**File name:** Technomoral Conversation Series Building Responsible AI Cultures and Alliances

**Moderator (Shannon Vallor) questions in Bold,** Respondents in Regular text.

KEY: **Unable to decipher** = (inaudible + timecode), **Phonetic spelling** (ph) + timecode), **Missed word** = (mw + timecode), **Talking over each other** = (talking over each other + timecode).

**Shannon Vallor: Hi everyone. Thank you all for joining us this evening. Those of you online and those of you here in person with us, in the Nelson Room at St Leonards Hall at the University of Edinburgh for the second in our series of technomoral conversations, sponsored by the Centre for Technomoral Futures at the Edinburgh Futures Institute. I'm Shannon Vallor, the Baillie Gifford Professor of Ethics, of Data and Artificial Intelligence at the University of Edinburgh here in the Centre and the philosophy department. The Centre for Technomoral Futures focuses on bridging the divide between technical and moral knowledge, in order to enable more ethical, sustainable and constructive models of innovation. Our new public event series, Technomoral Conversations, seeks to create a dialogue among diverse range of stakeholders with expertise at the intersection of technology and society, drawn from across academia, civil society, industry, government, the arts, community groups and public institutions. We want to facilitate conversations that re-weave together the divided strands of technical and moral understanding, so that we can foster new and better ways of thinking about technology's role in our lives. Before I introduce the topic of tonight's event and our panellists, let me quickly sketch the agenda.**

**We're going to take the first 30 minutes or so for the primary conversation with our two expert panellists and then we'll turn to some questions that will come from some of our PhD students and post-doctoral researchers here at the Centre, and I'll introduce them later. Finally, in the last part of the hour, we'll open up the conversation to questions from those of you in the audience, both online and here in the room. For those of you on Zoom, please pose your questions for our panellists now, through the Q&A Zoom function or you can do so at any time during the event. Okay, so now let's talk about why we're here tonight. Tonight's event brings together two distinguished leaders in responsible AI innovation, in Europe and Scotland. Our guests' expertise and experience cuts across the boundaries between science and government and both have confronted the complex interweaving of technical, political and moral questions around the future of artificial intelligence. We've asked them to join us tonight, to talk about the challenge of building responsible AI cultures and alliances. The European Union and the Scottish government have each expressed strong commitments to fostering responsible and ethical AI development. What opportunities and obstacles lie ahead on that path? What new alliances and governance cultures are needed, in order to bring responsible AI from an abstract ideal, into something concrete that not only garners public trust, but earns it.**

**We often focus on the technical and regulatory challenges that AI presents, but responsible AI isn't necessarily going to come from better software or better laws alone. We need to talk about the new cultures of innovation and the new cultures of governance that need to develop. Our guests tonight have much experience in this area to draw on. Virginia Dignum is a Professor of Responsible Artificial Intelligence at Umeå University in Sweden. She is the director of WASP-HS, the Wallenberg Programme on Humanities and Society for AI, Autonomous Systems and Software. This is the largest Swedish national research programme on fundamental multi-disciplinary research on the societal and human impact of AI. Her current research focus is on the specification, verification and monitoring of ethical and societal principles for intelligent, autonomous systems. She is committed to policy and awareness efforts toward the responsible development and use of AI, as a member of the European Commission's high level expert group on artificial intelligence, as well as the working group on responsible AI of the global partnership on AI and the World Economic Forum's Global Artificial Intelligence Council. She is lead for UNICEF's guidance for AI and children and the Executive Committee of the IEEE initiative on ethically aligned design. She's also a founding member of ALLAI, the Dutch AI alliance.**

**Her book, Responsible Artificial Intelligence: Developing and Using AI in a Responsible Way, was published by Springer Nature in 2019. Albert King is Chief Data Officer and leads the data division in the Scottish Government, the Centre of Excellence for data in government, here in Scotland. He is responsible for delivering platforms that support data and analytics for government and public sector partners, fostering data, innovation and policy, data, digital ethics and AI and he has direct insight into Scotland's AI strategy and the role of government in creating a healthy and humane innovation ecosystem that serves the public interest. Thank you, Virginia and Albert, for joining us tonight at the University of Edinburgh. I'm thrilled to have you here and I know our audience is very grateful for your time and expertise and the opportunity to speak with you. I know you're also both taking part tomorrow in Scotland's AI summit, where you, Virginia, will be giving a keynote on responsible AI, following Albert's remarks on the state of AI report and the Scottish AI play book. We're grateful to you both for taking the time before the summit for this conversation which can, perhaps, serve as a bit of a preview for tomorrow's events. So, let me start off by asking each of you to briefly define what people should understand by the phrase 'responsible AI'. It gets used a lot but, what does that really mean, from your point of view? Virginia, do you wanna lead us off?**

Virginia Dignum: Sure. Let me start by thanking you for inviting me to be here. It's my pleasure to be discussing it and I hope we will have a lively discussion today. Yes, responsible AI. It's, in a sense, a, kind of, misnomer, because it's not about the responsibility of the AI software, it's more-, it's definitely about the responsibility of us, people, organisations, institutions, for the development and use of AI. So, it's concerns us, concerns those that develop, that use, that govern, that make policies, that maintain and whatever, yeah, and effect or affect the AI systems. And it recognised the idea that no software exists in a vacuum and that, therefore, we really need to address all the legal and ethical and, also, societal aspects of the context in which software is used.

