[00:00:06.450]
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[00:00:34.950]
So if you can't afford a subscription, there's an option. And Sam Harris, Doug, to request a free account and we grant 100 percent of those requests. No questions asked. OK, the briefest possible housekeeping, we are one week away from the presidential election in the United States, and I am sure I will have a Zoome call for podcast subscribers at some point immediately following a result. We don't know how long it will take to get a result, but I will pick my moment and we will announce it by the usual channels, probably email and Twitter, and it'll be another video Q&A on Zoome.

[00:01:22.710]
And if you want to participate in that, you can subscribe to the podcast at Sam Harris. Doug. Today, I'm speaking with Nicholas Christakis. Nicholas is a physician and sociologist and he directs the Human Nature Lab at Yale University, where he is the sterling professor of social and natural science in the Department of Sociology, Medicine, Ecology and evolutionary biology, statistics and data science and biomedical engineering. He is also the co-director of the Yale Institute for Network Science.

[00:01:58.680]
And he's the author of several books, Connected Blueprint and most recently, Apollo's Arrow The Profound and Enduring Impact of Coronavirus on the Way We Live. And that is the topic of today's conversation. Nicholson, I cover a lot of ground, we talk about the breakdown of trust in institutions and experts, the corruption of science by politics, the ineptitude of the Trump administration in handling the pandemic, whether the gravity of covid-19 has been exaggerated using this experience to prepare for future pandemics.

[00:02:35.780]
Whether it's true that covid deaths are being overreported. Bad incentives in the medical system, the prospect that the coronavirus will evolve to become more benign. The efficacy of current treatments, safety concerns about a rushed vaccine, the importance of public health communication when life on Earth might return to normal. The economic impact of the pandemic. Long term social changes that may result. The future of universities, Nicholas's personal habits to keep from getting the coronavirus. The importance of rapid testing and other topics.

[00:03:18.880]
Anyway, this is up to the minute look at the state of the pandemic. And certainly a timely conversation prior to the election. And now I bring you Nicholas Christakis. I am here with Nicholas Christakis. Nicholas, thanks for coming back on the podcast. Sam, thank you so much for having me. It's good to be back.

[00:03:43.830]
So you are now a multi repeat guest, and so I know I'm in good company the first couple of times we're just a dress rehearsal. But now you can be a co-host whenever you want, but briefly remind people what your your station in life is and how you come to know or have strong opinions about many of the topics we're going to touch. Oh, goodness.

[00:04:05.760]
Well, I'm a physician and a social scientist, and I've spent my life or my career in academia doing scientific research and taking care of patients. Up until about 10 years ago, I was a hospice doctor taking care of people who are dying. But I run a moderately decent sized lab at Yale University now doing science of different kinds with a bunch of different groups. In my in my laboratory, we do everything from sort of quantitative public health research to work on the microbiome to classic

sociology research to we have a actually a social robotics division.

[00:04:42.210]
We work on artificial intelligence anyway. We do a whole bunch of cool things. So I'm very proud of them, this group of mine and I teach students as well. And I've lately become very interested in the evolutionary origins of of human social interactions and most recently in the pandemic. In the covid pandemic. Yeah, well, you, unlike many people, have managed to put this pandemic to very good use. I mean, you we've been under the shadow of this thing for about eight months now, and you have managed not only to write a book about the pandemic, but to publish it.

[00:05:20.250]
And that is astonishing if you are at all familiar with the usual time course of writing books and publishing them. And that book is Apollo's Arrow The Profound and Enduring Impact of Coronavirus on the Way We Live. And that is out just this week as we release this. That should be available to anyone online or in your bookstore if you are intrepid enough to visit your local bookstore.

[00:05:45.120]
So I want to talk about covid, obviously, and I want you to bring us all up to the present in terms of what we should know about it at this point and also to forecast, you know, what you expect to see in the next year or so. But I want us to use the pandemic as a lens through which to consider much else that's ailing us, because we're living with a significant breakdown in our ability to acknowledge a shared reality.

[00:06:15.360]
And this is based on the deliberate spread of disinformation, which I've devoted a few podcasts to. It's also based on how our our natural biases are being amplified by technology. I mean, social media has weaponized our confirmation bias and our tribalism and our other less than epistemic ways of thinking. And the result is that we're finding it harder and harder to collectively acknowledge the same set of facts, much less agree about what to do in response to those facts.

[00:06:49.140]
So we're dealing with this total pollution of our information space, and it's affecting everything. And as a result, our trust in institutions, you know, whether it's the government or the press or universities or scientific journals is at an all time low and worse, given what is happening. It probably should be at an all time low. I mean, it's just just give you one sign of the times that happened recently. The New England Journal of Medicine published a a truly blistering editorial about how badly the Trump administration has handled covid.

[00:07:26.850]
And I read that and I basically agreed with every word of it. And, you know, we will get into the details there. But then I noticed that my Twitter feed just lights up with allegations that the New England Journal of Medicine is financially tied to the Chinese Communist Party at this point. Right now, I don't even have time to figure out whether or not that's true, as I like, you know. But nothing at this point would surprise me.

[00:07:55.830]
But I have no time for this because you can literally hold your breath until the next scandal arises. That seems worthy of your attention. I mean, they happen over the time course of minutes now. So it's just a crazy space to even be having this conversation. And and so I want us to focus on covid and get deeply into it. But I think we should talk about the way in which politics in particular is to range in the information, space and science itself at this point.

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Yeah, I mean, in a way, we could even start with that. I mean, I was scribbling some notes about topics for us to discuss, as you were as you were speaking. And there's so many directions we could go in.

[00:08:33.370]
But I guess with one predicate we could start with that to her, which is that we happen to be alive at a moment when we are experiencing something very unusual in the in the history of our species, and that is that a new, serious, widespread pathogen has been introduced into our midst.

[00:08:52.120]
And this only happens once every 50 or 100 years. And and one of the themes actually of my book is that, you know, this feels very alien to us.

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This this this risk of death, this this this fact that we have to spread out this collapse of our economy. But I guess a very important idea is that plagues are not unusual for our species. This is just new to us.

[00:09:18.580]
We think this is so weird. We think this is so unusual. We think this is so unfair.

[00:09:24.190]
But really, epidemics of this kind have been afflicting us for for thousands of years. That is actually an interesting story about prior to ten thousand years ago, prior to the agricultural revolution. What were such epidemics possible? And the gist of it is probably not. But but anyway, from the time we invented agriculture and moved into cities, we we've been prone to this. And in fact, the title of the book, Apollo's Arrow, comes from the opening of the Iliad in which, in fact, there there is a plague.

