that our ancestors did not. Right. So you know, when a chalkboard was your mechanism for conveying math, you're limited in a sense, but we have all kinds of tools that we could be leveraging much more effectively, you know, you could gamify the acquisition of math so that it did not feel like medicine, that it felt like fun. And were we to do as my father did with me. Exactly. Yeah. But here's the key. Why was your father able to do that? Because he deeply understood math, right? Most of the people teaching math do not deeply understand math, at best, they're competent at it. Yeah. And the point is, our whole mechanism for education suffers from the fact that we don't budget to get the people who are labeled to be insightful into the field in order to teach children and this is Pennywise pound foolish because, you know, if we had a mathematically literate population, how many more things would we invent? How much more likely would we be to be able to overcome this nonsense? narrative manufacture, because people would be able to detect the flaws in what they were reading. So you know, the cost we are paying for not bringing the imaginative, really high quality mathematical minds into teaching young people how to think about math, is, it's a giant loss. And if, you know, we have immediate problems, but if we get past the immediate problems addressing that would be really high on

**Heather** 48:08

absolutely, or it is, is most, the way that math is taught is often terrible, and much of what is taught is the wrong stuff. Right? Like I have now now being familiar with a lot of the topics that are in the K 12 math curriculum, because our kids have been through it and are, you know, advancing through it now. It's clear that a lot of it is just oh, well, this is this is in the textbook that we've always used. And so we're going to force you to walk through this. And you know, both of our kids happen to have fun with math, and I get to do with them some of the same stuff my dad did with me and helping them out. But, but I still run into stuff, oh, my God, I just don't care. Like I just don't think this is this is going to come up, you know, it will come up in a very particular place. But math is everywhere. Let's be teaching math, that reveals itself as everywhere, especially for the youngest ages, and then allow people to track into you know, what kind of you do you think you're feeling entrepreneurial, you think you're feeling engineering, or you're like, or you just want to be able to interpret the news that you're getting, without being duped by, either. Are there bad actors, or just people who are bad at math all the time?

**Bret** 49:15

And, you know, in some sense, I think, you know, I certainly did not have an easy relationship with my formal education at all. I mean, at no point. But I remember, you do remember, but there's some you know, I do feel educated somehow. And I would say that as an educated person, you say, math is everywhere. Math is everywhere. Chemistry is everywhere. logic is everywhere, right? physics is everywhere. And the point is, you don't see to the deepest level, right, you don't see the world through the eyes of a theoretical physicist unless you have very good exposure. But the ability to peer into all of these levels, you know, when we talk about immunity, you're talking about the chemistry at the tip of something called an antibody We've all heard of but you don't realize this is a y shaped molecule that has two pads on it that have electromagnetic idiosyncrasies that stick to some stuff and not other stuff for reasons that you could demonstrate with a child's magnets, right. And so the ability to be able to see into these puzzles, it's not that hard if somebody who knew what they were doing, we placed it in front of you in a way that is conducive to your acquiring, it's effortless at some level. But if not, it's just a struggle memorizing stuff from books that doesn't stick because it doesn't, it's not connected to it, you

