



Lessons Learned Oral History Project Interview

Interviewee Name and Crisis Position	Raymond Dalio ¹ Founder, Chairman and Co-Chief Investment Officer of Bridgewater Associates
Interviewer Name	Andrew Metrick Yale Program on Financial Stability
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Introduction:

During the financial crisis of 2007-09, and at the time of this interview, Raymond Dalio was Founder, Chairman and Co-Chief Investment Officer of Bridgewater Associates, one of the largest hedge funds firms in the world². The Yale Program on Financial Stability (YPFS) interviewed Ray Dalio to discuss important points raised in its research and his opinions on certain crisis-related issues as a senior executive that had to manage through the fast-changing events that characterized the crisis and also communicate them to his investors. Dalio has frequently commented on his theories of crisis-fighting and has recently published a book on the subject matter- *Principles for Navigating Big Debt Crises* (2018). Page references cited below are to this text.

Also in attendance were: Abby McAleney (Associate Vice President, Prosek Partners, on behalf of Mr. Dalio), Russell Sherman (Partner, Prosek Partners, on behalf of Mr. Dalio), Kaleb Nygaard (Research Associate, YPFS) and Rosalind Z. Wiggins (Director, The Global Financial Crisis Project & Senior Editor, YPFS)

[This transcript of a telephone interview has been edited for accuracy and clarity.]

Transcript:

YPFS: Good morning. Hi, Ray. How are you? This is Andrew Metrick.

Ray Dalio: Hi Andrew, I'm very well. Thank you.

YPFS: Thank you very much for joining us for this. I'm here with Roz Wiggins, who runs the Lessons Learned part of our project, and Kaleb Nygaard,

¹ The opinions expressed during this interview are those of Mr. Dalio, and not those any of the institutions for which the interview subject is affiliated.

² A stylized summary of the key observations and insights gleaned from this interview with Mr. Dalio is available [here](#) in the Yale Program on Financial Stability's *Journal of Financial Crises*.

who is one of our research associates and has been extremely helpful and has read the complete works of Ray Dalio in advance of this call. I think you've seen various bits and pieces of our project over time and maybe Tim Geithner has talked to you a little bit about it.

YPFS: We snagged you a couple of years ago at our flagship conference over the summer to give a talk which was a real hit. The overarching research project that we're doing is something we're calling the New Bagehot Project after Walter Bagehot. The idea is to capture some of the lessons from the fighting of past financial crises - just the fighting part. It is more narrowly focused. It's taking up the mantle of something that you talk about in your book, which is that it is really important that the policymakers who are doing the fighting do a really good job. This turned out to matter a lot, and I think we were quite lucky in the United States that we had really good leaders who intuitively understood these things.

Those leaders are our board members now: Ben Bernanke, Hank Paulson, and Tim Geithner. All of them, to a person, say, "Gee, we were lucky. There were a whole lot of things that would have been great if we knew beforehand." So, our project is trying to crystallize that knowledge. And not just from the United States and the Global Financial Crisis, but from all countries' experience and from past crises as well.

A key part of the project is what we call the Lessons Learned documents. These are intended to be the subjective experience and advice given to us by people who lived through the crisis or various crises. Similar to how every time the military has an important battle, they bring a whole lot of people together to memorialize what lessons were learned. Or how you'll do a mortality and morbidity conference at a hospital after a major event.

So, what we'd like to do today is ask you a set of questions about crises in general and the crisis in the United States and try to gather from that what lessons you would like to impart both to policymakers and to other people who might be managing large and important financial institutions during a crisis.

Ray Dalio: Yeah. Wow, I think it's great. I'm impressed about what you're doing - that will be a treasure. I'm curious about how it will be put in the right hands. But overall, it sounds like you're doing a wonderful job of creating a manual, better than a manual, that somebody could go to and understand how these things happen over and over again and what the general formulas are. So, the part that you're now dealing with is the people, conflict, and personal part of that. In my book, I tried to deal with the broader issues, and only a small part was the nature of the interactions between the people. You're now making that a bigger, far more fleshed out part. You'll have a great resource. So, I think I understand that. If I'm not understanding that, please correct me.