[00:09:54.910]
I mean, that's you know, that's what that's how old this this phenomenon is. You know, three thousand years ago, Homer was writing about this anyway.

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So this this this germ has, you know, which has its own. It's a we can debate whether viruses are living things or not. But for the sake of argument, this germ is acting like any other living thing. It's found untouched virgin territory, namely our bodies. And it's just it's just having what's known as an ecological release. It's just spreading relentlessly among us. Just like if you had let rats loose on New Zealand a thousand years ago, they would take over the whole of the country.

[00:10:35.020]
So there's no natural immunity to this pathogen and it's just doing having its way, you know, just going about it, about its business, but leaping ahead. Now, with that background to the point you put on the table for us to discuss initially, it's odd to me the way this virus is striking us at a particular moment in our own national history. I don't know about global history, but certainly national history, because the virus has struck us at a moment in our political life, which is very inauspicious for us, but perfect for the virus.

[00:11:08.590]
So we we've have what I would call a thinning out of our intellectual culture. We have a denigration of expertise. You know, we think that there's something evil about experts or that they're self-serving, which is really odd because when you need a car mechanic, you want an expert.

[00:11:27.610]
Right. And there's this there's this famous saying in sociology that one man's occupation is is made up of the emergences of other people. So when you have a flood in your basement, it's a rare event and an emergency for you.

[00:11:41.200]
But it's the routine daily experience of the expert plumber who comes to repair it.

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So why we have this attitude or this posture towards expertise is itself very odd. But we have a kind of a.. Expertise, which is a reflection, I think, of a kind of anti elitism that we have in our society right now.

[00:12:01.070]
There is in addition to that, as you described, a kind of denigration of science or disbelief in science or or a politicization of science whereby scientists are seen as just any other like any other interest group, you know, trying to feed at the public trough instead of seeing, I think more rightly, of course, I'm very partial to scientists and science, but I recognize science has limitations and we can talk about that as well.

[00:12:24.230]
But this idea that that if scientists tell us something, there must be an ulterior motive rather than trying to engage science as science is also very dangerous, ascendant ideology in our society right now. And there are two more items which I'll mention, and all of this causes quite a witch's brew.

[00:12:43.250]
Another, of course, that everyone is familiar with is the political polarization, which by many metrics by political scientists show that we are at a moment in our history when we're very politicized, such that even a simple act like wearing a mask becomes seen either as a as an indicator of virtue or I'm on the left. You know, I'm a good citizen. I wear a mask. The symbol this mask symbolizes my commitment to the commonweal or, you know, the mask is seen as an infringement on my liberty, you know, like I'm on the right.

[00:13:16.040]
You know, I should be allowed to do what I want. How dare anyone tell me to wear a mask? This is ridiculous. It's just a mask. You know, it's just it's just a barrier to the spread of droplets. You know, it's it doesn't need to be politicized. And many other countries, incidentally, do not politicize mask wearing. It's not seen as a political act.

[00:13:33.830]
And finally, to this witch's brew. Is this extraordinary? Loss of capacity for nuance in our society, and I know you talk about this a lot, Sam, on this podcast, which is why things are seen as black or white. I mean, every topic, why we can't acknowledge that there's shades of grey, there's uncertainty there. Intermediate steps.

[00:13:57.340]
You know, you don't have to be with me or against me. You can be partly with me, you know, or you can recognize that this is a complicated topic.

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You know, whether it's whatever we're talking about, there's this sort of desire for simple perspectives on the world that I think is just it's not in keeping with the nature of the real world. So all of these things, that denigration of expertise, that disbelief in science, the polarization, the loss of nuance, this is when the virus is striking us. And, boy, has this sapped our ability to respond effectively. Well, let's focus on the political coopting of science.

[00:14:35.140]
And this has happened. The pressure has come from both the right and the left here in different ways and in different topics. Yeah, and it but to a degree on both sides that has revealed scientists themselves to be all too human. Right. So the some of the skepticism and despair over over the course of the loss of the stature of scientific opinion here is understandable, given just how craven so many scientists have shown themselves to be. I mean, so to see what's happening on the right, or at least in Trumpington, I worry where you locate that on the political spectrum is sometimes difficult.

[00:15:17.860]
But what we see is this effort to please the delusional boy king, and it results in some of the most

reputable people in public health walking on eggshells around this monstrously ignorant and belligerent president. And so we have, you know, Anthony Fauci, who has the most stellar reputation of anyone. He's been writing he's been writing about respiratory pandemics since before not before you and I were born. But but, you know, for decades. Yes, we're very lucky to have him.

[00:15:52.840]
But still, most of his energy seems to be bound up in an effort to not embarrass the president. Right. And he's found that almost impossible to avoid doing. And then we have someone like Dr. Burk's who, you know, in those first weeks and a couple months of her prominence, you know, seemed more and more like a hostage with Stockholm syndrome. Right. And Robert Redfield, who's running the CDC, appears just visibly neutered whenever he's communicating about covid in public.

[00:16:24.970]
And none of this inspired confidence in the beginning. And since most of these people have almost entirely disappeared, I trust for also for political reasons. So there's that sort of the lack of credibility in the public face of the messaging. But then there's a a reasonable concern that the Trump administration has so vitiated the the scientific expertise in government, you know, whether it's at the CDC or the FDA or in the EPA. I mean, just across the board, Prie covid, this was happening and has been replacing career civil servants and scientists with political lackeys and and industry lobbyists.

[00:17:06.610]
And given the ineptitude of our response to covid, it seems worth worrying that maybe we're no longer the medical and technical superpower we once were or thought we were. And, you know, this culminated in things like Harold Varmus, another person with a totally stellar reputation, writing an op ed in The New York Times declaring that we can't trust the CDC guidance about whether to reopen schools. So there is a breakdown in authority here. Yes. And then from the left, we see this, the moral panic around weakness in the aftermath of the killing of George Floyd in the midst of the pandemic.

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And we see this insane double standard endorsed by literally thousands of public health officials where they declare that the protest against the lockdown were murderously irresponsible. But protests in support of Black Lives Matter, you know, as if by magic are not only OK, they're actually necessary. Right. And. And so that's where we have the left and the right competing in this insane sort of reputational potlatch to see who can destroy their their gravitas, you know, more quickly.

