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WEBINAR

WHAT IS THE FUTURE OF ARTIFICIAL INTELLIGENCE?

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P R O C E E D I N G S

MR. WEST: Good morning. I am Darrell West, vice president of Governance Studies at The Brookings Institution, and I would like to welcome you to our event on the future of artificial intelligence.

AI is being deployed in many areas in healthcare and education to retail and transportation. It's being used to take over repetitive, boring, or dangerous tasks and the goal is to reduce costs while still providing high quality services.

John Allen and I have a Brookings book entitled “Turning Point: Policymaking in the Era of Artificial Intelligence” and we wrote this book because we think AI is the transformative technology of our time. We present in-depth case studies of AI in a variety of different areas and talk about how it's being used, as well as the risk that are being created. There are many different problems of AI in terms of fears, bias, lack of transparency, the impact on human safety, and then there are interesting governance questions in terms of who decides. Like you should really guide the future development of AI. And we use the title turning point because we argued the world is at a crucial turning point between utopia and dystopia and that the crucial variable in determining future is public policy. So we present a detailed policy and governance of blueprint, and argue that if we take appropriate actions we are very confident about the future, but if we don't do certain things the world could go off the rails pretty quickly.

So to help us think about the issues associated with artificial intelligence we have two distinguished experts, Rebecca Wexler is an assistant professor of law at the University of California Berkeley Law School. She also is a nonresident senior fellow in our Governance Studies program. And she writes about the intersection of law and technology.

Bhaskar Chakravorti, is the dean of Global Business at the Tufts University Fletcher School of Global Affairs. He's also a nonresident senior fellow in our Governance Studies program and he writes about the international aspects of technology and he has an interesting forthcoming report on the state of innovation in 90 nations around the world.

So our format will be, I'm going to start with a few questions for our two panelists and then we'll move to questions from the audience. Those of you who have questions, you can email them

to us at events@brookings.edu. That's events@brookings.edu, or we have set up a Twitter hashtag #AIGovernance and you can send questions that way as well.

So I'd like to start with Rebecca. So AI is being used in a lot of different areas. Perhaps one of the more problematic applications involves AI in the criminal justice system. And you're a law professor so you focus a lot on the intersection of law and technology. How is AI poised to affect due process in the U.S. criminal justice system?

MS. WEXLER: Well, Darrell, thank you so much. I want to just start by saying thank you for having me. And I have your book, “Turning Point” down in the living room. I should have brought it with me for this but I see it on your bookshelf there and it's just an excellent book. I've learned so much from it.

So AI is being used throughout the criminal justice system, as Darrell said, at all stages from policing, investigations, and (inaudible) evidence for use at trial, sentencing, parole, all of these decisions. And I think that we have three big questions to ask about it. One is access. Who has access to the data that you need to train AI systems? Who has access to the data that you need to deploy AI systems?

The second big question is markets. Who is paying for the development of these tools, and how do their interests get enhanced by the efficiency capacities that Darrell was talking about four AI systems? Who's not paying for the tools, and what interests might be being left out of the design of the systems?

In the third big question is oversight. So who should decide what Darrell saying? Do we want an FDA for AI? Do we need expert audits who are independent of the developers? Do we want ex-post contestability with rights to explanation?

So in terms of the criminal justice system, specifically, I think one of the big challenges for society is going to be, we have a criminal justice system that is tainted by structural, express, and implicit racism. And are AI tools going to increase those disparities or can they help us to mitigate them? I'll just start with an example on the access front. Who is going to be able to get access to data to use the tools that we're developing? If we have AI assisted DNA analysis, for instance, is law enforcement going to be

only one who can run the system on a DNA database?

Or are we going to have the criminally accused able to run that system to provide an alternate theory of the case, look for alternate suspects if it's in a mistaken ID. Use a different system that might have different thresholds, or a different design optimality to have an alternate result?

What's happening with AI and one of the big risks I want to tee up to talk about is that sometimes laws that aren't explicitly about regulating these systems, like information privacy laws, can have unintended consequences of exacerbating these disparities and who's going to be able to benefit from the systems. So, for example, well-meaning information privacy laws can sometimes create these disparities by having exceptions that give law enforcement access to sensitive information, whether it's face matching databases, DNA databases, the contents of your emails, anything, very sensitive information. But we give law enforcement access to that. And we often don't include parallel exceptions to permit the criminally accused to access the same kind of evidence. So those types of structural disparities are going to become much worse as AI's (inaudible) enhanced efficiency and power.

MR. WEST: Well, those are all great points. And we're going to come back to those in just a minute. I want to bring in Bhaskar. And you write a lot about the international aspects of tech policies so many of the problems that people worry about in terms of privacy, safety, a lack of transparency, racial bias, and so on, is not just a U.S. problem but many countries around the world are trying to deal with these issues, and countries are thinking about innovation, competition, policy, privacy, security, trade and a number of other aspects of AI.