**Shannon Vallor: Great, thanks.**

Albert King: Well, thanks Shannon, as well, from me, for having me here today. I guess, I would echo what Virginia says. Fundamentally, fundamentally from, from me and, and thinking about our commitment in Scotland's AI strategy, to building trustworthy AI, your point about earning public trust and creating AI systems. And not just software, but systems of AI and the governance that sit around them that enable citizens to understand how these technologies make decisions about them, to have agency and be able to contribute views to the development of them. So, I think, for, for me, it's about, not just the governance, but the ecosystem of engagement that sits round the AI software and systems and solutions. And that, that's certainly what we're endeavouring to build in the-, in the, sort of, ecosystem of trust, here in Scotland.

**Moderator: Yeah, that's great. And I think it shows that we can look at AI as something that, if it has these transformative effects on the way that we conduct business or the way that we engage in our responsibilities in government, we can use that as an opportunity to improve those cultures. And make them more transparent and more accountable, as opposed to seeing this as just a disruption that has to be tolerated or absorbed.**

Virginia Dignum: Definitely.

**Shannon Vallor: So, I, I wanna ask you about the way that different nations and regions are pursuing their own AI governance strategies. So, consider the differences between the strategies found here in Scotland, in the EU, the United States, China, India, many other nations, the UK more broadly. Is there any hope of international alliances, working towards a coherent set of norms for AI development and governance? Or are we inevitably gonna end up with a regulatory patchwork, constructed around, often, clashing regional priorities and cultural values?**

Virginia Dignum: Oh, I can-,

**Shannon Vallor: A big one, I know. That's a-, that's a big one to chew.**

Virginia Dignum: Good. I can-, I can start, yes. Yes, it's actually, it's a big one and it's one which, of course, many of us are concerned about it and I often get this question. I think the, the answer is, is not, kind of, a black and white answer. Once we talk about high level principles that should govern this, the interaction and use of AI, I think that most countries are in agreement. I actually was part, as a Swedish representative, to the discussions at UNESCO level. It was the most interesting Zoom meeting ever, 173 countries with two different language, screens in two different languages, six simultaneous languages trying to speak, it was a funny thing. But anyway, it was clear that all-, between all these 173 countries, there was an agreement on the high level principles, principles of transparency, principles of fairness, principles of human dignity. Those were shared across all these countries. What gets, then, to the-, to the difficulty is the moment that we start interpreting and operationalising these principles in norms, in the regulations, in concrete actions, in-, and there, I think that it's, it's not different in AI than it is in other types of systems or in other types of situations. We still don't have an agreement on what kind of electricity sockets we should use across the world.

So, there is this level of interpretation, which is not just a negative thing but it's also, I think, a way to enrich and to, to show the, the cultural diversity and the, the difference between ourselves. But the, the common agreement, in terms of high level values, I think it was clear, quite clear, in this UNESCO community.

**Shannon Vallor: Okay.**

Albert King: I mean, I guess, I-, so, so, one of the things we set out to do is when we-, when we launched the AI, got an AI strategy, was to, actually, build a lot of those alliances. So, I guess, my starting point is, is optimistic that, that we can achieve, you know, a coherent set of norms around how we adopt and, and govern AI and these technologies. And, and I think, maybe, you know, as you say, Virginia, one of the-, one of the reasons why we adopted an existing set of principles in both the OECD principles and, indeed, the UNICEF principles that you've-, that's you've, you've, you've lead on is that, you know, we felt that, that provided a coherent framework. I suppose, my experience over the last year in the conversations I've been having with other governments and other policy makers is that the reality of that is that there are a number of large-, and I, I tend to think of them as, as both-, I don't know if 'moral and ethical blocks' is quite the right way of thinking-, quite the right-, quite the right-, quite the right language but, essentially, moral and ethical blocks emerging around the world, you know, driven by how people interpret and apply those, those principles and values and, and, I guess, the political and, and cultural context in which they're operating.

But I don't think that, that's necessarily intentioned with, you know, fundamentally, actually, therefore-, for example, Scotland or working closely with the EU or others who, who share our values so that, you know, that we, we can achieve a reasonably coherent set of alignment on the governance and the frameworks and, and the policies that we set around the way that we adopt AI in, in, in our society. And, and I think a particular advantage in Scotland, actually, interestingly enough, is that we're a bit constrained in our ability to regulate in this space because, fortunately, for example, data protection reserved, so our focus is actually on creating, effectively, the soft nudges and the soft regulatory levers that sit around these systems that, that actually, I think, foster adoption of, of these, these approaches in a more-, in a-, in a more meaningful and thoughtful sense.

Virginia Dignum: Yeah.

