

Welcome to What Happens Next – 12.6.2020
COVID, BREXIT, Ligitating for Liberty, Gangs and Incarceration
Baruch Barzel

Larry Bernstein:

Baruch, that's fascinating. So, you said you had talked to some governments, like who? Did you talk to you the Israelis, for example? Do you talk to national governments or local governments? Who's particularly interested in something like this?

Baruch Barzel:

So, it all started when I was nominated to the committee that was advising the Israeli government back in March on how to design an exit strategy. And that's when we started working on this idea and entered the official recommendations. And once we published this, we were contacted by the Israeli government by the Argentinian and Chilean government, by France, the UK, Germany. It was pretty amazing the level of interest this that this garnered, I have to admit, we weren't able to push any government to apply this at a national level. And that was a kind of a disappointment for us. We learned something about the difference between science and politics. But what we were able to do is get this to be partially implemented.

Baruch Barzel:

So, in Austria and in Israel, schools adopted this idea of working in weekly alternation. In the US for example, I think it was in Missouri, the incarceration facilities, they worked in this alternating shift. Big corporations, like tens of thousands of workers in Germany that adopted this way of working in Argentina. Again, it came not from the politicians, but actually from the economic sector. It was the industrialists who pushed to go back to work in this fashion. So, unfortunately, we weren't able to get this to be applied at a national level, which is why I'm speaking here. Maybe the new president in the US will adopt this, but it was implemented partially and rather successfully in many different societies.

Larry Bernstein:

The next big thing is going to be these vaccines that are going to be coming out. They won't be fully implemented, it'll be a partial distribution. How do you think about vaccine distributions in the context of your strategy as well?

Baruch Barzel:

I think there's two things that's clear, the one thing is that vaccines are not going to be around, even if they're already at the advance stages of development, most of us are not going to be vaccinated within the next maybe couple of months, maybe even the next year. So, we can't neglect the social distancing policies. That's the only thing we have until they arrive. And I think Dr. Fauci put this very nicely. He said, "When you know that the Cavaliers are on their way, you don't stop fighting." So, we will still need social distancing strategies in the US, definitely in other places around the world until mass vaccination is achieved.

Baruch Barzel:

The second thing is that we should be ready for the fact that even after vaccination, maybe in a year or two, maybe even in a decade, a new strain of pandemic might come by. And this was, people say our first COVID-19. So, we looked at the government and we say, "Okay, you improvised. You weren't ready. This was the first COVID-19 we ever had." If there is another outbreak in two, or three, or maybe 10 years, I think every civilian should expect their government to have a ready-made plan in their cabinet. And what I suggest is that alternating quarantine is this plan that you instigate once you have a new outbreak.

Larry Bernstein:

That's very interesting. You talked about partial solutions like at schools. Can you maybe expand on that? And are schools doing it completely, because they can need a complete acceptance. So, is it teachers, and students, and administrators all going every other week in these pods otherwise they've got that continuation? And how effective is that when your parents aren't also in the same transmission pod? If you can talk about the infection problems and-

Baruch Barzel:

That's a very good point, because, okay, the one thing about the alternating quarantine, which is kind of sacred is that you get isolated cohorts. You don't want to have cross infection between the cohorts otherwise you lose a little bit of the mitigation efficiency. If it's just a little bit, you can handle it, but if it's too much, then the whole thing kind of mixes up. So, that's why we thought that it should be at a regional level, at a state level, at a country level, at a national level, but sometimes we need to compromise. For schools, and for penitentiaries, and for several big corporations, this was a very natural way to go back to business. And our approach was this, I mean, if you are the ministry of education, your responsibility is to reduce infections as much as possible in schools. If you are the CEO of a big corporation, your responsibility is to reduce infections as much as you can in your premises, in your workspace.

Baruch Barzel:

And by opting for alternating quarantine locally, you're doing just that. So, if many businesses adopt it, forget about the government, if many businesses adopt it, it really contributes to the reduction. If you really want to get to the levels that I was talking about, the level of the 75% or 80% quarantine, well, then you would need to implement it at a national level, which requires a little bit of more thought. We put that thought, we have a detailed plan on how to do that, but the governments seem to be reluctant to adopt this kind of out of the box idea at full scale.

Larry Bernstein:

When I read your paper, you showed a decline in cases that was exceptional, something in the 90% to 95% range relatively quickly. What is the mathematics that causes this incredible decrease in cases because of your pod strategy?

Baruch Barzel:

So, there are two things here. One thing which I did not talk about, and maybe I'll take this opportunity to talk about it. The other is the synchronization. Let's start with the first. You see, what social distancing does is it dilutes the number of interactions. Now you can think about

diluting the time of interactions. If everyone isolates for a week and then worked for a week, then you only interact for half the time. This cuts the magic number, R_0 , the reproduction number, this cuts it by roughly a factor of one-half. Then if 50% of the people work and 50% of the people at home, you have classes half full, buses half full, offices half full. Once again, you reduce R_0 by roughly a factor of one-half. Now, alternating quarantine is kind of mathematical magic. You do both things.

Baruch Barzel:

First of all, you partition society into two separated cohorts. That reduces the level of infection, because you dilute the interaction between people. And then each of these cohorts alternates. Work for a week, stays home for a week. So, you get double reduction. You reduce the time of interaction, you reduce the number of interactions. So, you get a fourfold reduction in R_0 with just a 50% reduction in economy. So, it's kind of a mathematical magic trick, but when you think about it, that's the best you can do. You mitigate the disease by a factor of four, but you only reduce your economy by a factor of 50%. I think I lost some of the listeners here with this mathematics, the other reason that this works so well, and that's like a force multiplier to what I just said is much easier to understand.

Baruch Barzel:

And that is the idea that this disease has a timescale of roughly one week. It takes one week, about one week, five to six days to develop symptoms and start infecting. And then another week to stop infecting. So, by working a week on and a week off, you synchronize with the disease. You get infected in week number one, you're isolated exactly when you started infecting others at week number two. And by week number three, most likely you're clear to go. So, this disease kind of directs you naturally to be isolated precisely at the time when you are at your peak infectious phase.

Robin Greenwood:

Larry, it may not be the right time, but I wonder whether... I had a question for your previous speaker.

Larry Bernstein:

Oh, please, go ahead.

Robin Greenwood:

The question that I had was... I loved the proposal. It's really interesting and the math, it's some beautiful math behind it. I wonder how robust is it to noncompliance. And whether one wants to think about that? For example, if you had 10% non-compliance and how to think about what the impact of noncompliance would be on the regime.

Baruch Barzel:

Yeah. So thank you very much. I'm happy you asked that. This is Baruch speaking here. We tested that very rigorously. We actually implemented defectors, people who are non-compliant. People really just cut corners, but our defectors in our simulations are people who flat out violate the rules, so it's much stricter than in the practical world. And we found that even under the

strictest conditions that we put in our simulations, this works pretty well with up to 15%, sometimes even 20% level of defection. 20% of the people who flat out violate the quarantine routine. So it's very robust against non-compliance.

Baruch Barzel:

Now, I don't want to take up too much time because we're in the middle of the other's talks. But we've also put a lot of thought on not just how robust it is to non-compliance, but how do you garner social conformity and compliance. Maybe later on where there's some more time for free discussion, we can discuss that too. But we put up some pretty strong strategies to make sure that we do get compliance. But in any case, even if you have 15, 20% of noncompliance, this still works pretty well beyond that. It starts to deteriorate.

Robin Greenwood:

Great. Really helpful. Thank you.