So I'm just curious, how would you describe the approaches that are under consideration in other countries? What are they doing? Are they kind of paralleling approaches that are common here in the U.S.? Are they following a different course of action? What can we learn from looking outside the United States?

MR. CHAAKRAVORTI: Thank you, Darrell. And thank you for inviting me to this fantastic conversation. It's great to have an opportunity to engage in this discussion with you and with Rebecca and to learn from both of you, and to get into a discussion with our audience here on a topic that I'm sure, you know, each one of us has been kind of saturated with information about. And still, we feel

there's so little we understand about this evolving space.

And of course, at the beginning of this year we talked -- we were sort of confused with all the different stimuli and different information about AI that AI was going to be like electricity running through everything we do. And of course, there were all this talk about the AI, I superpower race is picking up. You know, prior to 2020 there was a lot of concern about the U.S./China bipolarity in terms of a protest to AI, and this is where I'm getting into a response to your question, Darrell. So there were so many issues that we were trying to wrap our arms around as we introduced 2020, and then boom; we were hit by the pandemic.

And one of the critical things about AI, and not to oversimplify something that's an enormously complex topic of course, is that it depends on an analysis of the past in order to make predictions about the future. And then, what happens is you get hit by this continuity and the whole notion of the past itself (inaudible) window but then you have to start redefining the assumptions and retraining all your formula and algorithms.

And what I have found interesting and my team has found interesting is over the course of this year, how have countries around the world responded to this discontinuity? And what is it telling us about their potential approaches to both innovation and to -- innovation and regulation and to the different kinds of applications that we might take this emerging technology towards.

And what we are seeing is, you know, quite a diversity, as you can imagine, of approaches. On the one hand, you have the United States which traditionally had been the home of permission-less innovation with very minimal management of the creative process. And you just kind of let them, you know, let the entrepreneurs go at it. And of course, the market system kind of determined which applications got more attention. So we saw the banking sector, the retail sector, military applications, telecom and tech. you know, a lot of AI applications are already getting embedded in those industries.

And a lot of that is being driven by firms in the United States leading the way and then those applications spreading globally. So it's not just a U.S. phenomenon. It's happening all over the world. It's happening not just across the OECD countries, but it's happening in the developed world --

developing world as well.

So we are seeing those applications all over the place, and it's largely an outcome of business models. So essentially, the introduction of AI, as Darrell you mentioned, a lot of quote/unquote repetitive tasks can be embedded new algorithms and that can help improve efficiencies, lower costs, and you could potentially elevate your product by adding a certain amount of differentiation to it. Most of it has been a cost and efficiency driven mode.

And we've seen that spread across the world. We've seen that not just in Western Europe and North America, but we've seen that in sub-Saharan Africa and South Asia, in banks, for instance, using such algorithms.

On the other hand, as we think about the applications of AI to predicting what is around the corner across different industries suddenly the notion of how we deal with healthcare and public health has come to the -- you know, come to the forefront. And the discontinuity that we were hit with has translated into different ways in which countries around the world have responded to the enormous amount of data that is now accumulating in terms of state of infection of the population.

And here, I'd just like to make a point that COVID is, of course, a public health crisis. It's an economic crisis, it's a humanitarian crisis. It's also an information crisis. We don't know what the state of the disease is. I don't know whether I have it or not at this very moment. None of us knows whether the last person we met had it at that moment. And each country around the world has taken a somewhat different approach to how it collects that information from people and potentially processes it in order to make a better decision.

So you see many countries in Asia, for instance, taking a much more of a top down view towards collecting that data and then harnessing it for decision-making purposes. But that top-down approach at one level has been taken to the extreme in China where a lot of the data has been centralized and that is being used to then spread decision-making across the community. Singapore, to a lesser extent. And then you see countries like South Korea and Taiwan that are essentially taking a top down approach, but with the permission of the citizens.

And here's where it becomes really interesting that this year has taught us a lot about

how one harnesses all this data through a top-down and a bottom-up collaboration. And a lot of the permission to do that comes from a culture and history so when we think about the role of AI, the future of AI, we also have to embed it in the larger, global and local socio-economic and socio-cultural and historical contact. So there's a lot of learning that we are getting just by observing how countries around the world are responding to this information crisis that we are living through. And the effectiveness with which they are harnessing this data to make better decisions.

It turn out most of the western countries are doing an awful job of harnessing this data. And a large part of that is because they have concerns about privacy. And they're struggling to figure out whether the data should be centralized or it should be embedded in user phones that confusion has essentially mean that not the United States but the European countries themselves are struggling to figure out how to take all this information and translate that into a better decision.

Now, I've focused on 2020 because it's a gigantic science experiment a gigantic learning moment for us as we reflect on how do we respond to this discontinuity and in real time try and come up with algorithms to solve problems. And this will teach us something about where we go from here.