YPFS: That's exactly right. You should think of these questions as starting points.

You say that debt bubbles, quoting from your book now, "can only be seen by doing pro forma financial stress tests of the significant areas" (p106). But that, "without having been through a crisis to stress test them, it can be hard to tell if they are really as safe as they're made out to be" (p112). The question is, do you have any recommendations for how policymakers could better track lending that is happening outside of the official regulatory purview? Do you think they're doing a better job of this now than they were pre-crisis?

Ray Dalio: Yeah. The big thing now, and our advantage, is seeing these things with our granularity of understanding cash flows down at a nitty gritty level. I remember having lunch with Tim. He invited me down to his office when he was President of the Federal Reserve Bank in New York. This was just before Bear Stearns. We were sitting in the room and he was surprised. He had received a study of ours that had numbers on different entities doing different transactions and what the cash flows would be. And he said, "where did you get these numbers?" And I said, "they're pretty much all public numbers - a lot of them are Federal Reserve numbers."

Previously, what was happening was that there was not a granular ability to do that. It was more above the line dealing with aggregates and concepts like supply and demand, rather than the nitty gritty level. What I discovered in our building of Bridgewater and doing our analysis was that everything comes down to transactions - there are actual transactions. And if you know somebody's circumstances and how they behave within those circumstances, you can, at quite granular level, understand the cash flows. These days, everything can be done much more granularly because of computer programming. The computers can do a lot of the thinking that you would do. The brain itself has a limited capacity.

What I mean by that is the brain has neurons and there's some 87 billion neurons, and they're like tiny little computers working together, stuck within our cranium. But that limited space limits our capacity to process, so the brain can only process a certain amount, whereas a computer doesn't have size limitations like the brain does. So, what you can do when looking at anything, is you can specify, "how would I look at that thing?" and you can program a computer to look at that thing in that type of detail.

Let's say if I look at a company and have to decide whether to buy that stock you could create your algorithm and you can have the computer look at every company that way and you can connect one company to the other company in a very detailed and complete way that the brain is incapable of doing. That's largely our approach. And I would say that's similar to my discussions almost all the times with policymakers. It happened both in this financial crisis and in the lead up to the 2008 financial crisis.

I did the same exercise in the European crisis before it happened. It's a pro forma calculations down at the detail level. I went to policymakers very much similar to going to policymakers before 2007 and just wanted to explain those numbers like the meeting I had with Tim at the Federal Reserve to take him through those particular numbers. I'd say look here's what I see, correct me if I'm wrong, but if it's right it's an important thing. What was really the impediment to doing that was the operating, the disinclination to operate at that more detailed level.

Here's an example of what the conversation was like from many policymakers, "if we can have the markets confident then the markets would adjust appropriately, and we just need to show the markets why they should be confident." That was so macro and so wrong because in many of the cases it had nothing to do with that - the markets don't work that way. Let's take Europe for example, when we calculated how lending growth was occurring, we calculated the amount of money that had to be borrowed, and because there were funding gaps and the amount of money that had to be borrowed, you realize that the balance sheets of the banks had expanded from one level to another level and simply could not expand past a certain other level.

The credit growth that arose from going from one level to the other level, mechanically would stop. That meant less credit growth and less expansion which creates a funding gap. And you would have that by individuals. That was just wrong. Like, if somebody doesn't have money or doesn't have credit, they will not be able to do things. When they looked at this, it was at a supply and demand level. They were looking for the whole aggregate thing with a faith in the free market system, "oh, well, markets will adjust and resolve this." But you can't resolve those things unless you look at the nitty gritty of those things.

YPFS: This makes sense.

Ray Dalio: That notion of tracking what each individual wants is now possible. We have good interactions with a lot of central banks and entities around the world because we're global investors and not just American investors. It varies from place to place. There has been a significant improvement, for example, with our interactions with the ECB and the ECB staff. They have gotten down at that kind of nitty gritty level and have improved dramatically from where they were.