[00:18:19.720]
And so it's that's the space in which that are our political partisanship has just made a mockery of scientific communication.

[00:18:28.150]
Well, I mean, this is a very complicated topic. Obviously, that goes in many directions. And you've alluded to quite a few of them. And I know you've thought deeply about this, too.

[00:18:36.280]
But first of all, you know, one of the principles of. Democracy is that we get to elect our leaders and we have an executive branch that is responsive to the people we elect. Now, you could make the argument that the people voted for Donald Trump.

[00:18:53.480]
Of course, side arguments about how more people voted for Hillary and blah, blah, blah, but we had the system, we had he won the election and therefore it's a reflection of our democracy that we the will of the people is that the scientists be muzzled, which is a kind of an odd conclusion to come to. But, you know, you could, in fact, somehow make that argument that it is reasonable or correct or a working of a democratic right that the scientists are being muzzled.

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And yet we believe all of us, certainly I do, that there should be a way in which science could be

outside of politics. Otherwise, you get a kind of Lysenko ism, right.

[00:19:25.510]
During Stalinist time, you know, genetics was seen as a discovery in evolutionary biology and genetics were seen as a great threat to communism because communists belief wanted to believe that we could change social structure and therefore change human nature.

[00:19:39.220]
And so in writ large discoveries in evolutionary biology and genetics, which seen to subvert that, you know, that there could be a kind of innate human nature.

[00:19:47.200]
And so, of course, Lysenko, you know, had a kind of Lamarckian idea about acquired traits and he arranged for people who didn't agree with him to be shot.

[00:19:57.280]
Other scientists, as one does when reviewing scientific papers, one doesn't like. Yes. Yes, exactly.

[00:20:02.740]
Who who who among us wouldn't want his peer reviewers to be shot? So there's this temptation to have politics interfere, as you said, is longstanding. And and also, incidentally, another historical strand in this is that science often is expensive and it is a luxury and has been done at the public purse. You know, whether it's DaVinci or Galileo, you know, working for the Medicis or Seneca or Euripides, you know, working in the king of Syracuse, etc.

[00:20:34.450]
. I mean, since time immemorial, there's this sense, which is that, you know, scientists work for the king in a war, in a sense. But the problem we have right now is is is even more complicated than that for various reasons, not just the fact that it's the modern era and we have institutions which are supposed to provide ballast against the boy. King, as you said. Is that what is the dilemma of a good and wise person?

[00:20:59.130]
When there is incompetent leadership and, you know, Socrates writes about Plato writes about this as well. Let's say you're General Mattis or your General Kelly or your Tony Foushee or your anyone else who is trying to figure out like my allegiance is to the nation, and if I serve in this administration, I will I be tainted or do we only do we want competent people to refuse to serve on the grounds that their reputations will be harmed. But that can't be the right answer because, you know, we want competent people running.

[00:21:35.580]
On the other hand, if he's competent people serve, do they then lose their souls or do we get this kind of subversion of the scientific process? I mean, when do you resign? When do you say, no, I will not implement this policy or I will not be quiet?

[00:21:49.440]
So there are rules how quickly Falchi cannot easily be fired.

[00:21:53.910]
There's a process whereby he can be fired, unlike unlike the secretary of Human Health and Human Services. I don't know about Redfield and his position, specifically how easily he can be fired.

[00:22:02.910]
But, you know, many of these people are probably reasoning I can do more good than harm. You know, I'm I know I look like an idiot, not Falchi, but, you know, some of the others. But I need to help the country and I can model, you know, moderate some of these, you know, ridiculous extremes that the political elites are forcing on us anyway. It's hard. I mean, it's very hard to know what to do in this

type of a situation.

[00:22:27.390]
And I'm not making apologies for anyone. And I and I put the blame squarely at the feet of the political leadership, Trump and the administration, for the utterly inept response the United States has had.

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Let me just say one more sense about why I think it's especially appropriate to hold Trump responsible, because unlike, let's say, you could reasonably argue that certain other leaders, like the British and the Italians, for example, also got it wrong.

[00:22:54.340]
But the difference is that the president of the United States has the CDC working for him and the National Security Agency working for him. And he was told in December what was going to happen, unlike the rest of us who couldn't necessarily have known what was going to happen, the very best epidemiologists on the planet, you know, work at the CDC and we have, I believe, the best intelligence agencies and by the time will probably come back to us.

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By the time I started paying attention to this in January, we now know that even as early as December, the president was briefed. So that's really a dereliction of duty, you know, to be told that a pandemic is coming by.

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People you should know are reputable, are not making this up. And to ignore that or fail to take action, to fail to use the wealth of this nation, to prepare to put in place, to build testing capacity to do all the things that are recommended. Incidentally, the CDC has released every three to five years a playbook on how to cope with respiratory pandemics that Obama White House actually after the Bush White House and also bequeathed to Trump such a playbook.

[00:23:56.910]
But even leaving aside the political transmission of this information in the CDC, you can you can go online and it says, you know, plans for a respiratory pandemic.

[00:24:06.540]
Bill Gates released a TED talk. I forgot it was five or 10 years ago that has 30 million views talking about exactly what's happening to us. So so I can understand why the, quote, man or woman on the street are shocked and surprised that this is happening to us, like we discussed a little while ago.

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But our political leaders who are entrusted with the duty to protect us should not have been surprised. In fact, we're not surprised and therefore rightly are being held to account for the hundreds of thousands of deaths. And incidentally, I think we are going to surpass half a million deaths in the United States. When you and I spoke about this last March, I can't remember what my forecast was.

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It was hundreds of thousands, I'm pretty sure.

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But it's gone up since then. I mean, we you know, this is going to be the leading killer of Americans this year. And per capita will be for sure, the second worst pandemic we've had in this nation for, you know, for over 100 years, maybe, maybe approach 1918. It depends. OK, well, I want to talk about the future, but before we get there, let's talk about the past and present here. So when we last spoke, I had you on pretty early in the pandemic, just, you know, just when I began to take it very seriously.

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And I was not especially prescient, but I was, as I have said several times on the podcast, I was

palpably at least a week or two earlier than almost anyone in my sphere. Right. So I was the, you know, the dad at school talking to the other parents and getting these looks of astonishment and concern. You know, when when I said, well, you know, we're pulling our girls out of school on Monday and we looked like hypochondriacs and, you know, it was it was scarcely a week or 10 days before schools throughout the city and in many other places in the country were closed.