**Shannon Vallor: That's actually a perfect transition to my next question which, really, is about regulation. So, obviously regulation is just one of the tools in the-, in the governance toolkit, but it's an important one. On the other hand, there's often an argument heard that regulation stands in tension or in conflict with innovation, so that the price of AI regulation, some people think, will necessarily be to impede AI innovation and this is often presented as a reason either not to regulate AI or to regulate it as little as possible. So, how, how do each of you respond to that argument or that challenge?**

Albert King: Well, I, I'll, I'll start off with-, if that's okay?

Virginia Dignum: Sure.

Albert King: So, I guess, so, thinking about it as a-, from an economic perspective which, I guess, is where, often, people suggest that regulation, sort of, impedes, you know, rapid economic progress and so on. Actually, the, the reason why we have adopted, you know, a, sort of, trust, ethics and inclusivity first approach here in Scotland is that we actually see effective regulation as an economic opportunity and advantage. So, it's actually fundamental to the successful adoption of AI in our economy, in our public services, in our society more broadly. So, so, we-, I definitely don't see these things as necessarily being in tension, what I do think is a challenge, is to get to a place where we have good regulation. Because, I guess, that's the key to actually getting to a place where the way that we adopt this things is, is, yeah, it's pervasive in business, in our public services, and that citizens can engage with that in a meaningful way. I'm often quite struck by, sort of, transparency around algorithms, that if it's not meaningful and it doesn't actually-, isn't, isn't actually a, a meaningful transparency and accountability for citizens, it becomes a bit like-, I shouldn't really say this, but a, a number of other things governments do, that are just about publishing information and putting information out there and, actually, drawing people, citizens, in to these things in a meaningful way is, is the challenge. But fundamentally, I think, good regulation is an opportunity and an enabler of these technologies.

Virginia Dignum: I fully agree. I, I often get asked this question. I, I think there are two issues. One is that, often, the ones who on, let's say, the innovation side, see innovation as some kind of god given right, to use whatever technologies there at this moment, in whatever way they want, and that's actually not innovation. Innovation is, exactly, take the, the technology or the, the situation as is and improve on it. And what better way to improve on it, than to get some, kind of, guidance or direction by regulation? So, regulation that doesn't really improve innovation is not the, the good regulation that you talk about, but innovation without really caring about the way that regulations-, or what principles that, that really matter, it's also not innovation. So, I don't think that we can see them separately from each other and, by really putting them together, we do manage-, will manage to make better regulation and better innovation, and we have seen that in many different disciplines and areas and fields of industry. For, I remember from twenty years ago, when I was working with the car manufacturers and then this was this idea that you need to put the catalyst at the back of the car and that was taken like, 'Oh, this will be really damaging to the, the performance of the car and things will be-, go very bad and the, this regulation will really damage our capacity as car manufacturers.'

And actually, if anything, those catalysts were one of the enables to the much cleaner motors and, but also much more efficient motors, that we see now in the-, in the car industry. So, I don't think that we should be-, definitely not afraid of regulation, but really use regulation as, also, business differentiation and a way to, to provide the direction to innovation that matters.

**Shannon Vallor: Yeah and, you know, on that note, I think, can't we learn a lot from the history of regulation, as well?**

Virginia Dignum: Exactly.

**Moderator: In cases where this has been, been clearly demonstrated. If you look at the aviation industry, right?**

Virginia Dignum: Exactly.

**Shannon Vallor: Regulation there was one of the primary things that earned public trust, to go back to that point, in commercial aviation, such that it could be come the industry that it is today. Which, granted, its carbon footprints, perhaps we should consider the costs and benefits of that, but just, if people were concerned simply about the growth of the industry, right? Then regulation was certainly, there, a driver of both innovation and growth.**

Virginia Dignum: Yeah, definitely. Yeah, yeah, yeah.

**Shannon Vallor: And, and then you look at the Boeing 737 MAX debacle and look what the cost of regulatory capture is for the industry and for particular players who, you know, take the, sort of, short term benefits. It would be nice if, if the conversation around AI innovation had more of a historical, backward looking appreciation for what we've already learned from, from regulation and governance in other industries.**

Virginia Dignum: And, probably, in those industries, the, the carbon foot, footprint will really change by regulation in that direction.

**Shannon Vallor: That's right.**

Virginia Dignum: And they, they will go again, put their thinking hats and come up with the cars and the aeroplanes that do what they are supposed to do and, at the same time, are minimising carbon footprint.

**Shannon Vallor: That's right. And that's how we got catalytic converters (talking over each other 17.59). Exactly, right?**

Virginia Dignum: Exactly, yeah. Right, exactly.

**Shannon Vallor: Because California, where I lived, created a law, an emissions law, that required those to be developed, in order to meet those standards.**

Virginia Dignum: Exactly and then, then they improve everything, yeah, yeah.