The systematization or computerization of that has a long way to go. But the willingness to have conversations at that level, is immeasurably greater. Back then we might try to explain these things or show these things and they might say, okay I don't know, give me an hour. Now, they would say, yeah, let's dive into that. And then we would. So, there's a lot more willingness. There's a lot more understanding in some places. Generally speaking, it's still not computerized as much as it should be.

YPFS: Could you give us an example of what kind of granularity you're talking about without giving out any names of firms and things? Maybe a historical example?

Ray Dalio: Most of this information is available. If you go through 10K reports or you go through mostly publicly available data and you know how entities operate, how banks react to changes in their NIMS and all of that nitty gritty stuff, then you can match that up with your ----- it's not theoretical. You can take this data and match it up with how they have behaved when this thing changes or that thing changes. You can pretty much track them, and then build up from there. You can see the behaviors. There's a lot of data sources.

Some cases I won't get into because the more examples I give you I can actually get into proprietary stuff. You could probably list who were the important entities and what data sources you could get on them. And then you take those data sources, and you say, "Okay, first, how do they behave when this thing happens?" And you do that at a granular level. Then you know how they behave, and then you take those circumstances and you do pro formas.

YPFS: I see. Okay, I have a glimmer. We can think more about this.

In your book you make a number of comments about the political and legal constraints policymakers face during a crisis. This is a big topic for Tim as well. For example, on page 133, you say, "the system that is designed to ensure stability during normal times is often poorly suited to crisis scenarios in which immediate aggressive action is required" (p133). You make similar comments in other places (see: p123, 134, p142).

This is a major thing that we're working on - what's the right set of rules and powers that we should have in different times? So, the specific question to ask for your subjective advice on that is - working within our democracy, are there changes to the current system that you believe would provide policymakers with the requisite tools to fight the next crisis? For example, would you be in favor of some type of trigger, something similar to the section 13(3) that authorizes some interim level of fiscal authority without requiring congressional action, something like an automatic stabilizer for some part of the system?

Ray Dalio: Before I get into the particulars of what might be recommended or not, I'd rather start by describing how I think there's a limit to how good the rule of law or regulations can be relative to common sense. I think the rule of law and regulations can carry it down to a certain level, but can't carry it all the way. That's the history of the collapses of systems. Let's say you want to write a contract with your wife and now you're going to be married, or you want to write a contract with your partners or your employer. No contract can be written with such precision that it is going to be good enough for all types of crisis situations. That's just the way it is.

Let's say, for example, if you take the history of breakdowns of democracies and you take the circumstances now, I would say we have a situation in which Donald Trump and others might go into a war with the other side rather than respect of rule of law. Then it turns into a power game by way of example.

Let's say, for example, there was an immigration thing, and you had a sanctuary city issue. Here you have state rule of law, and you have city rule of law, and then they came down to a power struggle. If we look at the rules, and the interpretation of those rules, in terms of any form of giving the President certain special powers under certain circumstances, and then there are words that lend themselves to interpretation in terms of an adversarial act. Let's say today, for example, the President has the authority to freeze all bonds going to pay China's debt. Today, right now, the President of the United States could do this. It did something like this in Japan, in the 30s. They said, "what we're doing is because of our adversarial relationship, and your behavior, we're going to freeze your assets."

There is this power that exists, that power can be used in an arbitrary way. Once you put somebody in power, they have the ability to overdo it or under do it. So, there's the notion of, is there wisdom? Are there reasonable people? How do they interact with each other? You're never going to get the rules perfect enough that you can rely on those tools when there are not adequate people playing the game by the rules. There will always be loopholes in these writings and rules that allow people to use them or not use them in that way.

So if there's not civil behavior, or respect for rules and respect for the other side, it doesn't work.

YPFS: Right.

Ray Dalio: So that's the reality - you can't get away from the fact that the players matter. When we come back and we say, "okay, let's do another rule." Okay, yeah, we can do more rules. But you can only carry the rules so far.