**Heather** 50:33

don't have you if you need to be able to build your own architecture that makes sense to you in your head, and such that when you get something new in your head, you can even when you when you receive some information, you're like, Oh, this will fit there. And you know, I feel this way very explicitly about animals and your ecology and behavior. And you know, when I'm when I'm in the tropical rainforest, and seeing yet another bird, yet another interesting thing, if I, if I have literally the phylogenetic tree in my head and go like, Oh, well, that's a woodpecker as opposed to a cuckoo as opposed to a tanager. And I know what woodpeckers tend to do when Oh, that's something unusual for woodpecker or one of that fits right in. It just gives you an architecture right from the beginning that you can you can, you can base things off of, I think, also, what you just said, makes me want to give a shout out to the model that was evergreen when it worked once again. And I don't know that the program in question did work. But you've heard this story when I was flying out to my interview at evergreen. flipping through the at that point, it was still paper catalogs back in would have been early 2002, I guess. Like the catalog and these, you know, full time programs, again, where you often had multiple faculty teaching from very different disciplines, I found a program that really this this program was the one that made me think, ah, if you can do that there, this is where I want to be teaching and therefore learning because I'll be learning from my co faculty and my students as well. It was called centering. And it was about the science and art of pottery of ceramics. And I had you know, over the last few years at that point, become a potter myself and was fascinated with exactly the artistic manifestations of ceramic I particularly like well thrown pottery. And of course, the physics and wheel thrown pottery is, you know, both obvious and intuitive which and you know, we've talked about this with garter frisbee as well. But also the chemistry like I know little least about chemistry of all of the natural sciences, probably but once you are mixing your own glazes, and putting pottery into sometimes an oxidation Kelvin and sometimes a reduction Cal and seeing the difference ways that say, you know, copper reveals itself in an oxygen rich environment versus an oxygen reduced environment is amazing. And it just brings the at least the science and physics to life. And you know, I never did my own clay. But you know, you could do that and start to think about some of the underlying geology, biology too. And, and that's what this program allowed like this, it could have right, the idea of learning how to make both hand belt and wheel thrown pottery and understand the physics and chemistry of it in the same place at the same time with the same faculty, the same students. That's what what's, what an education can be. And that's part of what that's part of what we do mourn at evergreen. Right?

**Bret** 53:16

I was just going to add that you also get issues of mathematical scale with respect to the particle size and the different kinds of clay and the way that they throw differently on a wheel. Yeah,

**Heather** 53:27

how much they messes. Yeah, porcelain versus the red, a red clay base, I have not forgotten all the all the various terms, because when we moved, I had to, I had to give up my pottery studio that we built for me in our backyard. But you know, the different the different shrinkage, right? Just, you know, some clay bodies will shrink 15% some 25 and planning for it. And you know, if you've done it, we'll throw in it will shrink in some, you know, with some kind of circularity to it. And yeah, it's, it's fascinating and remarkable. And it really does allow you to bring your science and your art brain together. Well, and and most traditional education doesn't let that happen. Because

**Bret** 54:05

in that case, you've got a physical product, right? There's also a reward structure built into it, which is really the hidden key to all education is that, in general, we sit you in a chair, and the reason that you want to learn this stuff is so that your teacher doesn't say mean things about you at the end of the term. You're just not a good motivational structure. Whereas I want to get better at this because I saw that right thing, and I'd like to be able to make one like it. You know, that's a very powerful motivator. So yes, figuring out how to get the motivation in the right place is key. Yeah, I would also point out if I can just go back to one of the things yeah, this issue of, we must unmake history. And mind you, I think the history curriculum sucks. Sure, yeah, we must unmake the history curriculum, because certain populations are underrepresented in. Really, how do you know? Right? How do you know is a question that is dependent on a method which is dependent on mathematics. So the point is, these two stories are in conflict with each other, we must unmake the history curriculum because it is an error. But the very claim that it is an error about representation implies that there is a method which would with which we could figure out what

**Heather** 55:21

is now they've seen you coming. It's about your lived experience and your personal emotional feeling about it. And that is what makes it true, right? But then it's not the lived experience and personal emotional feelings about things aren't important in real, but it doesn't make things true.

**Bret** 55:35

Well, but But even then, yeah, like, Look, I'll sign up for that. Okay, it's about lived experience. Who's right? Because which history curriculum? Or is it everybody writes their own history curriculum? Or is it that the most aggrieved party gets to write history for the world? Or what exactly is this? Right?

**Heather** 55:54

No, it's it's it's that and it's, you know, it's, it's, it's that latter thing, and it is a, an abuse of the idea of anything about the collective being a good thing. And it you know, it's part of what makes people so terrified of anything that sounds like socialized anything, you know, socialized medicine, or, or, you know, or education sounds like this big Boogeyman to a lot of people on the right, because they've seen what thinking in terms of the collective can do. But you know, my favorite example of yours is the fire department. Oh, yeah, we have socialized fire departments. And good good for us.