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You know, the experience of being a week early was one of living on another planet. Right. Like my last trip to the supermarket was one where it was a completely normal trip to the supermarket. And a few days later, I was hearing stories of people literally running down the aisles just and sticking their straight arm out and just scooping 30 bags of pasta into their carts. Right. So, you know, I don't give myself much credit for being early, but once I got clear about or thought I was clear about the nature of this problem, I initiated some conversations with people like yourself.

[00:26:35.190]
And at that point, there was a general concern that there was there was a trade off between public health and the economy. Right. If we take this too seriously, we're going to torpedo the economy. And that's just an intrinsically bad thing. And to say nothing of the fact that when that happens, people die for other reasons. There's a mortality calculus on both sides here. And many people were persuaded, you know, at great effort and obviously incompletely.

[00:27:05.790]
But many people were persuaded that whatever your concerns about this, you know, maybe not being that much of a a lethal pandemic and, you know, we're going to do intense harm to the economy, but it makes sense to so-called bend the curve. We need to keep our hospitals from being overwhelmed. And people got on board with that project for about a month or six weeks or so before our lack of full commitment to that became evident. And also, we did successfully bend the curve to the point where, OK, our hospitals survived.

[00:27:44.220]
Right. That we got we had some fairly scary reports of ICU filling up, but basically we kept the ship afloat. And since then, there's just been this total bifurcation in people's thinking about this pandemic. I still know people and you can certainly see them in many others on social media who think we had a colossal overreaction to this thing. No, the story here is not that we didn't sufficiently prepare. The story is that we panicked and that something like herd immunity is an inevitable terminus to this globally and locally.

[00:28:24.330]
And, you know, this kills people in old age homes, but it doesn't kill all that many people who are weren't going to die of something soon anyway. And this again, this is broken along predictably political lines. Yeah, but I know you you're you're going to want to talk about how catastrophically bad our response has been to this and how much we need to learn from this episode. But I don't see ourselves poised to learn those lessons because so much of our society seems to think that this is if not a hoax, just hoax adjacent.

[00:28:59.790]
Right.

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OK, but first of all. There's so much, again, to unpack there. We need to come back to the herd immunity, we can come back a little bit to the flattening the curve thing. But I do want to also talk to you and I made some notes here about notions of quantifying risk. And maybe that's where I'll dip into what you just said. So. On the one hand. The country has been confused in the public health messaging has been confused by people thinking because this unfortunately for us, this disease is has a variety of things that can happen to you from no symptoms to mild symptoms to serious symptoms and long term disability to death.

[00:29:39.590]
So it's a very heterogeneous presentation and in a way that has muddied the public health message because so many people have such a benign course that it becomes possible to imagine what might this might not be so bad in the way that if it were cholera or smallpox, people wouldn't be saying that. So the intrinsic nature of the pathogen, which is its protean manifestations, ironically, have made it more difficult for us to combat.

[00:30:04.550]
In addition to its protean nature, the disease is deadly, is 10 times deadlier than the flu, but is not as deadly as the bubonic plague or smallpox or cholera, which we'll call the holy trinity of infections in the Indian subcontinent.

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For centuries, you know, they were so deadly.

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And that also is ironic because if this disease had been as deadly as smallpox or Ebola, you better believe Americans would be taking it more seriously. And incidentally, I just want to highlight for your listeners, we are lucky it's not that deadly. There's no zanti reason as known to God that this disease is only as bad as it is. It could have been so much worse. And in fact, the pathogen, a SARS, one that afflicted us in 2003 in a pandemic that petered out for reasons I actually discuss in the book, compared to the current pandemic, it had some subtly different biology that made that it.

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But that germ peter out, that germ was in, by some metrics, ten times deadlier than the current one. So so the sars-cov-2 kills about one percent of the people that get symptoms from it kills between point three and point five percent or point three and point six percent of the people who become infected with it, and about 2.5 to one point two percent of the people who developed symptoms from it. And it varies a lot by age, but let's just say up roughly about one out of 100 people who are symptomatic from this condition will die.

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And the original SARS probably was 10 times deadlier.

[00:31:33.830]
And in some ways that the lower lethality of this condition have made it harder for us to take seriously, because even if the disease had been left unfettered in our society to just run loose and probably in that scenario, maybe 200 million Americans would have been infected. And of those that say 100 million would have had symptoms, and of those, maybe a million would have died.

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Even in that scenario, that's only one million out of three hundred and thirty million Americans. And this has led to some people doing calculations that say, well, don't worry about it.

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You know, you know, one out of three hundred chance of dying isn't so bad, they say. But that's a completely wrong way to understand and compute risks of of disease in general, let alone infectious diseases. A million deaths is a catastrophe. It's a it's an enormous number, an enormous amount of death and destruction in a year in our nation. But but our nation will survive.

[00:32:30.800]
I mean, we are going to see the other side of this.

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And this is another thing that's so interesting about plagues is that even the bubonic plague, which would sweep through cities and kill often half, sometimes nearly all of the people in a city ended.

[00:32:45.260]
I mean, we have accounts, for example, among Native American populations that were annihilated by smallpox. You know, 95 percent of the people dying within a month, like everyone is dead, you know, just like and we have accounts for medieval Europe of people thinking that this was the second coming, you know, that that the world was being utterly, completely destroyed. So bad was the toll of death. We thankfully do not have that a situation with this pathogen.

[00:33:10.610]
But I just want readers, listeners to understand that it's dumb luck that that's the case. I mean, this could have been a much worse pathogen. It's not. And therefore, the fact that we should take that as a blessing, not as an opportunity to be reckless and then say, oh, well, let's just go about our business and ignore it. There's no reason we need to loose as many Americans as I fear we are going to lose.

[00:33:33.260]
Before you continue, let's just secure that that one epiphany here, because I think everyone, regardless of their politics, should be able to agree about this, that there is simply no guarantee that the next pandemic won't be an order of magnitude worse than this or or even worse than that. Right.

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I mean, we could there's no guarantee we could be, but you're absolutely right. But also, to be clear, these types of pandemics, part of the problem is there's no one alive that remembers this experience from before.

[00:34:06.590]
You know, the 1918 pandemic was one hundred years ago. And so all the learnings. Yes, we should learn our lesson, but it is true that it is unlikely in our lifetime we will have personally to deploy these lessons again, except when you think about the possibility of bioterrorism remain an engineered pandemic.