Let's say, for example, if you take monetary policy or monetary and fiscal policy in China, it comes down to the fact that if you have intelligent people who can have coordination and do it the right way, if done well by the right people, it's a tremendously beneficial thing. Better than by rules that can't do these types of coordination and so on. A good example of this is cyber security. There are rules. Keith Alexander was head of the NSA, whom I know very well, he was describing how there would be cyber attacks on companies and they couldn't even tell the companies that they were being cyber attacked because of a series of rules written in a certain way.

It's because of how the government separates its information that all these things can happen. Sometimes there are sensible people that can still only carry the rules so far. That's the nature of the problem. These rules are written this way, so I agree with Tim in that all of a sudden, you have to have the

exceptions to the rules, you have to have a rule for the exceptions to the rules. And you want to do that. Then there's the challenge of what does that mean, under what circumstances, and how does that work?

Now, what the exact form is, I can't say. Whether it's to have the President or four people decide, and then you have to choose which four people - maybe heads of the two houses or the two political parties. I can't say exactly how that would be configured. Now, how would it be used? Geez, I can't tell you it'd be used well. I mean, maybe what happens is those four people are in cahoots and do other things. In any case, I do think that extraordinary powers, in terms of some sort of bipartisan kind of way would be an essential thing.

YPFS: It is sobering when one realizes that there is no strategy brilliant enough to be executed by bad generals. You might set it up as beautifully as you can and put all the rules in place but if the people in charge of implementing it, screw it up, they'll screw it up.

Ray Dalio: Well said.

YPFS: One thing that comes up again and again when we have our conferences and when we talk to people about the crisis and what things could have been done better is communications. Everybody says it could have been better, but nobody has great suggestions about how to actually do it better.

Specifically, the need to do things that might have seemed like they were unfair. It would be great if we could somehow convince people when we're talking to them that, "hey, we may need to help some banks because that's how we actually help the whole economy" for example.

We hear a lot about this every time we talk to people. They say, "boy, we'd like to be able to do this better." We're so serious about this that Roz Wiggins, who's sitting here with me, this year is going to be teaching an experimental course to our Systemic Risk Master's degree students trying to bring in speakers and synthesize everything we do know about this. All that said, we would be remiss if we didn't ask you for your advice. Do you have any thoughts about how we could communicate the need to do swift, decisive actions that make sense during a crisis that wouldn't make sense during regular times in a way that doesn't actually leave us with this hard populist tail after the things are over - something that happens in country after country.

Do you have any thoughts on this? I realize this is not your main level of expertise.

Ray Dalio: I do have some views on it because I think it's a constant issue. And what comes to mind is - who is communicating with who and for what purpose? What I mean by that is, there are people that matter. And then there's everyone else.

One of the great challenges is democracy and the nature of public opinion. Is it achievable that the vast majority of people come away with a balanced, intelligent, and formed view? Or is that really a naive aspiration? And in pursuit of that naive aspiration are you doing more harm than good? I don't know. One of the things I worry about with your project would be, who is it going to communicate with? I mean, how does it fully live up to its potential?

YPFS: Yes.

Ray Dalio: How does it communicate with the people who are in that position? And what are they like? Or is it just academics talking to academics and so on and convincing each other?

When I look at the situation here today, I would say you're dealing with the realities, you're dealing with the media, the realities of the media, and you're dealing with the issue of power, and how information is filtered for the objective of the participants. Even the threats to democracy, the concept of democracy was built on the concept that the population views both sides of the argument and then it goes to the ballot box votes and the will of the people, the thoughtful will of the people, gets enacted and that's how democracy works. Now we have a situation pretty much where there are 500,000 people who are the swing voters who will matter because there's a limited number of swing states and a limited number of people in those swing states and they are targeted with one side wanting to win a battle against the other side.

What they do is they create factual targets that have nothing to do with truth, or debate or anything. They are subject to influences in various ways, even using psychological techniques to create beliefs of things that don't even exist in order to win the game. Ideally those people get that and are going to change their belief system, because they are thoughtful. Maybe you guys would be like that, but the world doesn't look like that. So okay, then the question is, what is realistic to expect? What should you do given the nature of those circumstances?