**Shannon Vallor: That's right. Yeah, absolutely. So, let's come back to the, kind of-, we've, we've, we've talked a little bit about the, the, kind of, governance strategies and, and, and alliances that we need to form, but it's not just about governments, right? It's about all kinds of organisations that are involved in this-, in this space and building responsible AI raises a lot of challenges for organisations, some of which are technical, but some of which are cultural and professional. How do we address those, kind of, organisational, cultural challenges and what are the biggest obstacles there, in your experience? Whether we're talking about industry organisations or whether we're talking about, sort of, local government agencies that might be using software and, and, and maybe need to develop a, a, a certain, kind of, different cultural shift in how they think about using computing or, or AI. Any thoughts on that subject?**

Albert King: I, I love your optimism by the way, Shannon, that you think humanity is gonna start learning from its past but if, if, if we (talking over each other 19.08).

**Shannon Vallor: Hope springs eternal.**

Albert King: Yeah. Well, if say that, yeah, you know. Yeah, no, I think that's a really good question. I suppose, the way I think about this in the work that, that, that we do, is that there was something you said, Virginia, about people thinking they've got, like, a right to innovate and, and there's a bit of a risk. I often think that, you know, machine learning engineers they-, and I-, and I speak as a-, as a technologist myself, you know, I would love to tinker with this technology, purely for the sake of tinkering with this technology, it's beguiling but-, and, and I think that those professional silos, whether we're thinking about that in terms of, you know, machine learning specialists or, indeed, in terms of ethicists and moralists or policy makers or the people who own the business problems or the policy problems that need to be solved. I think the fundamental thing that we need to do is break down those professional silos and professional barriers. I think there's an issue around and therefore, you know, effectively, the technical literacy amongst the ethicists and moralists and the-, and the-, and indeed, the ethical, moral literacy among the technologists, which is why I think the Technomoral Future Centre is so vital, and the fantastic work that Shannon is doing. So, so, that, that's the way I think about it, in terms of those, kind of, professional silos and trying to-, and try and break those down with the culture we're trying to build about stronger teams that, that share and innovate.

I think, then, that we need to support those people with better infrastructure, and we're building a bit of infrastructure to help people do that. So that they've got access to the tools, methods and support they, they need, in order to think about these issues and, you know, sort of, engage the public or engage in public dialogues, whatever it is they need to do, in a more routine and systematic way. So, I, sort of, think about it in those, those, those two veins, about the infrastructure we create to support people and the, sort of, professional cultures we need to build.

Virginia Dignum: Yeah. I, I fully agree and I would like just to add one more way or possible-, one of the issues is that, we often, or organisations often see responsibility, ethics and regulation as a, kind of, post hoc checklist. So, 'We do whatever we want with our systems, we develop it all. And then, at the end, someone will come and, with a checklist and they will check this and it's either okay or not.' But it's a, kind of, after, after the, the thing has been done. And I think the most-, the, the biggest obstacle, but also where we can gain the most, is when we manage to turn organisations into the idea, we have to start, exactly, with responsible design, exactly with identifying of the, the responsibility, the, the, the principles, the values that really matter. And from there, move into the design and the development of the-, of the, the technical systems. So, that's changing the order of-, in which people see things. It's challenging, but once it happens, I see that organisations, really, start looking at things from a different way.

**Shannon Vallor: Yeah. I think one way of thinking about this is, you know, the, kind of, moral ambition that, when we link it with innovation, you know, allows notions like human flourishing and progress to, kind of, come back into play. And right now, those words, if you speak them in, in certain commercial contexts, they seem out of place, right?**

Virginia Dignum: Yeah, yeah, yeah.

**Shannon Vallor: To talk about progress or, or human flourishing, certainly to talk about virtue or-, you know, so these, these moralised concepts, I, I think there's a challenge of integrating them, reintegrating them into both political and technical spaces. But there's also, of course, the danger there, right? Because I think we've all seen it and, and many in the audience will, will be aware of organisations having a, a very, kind of, narrow, blinkered view of progress, so that they think, for example, they're gonna solve poverty with an app, right?**

Virginia Dignum: No, no, no.

**Shannon Vallor: We worry about the approach of having technical fixes. So moral ambition in someone who has a very, sort of, simplistic idea of the relationship between technology and progress, can actually go sideways very quickly, when someone is not looking at the complexity of the problem or they're not bringing in outside perspectives. So, so is part of the challenge here, then, just about how to get organisations to not be so internally focused, but to be more outward facing, more participatory. To be able, actually, to respond to the needs that people are communicating, as opposed to telling people how they're gonna solve their problems.**

Virginia Dignum: Yeah, I think so. And I think it's also a matter of metrics and I'm a computer scientist and computer scientists and technologists, we are obsessed by metrics, and what can be measured is what counts and what counts is what we optimise for. So, we are optimising for metrics, which is, kind of, the, the normal way and there, there are conference full of papers in which they optimise 00.1% over the previous paper, which has optimised again, 00.2% over the previous one and that, we go, forever, clearly, like that. And if was start-, and the metrics and what kind of things we optimise for are things like speeds, like accuracy, like, all, kind of, very mathematical type of quantities. If we really start-, are able to change the culture into, 'Okay, fine to have metrics, fine to optimise, but start optimising for human flourishing, optimise for participation, optimise for cost, carbon footprint cost, of the systems that you are doing.' We can really change the mindset. But while we keep just optimising for accuracy or for, for efficiency, we are not really, kind of, able to change the, the (inaudible 25.03).

