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>> Okay. Bela, are you here? All right. Okay. So you have a mic, yes. So let's get started. We have the reports back from the breakthrough groups. We start with the results of -- the results are still being collected. But we can start with the first two breakthrough groups. If we -- if we start with the hunger and ending hunger. Are you ready for that one?

>> First of all, thank you for everyone attending the session and the ones I see now here in the Plenary. We had lots of conversation focusing on actual problems and use cases and one of the principles of food for thought as it is called here right now and this was coming from the expertise in the area of AI that's already being applied both in the industry and in Developing Countries was we have to be user centric and inclusive. So the needs of the diverse range of people including the most --

>> Okay. People, please continue their conversation outside the meeting room perhaps. That is easy to follow for people inside the room. Okay. Great.

>> Thank you for the intervention. So but the point is really that when we design or work on Artificial Intelligence system that we have to work with the people that are actually

affected by them. Being inclusive and working with the most vulnerable. That people should guide the design and development of those AI systems. And the second food for thought this was related about accountability and transparency in how we actually then deal with the privacy and responsible handling of the data. In particular again when talking about vulnerable people, vulnerable populations how do we protect people's data or allow them to have a transparent input in to the process. Rather than having the magic box that outputs some certain output, having the ability to say if you are affected by an Artificial Intelligence system how can we have accountability in that type of process. And maybe just let me say one last thing about the session that we just had on ending hunger, two highlights of what I heard. Marcus Shingles is the CEO of XPRIZE. He said we need another set of entrepreneurs to tackle these types of challenge. Bring these technologies to problems of ending hunger. And secondly there was an image from like Google who said actually a lot of these AI challenges have already been solved today. So we just need to get more people to get involved in to that type of process. And this is when you see the first food for thought here is like being inclusive, this really means like how can we broaden the usage of AI in that realm.

>> Thank you, Robert.

>> Any questions so far on No. 1 or No. 2 or comments or clarification before we ask you to give feedback or to use your apps. No. Was it clear? Stuart, any comment? Not yet. Okay. So as we try to identify general directions or ideas and we call them food for thought we call them guidelines, the groups have been spending 90 minutes to come up with some general directions. As we try to capture those directions as a starting point to organize work groups or keep going with those, I think it is important to notice that the way we formulate those food for thoughts or guidelines cannot be ideal, cannot be complete. It is just a process. So we ask for your understanding but also for imagination about how this can expanded. This is going to be improved and iterated a few times. But just make sure that we have a good sense of why and how we are doing this. So maybe we can use the app now.

>> Okay. So for everyone who cares just emphasize this is nonscientific. For those who feel to wish to express an opinion you are welcome. And if you don't that's fine, too. So maybe Bernard that's -- these ideas can also be applied in general. It is not really specific for hunger.

>> Yes, absolutely and I think there was one of the observations as well that these systems are applying for solving problems in hunger space but generally apply to other areas. You will end up with lots of these same principles or aspects that

you may want to consider.

>> Okay. Good. All right. Shall we move to the next one?

>> So we can use your app again as we did yesterday. Go to the session about ending hunger. Identify at the bottom the survey. And give your opinion about the two proposals or food for thoughts that were highlighted here.

>> Disaster prevention and relief.

>> I thought the food for thought was a clever ending hunger reference. I want to start with the first notion and this was -- I dare say all of these breakthrough sessions have been excellent. I am a little biased towards this one because I sat there listening attentively. It was a deep discussion among the panelists and participants. One of the key themes that the notion that data is primary. In dealing with disaster prevention and relief there was a great deal of emphasis not on the algorithmic development or math but the requirement of good, meaningful open data. So there is a few sort of principles associated with the need to build a process that ensures data in particular but also the development of AI based on the tools that are based on that is transparent, open, and diverse. A related piece of that is that those who are contributing to and benefitting from the development of data and tools, AI tools or others themselves need to also be diverse and even more importantly actively included in this. So a lot of the point was made that if you are dealing with something like famine or disease outbreak, these are often missed or not caught, looking at a problem through a single lens. It can be true of any lens if it is not representative of those who are out there. And old garbage in garbage out principle would indicate unless the data we are collecting is meaningful to forecast and predict and ultimately respond to disasters, that you are not going to miss some of those and, of course, the algorithms are only as good as the data they are predicated on.