[00:34:26.970]
Yeah, or it could I mean, there's still plasticity. I mean, there's already a pretty bad flu influenza, a germ that's brewing in China.

[00:34:34.230]
We know from surveillance, from epidemic surveillance procedures. You're right, I mean, there could be in 10 years or in 20 years or one year in 30 years, we don't know. The usual entire pandemic interval is about 10 to 15 years. And most of those are not so serious like the 2009 influenza pandemic. The reason people don't remember that one, although it was a pandemic, was that it was very mild. It was like the common cold.

[00:34:58.630]
You got it. But you didn't die. But there absolutely could be another pandemic and we absolutely should be better prepared and do a better job of it. I'm not I'm not saying we shouldn't. I'm just saying it's, you know, probabilistically unlikely we're going to have another sars-cov-2 event, you know, in the near future. Right, so at a minimum, I think we should agree that we want to be able to respond intelligently and at minimal economic and social cost to a terrifyingly lethal pandemic should such a thing emerge.

[00:35:35.200]
And on some level, it is just a matter of time, whether it's one year, 10 years, 100 years, we know that nature is continually cooking something up like that for us. And there are there bird flus that can jump into the human population and have 60 percent lethality. And we know that there are bad actors who will increasingly get their hands on the means to produce engineered viruses and other pathogens. This is something we want to be good at.

[00:36:05.570]
And during this dress rehearsal, we proved that we're actually bad at responding to this problem. So

we have to get better at this. Whatever you think about covid. Yeah, no, I agree with that, but I also want to pick up another thread of what you were saying, which is there's only so good one can get. I mean, a circulating deadly germ is a circulating deadly germ. It's hard to imagine having the economy escape unscathed.

[00:36:32.830]
Even the Koreans, even the Koreans or the Chinese or the New Zealanders or the Greeks or, you know, people who have done reasonably well with a pandemic. Their economies are devastated. And it's because in order to cope with a germ, you have to see social interactions and economy requires social interactions. And so, you know, I think you can test and trace and wear masks and you can do a lot to maintain a semblance of normality.

[00:36:58.490]
But it's hard to argue that a world in which suddenly you've introduced a deadly contagious pathogen through the through implementation of certain responses can be neutralized. So it's not completely neutralized, but we absolutely can do vastly better than we have been doing.

[00:37:15.860]
And but it will cost I mean, there will be at some significant socioeconomic costs. It's unavoidable.

[00:37:21.680]
So just whatever you think about what's happened so far and what's likely to happen in the future, you should agree that whatever lessons there are to be learned about how to respond to a pandemic, we should learn those lessons. Like you can't be skeptical about that project, even if you think, you know, covid was not at all what the Libertador cracked it up to be. Yeah, right.

[00:37:44.810]
I mean, I, I certainly wouldn't argue about that. But this is going back to our argument about science. Yes. This is what science is about. We should learn we should observe the world. We should make inferences and we should record them and we should learn from them. Absolutely. And yeah, absolutely.

[00:38:00.980]
But I also would emphasize, in fact, that's one of the things that I discuss in Apollos Arrow. One of the ironies of this pathogen is that the way contagious diseases work, of course, is to exploit our social nature.

[00:38:13.190]
They we we humans live socially for a very specific set of reasons.

[00:38:17.010]
And this was the topic of a previous conversation you and I had and of course, a previous book as well, you know, blueprint the evolutionary origins of a good society.

[00:38:24.860]
But anyway, we we humans live socially for very particular sets of reasons. And just to summarize a couple of the key ones. One is to cooperate. I mean, this seems obvious, but we band together to be able to achieve things we weren't able to achieve on our own and also to be able to learn from each other so most animals can learn independently. You know, a little fish in the sea can learn that if it swims up to the to the to the light, it will find food there.

[00:38:50.300]
That's independent learning. But we we can observe each other and learn so. So you put your hand in the fire and you learn that it burns, that's independent learning or AI and that you learn something but at great cost.

[00:39:02.720]

Or I can watch you put your hand in the fire and I gain almost as much learning, you know, fire burns but none of the cost. You know, my hand is on burnt or or you eat a red berry in the woods and die and I watch you eat a red berry and I don't eat it. So I survive that kind of social imitation. A kind of social learning is incredibly efficient, and this is one of the reasons we evolved to live together.

[00:39:25.310]
But we also do something else, which is we teach each other things. We we accumulate knowledge and we transmit it across space and time now.

[00:39:34.340]
So so one of the arguments that I like to make about human social life is that the spread of germs is the price we pay for the spread of ideas.

[00:39:43.640]
So I come near you to learn from you, but in so doing, I set myself up for contagion's of infections. And so therefore the the pathogen is exploiting our social networks, our social interactions, our evolved desire to touch and hug each other are our desire to band together in order to learn from each other. And the virus moves along these social pathways, killing us. And so how are we going to respond? Well, we respond by exploiting our capacity for cooperation and learning.

[00:40:15.860]
We work together to live apart. We have learned from the past we're not the first humans to confront a pandemic. We inherited a playbook about what to do. That's a kind of teaching. So one of the deep ironies is that the the very same things that the pathogen is exploiting to kill us are the tools we need to use to best it.

[00:40:38.210]
And and this is one of the reasons I'm so particularly invested, as are you in us learning from this experience. There's no reason for future generations of us should do the job as poorly as we have done it right now. And in fact, I should also say we don't even need to look to future generations.

[00:40:54.860]
There's still time for us to learn now and do a better job in the coming year or so.

[00:40:59.540]
And we can discuss what I think is going to happen next. But we still have about a year and a half, in my view, of serious, immediate impact of the pathogen where we're going to need to wear masks and and and and physically distance and do a bunch of other self protective interventions.

[00:41:15.800]
But eventually. The tide will turn, but nevertheless, in the interval, we there are things we need to do well, so let's talk about that. But, you know, the reasonableness of any intervention turns on some appraisal of how bad this disease is. And the core of any claim about its badness rests on how many people are actually dying from it. And this is where I've encountered that one source of skepticism, which seems to me to be harder than most to dismiss, and this has been trumpeted by many prominent people have had to encounter this both publicly and privately.

[00:41:58.680]
But it's this concern that the mortality statistics of covid are being amplified because doctors have been incentivized to overreport covid deaths. We rely on doctors to fill out death certificates and the CDC guidance for reporting a covid death does not require a positive test for covid. And this seems to be a concession to how inept we were at testing and and still are testing. So rather, doctors simply need to deem it probable that covid was part of the picture in accounting for this death.