You communicate up to a certain point. And I mean I'm sure you could do more. But I think when Tim and other people communicate more, they sound defensive. When they say, "okay, we have to make the situation work" I think they view me as being somewhat helpful, because I believe that's right and I'm not the one who's making the decisions so sometimes when I say publicly, something like, "that's right - you'd be you'd be crazy not to" what do you want to do?

And you look at why what they did is sensible. And by the way, when I do that, I do that risking the ire of people because if I didn't put the interest of the well-being of the Society above what might be my own best interest - I get lambasted by those people. So, the idea of how you expect that communication to be effective and making the public aware so it changes views in a right way

is a challenge of democracy in a media sensitive world and so on. That's what it looks like to me. What are you going to do? What are you going to expect to achieve? You probably could do it a bit better. I don't know exactly how it is. But to what extent does that mean going to become "propaganda" by the party to say, okay, that's good communication.

It's vested interest in propaganda who finds out even what truth is and who even cares what truth is? And so along that line, as almost as a question of how much does it matter, hopefully it doesn't matter that much. So what matters most is doing the right things. Having the right people in the right place so that essentially they do the right things, regardless of the sensitivity to the communication, it is an important thing.

Again, I'll give an example of the challenges that we face that the Chinese don't face, in terms of such things, they communicate the best they can, but at the end of the day, it's not like they're going to be subject to that load or that particular thing and they don't worry as much about it. They severely under-communicate in my opinion, but in any case, I'm just describing the nature of the beast and what you can expect from that communication. Please don't be naive in thinking, okay, I'll communicate more completely and more articulately or whatever and expect that you're going to affect the guy who has the mortgage and somebody else is speaking to him and you think that you're going to convince him? That's an awfully naive view I think.

YPFS: You put your finger on one of the challenges that we face in the project - we really want to avoid being a bunch of academics talking to academics. One way that we're mostly doing that is we're just not talking to too many academics.

To start, we're mostly trying to create something that will be useful in the central banking community. So, when we think about what, ultimately, the output of our project will be, we are imagining that the users of it are experts themselves. They are people within the financial stability function at central banks or within the markets function at central banks, who have been through some kind of training program or been through some kind of familiarization with the resources that we're providing. We're doing a lot of work with the Fed and with the BIS to try to figure out how to deliver that - with the idea being that it's like an expert support system. So, it's not as though we think we can produce something that can take somebody who is, for example, not trained medically, and turn them into someone who would be a great emergency room physician.

Instead, what we're hoping is that if you are an emergency room physician and somebody comes in and you're trying to figure out, is it contraindicated for me to give this much drug if the person is already on these three things, that this is something that you can quickly get to?

Ray Dalio: I got you, and I think that's really, really great. I think that's great. And then I think it so underlives, its potential, and is nowhere near good enough. Let me say that I think when we start to say you have a finance minister, you have a president, you have legislatures. If you're not getting to them in some way, it won't matter much.

I mean, it's okay. It's good. I don't mean that black and white. It matters - but let's say you go to central bankers.

YPFS: Yeah.

Ray Dalio: I'm not even sure how much central bankers will matter much in the next 10 years. And so Okay, now you've got this book and they pull it off the shelf, if you instead could have greater aspirations, and start to think about the others.

And you deal with the relationships of the five people in those types of positions. Those aren't the central bankers. They are the legislatures, the finance ministers, the President, the treasury secretary, and the whole dynamic and the world's community and investors. If you could communicate the lessons that you're putting together effectively - that would be a great achievement.

Then you still have to reach the public in some way. The question is how much you do that? But maybe that's an over-expectation. So, what you're asking me a question about is not a central banker question in the way that you described it.

YPFS: Correct.

Ray Dalio: You're asking me how I communicate with the public?

YPFS: Correct.

Ray Dalio: That was the question. I was answering.

YPFS: Yes. Absolutely.

Ray Dalio: Who communicates with the public?

YPFS: Yes.

Ray Dalio: Okay. Let's go back to that question. Who communicates with the public? And how? Let's go back to my basic point.

Ray Dalio: And so we focused on my question. Then I thought that I was saying let's not lose that. Unless you want to lose that? Because that's the question you were asking.

YPFS: Let's not lose that. I agree.