Real emphasis on both of those two. And in order to do it participants need to be diverse and included. And then the third piece of this was really relevant and very important conversation was around what it is that the AI, the algorithms or any of the tools that are developed could be useful for and in particular they are serving the needs of humans, very relevant piece of it. It can reduce uncertainty associated with those predictions, but it is serving to support decision making, decision making to intervene and advance of potential disasters or, of course, in response to things like declaring famines and the like, and that AI in general can serve a valuable role in supporting decision making and action taking. But that we can't expect and it is probably unlikely to be any time soon that those decisions being made in the absence of humans. A very

important intersection here between humans and machines.

>> Thank you. As you are working this session did you take in to account the realtime aspects sometimes of relief? Where we don't necessarily have a model dataset to help us and how would you --

>> That was a big conversation around the values AI is that can advance the decision making process in particular by making it realtime or getting potential access to it. That piece of conversation quickly helped lead us to the data access essentially. How is it that we can access to relevant data to understand everything from environmental conditions to movements of people, et cetera. And if there are a ways of accessing that in theory you can have algorithms that are reporting risk to some of these things.

>> A couple of breakthrough sessions talked about governess and ownership of data. Did you approach that?

>> A fair number of questions from the audience dealt with that both. Proprietary data and Chris from UNICEF has pointed that UNICEF has been working with Telefonica and Amadas that will identify APIs that will access proprietary data. They are comfortable in sharing and also the point there is a significant amount of data in particular with disaster representation and relief that has to do with environmental conditions, earth sciences that may or may not be open. But it is very inaccessible and a lot of it also still as Pascal pointed out written on paper in various places.

The soil moisture in Kenya may have been documented for 30 years but it is in somebody's desk drawer. And then there is a discussion around how it is that we can use even bodies like the UN to either incentivize or require that some of this data themselves be useable, especially things that can prevent death, hardship and other sorts of things that may be protected by Governments or others for less than heroic reasons.

>> Thank you. I think the incentivization portion is an important one because as we formulate goals and ideals and suggestions how we put in to motion especially if you involve the UN or other instances that could be helpful I think the incentives that could be put in place are tremendous. Any comment or question from the audience on these three suggestions? Anything that you think they missed or they hit on? We are very close to lunch. Before we go to the next one again if you want to give an opinion or give the group some feedback about what they come up with, here is your app.

>> Okay. I think we forgot to clap after the first one. So we will do it at the end for everyone.

>> We can do a clap now for the first one.  
(Applause.)

>> Education is next.

>> Hi everyone. My name is Kristian. I am the founder of a company called E180. And we are based out of Montreal and we help to shift the way of learning and we create brain dates. Helping human beings to learn from one another. Working on collaborative learning and scaling new ways of thinking about learning as well. I am really happy to be here as the representative for the education panel that was a very rich one. I am sure as all the others were.

So the first one, the first food for thought which stood out for me was that AI in education needs to first serve the underserved. Basic literacy should be a priority. We heard a lot in the different sessions how can we train every single human on AI itself. And it was not something that came out as a big priority for education in the panel that we held together. So going back to the idea of there are still billions of people who don't know how to read. So any type of training we want to achieve is actually not possible because we don't have access to these human beings.

The second one was before thinking about scaling anything in education with AI. We first have to redesign what great education and what great learning is. So we are at the point in the history where obviously AI is at a pivotal moment but also a point of pivot for education. And before thinking about just scaling what works in education but also scaling probably what doesn't work we still have to stop and think about what should be a great learning experience, where are these great learning experiences who -- how can we document what works when learning is as thrilling when we were three years old and reproduce those experiences instead of reproducing lectures in halls and that are not necessarily conducive to great learning experience. And that being also supported and fed by the perspective of students themselves of communities and actually involving those stakeholders in the definition of what the great learning is. And that's something we also saw in our panel. We were saying yesterday there were not a lot of women on stage. Here I am. So I hope that everyone is happy about that. I am. But we noticed in our panel on education there were no students nor children in the room. And that was a lack in voice in defining what great learning and education should be.