[00:42:36.690]
So they presume it covid death in many cases based on a constellation of symptoms, whatever else may be wrong with the patient. And of course, you know, there are many respiratory conditions that

people die from their COPD and asthma and pneumonia and and they also kill some hundreds of thousands of Americans each year. So these are not tiny sources of mortality. It's easy to imagine that if doctors are simply admonished to check this is covid box whenever it's plausible against this background of other respiratory diseases that could inflate the number of covid deaths.

[00:43:16.320]
And just to add one final wrinkle here, which is perhaps the most troubling, this was happening in the context where there was an actually and probably still is a financial incentive to presume corvids involvement because, you know, hospitals, many hospitals were on the verge of bankruptcy because all elective procedures were being canceled because nobody wanted to get covered and they were given money. You know, I think HHS allocated something like 50 billion dollars for hospitals that were having to deal with a surge of covid cases.

[00:43:50.900]
So there was a financial incentive to say, oh, yeah, this is yet another covid case that's hit our ICU.

[00:43:56.700]
No, I don't I don't think any of this makes any sense on any level. And we can discuss this. OK, I'm not I don't know about the details of how HHS reimbursed for the care. I do know that, ironically, our health care system was organized in such a fashion that in our reimbursement system that precisely when we needed it most hospitals started losing money. As you alluded to, you make much more money with elective surgeries than you do with caring for acutely ill people during a time of an epidemic, which is nuts.

[00:44:26.100]
That is to say, this is when our hospitals were most needed, when money should have flowed to them liberally. And the idea that many hospitals, I understand it, quite a few rural hospitals almost went out of business.

[00:44:37.530]
I read some news reports about Maine. I'm not 100 percent sure about this.

[00:44:41.820]
Yes, the government tried to compensate hospitals to make up for the losses, but my understanding is it wasn't enough. In any case, that is is nuts that that hospitals providing care in a time of a pandemic, that this would be a loss leader, you know, that they would lose money is is crazy, that that would happen.

[00:44:59.460]
Now, on the issue of are we correctly finding it, there's so much evidence that that that that's not the case that I don't even know where to begin, that it's not the case that we're overreporting covid deaths.

[00:45:10.410]
No, no, absolutely not. And the evidence for that comes from multiple sources, one of which is, of course, the consistency in the death rate in places around the world with very different systems of recording deaths, of detecting deaths, of very different financial incentives. We even have situations in which, you know, for example, we could look at the we had those famous cases early on in the epidemic of the diamond princess. Cruise ships were no one could come or leave.

[00:45:35.070]
We knew exactly who got sick and we could count which of them died. So, you know, we could we could assess the lethality of the pathogen. And we now have a focused studies around the world of sort of case studies of, you know, Manaus in Brazil or or villages in Lombardy or in Austria, where early on the epidemic just, you know, swept through the community and we can enumerate who died during the time of the epidemic.

[00:46:03.420]
Furthermore, there is another technique that was introduced in the middle of the 19th century by William Farr, one of the founders of the field of demography that, ironically, is still in use today, which is the notion of counting excess deaths and and scientists use.

[00:46:15.980]
Is this even now when we're trying to look at historical epidemics, let's say you want to figure out how bad was the bubonic plague or how bad was the the Spanish flu in 1918?

[00:46:25.700]
You don't have the capacity to test people. The death records at the time were very incompetent or incomplete.

[00:46:32.150]
How can you tell?

[00:46:33.590]
Well, so far proposed that we can assess the impact of an epidemic by by counting up how many people are dying of all causes during the time of the plague and comparing that to the number of people expected to die if the plague had not been there, for instance, in the prior five years in this time window. And when you do an exercise like that, that's how we get estimates that the current count of people confirmed covid deaths that we have in the United States, which is something like two hundred and thirty thousand, that it's probably an underestimate by a factor of about twenty five percent.

[00:47:08.210]
Probably three hundred thousand Americans have already died of covid other words, what we're doing, if anything, is undercounting the deaths. We know simply by looking at who's dying. Now, in fairness, some of those deaths are due to covid, but not necessarily due to covid infection. For example, if covid causes you to become depressed and suicide goes up, that's swept up in the covid deaths, you know, abusing the excess death metric.

[00:47:35.060]
But in any case, the point is, is that there is there's really no there are obvious reasons why there will be fewer than normal deaths based on all the behavioral changes due to any kind of lockdown during a pandemic. There had to be a period where there were fewer motor vehicle deaths and. Yes, you know, yeah. So the excess death metric captures all of that, both the benefits of covid and the extra costs of covid. Exactly right.

[00:48:02.300]
So let's say there were more suicides, but fewer motor vehicle accidents. Some people have argued that there was less less overtreatment of patients.

[00:48:10.460]
You know, iatrogenic this, which is medical doctor, caused injuries.

[00:48:14.780]
They were likely lower. In other words, in the past, if you had a mild heart attack, probably the right thing to do is not to not to have a doctor do anything.

[00:48:22.790]
But the doctors would do things to you actually increasing your risk of death. But under covid, people with mild heart attacks maybe stayed at home or didn't come to medical attention. And ironically, then they they failed to die, which they otherwise would have. So maybe covid saved their lives. But the point of doing this calculation is that it combines all of that stuff together and says, OK, here the total direct and indirect risks and benefits of covid and that number is higher even than the number of known covid deaths as reported by doctors along the lines that you described.

[00:48:59.180]
I would also add that if, in fact, deaths that should have been ascribed to other respiratory illnesses like COPD or asthma or pneumonia were being inaccurately coded as covid deaths, we'd be able to see the rates of COPD and asthma and pneumonia related deaths go down. Yes, because we know what to expect from those here. Yes, that's right. And in fact, reassigning covid deaths, COPD to be COVA deaths wouldn't affect the excess death calculation. So this excess death calculation is a kind of more objective way of looking at the impact of an epidemic which has been used for one hundred and fifty years, for real time epidemic monitoring and for assessment of historical epidemics.

[00:49:43.940]
And we didn't have good death records, you know, cause of death, rather information. So, no, I don't think that there is some kind of conspiracy or some kind of a mis miss assessment of of of deaths in our society.