So I've gone on for a long time, but I just wanted to also make a comment about some differential applications of AI in different parts of the world that might be interesting to get into in a later point of this discussion, which is I talked about the banking sector, for instance, as one of the early adopters of AI. And of course, banking is a global phenomime and it's the algorithms are used in banks all over the world.

But there are other applications where you might see certain parts of the world benefit from the adoption of better data and analytics and AI. And we are, so far, not getting enough traction among companies and adopters in that regard. And let me just give you one example. And that's the example of agriculture. So a large part of the developing world is heavily agriculture dependent and much of the agriculture is sub optimize in terms of productivity and efficiency. The introduction of better decision tools using data analytics and AI through better agricultural practices and precision agriculture could enormously improve the productivity of the agricultural sector of many developing world nations.

And I think there is an opportunity here. My team has done some analysis of how much

this could be worth, and it's about $195 to $200 billion worth of value can be a lot simply by applying AI to precision agriculture in many parts of the developing world, particularly in South Asia and sub-Saharan African. I can go into more details on that, but I think the application of AI and what we are learning about its future potential, a lot of that is quite different depending on whether you are in the developing world, whether you're in the emerging world or whether you're in the OECD world.

MR. WEST: Those are interesting divergencies just in terms of how various countries are thinking about these issues. And I agree with your basic point in terms of the United States has tended, in the past, to be pretty libertarian in its stance on technology. You mentioned a permission-less innovating being the dominant theme that is read through our approach to technology over the last few decades. But I think the United States is starting to change because we have seen an emerging tech lash, kind of a backlash against the tech sector, people's growing concerns about privacy, racial bias cyber security threats, and so on.

So I think even in the United States we're starting to move towards greater public engagement, more oversight, and possibly more regulation.

So Rebecca, I want to come back to you. I mean your opening comments you mentioned some of these problematic disparities between prosecutors and defendants just in terms of the kinds of access to information they have, the data access. You mentioned some of the privacy rules which were adopted for completely noble reasons to protect all of our privacies, but as you mentioned, some of the laws provide special exemptions for law enforcement. And you know, you expressed some concern about whether that tilts the criminal justice system away from defendants. Of course, the issue of racial bias is a huge problem throughout the criminal justice systems.

So I just wonder if you could elaborate a little bit on how you see these kind of problems playing out in the criminal justice system. Are there specific things or specific examples and how we can address some of those problems?

MS. WEXLER: Thank you. Yeah, so I do think that these are reflections of broader systemic power disparities between the government and the criminally accused. And just to also build off of what Bhaskar is saying some of it has to do with what type of oversight we have over private

innovators versus what type of oversight of government technology. So just to put a little checkmark in there.

Darrell, the problem is pervasive that prosecutors have more access, more power, more resources, more money, more time. At the state level, prosecutors are often paid more than public criminal defendants (sic). They have a lower case load even though they're both serving the public interest. We have an adversarial justice system that relies, supposedly, on both prosecutors and defense counsel to seek just outcomes. And yet, we see these power and resources disparities up and down the entire system.

So a very concrete example of a privacy law that I've been very worried about that has a disparity built into it is the Stored Communications Act. And this is a key internet privacy law that was passed in 1986 but is still our main internet privacy law in the U.S. And it permits law enforcement to go get data from tech companies, but doesn't allow criminal defense investigators to get the same data from the same sources.

And so one of the things I've been working on is trying to encourage courts to adopt a better interpretation of the statute that would build in parroting, and also to encourage lawmakers and policymakers as we are thinking about how to set new privacy policy, all very well-intentioned, to realize that law (inaudible) has well established lobbying power. So they're -- they are at the table. And there are fewer people who are able to represent the interests of the criminally accused in the lawmaking process.

To loop in some of what Bhaskar is saying about, how are we, as a society, prioritizing top-down innovation, the government control versus bottom-up. Some of the regulatory proposals for different AI application whether it's AI systems that will help you sort through large swaths of data, whether it's who is going to be able to use face recognition systems, whether it's, you know, who has control and possession of your DNA and how gets to access that; some of the regulatory proposals are also targeted to law enforcement use without attending to the possibly that law enforcement then circumvents the regulations by buying the same data off of the private market.

So there's two ways that this can lead to circumvention. One is, oh, I'm not allowed to

use this technology. Well, thank you market, I'll just purchase it. The other is, well, hmm, I'm the prosecutor, I'm law enforcement, the government; not trying to tag any individuals here but the government overall, the prosecution's interest is in finding evidence of guilt. Their interest isn't in finding evidence of innocence. And in fact, they have no constitutional, statutory, or ethical duty to seek out evidence of innocence.

So now, consider -- Darrell, you opened with a question about due process. Consider what due process requirements do we impose on prosecutors and law enforcement, police officers when they use AI systems. Do they have to disclose information about subjective choices that are set when an analyst applies the system? The thresholds that are set, the way we prepared a probe photo in a face recognition system, the scope of validation study for the system, the source code for the system, the training algorithm, the underlying (inaudible) how much of that do we have to disclose?