**Shannon Vallor: Yeah, I think that's absolutely right.**

Albert King: I, I think, something you said there, Shannon, about, you know, like, 'an app to solve poverty', that, that, sort of, resonated quite a lot with me. And, and I think, in there, there's something about, as well, just, the way the industry, actually, talks to-, particularly to leaders in, in companies and, and public service. And there's a bit of a sense that, that the technology here is, in some way, magical and can unlock progress simply by-, and I think-, so, so, there's a bit of responsibility on technologists, on computer scientists, but on the industry, to just be a little bit more honest about what its technology can actually do. But at the same time, I think, and this is, again, something that, that, you know, we've invested quite a bit in, to try and develop greater literacy amongst our leaders about, about both the shortcomings and the opportunities around some of this technology. So, I think, it's a little bit of realism and, and taking a bit of the magic out of it is, is a little bit of what we need to do as well.

Virginia Dignum: Yeah, yeah. And actually, if we go back to the different guidelines of different countries, in China, often, those guidelines focus on, or include, humbleness and it's some, some type of property or value, but we in the west don't really look at, and probably, we need to take more, the humble, humbleness, and being humble about what can be done with technology or not. So, maybe it's also something to learn also in ethics from China.

**Shannon Vallor: Absolutely. Yeah, I think about the virtue of humility a lot in this context, when I think about the, kind of, over-promising, with respect to things like autonomous vehicles, especially in the United States, right? Where, I, I think a lot of people, you know, approved of Tesla's, sort of, 'Let's beta test on, on public roads,' approach, but there's an argument that, that the lack of humility there has actually impeded the development of sustainable, safe integration of autonomous vehicles on the roads. Because people are beginning to develop a, a very negative attitude, as a result of some of the, you know, perceptions that, that this isn't necessarily being done in a, you know, in a way that consults the public or brings the public interest suitably to the centre. So, I think we-, humility, again, is a thing that we might be able to see as a driver of long-term, sustainable innovation and progress, instead of something that holds us back.**

Virginia Dignum: Yes, definitely.

**Shannon Vallor: I wanna come back to the question of governance itself and I, I wanna, maybe, give you an opportunity to answer this question a couple of ways. One is, maybe, to-, again, going back to history, thinking about, are there particular lessons from the history of governance of technologies or, or the-, or other governance challenges that required creating these new kinds of alliances? Are there any lessons from the history of governance that you think can help us, when we think about governing AI or are we gonna have to develop, really, entirely new systems of governance and entirely new kinds of institutions of governance for AI, due to its distinctive capabilities? So, that's one question. I'm gonna, kind of, combine it with another. There's increasingly also, I think, some growing cynicism in the public about the legitimacy and efficacy of governments, in general, and the government's function. There's, you know, so much cynicism about the unchecked power of large corporate interests and authoritarian leaders that exploit the, the, the, the population's desires and fears. So, I'm also wondering if there's a, a worry hear about the-, a broader loss of public faith in the very notion of governance? So, so, what-, how do you-, how should we think about these really difficult, deep challenges with, with, with governing AI, when governance itself is such a fraught and contested and fragile notion right now?**

Virginia Dignum: Wow, those are-,

Albert King: Big, yeah.

Virginia Dignum: Big questions, yeah, yeah.

Albert King: Big questions, yeah.

**Shannon Vallor: I'm a philosopher, that's what we do.**

Virginia Dignum: I'm, I'm just an engineer. I build stuff. Let me see if I can have a go at that. So, I think that, indeed, there is this-, there are two things. One, indeed, that there is a, a lack of trust in governments in general, across the globe and, at the same time, there is definitely a lack of trust on the, the big corporations. And there is, increasingly, this feeling that those big corporations, probably a very correct feeling, those big corporations have more say over what our life looks like, than many of the governments. And the lack of democratic legitimacy of this type of corporations is definitely an issue of concern but, at the same time, I think there is a, kind of, a complacent, a laziness of ourselves to accept things as they are. Yes, those companies are big and they give us all this type of stuff and, yeah, we cannot do nothing else than sit and expect it and complain, maybe, about it. 'Yes, governments are maybe not the most effective or-, but, what can we do? Let's just sit and watch the next Netflix series.' And I think that there is also a, a very large need for a wake up call of all of us, as citizens, as, as people, to really take our, our own responsibility as well. It's, the responsibility is not just on those with power, but it's, it's only there because we give them that power and we give them that power because, often, often, it's laziness or, kind of, sitting in our place, in our own banks, and do nothing.

So, we really need, also, to realise that all of us are part of the game and all of us, also, have the responsibility to, to take a, a role in the-, in the-, in the process. We, we have, with respect to the large corporations, as consumers, we do have huge power over them. Without us as consumers, they have no way to go and as governments are the same. Without us as citizens, government have nothing to do. So, I really would like to appeal to all of us, ourselves, to take the role that we need to take.