[00:49:57.410]
And picking up a little bit on what we said earlier. See, one of the ironies is that even if a million Americans die, they're probably only going to be about, let's say, 10 people for each of those people who knew them personally. So that'll be like 10 million Americans will know someone who died of covid and probably one hundred million Americans. So like a hundred, you know, I'm sorry, 10 Americans per decedent who are intimately connected to this dissident and now, let's say, are like really upset and worried about covid.

[00:50:29.180]
And then even if a million Americans die, there will be, let's say, a hundred people who who know of that person. So they'll only be one hundred million Americans who know of someone who died personally.

[00:50:39.570]
This is a very crude approximation for many reasons that I don't go into right now.

[00:50:43.370]
But the point is, even after the epidemic has swept through our society, the majority of Americans will neither have died of it, nor knows someone who has died of it.

[00:50:51.110]
And so this is one of the reasons that it's difficult to why President Trump can get up there and say, oh, nothing bad is happening, because in the everyday experience of most people, in fact, they're not going to come up close and personal with this pathogen, again, for the reasons we discussed earlier about the fundamental nature of this pathogen.

[00:51:08.960]
But that doesn't make it less of a threat.

[00:51:10.820]
It doesn't it? And furthermore, one more thing. We've been talking about death, but it's very important to highlight the fact that we're also going to see an epidemic of disability in our society that's going to persist for a long time. So so most people who get the disease, including, for example, the president, survive the condition. But five percent of them, we don't know the precise number yet and we won't for a while, but probably about five percent will have serious long term disability.

[00:51:37.950]
They'll have pulmonary fibrosis, they'll have renal insufficiency.

[00:51:41.820]
They'll have cardiac abnormalities. They might have neurological abnormalities. So we're going to have many millions of Americans who have post covid syndrome. And and this does also doesn't

include all the children whose parents will be sick or disabled.

[00:51:59.040]
You know, all the the the the adverse health events, the adverse events on young children whose whose parents have lost their jobs, whose parents are dead or sick. You know, there's just all of this sadness and badness that come in a time of plague.

[00:52:14.610]
And unfortunately, there's no way to escape it. I mean, it is it is just an ineluctable truth about about plague that it that it is ruinous, that this is what it does to societies, that it is one of the four horsemen.

[00:52:29.100]
You know, for precisely this reason, it seems reasonable to worry even about mild so-called mild cases here. I think there was one study that showed that there was some crazy percentage of something like 78 percent of of mild cases had detectable heart irregularities as a result. So it was it just seems fairly clear that we don't know enough about what covid is doing to us. And in some sense, it's not even principally a a respiratory illness. I mean, it's a vascular illness.

[00:53:03.600]
And also, as you say, you know, in a neurological one, we certainly know about coronaviruses.

[00:53:09.240]
I mean, we we have some evidence there for coronaviruses that cause the common cold. In my book, I, I speculate in keeping with speculations by others that the 1890 pandemic was actually not influenza, but may have been a coronavirus. And over time, that virus has now become the virus that one of the four coronaviruses that causes the common cold. It's become more benign. We've evolved as well, some natural immunity to it. We get the disease as children and then when we're re exposed as adults, we have a minor illness.

[00:53:41.280]
There's a whole set of human diseases that behave this way. So it's possible that this current coronavirus, you know, in a hundred years or perhaps sooner will I should just emphasize the virus is not going to disappear.

[00:53:52.890]
I mean, it's going to keep circulating among us forever. The only issue is how will we cope with it? And hopefully we'll have a vaccine. And we haven't talked about that yet. And we can. But one one thing that is likely to happen is that the the virus will, over a period of years, become more will evolve to be less lethal. And probably we will be exposed to it as children when we, as we already know, are relatively less adversely affected by it, as is also typical of other coronaviruses.

[00:54:21.690]
For example, the two thousand three coronavirus is all discussed in my book, by the way. And then when we were re exposed as adults, they have a more benign course. It's a little bit like chicken pox. You know, if you get chicken pox as a kid, you get a pretty benign condition. If you've never had chicken pox and you get it for the first time as an adult, you can die from it.

[00:54:40.320]
So that's why exposure to chickenpox early on might be a rational strategy. So there are lots of diseases like that. And it's possible that this will join, you know, that that will be the pattern for this particular condition as well. But as you said, it's early to speculate. And furthermore, as you also said and as I was saying, it's a serious condition.

[00:55:01.080]
It it doesn't just cause us death. It causes us disability. And and the disease is having, as we were discussing earlier in ecological release, you know, it is it is just spreading it.

[00:55:11.760]
You know, it is doing what living things do. It is just, you know, spreading across all of humanity.

[00:55:17.670]
And how is it spreading? Early on, many of us began speaking about the ah, not of this. And just how how contagious is this and how will that respond to the things we we do to modify our behavior. But now we're speaking more in terms of super spreaders and super spreader events. How do you think about the spread of this now? Well, we know now much more than we did when you and I last spoke in March, I mean, the aren't the intrinsic transmissibility of the virus.

[00:55:50.800]
The so-called are not the number of new the reproduction number. The number of new cases that arise in a non immune population that is interacting normally is between 2.5 and three point five. So for each case of sars-cov-2 each infection on average between two and a half and three and a half new cases will arise if people aren't immune and they're interacting normally.

[00:56:14.350]
That's the fundamental transmissibility of the virus. In my book, I use an R, not a three as a benchmark. Now that is a pretty high are not like seasonal flu has an R not of between point nine and one point six or so. So if you have an iron out of one, that means that for each case you create one new case. So the so you don't really get an epidemic. There's no growth in cases. If it's below one, then of course the case count declines with time because each case on average cannot reproduce itself.

[00:56:41.710]
Diseases like chicken pox.

[00:56:42.970]
I think of an aunt out of about six or something.

[00:56:45.880]
Measles, which is the most contagious disease known, has an aunt out of eighteen or something. And and this incidentally, this also relates to the issue of herd immunity, which we haven't discussed, and also the fraction of people that will need to be vaccinated in order for the population to be immune. So the more transmissible the disease, the higher percentage of people have to have acquired immunity for herd immunity to kick in naturally or the higher the fraction of people have to be vaccinated in order to protect the unvaccinated people in the population.

[00:57:16.850]
So the higher the transmissibility the disease, the higher those percentages need to be. So far, so this disease, we now know about how transmissible it is.

[00:57:25.810]
But there's another number, which is not the R, not is a so-called R sub E, the effective reproductive reproduction number or effective reproductive rate, which is what we manipulate when we engage in physical distancing and when we try to flatten the curve. So when we when we change our behavior, we modify the transmissibility of the virus.