Darrell mentioned transparency, now ask yourself; well, if I'm purchasing the system off of the private market, could I just not acquire that information? Could I just license the results? And if I don't have possession of it as law enforcement, do I now no longer have a disclosure obligation?

So all of these questions about structural disparities as well as private versus public, you know, ownership and how much Democratic control we have in different contexts are really ripe for policymakers to weigh in.

MR. WEST: Thank you for pointing out those examples. Certainly, lots to worry about there.

So Bhaskar, I know you have a new report coming out soon on the state of innovation in 90 different countries, and I think you look at something like 160 different indicators so obviously, it's very ambitious and very comprehensive and just wondering if you could give us a quick preview of some of the important findings?

MR. CHAAKRAVORTI: Sure. Absolutely, Darrell. So we are just about to launch on December 1st, actually the latest -- the 2020 edition of the digital evolution and trust study that we do every two years. So this year, we are looking at 90 countries, as you mentioned, and it is a special year because this is the year when much of the world has relied on these technologies to keep some

semblance of economic and social and other activities going.

So it is particularly meaningful for us as we try and understand how countries are evolving from a digital past to a -- I'm sorry. From a physical past to a digital future and particularly in a year when that journey has been accelerated by the lockdowns and shelter at home and social distancing over the course of the last 10 months.

So what we are seeing is, you know, some interesting phenomenon. One is that countries in Asia, for instance, are, in many ways, and not surprisingly, are leading the pack in terms of being ahead on the actual -- the state of evolution as in how much of their activities have they put on the digital systems and how much -- in many ways, how trustworthy are the environments within which activity takes place?

And then, we've had an opportunity to look at different parts of Asia, such as countries like Singapore which are standouts in kind of all regards, both in terms of the state of evolution, but also the momentum of change. So Singapore continues to move quite rapidly. An interesting alternative to Singapore is a country like China, which still has a lot of unrealized potential in terms of evolution, despite the fact that so much of China has moved to digital platforms and had done that way before 2020.

China is a vast complex country and a vast complex society so the benefits of the digital ecosystem has not fully penetrated this very large country. However what China has excelled in is momentum. The pace of change of China is just incredible. It is just mind boggling just to see the change that has happened in China. Now, I reflect on how that has played out in terms of China's management on sort of bringing us back to the topic that we were mentioning before which is how has China managed to utilize to utilize these digital ecosystems in order to control the spread of COVID and to control the pandemic and get its economy back into motion.

And I think it's been pretty in progressive, and a large part of that has been an outcome of the centrally controlled systems that govern the use of data and the application of data, and the fact that so much of the Chinese population is on a few apps. And of those few apps kind of help combine multiple forms of activity, and thereby enrich the quality of the data which then are used to train the algorithms. And those algorithms, invariably, are going to be better in terms of the predictions they

provide because you have multiple activities that are combined on the same platforms. And then, all the data gets centralized in one place.

So I think China is giving us a model for one form of societal structure, organized digitally, as we are coming through this period. And then, there's the alternative model which is the European model and what we are seeing in our later study is the European countries have reached a very high level of maturity, but they have slowed down in terms of momentum; in terms of change. And part of that is a natural outcome of just age. So they are, you know, essentially what I call digital arthritis has set in in many parts of Europe because they -- you know, they peaked very early.

But simultaneously Europe has been among the leaders in setting some guardrails in place. And some policy constraints on what you can do with data. And essentially, it is setting the standard for the world in terms of privacy management and data management. And that sort of -- to some extent counters this notion of permission-less innovation from the bottom up or centralized innovation coordinated from the top down. So Europe is providing an alternative model, so digital arthritis is an outcome, not just of digital maturity but also digital rule setting in Europe.

Now, I find it very interesting sort of comparing these different calls to a couple of other countries, Darrell, and I'm not sure (inaudible) the discussion and I really found it interesting the comments that Rebecca made about the -- how the legal system sort of goes about it, and the political economy, that's in place. You know, the political economy is a great way to understand the incentives behind regulators and how lawmakers are going to make laws or not, and is it in my political interest to do this or that.

Now, when you think about the United States, it's very interesting, Darrell, you know, your observation that maybe the era of permission-less innovation in the United States is going to be tempered somewhat as we go into a new administration and a new reality of the tech lash and so on.

We've seen, of course, an enormous amount of pressure on big tech and an enormous amount of almost bipartisan pressure and reining in the power of big technology companies. It will be interesting to see, as the Biden administration, sort of, you know, comes into place how much of that energy will be continued in 2021; and we can only speculate. But I think part of the guiding factors here

are going to be that the Biden administration has so many other priorities that they need to focus on, whether it's the COVID response or the economic response or climate change or racial inequality, that I feel that technology is going to take a bit of a back seat.

So many of the issues that led into the election are going to take a bit of a pause. And then the rivalry with China in particular is going to start surfacing. And here I'm in the speculation zone. Whether the success of the Chinese model, not just in terms of delivering digital momentum, but also delivering a world-class pandemic response is going to put pressure on the American policymakers to now come back and look at our own systems here and say, how do we compete with this juggernaut.