**Shannon Vallor: Yeah, that's a really good point, I think, especially if we're talking about people who are currently in circumstances of relative comfort and security and, for that reason, you know, aren't necessarily motivated to institute political or governance changes, to make a more legitimate and sustainable system. So, I think, the responsibilities, right, are very different for those are currently disempowered by the system explicitly and have relatively few levers to pull on, compared with those of us who are relatively comfortable and still not pulling those levers.**

Virginia Dignum: Yes, yes, definitely. There, there are levels of responsibility all over but, actually, I was-, we, both, both, both of us have been recently in the north of Sweden in one of the arctic research centres and you had a lot of discussion about sustainability and AI with the, the sustainability researchers there. And, also, one of the comments of one of the top researchers there is that he goes all over the world talking about sustainability, about climate change, giving the numbers and the-, all, putting it all, and people really get very engaged during their talk and then, after that, what you go do? Go watch Netflix or you go do whatever else. So, it's, indeed, those, those of use in-, which, which can have more power or run in, in those situations in which we can mean more, definitely, have more responsibility. And, of course, AI or governance might be not a, a life threatening-, it's definitely, for us, not a life threatening thing but, also, for this in, in, in, in situations of, not problematic situations, it's not the first thing they think about. But, in a sense, I think that all of us, including those which have been disfavoured by the, the situations, also have something to say and we have a voice and all, all, all of them, all of us.

Albert King: Yeah, I was gonna say, I mean, I think your, your fundamental, your core point there about the agency we all have here is, is, is, is crucial and I think that, for me, the role for government there is, is probably two-fold. The, the first is around equipping citizens with the, the skills to be effective digital citizens. So, you know, to, to take advantage of that agency, to understand the choices and, and control that they have, and that-, and that's something, you know, that there's, there's a fundamental good that we should be expecting of our educational systems. And, you know, so that would be one big, big area for, for government action, I think, in this space. And I think the other is to try to insure that the ways in which we seek to regulate and, and govern these technologies, actually enables people to meaningfully engage with them. And I think one of the things-, you know, we talked about good regulation earlier, I think one of the things that I often feel we're at risk of doing is, actually, abdicating that responsibility and trying to push all of that, that, that, that, often, very complicated decision making about how, I don't know, information is used or-, put all of that accountability or, or responsibility, into the hands of the citizen. And, and actually, the role of government here should be to try to create the regulations that enables people to make meaningful decisions at the point where they need to meet-, make them. And I, I, I think it's a work in progress and certainly, you know, something that we're, we're trying to work on.

Virginia Dignum: Yeah, yeah.

**Shannon Vallor: That's great. So, I think now is a good opportunity to begin to take some, some questions. We're gonna lead off with some questions from students and post-doctoral researchers in the Centre for Technomoral Futures, who are supported by the Baillie Giffords studentships and our research programme in AI and data ethics. So, within the centre, we have eleven PhD researchers and two post-doctoral researchers who are working, all of them, across different disciplines, on concrete research challenges in AI and data ethics, and a few of them are coming here today with some specific questions for, for you and then we'll turn to general questions from, from the audience. So, those of you on Zoom, again, now is the time to put your questions in, if you have them, and we'll take them in a few moments. But first I want to introduce Joe Noteboom. So, Joe is a second year PhD student here in the Centre, in education and sociology, working on the ethical and social futures of data driven education. So, Joe, feel free to stand up and ask your question.**

Albert King: Thank you. Is that-,

Albert King: Yeah.

Joe Noteboom (audience): Okay. Thanks for the, the great talk so far. And you've, kind of, touched on what I wanted to ask about a bit already, but maybe we can dig a bit more into it. So, I'm thinking of quite a good deal of prominent criticism recently about the undue influence of private actors and, and platforms and infrastructures in AI ecosystems, in public life, in, in universities which is, I guess, my particular area of interest. And I'm thinking of things like Meredith Whittaker's recent piece on the, the steep cost of capture, which you may have seen. So, in this context, I guess, I'm wondering how we can ensure that AI alliances serve the public interest and, I guess, the, the common good?

M: Well, I'll maybe start with that and, and, so, so, you know, first of all, with a confession, because Scotland's AI strategy, one of the fundamental activities and, and commitments, is to build an AI alliance. So, that particular language, I just happened to pick up on but I guess that the reason for that is that we, we see that alliance as being about creating a space to bring together, you know, industry, innovators, academia, the public, the third sector, together. So, I-, so I suppose there, there's something about how we try to architect those alliances and ecosystems, such that they, they, they bring all of those interests together and they're not exclusive to, and, and controlled by, you know, particular interests or, or, or corporations. I think that would be to the detriment of everybody in this space. So, that, that's, I suppose, the, the, the context in which I'm thinking about it. The, the, the challenge, then, for us, I guess, is to get that meaningful public engagement and ongoing engagement and ongoing dialogue around the sorts of issues that, that, that we need to consider as part of that process.