**Bret** 56:29

Yeah, we didn't always right now we do. It used to be I think there's a Roman example where they used to negotiate with you, you know, and you'd pay more and more to get them to put out your house as it burned down, because something might be salvaged. And then, of course, as a colonial version in which you had private fire departments, and you had to have a bad, there's like a little metal badge you had to have on your building, or the fire department wouldn't lift a finger to help you. And so we dealt with that problem. And we socialized the cost. And it's a risk. Well, it makes perfect sense. And some things work this way, and some don't. But But anyway,

**Heather** 57:02

and that, and that's key, right? Some things work this way. And some things don't, not saying that. Everything should not be socialized, and socialized can go very, very badly. But look to the fire department for an example of how this works, and how it's patently better than the other options that have been tried.

**Bret** 57:19

Right? So final cap on this, I would say is if you do not take a verification approach, and if you simply even a sign up for their epistemology, and just see how far you can push it before it breaks down, it breaks down almost instantly. Right? So the example of you know, if it's lived experience, who's lived experiences it, who's that's going to tell us what we must do what we must say what we must accept the fact that these things, can't even go two steps without contradicting themselves or revealing their absurdity is evidence that in some sense, instead of saying, Yes, I'm on board, Black Lives Matter. The answer is actually, you don't have a clue how things work, do you? Right? You're telling us that much. Yeah. And the idea that you want to reformulate civilization, including education and journalism, and everything else, right? tech sector, tech sector policing, all of these things. And you are simultaneously telling us that on any, any question on which we are entitled to investigate, it turns out you're in error and crazy, should say, Well, okay, okay. You have the psychosis, maybe it is our responsibility to help you with that. But it is certainly not our responsibility to put you in charge. Right? That's not a good idea. It is,

**Heather** 58:39

in fact, our responsibility to not let you be in charge, yes, that that is what is, in fact, our responsibilities. In

**Bret** 58:44

fact, our responsibility to you not to put you into not just the rest of rights, the fact that you may be of a mind that the plane is being piloted by demons and that everybody else on the plane is a demon, and that you are the only person who isn't possessed, and therefore you're the best hope of landing. It doesn't make it true. And we have an obligation to you not to put you in the cockpit. Right? So

**Heather** 59:09

where we are, okay, well, we got a lot more to talk about. We're coming up on an hour, lots of things in COVID space, and I know you wanted to at least get to talking about the testing regime.

**Bret** 59:20

Yeah, maybe I'll just introduce this. So I went through a situation where about a week ago, not a little more than a week ago, I had a headache that had no explanation, and I was concerned that I might have COVID. And it was plausible that I would have contacted it though I don't know of anybody. But anyway, it revealed to me something that I think is a reflected in many people's experience, and B that is really significant and pretty scary. So I didn't think there was a high chance I had code but I thought there might be a 5% chance that I had COVID but in light of that, I know that if I did Have COVID I would go to extreme lengths to protect my family from getting, you know, if it came down to it, I would, you know, if I had a trailer, I live in it, if I had to, I'd rent a room somewhere and isolate myself. And you know, I'd be very careful not to give it to anybody who came to the door, but I would, you know, order food or whatever I had to do. So I wasn't contacting the world would be the right thing to do. But what I found was a, okay, you think there's a 5% chance you have COVID, you need to test. Okay, so I went to get the test. I got put through a rigmarole to get the test, which was bewildering, I got the stupidest medical advice you can imagine I was told simultaneously, that I didn't need to worry about COVID, because I had been misled by the press to think it was common. And then I was told if I had it, there would be no way to protect my family from getting it to the same person, do those to the same person told me that inside of three sentences of each other. So that was an official medical consultation, then they didn't know what test they were given. So this is a PCR test. We don't know. Really, you don't know if it's the PCR test. Can you find out? Can you look it up? Do you have the white paper that comes with the damn test? Well, I did find out it was the the paper to the PCR test. But anyway, I went, I got the swab. And then I waited. And I waited. And I waited for a result. Right. And while I waited, I was in the situation, do I assume that I do have it? In which case? Should I be at a hotel while I'm waiting for this test? That doesn't make any sense. On the other hand, it doesn't make any sense not to do that. So I was caught in a middle ground that I know is stupid, which is I was wearing a mask in the house right all the time. But I wasn't insisting that you guys wear masks, which probably if I did have COVID would be the minimum thing necessary. Right? I left all the windows open. So we had airflow. I spent as much time outside as I could. But the point is the limit of what you can do if you think there's a 5% chance you've got it is very different than what you should do if you actually do have it. Yeah. And it was a completely incoherent response. And I have a sense that what other people's