[00:57:45.940]
And you can measure and monitor the R e and you can see, oh, my goodness, everyone is staying at home. Each new case of the virus is creating less than one new case. We brought the three below one, and that's exactly what we're trying to do. And we have brought it down.

[00:58:01.990]
And just to pick up a little abandoned thread from our conversation earlier, the whole reason we rightly social physical distance and tried to flatten the curve nine months ago was not like what the

Chinese achieved by locking down their country or what we achieved by engaging in the kind of physical distancing that we did was not the eradication of the pathogen, that pathogen. We can't eradicate it. It's it's loose. Now, what we achieved instead was a postponement of its impact and may, as a result, also have saved some lives.

[00:58:32.740]
Let me explain why. When the disease first struck, we had no medicines to treat it by engaging in the sort of lock down behavior that we engaged in, in the closing the schools and the masking and everything else. We we gave our hospitals and our doctors and our scientists and our supply chains time to work so we could make more PPE, which would then ultimately save lives if people had PPE or so. Our doctors could do research to discover how to treat the condition.

[00:58:59.560]
And over the summer, we had the first drug that was shown to actually lower mortality from coronavirus, which is a very cheap and old drug, the drug called dexamethasone. We had a landmark randomised controlled trial, a very large number of people, the so-called recovery trial out of England that show the dexamethasone reduced mortality by twenty percent. That's huge. So you would much rather get covid now than covered in March, because now we have a drug that we can give you that reduces your risk of dying if you're seriously ill with it by twenty percent, which is amazing.

[00:59:31.300]
Plus, doctors have learned all kinds of other stuff like to put you on your stomach when you're in the hospital instead of on your back, for example.

[00:59:38.050]
In addition, there's some other drugs like Ramdas Severe, which none of the trials have so far shown that it has an impact on mortality. We had a very depressing trial that was just released a couple of weeks ago with a large number of people which failed to show an impact on mortality. But nevertheless, that drug might also be helpful. So we will continue to innovate on drugs.

[00:59:58.000]
There will not be a drug that is that cures coronavirus.

[01:00:01.450]
It's very difficult to find to stop viral infections, to cure viral infections, unlike bacterial infections. But we will likely have drugs that are more and more effective, that are discovered over time. And this is why we had to flatten the curve. And of course, we bought ourselves time to invent a vaccine. And I do believe we will see a vaccine in twenty twenty one, there are over one hundred and thirty efforts, foot of over 10 different approaches to vaccine development around the world.

[01:00:30.410]
I think sometime in twenty, twenty one we may discover a vaccine, how safe it is or how effective it is.

[01:00:36.250]
It's hard to predict.

[01:00:37.520]
I think in our rush to develop these vaccines, we may find a safety profile that's not so great, which may dampen enthusiasm for the vaccine. But but the problem is, even if we invent a vaccine, we then have to manufacture it, which is not trivial, distribute it, which is not trivial. We need to maintain something known as a cold chain from the moment of manufacture to the moment of injection. The vaccine always has to be in a refrigerator.

[01:01:00.380]
That's not a trivial thing.

[01:01:01.910]

And finally, and most importantly, we need to have acceptance. People have to want the vaccine and have to take it up in large numbers.

[01:01:09.140]
So I think that's going to take us into 2022. That's so from my desk.

[01:01:14.690]
What I see is that either we will invent a vaccine and accomplish everything else I just described, which will take time and take us into twenty, twenty two or.

[01:01:24.560]
Meanwhile, the virus is still spreading, which means we need another couple of annual cycles of this pathogen, which is what respiratory pathogens do.

[01:01:33.650]
Only about 10 percent of Americans have been infected.

[01:01:37.190]
And according to some network science informed estimates, I think about 40 or 45 percent need to be infected before we have herd immunity, which I think then we will reach by 2020 to just because we're so incompetent right now and the germ is just spreading.

[01:01:51.770]
So one way or the other from my desk, we're going to be physical distance, saying we're going to have periodic school closures, are going to be wearing masks, we're not going to be shaking hands.

[01:02:00.260]
We're going to have a suppression of our economy until twenty, twenty two. And then we're going to the immediate pandemic period will end.

[01:02:10.250]
But it's not going to be an immediate return to life as normal, because if you look at what's happened with centuries of epidemics, people are going to be shell shocked. Our economy will have been adversely affected. People's psychology, you know, people aren't going to suddenly want to go to airports or suddenly start shaking hands again or going to crowded bars and restaurants or nightclubs.

[01:02:29.930]
It'll take time for people to recover from that. So I, I put the intermediate pandemic period until 2024.

[01:02:38.510]
And then I think in twenty, twenty four we're going to have the pandemic period where I think we will return to normal with some persistent changes. I think people will be working from home more. I think there'll be a number of other changes in our society. I think gender relations are going to change in certain ways as a result of the pandemic.

[01:02:55.070]
We can discuss that and then we're going to have in twenty, twenty four a kind of roaring 20s. You know, there'll be an efflorescence. People will pack political protests and and sports events and restaurants and nightclubs and religion, which is rising, by the way, right now. We'll go back down again. You know, during times of plague, people find God. They'll be a kind of licentiousness, a sexual licentiousness and a kind of intemperance and joie de vivre.

[01:03:22.130]
And this is typically what has happened with past epidemics.

[01:03:24.860]

So these these aren't hard landmarks, you know, twenty, twenty two and twenty twenty four. But approximately that is what I think is going to happen.

[01:03:33.590]
It's October and already you're so full of Christmas cheer. Nicolas.

[01:03:39.470]
Well no I mean twenty twenty four. It happened a good no, no, no.

[01:03:44.630]
We have to traverse some of this ground again. I thought we were going to bring this conversation in around the hour mark, but I see no hope of that. So first of all, let me just check your time. Neckless, you've got another half hour in here. Yeah, no, I'm available. Right. OK, so I want to talk about the future. The prospect that nothing like normal life returns until twenty twenty four is not something that that I have foreseen.

[01:04:12.140]
So let's talk about the near time horizon here. Let's talk about the next six months. We have a president who is promising a vaccine any week now, and he's fairly sure that distributer. If you'd like to continue listening to this podcast, you'll need to subscribe at Sam Harris. Doug, you'll get access to all full length episodes of the Making Sense podcast and to other subscriber only content, including bonus episodes and Amma's and the conversations I've been having on the Waking Up app.

[01:04:48.550]
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