So, there needs to be that investment in creating the spaces for that and we, we, you know-, again, we can-, we can think a little bit about what those, those might look like, but I think, coming back to-, I think you talked about public interest, in particular, and I-, and I think that is something I, I'd just like to-, coming, turning to that, that's the really tricky part because 'public interest', what I-, what I mean when I say that and what you mean when you say that and the next guy or gal, we're, we're all talking about a different thing. And so, unpacking that and getting to a common understanding, sits at the core of so much of this and, you know, that's why, you know, I, I, I think, you know, we, we really need-, you know, for example, we're thinking about how we use public sector data to support innovation and in the public interest, and unpacking that question is fundamental. You know, is the public interest economic? Is it-, is it social? Is it environmental? And so I, I think, a focus on, on that and, and those sorts of issues is, and questions, is, is, is really important to making this all work.

Virginia Dignum: Yeah, yeah, I fully agree and I think that the, the core issue is, first, to realise that in an alliance, everybody has different interest in the-, in the connection, so it's not like we are all agreeing on everything, but we see that there is an importance to bring our own interests or, either, the interests of each party together. It, it's better realised by working together. So, it's very important to have this discussion about, what do you mean by-, what do you want to put in the alliance? What do the other one wants to put in the alliance? And agree, both, that they-, the, the interests are different, but that there is a core common issue that is meaningful for all of the, the people in the alliance and I think that this discussion, understanding what are the motivations and the, the objectives for all the different parties in the-, in the alliance? And what are the, the different meaning and the way? The, the languages are full of them, into, kind of, translating from the languages of each of them, that I think are, are core to, to make alliances work. Otherwise, it's just some piece of paper.

**Shannon Vallor: Great. Our next question is from Ellen Wilkie, conveniently sitting right next to Joe. Ellen's a first year PhD in philosophy and politics, working on the ethics of data driven campaigning.**

Ellen Wilkie (audience): I'll stand as well. Thanks for a great talk so far. You've already started, sort of, touching on my question, but I think it would be interesting to dive a bit deeper. The UK having left the issue is quite a conspicuous issue, when talking about shared values and potential alliances between Scotland and the EU. How, if at all, does political relationships between the bodies, affect the possibility for uniting under their shared values? And how can effective alliances for shared action be built in more complex political circumstances?

Virginia Dignum: Yeah. Yes, of course, the-, it's the elephant in the room, maybe, and the idea that we-, but in, in another hand, the-, it's not the only platform in which UK and European Union are-, in, in the European Union part, we are now separate, but we are joined in many different other platforms. Both, both groups are part of GPAI, the Global Partnership on AI. Both are part of UNESCO, UNICEF, of United Nations and, at that level, I think the discussions are, probably, even more meaningful, in terms of, really, participatory engagement and the meaningful, meaningful contribution for the whole world and not only for this specific corner of the world. And I think that we should really work at that level and find each others at, at those levels, than keeping looking at the difference that brought us apart on a-, on a, a smaller area.

Albert King: Yeah, I agree. I mean, I guess, you know, the, the, the-, I'm gonna parrot the policy line here, but the Scottish government, Scottish ministers are very clear that we should remain aligned to the EU as far as we can. And I suppose the, the way I look at, or the way I think about this, is that this is actually a bit of an opportunity for Scotland to show distinctiveness in the context of, of UK approaches. Now, that doesn't mean that we can necessarily legislate and regulate in exactly the same way as Europe and align in that sense. But I do think that we can still align, you know, our policy frameworks or our thinking, but also contribute in some of the forums that, that Virginia mentioned, to some of the debate around these issues. And fundamentally, you know, if you like the hard regulation stuff, in the sense of, you know, the legislation and all that, kind of, brittle stuff. Actually, that's, that's the manifestation of the-, of the values and principles that we're trying to see flow through in, in, in our policies. So, if we can alight on shared values and shared principles then, actually, that, that's gonna drive much of what we, we do in reality anyway. So, I think, I, I, I, kind of, see it as a bit of an opportunity and, yeah, a potential differentiator with Scotland in the space.

**Shannon Vallor: Our, our next question comes from someone who intended to be here today but was, was prevented from doing so. He's a post-doctoral fellow in theology and ethics of AI here at the Centre and in the University's School of Divinity, Simeon Su (ph 44.08). So, let me ask his question on his behalf, since he wasn't able to join us. He wanted to know what you say to the idea that we might consider moving from the language of 'responsible AI' to 'accountable AI'. So, he says, 'The term "responsibility" seems functionally oriented, focused on the tasks that AI can complete. The term "accountability" includes responsibility but, also, what will happen after an action is taken, which can include undesired outcomes.' He also says, 'Recent studies on emotion, for example, empathy and AI accountability, show that the term "accountability" can provide a broader framework for AI research, for example, linking up with religious norms. Is there an argument for keeping the narrower ideal of responsibility?'**

Virginia Dignum: Interesting because I see it, exactly, either, yeah, but maybe because it's off my engineering background. I see responsibility like a more active concept than accountability. Accountability feels like, like I said before, it's a (inaudible 45.12). You do something and then you check whether or not and who is accountable for whatever happens and 'responsibility' is more active and it's more direct, at least in my interpretation. It's more direct to the development of the system and it's definitely, not like-, we said already in the beginning, it's not about the AI technology, not about AI systems, it is about this ecosystem of people, organisations, institutions and systems, of course, which, together, really, can take these active steps towards being responsible to what happens. So, I think that we, we definitely need accountability as well, but I, I, I see the, the 'responsibility' as being the broader concept, but maybe it's a matter, again, of interpretation.