So I think this is going to set up a really interesting new dynamic as we go into 2021 and beyond.

And I would be remiss in not mentioning one other model, which is kind of off to the side. But it's an interesting model to consider all the same. And it's not a model that has had great influence on the global stage. And this is the model out of India.

So if you think about the notion of what India has tried to do, is first of all they put a billion plus people on a single national ID system. And that in many ways creates a foundational infrastructure from which you could now utilize a data management system which could lead to a more inclusive approach to using data analytics and artificial intelligence for providing public services to a country that, for large part of the country, desperately needs many of these services.

So I think there is a new model emerging in India which could become a model, if successfully deployed and with all the political economy concerns that Rebecca was mentioning, they play out 10 times over in the developing world. So if there is a success model that comes out of India, I could see some of that in a trade into large parts of the developing world, certainly across Africa, Latin America, and in many ways, it could actually also make its way into the United States because there are elements of what we are seeing in India in terms of the inclusion, the inclusionary model of data management, that can be quite appealing to an American system.

So I will just pause there and we can continue our discussion.

MR. WEST: Yes. Those are all great points about the diverting models around the

world. And your point about tech lash in the United States, I agree with. I actually wrote something for our tech tank blog on what divided political control of Congress will mean if that is where we end up. So we have a Democratic house, the control of the Senate still depends on those t wo outstanding Georgia races that will be decided on January 5th.

But if Republicans do retain control of the Senate, the implications for what a Biden presidency could do on technology policy in terms of antitrust regulation, privacy protection, and other types of issues could be quite substantial. So a lot of the Democrats who are hoping to move very aggressively on tech regulation may find they can get things through the House, but they may not be over to get a parallel legislation through the Senate. So that is an important point to watch.

So Rebecca, you have outlined a number of problems that we should worry about. I'd like to move from problems to solutions, how do we address some of the problems that you have identified. Are there possible remedies that would make a difference? Are there ways to reduce some of these disparities between prosecutors and defendants?

MS. WEXLER: Thank you. So this is the challenge. Some is easier to talk about the problems than to figure out how to fix them. But okay, fine. I'll give it a go. And before I dive in, I just want to flag -- because Bhaskar's done such a great job of bringing us to this cross-border, transnational, the global perspective on this. And I want to say that there is also an issue for the U.S. criminal justice system around how different countries manage their data.

So India has this new data localization laws that all around the world people are passing data privacy, data protection, data localization. And what we are seeing at that transnational cross-border level, is a mirror image of the political economy of law enforcement versus defendants within the U.S. where U.S. law enforcement and law enforcement in other nations are negotiating to maintain cross-border data access despite these data privacy protection and localization laws.

And once again, no one is negotiating for criminal defendants to get access to cross-border data. This step is more complicated transnationally, cross-border flows, because the U.S. has an adversarial justice system where prosecutors, law enforcement, the government only has to get evidence of guilt, whereas most -- the countries, they are negotiating treaties with for cross-border flows; in those

countries, they have a more balanced investigative system. Often what we call a kind of inquisitorial system where government actors are actually responsible for finding both evidence of guilt and evidence of it innocence.

So I've spoken with some of the lawmakers in India who are negotiating proposing these data localization laws. I said hey, did you realize that if you have exceptions for law enforcement not for the defense, it's going to be really hard for criminal defendants to get access to evidence of innocence. The answer is, it's not their problem. It's the U.S. law enforcement's problem, the U.S. executive branch that's negotiating this and other countries don't -- you know, that's not our system. We have our executive branch gets access. Our defendants are going to have due access. You fix your problem over there. But it is another problem Darrell, and we have more problems.

Now in terms of solutions, there are solutions. For the privacy side specifically, I have two articles coming out that propose concrete solutions. For courts, I have an article called Privacy as Privilege coming in the Harvard Law Review that says if a statute is silent on criminal defendants' access rights, courts must construe it, or interpret it, to yield to the defense rights.

And we shouldn't be presuming, because the political economy issues, we shouldn't be presuming that Congress intends to undo criminal defendants' rights with silence and a statute. So that's the instruction or guidance, the hope, for how courts could solve this problem.

There is a hope for lawmakers to solve this problem, which is say, hey, we rely on defendants to investigate just like we rely on law enforcement to investigate. So if law enforcement is coming to you asking for access to certain information with controlled safeguards oversight, think about whether you should make that exception neutral. Say we are not -- nothing in the statute is meant to block otherwise valid investigative rights. And don't just say law enforcement's investigative, just say otherwise valid investigative rights. We are not giving more access to defendants. We are not giving less access to defendants. Make it a parity, a symmetry.

And of course, if you're very worried about the privacy concerns, you can always rachet it down. Nobody is going to get access. Or you ratchet up. Everybody's going to get access. But make some requirement in there for it to be parallel access. So that's one key solution for that privacy law part.