And the third one was -- oh, it is very big now. Yes. Thank you. That learning has to be self-directed for meaning and relevancy. So we had an outstanding example of self-directed learning I think in Ethiopia that was provided by the MIT media lab and that children don't have access to teachers bringing even more meaning to the idea of self-directed learning. So it was said in the panel that every single human being should be

able to direct their own learning based on truth and path in life. And that takes more relevancy that you see for some children. There is no other option as there are no teachers available. So that was something that was very crucial. So yeah. I think that's what we had.

>> Thanks very much. A few days prior to the conference to get a feel for which sessions people might be interested in education got a lot of hits. So I think that's really a centerpiece of the discussion. Just on your second thought here, on your second idea, we first have to redesign what rate education learning, that's not really known. There is not enough research on what great learning is.

>> I think that's something that was mentioned on the panel. There is a lot of research on the science of education and context. We know what great education which we have been doing for the past 200 years. When we think about 21st Century skills and the future it is a cliché to say that we are training children for jobs that don't exist. And if learning should be self-directing and there is not a lot of research that can help educators and technologists and students to define the new science of education.

>> Are there any questions? Comments? Thoughts? Please in the very back. State your name again and the organization you are with.

>> Kristian Voltan from the University of Cologne. But here for IBC UNESCO. During the session despite all these wonderful and really, yeah, siting initiatives a little bit of uncomfortableness in the room about the contribution that Artificial Intelligence can do as an added value to digitalization. So what does the special contribution of Artificial Intelligence there have?

And the other one was about cultural imperialism and kind of a cultural imperialism and the starting points or possibilities to do deal with bias, discriminatory effects. And just presuming that open data is something wonderful. I think there are a lot of good reasons that all people in this room agree that open data is a wonderful thing. That Artificial Intelligence can contribute a lot to Sustainable Development Goals and so on. But some basic questions are not addressed about cultural, about what is really the good and what does autonomy mean and so on. So I think that's a crucial question that came up within this session. But it was not so much addressed. So I think it could be incorporated in the food for thought, too.

>> And I think that's maybe some path to solution about the place and the role of AI. I think that what I have heard was the idea of individualization of learning I think is probably critical and connecting the right person with the right

resources. Either it is more content based or even human based in terms of mentorship and peer mentorship. I think the AI is clear, but thank you for your contribution. I think it is extremely relevant.

>> Yes. Gentleman behind you was first, please. Just press the button and wait a couple of seconds.

>> I would like to -- motivation is key for the kids. They are going to be self-learning. And they don't have the teachers. So it is critical to teach them how to learn.

>> I think a lot of the kids know how to learn already. They don't maybe know how to learn the way we would like them to. And I think that there is probably something there in terms of redefining what learning and education is. Is probably rethinking about our concept of the relationship between teachers and students and content and meaning and purpose. So instead of forcing kids to learn the things we want them to learn in the way that we want them to learn, to learn from the way that they are already learning and providing experience is that -- propel them in a way that is natural for them. So I think something that we should consider when thinking about the new learning.

>> Yeah. You wanted to add something?

>> Yes, I just wanted to add the parallel of our panel. Stuart gave an example of work he is doing with the farmers in Africa. They are using butterflies to forecast rain and he is using Artificial Intelligence to forecast rain. We are -- all of a sudden we are giving out this information that's going to be two millimeters of rain today. And the same actual conversation is in education as well. You need to think about if you have been learning before how does that have to be adapted including like what children already do.

The same is for the farmers, the exact same process where you are saying you need to think about the cultural indigenous knowledge and the processes that you undergo, how you actually then take this information on board. If you are replacing the butterflies with Artificial Intelligence, you are not going to have AI butterfly. You need to think about the behavioral change and how you are going to do it.

>> We are running a bit late. If it is really quick 15 seconds the question.

>> Just quick. Hello. Really just with respect to item 2, you have already said there is a lot of research on what education is. I'd just like to make the obvious comment that there is a difference between education and training. And I think we have to bear this in mind. And it could well be that AI is going to be far more adaptable to training than to what I think real education is.

>> Okay. Good point. Okay. So if you would like to give us a feedback on your app you are welcome to do so and then we clap for your --

(Applause.)