Ray Dalio: So, we have a certain environment. What kind of communications can one expect? What do you expect? What are you trying to achieve with whom? What is realistic to achieve? Do you expect to have the public say, “Oh yes, I get it, even though my mortgage was taken away and this other opposition political party is hammering me with the view that your political party was a son of a bitch and you're responsible because you let the guys go away and not go to jail.”

Is your goal to make the argument to those people so that they now have a different view and they say, “oh I understand”? Are you being naive in that aspiration? Clarify for me exactly what you're expecting and what you're trying to achieve with your communication.

YPFS: I agree with you 100%, it would be naive to think that you're going to convince somebody to move from one side of the fence to the other side of the fence on a question like that. Tim always says that George Bush and Barack Obama were surrounded by tremendously talented communications professionals and they had every incentive to try to communicate these things well, and they didn't really have good ideas for how to do it. So, we don't really think we're going to convince the whole public of this. Instead, it seems like what one wants to be able to do is move the needle a little bit, because the cost of getting it wrong is so great, and lead to this big populist tail.

Ray Dalio: I don't think you're engineering it well enough. It's like the granular thing that I'm talking about. If you want to do a good job of engineering it, you really have to first get much more specific of saying, okay, who is it that I'm trying to communicate to, and break it down. In other words, do it scientifically, do it in an engineering-granular way, by saying, am I communicating with members of Congress? They are the ones who are going to make the decisions. How do I effectively get them to operate in a certain way? Then engineer for that. Or what population am I going for and how do I communicate with that population?

What strikes me is the lack of granularity.

YPFS: Yeah.

Ray Dalio: It's almost like I described before about speaking to policymakers. And they would say, “okay, well, the market...” They talk about the market. Well, there's no market - they were just individual participants, and each has individual motivations, and when policymakers deal with the market with that degree of vagueness, that just isn't going to get you there very effectively when dealing with this situation. Similarly, if you're trying to decide who you want to communicate with - be specific about your goal. Do I want to change a Senate vote? Or should I give up on the mortgage guy? That's, by the way, one of the changes in the nature of the elections - the granularity that is being applied.

Who gives a damn what voters in Connecticut or let's say a red state, blue state - nobody cares.

Just forget them and stop trying to even speak to them, let's get down to the guy who's actually going to make it and how can I hit that guy. And then I've tipped his vote. That granularity and that precision in that form of communication is effective. If you want to communicate well, do it that way. Who are you going to target and get down into the nitty gritty?

YPFS: This makes a lot of sense. I'm going to restate this because it's something that we're going to want to put into the Lessons Learned document, and I want to make sure that we get it right. When we talk about communication, everybody is imagining we're going to get something like FDR's fireside chat that's going to go out and convince the whole world. Instead, we should really be thinking 21st century communication - the same way we think about targeted political communication or targeted advertising on the web. That very specifically we're advertising either to a specific decision maker or to a specific group. And this may require really different messages, and that it should be engineered the same way you try to engineer any really complex marketing or political communication.

Ray Dalio: Right. We are now in a much more granular world so that we know about every single individual. The ability to collect data, publicly available data on every single individual now exists. So, we can go much more granular, just in the way that I was describing it. And each person will do different things and have different effects on the outcome.

Somebody may not ever vote so don't even try to communicate to that person. Today, it is a crude form of communication, to say, "I'm going to have a fireside chat". That is not the way of communication. Who are the important people or types? Get specific, and then say, "what am I trying to achieve with those people?"

What am I trying to achieve? Am I trying to achieve a vote? Public opinion in today's age is much more specific. It's not this vague. Who gives a damn if certain people have a certain opinion? Other ones matter a lot. What are their motivations? So go down and say okay, if you focus in on who is a swing voter, where, and what matters to them by way of example. . . What are you trying to achieve with your communication? Are you trying to achieve with that communication a change in the votes? How does democracy work? Who matters? Who doesn't matter? I mean, at the end of the day, you just want to do the right things to run the country well.

So, step back from everybody. Do you need to communicate with everybody? My point is - engineer. You have to start with, what am I trying to achieve?