But I started out by just saying I think there are at least three big buckets of problems; access to data to train, to deploy systems, access or control over markets that determine how systems are designed, which systems (inaudible) designed for whom, and oversight. So on the solution part, many of the oversight proposals for how to regulate AI in the criminal system and other parts of governance have to do with creating expert overseers, creating an FDA for AI, creating independent audit bodies.

Congressman Takano has this wonderful bill, the Justice and Forensic Algorithms Act that proposes certain necessary standards for when we are going to use AI and other algorithms in our criminal justice system. So we can have bodies like MIST, government experts who can oversee an audit. And all of that is really important. I agree with all of it, but it's insufficient.

And it's insufficient, we know, because we've relied on oversight regulatory approval bodies in our forensic evidence space for many years. And that has been a disaster (inaudible) failure. We have had a disaster of non-scientifically grounded forensic matching coming into our criminal system. This is your hair fiber analysis that the FBI had to retract, your blood splatter evidence, your arson pattern matching evidence, no scientific basis for the kinds of claims that were coming in over and over again to say this defendant matches the crime scene evidence.

Now we have forensic oversight regulatory bodies that are supposed to evaluate the systems and approve them and they haven't been enough to stop this poor-quality evidence coming in. And so I want to double down and say, in addition to oversight bodies, which are by definition, made up of a limited number of humans who have limited viewpoints because they are human, and in addition, they are subject to regulatory capture. They have – ex ante is the only option for them.

They can only look at how the system works in a controlled condition. They can't look at how it works as applied in an individual case. They can't examine user error in the application of the system. Did we feed the thing right with the data we are supposed to be analyzing? Did we set the thresholds correctly? Did you screw up something in how you actually used the system or reported the results?

So those kinds of problems require ex-post or after the fact contestability and we have to

build that into our oversight mechanism. It can't just be in advance oversight. You have to give individuals who are subject to AI decisions some process rights to scrutinize, to contest the results of the systems as applied in their case.

Those are my proposals. Not saying they are easy to achieve.

MR. WEST: Thank you. No, those are helpful and very forward-looking. So we appreciate that. Bhaskar, one more question for you and then we are going to move to some questions from our viewers. So you pointed out the different approaches across a variety of countries in terms of how they are thinking about these types of issues.

Since Biden was in the Obama administration, one of the ways that Obama dealt with these international conflicts, international issues that were popping up across countries in the technology around, was through treaties and negotiations and different types of international agreements.

So the question I have for you is, when we are thinking about the upcoming Biden administration and relations with the European Union, India, China, developing nations, and other countries around the world, how much do you think Biden will emphasize trying to negotiate these differences either through outright treaties or just other types of agreements, in the same way that Obama did or will it be other ways to try and resolve these types of international issues?

MR. CHAAKRAVORTI: Such an interesting question, Darrell. And of course, very, very timely. And of course we are all reading the tea leaves as we're going through this transition process. And I -- here is kind of my speculation. Biden is the ultimate committeeman. I mean, here is the guy who has been on the Senate Foreign Relations Committee for decades. He has chaired the committee. More than Obama, he is going to be an internationalist. And he is definitively going to put behind the notion of America first and take America, part of a committee. And of the many committees, of course we know the Paris Accord, the WHO and all that. It is going to be some kind of committee process on data governance, data management and learning from each other.

Now here's where I think things could get a little messy. Because as we all know, the committees are great. They are collaborative efforts. They are a wonderful way to bring insights from many different dimensions on complex issues. The problem of course is that committees very rarely get

things done in a timely manner. And there are obviously differences of objectives across the different stakeholders in these committees.

A second challenge is that America's standing on the global stage has taken a few steps back. So we do need to repair some of that before Biden or whoever his representative is on those committees, can actually pound the table and say, you know what, you've got to listen to us. I think there is going to be an enormous (inaudible) and I keep coming back to China. For all the reasons that we understand, China was a major power for all kinds of reasons and certainly the West and much of the developing world was backing away from the Chinese model of data governance and data management and data protection and the lack of access to data outside of China.

But the Chinese government now has a couple of trump cards, trump cards, in the lowercase T sense, which is that our model actually worked in 2020 in response to the biggest crisis of our lifetime. So you know what, we do have some leverage here.

And I'm willing to bet that many parts, particularly in the developing world, are going to look at that model and say, hmm, let's take another look at some of the things that we always believed we would turn to the United States for. So I do believe that there is going to be more of an internationalist posture as far as Joe Biden is concerned. But he is going to join a table aware there are several other people and countries with some potentially important recommendations.

I think the United States would benefit from absorbing these different ideas and different principles and potentially integrating them. Because one of the great things about United States is it is an integrative country. It absorbs ideas from all over the world and then makes something completely new out of it. And I think this is an opportunity.