**Heather** 1:02:15

isn't that the word that more than anything else describes the collective response to this virus in cohere incoherent.

**Bret** 1:02:21

Yeah, absolutely incoherent. And then ultimately, I did get my test results back, they were negative. But it doesn't mean that much. Why? Because

**Heather** 1:02:32

well, but before you explain that, I mean, this is super important. But really, you had none of the other symptoms, and they disappeared quickly. And so they went away in concert with a negative result, it seems it seems likely that that is an accurate negative result, however,

**Bret** 1:02:47

yeah, okay, I took my temperature daily, it never went up. So I had no other symptoms, the headache went away. I never figured out what it was about, but probably just a stray headache. But the point is, okay, I get my result. And then I start looking into it's false negative rate, it's false negative rate is through the roof. And it varies widely, depending upon how many days into symptoms, you actually had

**Heather** 1:03:08

the test take out, because guess what? its efficacy is density dependent, right? It's

**Bret** 1:03:13

exactly. And so anyway, my point is, I think, first of all, every I just coughed during this little chat. That is plausibly the first cough of a COVID set of symptoms. Right. But almost certainly not, at the point that you cough. Do you take action? Right? So we've been handed a well, you don't want to give other people COVID thing, but we have not been handed good tools with which to know if we have it, or to trigger the top level action that you would want to take if you did have it. And my guess is, almost everybody is navigating this badly, almost everybody is probably rationalizing to themselves, that I must not have it until it's way too late. At which point, there's a less they can you know, do we know about how much COVID is responsive to our behavior? In other words, the difference between a case that is quick to go away and one of these cases that gives people symptoms for months down the road? I haven't

**Heather** 1:04:14

seen those data I have there been the man, aren't they I mean they they would be relatively easy to collect and there's some that would be the most interesting and important for those of us who could actually make sense of Okay, given that I can't trust the the collaboration of data that we're seeing thrown at us. I'd like to be able to make my own assessment. Right. Yeah. Does does laying low if if you think you've got it have a an impact on the course of the disease. I think it almost certainly has to but I don't think I don't think the data out there is not available

**Bret** 1:04:47

and the fact that you and I are even if they are the fact that you and I are looking at all the places that we do look are unaware of what the advice would be about how to keep a case mild if such advice exists at all. The fact that you don't have a test that's worth a damn. And therefore, you know, lots of people are getting false negatives who are positive and then acting in presumably reckless ways as a result of it, the whole thing is setting us up for failure. That's the point is, we are being set up not only for personal, sometimes catastrophic medical failure, physiological failure by our lack of information. But we are being set up for epidemiological failure on the basis that the data is too slow to emerge. It's too low quality. And the advice on what you're supposed to do is anecdotal at best. So lots of the answer is lots and lots of people are dying. And as much as this disease isn't as deadly as we feared, it is potentially much more destructive. So every time you hear, oh, it's not that serious, because the death rate per infection is low, you should ask the question, okay. But how much quality of life is being lost by people who recover or somewhat recover? Because the stuff I'm reading is certainly very frightening on that front.