>> For the work being done by the group. We go to the last one. Promoting equality and access to AI.

>> We had a fantastic panel and contributions and discussions. The first food for thought is around meaningful participation of individuals and communities in how data is collected and analyzed and used. It follows the thread of inclusivity from the poverty and disaster breakthrough groups. And in particular one of the issues that I emphasize is that AI design should allow for interrogation of decisions that people should know how decisions are made.

The second food for thought is that this notion of regular review to monitor the impact or the design, development of AI and this audit should also include the impact of AI on Human Rights of individuals and communities. So the aspect that, you know, Human Rights principles should inform the development, design and implementation of AI and the need to regularly monitor this. In the group there was no decision as to whether this should be exclusively an internal review or should also include an independent external review of the AI.

And the third was the principle of Democratization that should be infused in development of AI. That -- and this includes the notion of accessibility, low cost representativeness, giving people a voice and education in order to allow people to understand how AI -- the implications of AI but also in terms of how to use the tools.

>> Okay. Thanks very much. Again we are seeing a convergence of some of the thoughts that we have also seen in the other breakthrough groups. That's interesting. Any comments that you may have? Yes. If you state your name. Just press it once. Just wait. Okay now it is on.

>> Emer Farrell. It was a fascinating discussion in our group. And thinking about the question of audits and explain the ability of algorithms, part of the discussion was also around are there particularly sensitive areas or high stakes questions where it may not be appropriate to use AI or where we should be more careful. I'm thinking about law enforcement and use of AI in the courts. I'm wondering if this is an area where there is something about the notion of justice that requires a more individualized determination. So even in a case where you may have more greater accuracy with AI determination of probability, for example, if you had 85% accuracy, and if you only had 80% accuracy from a human, many of us would still feel uncomfortable being sentenced or targeted by a machine.



But more generally if you look at the use of AI in courts, particularly in the area of evidence and probability, I'm wondering can it also be used in order to promote equality. So rather than increasing disparities there has been a lot of criticism about racial bias and so on in this type of area. Could it also -- could we envisage a situation where it is used to reduce disparities in sentencing and maybe to do things to promote equality. Could there be variables built in to AI that would help to take in to account specific circumstances of an individual that might lead to a different outcome or a different sentencing. Those are a couple of questions to throw out and maybe a third one. In terms of audit in many cases this is proprietary software. So how can we ensure that either an attorney or a defendant might have access to this information. Could we envisage systems like third party trusts where the information in the algorithm would be available.

>> Thank you.

>> There were several questions in one. One was whether we have higher standards for AI than human beings and increase equality and audit third one.

>> Increasing equality, the science is there in terms of ensuring that, you know, it regulates for bias. But that it is not being currently implemented. One of the reasons may be the issue of cost. So the science is interesting but it is not being sufficiently applied in AI in terms of implementing a guarding against the bias and data. The other issue that was raised was the value of data and the limitation of access to data and in order to ensure less bias you may have to gather more data. And I think one of the speakers pointed out that might not necessarily be the solution. In terms of criminal proceedings certainly there are a range of issues around policing core proceedings, sentencing from a Human Rights perspective that will create problems. Particularly when you have data that is biased in terms of predictive policing and marginalized communities often end up with higher sentences or guilty verdicts in cases where they might not know the evidence against them. Feeds in to a system that produces similar biases and that for me is hugely problematic.

>> Okay. Good. Thank you. Yes, one last question. Please. Just press it once and then wait a few seconds. Okay. Good.

>> I wanted to disagree, that we know how to eliminate bias in algorithms. We are beginning to understand how to eliminate bias. And when we do there is the huge great societal question we have to work out what exactly we mean by the biases and what sort of ethics we want to have the unbiased/biased algorithms encode. It is wrong to think that we already know how to solve these problems.

>> Okay. That's Toby Walsh, professor from down under. All right. So let us -- if you wish give your feedback from the app and we thank this breakthrough group.

(Applause)

>> There is not much time for lunch. The session at 1:30 will be shorter. About 30 minutes. So the entire program, we are trying to move the entire program a half an hour earlier. So this way if we stick to the schedule you will also be able to leave half an hour earlier today. Okay. Thanks very much.

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