And who am I communicating with? How do I achieve that goal? And you have to engineer for that at a granular level.

YPFS: Roz Wiggins is currently organizing into a class what we know on this particular topic. She has at least one follow up question. So, I'm going to turn it over to her, go ahead Roz.

YPFS: I agree with you, communicating to the public is a vast unknown that we are thinking about. But we have, I think, done some more in-depth thinking about one group of stakeholders - the legislature and the administration. The theory on which we're proceeding is - we're doing all this work to really capture these lessons for the central banks and make sure that they don't lose the learnings from the crises. That way, 10 years from now, when we have another crisis, we'll have a more educated body of central bankers. They'll have the benefit of all of this knowledge. Yet, when they need to go to the Congress, we can't have a Congress that doesn't have some of that same knowledge. So we are exploring how do we also raise the baseline of the general knowledge of the legislature? That's a part of what we're looking at, which I think does comport with what you've been saying about the particulars.

Ray Dalio: At the risk of saying something that might not be well received. It sounds to me like you're not clear on your own communications. You tell me that you want to communicate with central bankers.

It seems to me that the type of communication that you're really talking about is the type of communication that Tim was talking about. Where people are asking themselves, "Why didn't people go to jail at all?"

Central bankers are not going to have anything to do with that. I mean, you can communicate all you want to those central bankers, and their probable reaction and probably appropriate reaction is, "Why do I want to read that? I'm a central banker." Now, confidentially, I was with Mario Draghi yesterday.

Even if I was to say to him, "Do you want to communicate why those people went to jail?" He would say, "I don't want to even read about that. That's totally unrelated to anything that I would communicate - that's not my responsibility. I'm trying to deal with how I get an ECB vote of the following to achieve this monetary policy outcome". So, I would say that the type of communication that Tim is referring to is so out of the realm of what central bankers would do.

I'm not clear on how your engineering is going to be a communication to central bankers. They are not the ones who are going to deal with the issues that Tim is raising. It doesn't make sense to me.

YPFS: Well, our project is unlikely to say anything too interesting about communication. What we're doing in the New Bagehot project itself, much for the reasons that you just described.

Ray Dalio: You don't need to justify what we're doing. My main thing is engineer very specifically for who you want to do what and how you communicate to them given their circumstances. Mike Bloomberg told me about how you affect education or policy. He said, "You give a \$5,000 donation to everyone in the legislature." You're going to have much larger impact. If you have a lot more than if you say, "Oh, I did something."

And that's practical. I'm not saying bribe legislators with that, I'm saying - know who you're engineering for, and be practical.

YPFS: That's very useful. Not only useful but actionable for the course Roz is designing. Thank you.

You talk a lot about macroprudential policies in your book. On page 136, "macroprudential policies are more appropriate, and in fact, would have been appropriate much earlier such as in 2007, when they could have been used to control the then emerging bubbles." You also mentioned in the book how monetary policy is a somewhat blunt tool.

What do you think of the macroprudential policies that different countries are now experimenting with? Do you have a sense of which of these is most efficacious? And what, if they were in place prior to the last crisis, would have been good to use as that death cycle was really reaching its peak?

Ray Dalio: Well, I want to answer the question in a generalized sense because there are so many situations and so many particulars that can apply. My main point was that if you use monetary policy, you change interest rates. That's like changing everything for everybody - it's not as surgical, it's not as precise. And so, what happens is, you might have one segment of the financial system, like for example, maybe you're concerned with leveraged loans. I can imagine when there's a certain dynamic that is going on now in the leveraged loans markets where essentially, they get rid of covenants, and they pretty much promise that the interest rates are very low still, and they pretty much promise that they will roll over the debt forever.

In other words, you want us to pay back your principal, you don't have any interest. It's almost free money, but there's a spread, and somebody gets the spread. So, one might say, "I have concerns about that" and then say, "I need to deal with that." That is not the same thing, and that has to do with granularity and surgical rather than saying, okay, I need to raise interest rates, or tighten monetary policy, which affects areas that would be harmed, and you wouldn't want to do that. So macroprudential policies, is kind of that mix of other things that could be done - more surgical. And I think that if you could use macroprudential policies to be more surgical, you're going to produce a better result.