**Heather** 1:06:10

Yeah, no, absolutely. And here, actually, if you want to show this sack, here's just a, it's a science news article. So it's published in one of the top tier science journals in the world. But it's one of these news articles from brain fog to heart damage. COVID-19 is lingering problems, alarm scientists, it starts with an extended anecdote about a neuroscientist who is 38 and has her own lab at University College London, but who haven't, quote unquote, survived to COVID, finds herself still was sufficient, both anatomical and physiological symptoms in terms of joint and muscle pain, but also neurological symptoms. Like she is she, she says she has brain fog and isn't and such that she cannot do the work that she is accustomed to doing. And that this is now I think, months. Oh, she says she said just three weeks since March when her body temperature was normal. So she's not dead, therefore, she doesn't count as one of the deaths. And this is it's a terrible way of assessing the impact of a disease, right? deaths versus not deaths. Well, this, this woman's career may be over,

**Bret** 1:07:23

maybe over and we also don't need young, she's in her 30s. Right. We also don't know, you know, as we've discussed models of senescence, and the force that pulls you towards the grave, we don't know how much life has been lost, the fact that you die from the initial infection is one thing. But if you've had 15 years knocked off your life, that's not an insignificant fact.

**Heather** 1:07:44

So how many lives versus how much life it's a different way of counting, it's both counting, but it's, it's just a tiny bit more nuanced. It's just a little bit more categorization that is required to imagine sort of actuarially, how what was your expected life? Life expectancy? And, you know, in 50 years, we might be able to know, right, but it would it's, it's going to be such noisy data that we might never be able to know, but of people who tested positive and had cases that were serious enough to be noted, do they live less time then are expected by life expectancy tables? Yep. And prediction is that they will, although again, that's only counting just actual number of amount of moments lived, as opposed to quality of life,

**Bret** 1:08:32

right? And the quality of life thing? You know, it's very hard to tell from the reports, the reports are frightening of what people experience. Yeah, but there is, you know, basically, people are having an attack on the tissues across their body, which gives a huge diversity of symptoms. I'm also hearing about the recurrence of these symptoms. I have one friend who has a pattern where he had it months ago, and he recovered, and every month it recurs. And the pattern is that the degree of severity decreases over time. This is one person I consider him highly reliable in terms of the battery's experiencing, but the point is, the diversity is way too high, to even know how to count the damage here.

**Heather** 1:09:18

Yeah. And that maybe just one more thing quickly before we finish for this top hour. That is part of what prompted a bunch of scientists to create their own vaccine. So this is published in MIT Technology Review, which is a very highly regarded publication. And the headline is for those listening and not watching some scientists are taking a DIY Coronavirus vaccine and nobody knows if it's legal or if it works. Okay, fair enough. It the you know, the story goes on. This is their site here. They are calling themselves the rapid deployment vaccine collaborative and there's you know, it's it's It's fascinating. There's there's a bunch of good stuff here about what they're doing what they're trying to do what they are not promising. But their basic point is, we don't foresee a, a valid and reliable vaccine coming anytime soon. And given that, and given how much we're seeing about, yes, pretty low death rate, but really high collateral damage rate from this virus, we are going to prioritize creating a vaccine for ourselves. And so they're doing it's kind of citizen science by scientists.

**Bret** 1:10:34

Yeah, sure. It is a

1:10:35

big Yeah, exactly. So

**Bret** 1:10:38

very important person.

**Heather** 1:10:40

You know, neither of us has we just came, became aware of this, you know, like a half an hour or so before the podcast. So we have not fully vetted this. But I guess one question that shows up is, you're just what do you think like, should should citizen scientists, you even be allowed to, with tools that they have access to? Because some of them have research labs, create their own, you know, taking full responsibility for what happens? If it doesn't go write their own vaccines at home? In my opinion, my first response is, yeah,

**Bret** 1:11:15

well, yes, and no, it's my response. That happens. I'm reading here, what their mechanism is, and basically, it's a synthetic peptide, they say these peptides are small synthetically produced portions of viral sequence. Now, what this means is that they are delivering proteins, which are matches for proteins produced by the virus. And therefore what they're doing is they are triggering the immune system, to react to antigens that the virus itself produces so that when the virus shows up, your immune system recognizes ahead of time. Now that strikes me as much more likely to be safe than the alternative, which is to produce an inactive virus, which therefore informs the immune system by actually diversifying in your system and spreading antigens by a mechanism that doesn't make you sick, but does infect cells. Yeah, no, and it's likely that or the third case is to kill off a virus or inactivate it so that your immune system just sees those particles itself,