My concern right now is that all the signs that we've seen in terms of the Biden campaign is that they've not had a coherent tech policy. They have not had any clear tech advisors. Every time the question is popped to Joe Biden, he has given sort of a one line response, which seems to suggest that this is an issue that he has sort of kicked the can down the road. So there is some concern that I have over that.

I do believe that there are a few things that we need to sort out, and this could be done

as part of this international group that America, I'm sure will join in 2021 and beyond, which is getting clarity on what we mean when we say data. We automatically assume that we all kind of understand what data is. Well, you know, it's not quite clear what data is because there are several things that we need to clarify in terms of what is data.

We need to figure out what exactly constitutes personal data on which one person has exclusive rights. For instance, you could be in a photograph that has all three of us in this picture. So who owns this image? And can I actually put this on Instagram without Rebecca's permission? We don't know about that. We need to establish criteria that demarcates personal data, anonymized data, and third-party data.

When I'm using Ways to get directions in a town, I'm utilizing my own data, the data of everybody else in cars around me and then I am using the Google algorithm. How do we separate these things? We have to create a transparent market base, universally accepted system of the valuing data so that users can potentially be compensated for the data that they contribute to the systems but we need to have systems and standards about how data can be moved across platforms.

So there are so many different issues that need to be resolved and this resolution is not necessarily going to come from Congress. It's not necessarily going to come from the committees, the international committees. We would have to absorb these ideas from multiple sources. I do believe that the Biden administration is a multi-stakeholder administration, and it is going to listen to all kinds of voices. But the issue is, I think it is going to slow down the process of getting to some decisions. That is going to take a long time.

MR. WEST: And just to answer your question on who owns the data on this broadcast, it's Brookings. But if you want to post anything on your Instagram account, we are happy for you to do that. So no problem from our end.

Let's move to some of the questions.

MR. CHAAKRAVORTI: I'm not taking any screenshots.

MR. WEST: Let's move to some questions from our audience members; a number of different things that have come up. So one question concerns; what are the most interesting military

and/or national security AI applications that are being developed? And that's an interesting question.

In our *Turning Point* book, John Allen and I have a very long chapter on national defense and the AI applications. John of course is a former retired four-star military general. So has a lot of expertise in the military area. And some of the things we talk about, one is just data integration and as Bhaskar has noted, data means a lot of different things. Data can be numeric and quantitative data, it can be visual imagery, it can be satellite imaging information, it can be video types of information.

And so in the military area, obviously they want to integrate information from a lot of different kinds of sources and then analyze and be able to act on it as quickly as possible. That is where you gain a military advantage. So there is a lot going on there. The Pentagon has set up a joint AI center to aid in the integration process.

There is also AIB being applied in an area called predictive maintenance. We know one of the problems of any army or military is equipment breakdowns. The worst thing to happen is you are in the middle of the battlefield and your tank breaks down. So the military has developed predictive analytics that uses sensors on various types of military equipment and then use that information to predict when something is likely to break down and fix it before breaks down. So it's a way to basically improve the equipment offerings and make sure the equipment is there.

And the last quick example, which is just an example I discovered in the last couple of weeks, the war between Armenia and Azerbaijan featured drones that would take pictures of battlefield and it was the Azerbaijanis basically had the drone advantage on the battlefield. They would then use those pictures to take out the tanks and military equipment of the Armenians. And it's one of the reasons Azerbaijan was able to move to such an advantage and then were able to negotiate terms that were very favorable to their site. So we certainly are seeing a lot of military applications there.

Rebecca, a question for you concerns oversight bodies. So you mentioned that we need to start taking a look at some of the AI problems that are developing. You've focused mainly on criminal justice, but we've seen bias in fairness issues that are popped up in a lot of different areas. What with these oversight bodies look like? And at what level should the take place? Should these oversight bodies be at a local level, a state-level, the national level? I mean, what are your reflections about those

questions?

MS. WEXLER: Great. So I think oversight bodies should take place all the way up and down. We should have these proposals from Congress (inaudible) bill would be to have standards that MIST has these, as an example, area committees that establish standards for the use of different forensic models. And I'm not saying that forensic model standards are the only type of oversight. It's just that this is a model for us.

We've actually -- we've had these oversight bodies of high (inaudible) tech systems up and down from the federal to local levels in forensics, and we can learn from our experience with those to say they are necessary but not sufficient. So at the federal level, MIST has these area oversight bodies. We've had two extremely important reports from the executive branch, the Obama administration PCAST report most recently exposing some lack of scientific foundation in many of our forensic (inaudible), so the federal level can be very important.

Then there is also state and local. So for instance, the New York City and New York State has a forensic regulatory commission that approves systems and they've approved the use of certain software systems in forensics before for DNA analysis. The point I was making is that in addition to these oversight bodies, we also need the individuals who are affected to have rights to contest, to examine, to introduce alternate results from different systems.

For example, because another problem around political economy is that as it gets to be more expensive to train new systems for certain complex systems that require access to a large amount of data, large amount of computing resources (inaudible) we are going to get fewer and fewer examples of those because fewer and fewer entities are going to be to create because they are so resource intensive to produce.