YPFS: To what extent are you specifically talking about the surgical stuff? I often worry when we're doing policy with regards to the financial sector, that surgical things are really easy for the institutions to get around.

Ray Dalio: Maybe. I don't know if you're interpreting my words correctly. I mean that it's focused. Nowadays, even if you take the medical example, and if you had a particular problem - there exists precision sufficient to hone in on that particular thing. It could be a company, it could be an institution, the granularity. If it's germinating over here, you don't want to nuke the whole body because there's this little thing germinating. Now you can come to that piece, understand each piece and deal with each piece well, rather than give radiation to the whole body when you got this little piece over here that you can deal with. Chances are you'll do almost more harm when you deal with the whole thing.

YPFS: Right. That makes sense. Is there anything on this topic, or advice for us on the project more broadly that we haven't gotten from you yet, before we run out of time?

Ray Dalio: I think your questions are your priorities and I'm just responding to them. I wouldn't have known that your communications would have been higher or the other, so I'd rather respond to those that you consider to be your high priorities.

YPFS: Okay. Kaleb did you have something?

We're making the rounds talking to a lot of the policymakers that designed the specific interventions in the crisis. But beyond the scope of the policy makers sitting in government, whether at the Treasury or at the Central Bank, are there other people that you admire that you think we should talk to? Or people that you think are thinking about these things that would add value to an additional Lessons Learned, for example?

Are there other Ray Dalio's out there that we don't know about who were not very public, yet talking behind the scenes to a lot of the policymakers and in the thick of these things, who might be useful for us to reach out to?

Ray Dalio: I really don't know. I'd have to think about that.

YPFS: Okay. That's all right. We would have been remiss if we didn't ask.

Ray Dalio: I think what I wish for, and I've said this to others.

My wish is, speaking honestly, for you to see the big picture level about the problems. In other words, these practical problems of the media, democracy, character. If I was to leave a parting wish or aspiration, it would be that in many cases the root worry about how we operate with each other, how the people or participants operate with the substance. The notion of how it needs to work

together to work well, at that granular level. That would be really good, and I think they never quite take it there.

YPFS: Right.

Ray Dalio: It's almost like well, they'll discuss those thoughts in private. But those thoughts need to be brought to the surface. If I was to say a parting thing - I hope your project will bring those things out. And how does that work in a democracy. If you have good coordination of smart people who could still sit in a room and have coordination of monetary and fiscal policy. Look, we're going to go into an era in which central bank policies are not going to be as effective and therefore the changes and policies are going to require a greater amount of coordination of fiscal and monetary policy because we're going to run bigger deficits.

That means more debts. That means more need for debt monetization. There's got to be a coordination there. And then also the impotence of monetary interest rate policies not working as well. You're not going to have quantitative easing working well, because of all the reasons that it is not working well now, and will work less well in the future. That, for example, is going to necessitate some form of coordination about such things. And it's going to be more politicized. And if there's not coordination, whew, that would be a hell of a mess.

And if there is coordination, then there's politicization. Those are the big things where if you just go to the rules, and you operate by the rules, that's not going to be good enough. You actually have to have sensible people who care about the common good, sit down together and say, "Okay, how do we engineer this to produce the best results?" That's what the future is going to require and the system won't get there that way. It's functionally problematic how you get that group of people who together will face whatever the circumstances are, and do the smart bright things. These are the big things I think.

YPFS: Got it. Thank you very much Ray. Thank you for your time.

Ray Dalio: Okay, and just as a closing remark, I would say, I think what you're doing is so great, so important, and has such great potential. I just hope that you make the most of it.

YPFS: We're going to try. And I'm going to follow up with you to get some more advice about that because the suggestions you've made today have been quite helpful and I'd like to hear more. So, I hope you don't mind if I bug you or Tim bugs you about it.

Ray Dalio: No, I think what you do is really important so if I can be of help in any way let me know.

YPFS: Great. Thanks very much, Ray. Have a great day.

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