**Heather** 1:12:21

right. And they say here also the your the antigen portion that they've chosen could be substituted by others. For example, the example they give is the recombinant saris, Coby to spike RBD. And that, you know, for me, what that calls up is, okay, well, the efficacy of this or really any other vaccine, and they say to this doesn't have to be for this, you know, you could use this mechanism, this kind of this framework, with other antigens from other viruses to make vaccines for other viruses, that it is likely to be highly different in efficacy, depending on which particular antigen you use, and it's going to be difficult to predict in advance which antigen is most likely to produce the appropriate response in your own body,

**Bret** 1:13:03

right, but let's put it this way, this is potentially a good idea, the fact that they are not using virus decreases, presumably to zero the chances of a recombination event informing the virus of something it doesn't yet know, the actual virus. So peptides, probably a good choice. However, the problem is you're you're playing with the information that the immune system uses to understand what antagonists it is encountering. And so the possibility exists, for example, to trigger and auto immunity by leading so you've got selection inside the body functioning, to train the virus to be invisible to immune systems, that means the closer it gets to self, the harder it is for the immune system to fight. Once a go to strategy. It's part of you know, AIDS, basically, HIV digs a hole in the immune system, which it then disappears into more or less.

**Heather** 1:14:04

That's what an autoimmune disease means that it tricks your body into thinking it's you so that your own body doesn't go after it.

**Bret** 1:14:11

Well, no, an autoimmune disease. Let's say that a virus Oh, I'm sorry, I'm sorry, a virus mimics your own part of Yes. And then the immune system chases it, and it starts reacting to stuff that's ever closer to you. And sooner or later, it's attacking your own tissue, like cartilaginous tissue in rheumatoid arthritis, for example,

**Heather** 1:14:30

I misspoke. Yes,

**Bret** 1:14:32

but, but the point is, if you're, I'm not saying this isn't worth it. In this case, I share the authors of that papers fear about the danger with COVID and the necessity to do something. But in general, do we want people messing around with informing immune systems, you know, based on these things, there's, there's a big hazard here. So the point is, we really ought to be having a proper discussion. About the costs, risks and benefits of allowing this sort of behavior. And the problem is we can't do it in an environment where the New York Times is telling people that subways are probably safe. And, you know, the who is telling us that masks don't work. And all of this stuff is clearly cooked up for reasons that have nothing to do with our actually being informed. So anyway, yep, very important problem to be solved. All right,

**Heather** 1:15:30

I think we're, I think, I think we have

**Bret** 1:15:33

arrived.

**Heather** 1:15:33

Yeah. So we will be taking your subject questions in the next hour, starting in about 15 minutes. And we encourage you to if you have questions either ask them at the very end of this hour we'll be taking from this hour in monetary monetary order in the next hour in the order in which they come in. You can get access to a private q&a that we'll do every month at my Patreon and either our Patreon is access a private Discord server for people who are interested in these kinds of conversations.

**Bret** 1:16:05

I promised the Unity update and there is one, the long awaited unity campfire is going to be deployed tomorrow with a special guest I think you will be very pleased to see join our ranks. We are likely to do this at six o'clock Pacific that is 9pm. Eastern so that we can get everybody able to watch live. So please tune in to our channel to find that announcement unity channel community channel. You can find that at articles of unity at articles of unity on Twitter. You can also follow me on twitter at Brett Weinstein. Brett has one T. And any case please join us for that it should be great. We've failed to mention what take took place in Beirut this morning. Sorry for that. I know I promised it on Twitter, but we just ran out of time. So in any case, if you're not aware of what's going on, it's worth looking into We will see you in 15 minutes. All right. Well, everyone