And so we don't want there to be only one system to give this one answer to the problem, are you guilty, are you innocent. If that were the case, I think we would want a lot of oversight and a lot of individual transparency and scrutiny. But there is other ways that individuals can also contest.

Could you have a requirement, for example, that an AI system that produces a result have variable thresholds and the individual who's affected by it gets to rerun the data that -- from their

case through the system but changing some of the threshold assumptions and how it was set. Do I want the system to return 50 possible face matches or only the top 10? Do I want to return zero if there is none that I'm very confident in? What happens if I program with different assumptions about what kind of data is significant and what kind of data is noise? What I get a different kind of result?

So what I'm saying is that while the oversight bodies matter a lot in terms of wanting independent validation studies, wanting people outside of the professional cohort to evaluate whether their methodology is actually scientifically grounded, it's not enough, because oversight bodies never know how the system is being used in the individual case. We need additional safeguards for individuals and their cases to be able to contest how the systems are used as applied, is the legal jargon. It just means in your case after the fact. Do you know how it was used? Can you challenge it?

MR. WEST: Okay. Thank you, very much for that.

Bhaskar, we have a question for you about AI and global inequality. And the question is; do you believe that AI will widen the economic inequality gap between developed and developing countries? And I would tack on just the additional; is it going to increase inequality even within the developing world? Will there still be winners and losers even among that group of nations?

MR. CHAAKRAVORTI: So my short answer to the question is yes and yes. And I will elaborate on that in a moment. But I also wanted to just add on to your excellent observations Darrell, on the security implications of AI.

I wanted to say that what we should be looking for in addition to the classic use of data for military responses, for sending tanks to a battlefield or dropping bombs in certain places, we should also be looking out for the applications of AI for nontraditional warfare, whether that has to do with cyber warfare or for warfare that is -- that sort of infiltrates in certain ways.

So for instance, there's been a lot of analysis done, just to give you an example, a really scary example of what happened with the Rose Garden ceremony and who met whom. And by piecing together the photographs of the Rose Garden ceremony and then eventually led to the infections across -- in the White House. Now that could create a blueprint for somebody who wanted to introduce a pathogen into a high-security institution.

So we should be looking out for multiple forms of applications of AI. Not just analyzing the data, but also in planning an attack. And that of course, unfortunately, is a scary possibility.

Coming back to what I feel is going to be the outcome of AI as far as inequality is concerned, I do fear that what we are likely to see is -- and this draws from the basic notion of what AI is. We use the past as a way to turbocharge a bunch of decisions, which then is fed into choices that are made in the future. Many of those decisions are some of the more routine ones.

So without the opportunity for human intervention and for an understanding of nuance and for an understanding of patterns and identifying where those who have historically been excluded from opportunities or if there are historical biases in the past data, these algorithms are likely to cement some of those biases and those exclusionary factors and will reinforce them and amplify them as we look ahead. That's why I believe that it is going to exacerbate inequalities.

Another reason why I fear it is going to exacerbate inequalities is because the algorithms themselves are expensive. And that money has to come from somewhere. Much of the money is going to come from the private sector. Governments are going to be focusing on a whole bunch of other things such as paying off debts for the next 10, 20 years. So when you turn to the private sector, they unfortunately, or fortunately, have some shareholders that they need to serve. And in order to do that, we basically have to understand where their business models are.

From a business model, if I'm a bank, it involves recognizing the customer who walks in the door and simply by observing their face and their clothing, I reach a conclusion about their credit worthiness. An AI is going to help me do that. Unfortunately, the face and the clothing is based on some stereotypes that are driven by what I've seen in the past. So if it is a white male who walks in relative to a black woman who walks in, the white male is likely to get a stronger score because historically, they have been better customers of the bank. And that's just one example. It's a ridiculously stereotypical example, but I fear that this example permeates into all examples largely because that's what the business models are set up.

So yes and yes that inequalities across countries is likely to be exacerbated in inequalities within countries are likely to be exacerbated.

MR. WEST: Okay. Thank you for those points. This has been a tremendous conversation. I want to thank Rebecca and Bhaskar for your insights. And Bhaskar we will look forward to seeing your international report that is coming out in early December.

For those of you who would like more information about our technology policy at Brookings, please read our tech tank blog. We have regular posts on many different aspects of technology and policy both in the United States as well as abroad. And each of our panel contributes to the blog.

We also have a tech tank podcast that we launched a few months ago. We've had a number of different episodes aired. You can access that either through our tech tank blog or through Apple or Spotify. Our most recent episode was on technology policy in the next administration. I participated along with my colleagues Nicole Turner Lee and Tom Wheeler, a very interesting discussion about what we should expect in terms of technology policy from the Biden administration.

To our panelists, thank you very much. Our audience, we really appreciate your tuning in. Thank you again.

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I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

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