Albert King: Yeah. No, that, that's a really interesting take on it, Virginia. I mean, certainly, that accountable piece has plenty of challenges wrapped up in it already, doesn't it? In terms of, well, what are the, the mechanisms for accountability and how do we understand accountability in the context of the systems that contribute and the thinking and the actors that contribute to the development of AI technologies and solutions. So, there's plenty to unpack in there. I mean, I suppose, I, kind of, think about that accountability piece, therefore, as also being, then, the means by which we have all those different actors in a system, to account for the way they've contributed to those things. So, there's a, sort of, set of issues around that. But I also recognise what you're saying Virginia, is that responsibility, then, almost gets into the space of-, irrespective, almost, of your accountabilities, then actually putting yourself in the place of, as you say, being responsible for them. And again, that's a really interesting and tricky concept in the concept-, context of a-, of a technology that often has lots of actors that contribute to both the development and then, operationalisation-, operationalisation of it? Yeah.

Virginia Dignum: Yeah.

Albert King: Anyway, delivery of it. So, yeah, these, these two-, so, I suppose I probably came into this conversation thinking that accountability was, was, was the gold standard and, and I'm probably coming away from it thinking that we need to think about both of these things in parallel.

Virginia Dignum: Actually, in my work, I often talk about art, the art of AI, and art stands for accountability, responsibility and transparency. So, I think that all of the issues are important but what you-, the responsibility, for me, it's, kind of, this feeling of doing the right thing irrespectively, whether or not someone is going to make you accountable for it. So, it's, kind of, more-,

**Shannon Vallor: A higher standard?**

Virginia Dignum: Yeah, maybe.

**Shannon Vallor: Yeah, great. So, our next question is from Claire Barale. Claire? Claire is a first year PhD student in the School of Informatics and the Edinburgh Law School, working on enabling ethical human AI reasoning in international law.**

Claire Barale: Thank you for the talk. So, my question is more about the links between the AI legal frameworks and the research, whether it's academic or company driven. So, do you think accountability and responsibility can be more important than scientific progress, when it comes to AI? And should research and more AI deployments slow down, in order for countries and organisation to get a strong legal AI framework or research guidelines?

Albert King: So-,

Virginia Dignum: I don't know. Irresponsible scientific progress doesn't really sound like something we want to achieve. But, yeah, of course, academic freedom and academic, scientific progress is definitely important and, as long as we keep at the broad, academic thinking and reasoning space, I think that, that we need to have the, the space to develop and to identify and to test different types of ideas. But once we start applying this scientific progress, scientific results into real life, then we cannot do that without responsibility and accountability.

Albert King: I mean, I guess, I, sort of, see-, if we think about these as two separate, sort of, endeavours to begin with. There's, you know, one that's being the, sort of, 'Let's, let's drive forward progress on the technology and help helm handle, sort of, moral and ethical issues that might sit around it.' And then the other extreme of, 'Well, we absolutely must solve all of those ethical and moral issues before we make progress on those other things.' And neither one of those is particularly satisfactory, is it? Because there's gonna be adverse outcomes, whichever way you go, whichever of those two, two approaches you, you know, you favour. Not least because, if you focus on the moral and ethical and unpacking all of that and solving all of those really tricky problems we've been discussing today before you make progress on the, the technology, other actors who don't favour your balance will, you know, will, will displace you and you'll be left. You'll lose agency and, and so, so the trick here isn't that-, to have these-, see things as a tension, it's to make sure that we advance them, on them, in parallel and they each inform each other. And I'm sorry to give you a second plug in the same conversation, Shannon, but that is why the Centre for Technomoral Futures is so important because then you work-,

**Shannon Vallor: I will take it.**

Albert King: Absolutely. Because these two things need to progress in, in parallel and, actually, inform each other as, as, as well.

Virginia Dignum: Yeah, exactly, yeah.

**Shannon Vallor: Right, absolutely. We've got some great questions from our online audience and then I'll alternate between taking questions from the online audience and taking other questions from the audience in person here. So, the first question from our online audience is from Mark Wong who asks-, well, first Mark says that he completely agrees with the need for meaningful public engagement and participation. 'Could the panellists tell us more about what initiatives and plans there are in Scotland?' Sorry, it just went away from me. So-, but, I, I do remember what the-, what the question-, oh, now it's in the answered column, sorry. 'Could the panellists tell us more about what initiatives, plans there are in Scotland at the moment on this front or in other countries, giving Scotland examples to aspire to?'**

Albert King: So, certainly some-, in, in Scotland, one of the things we've been doing is, for example, the CivTech challenge we ran, or we are running, around how we give people greater agency, trust and agency, over algorithmic decision making and with a-, with an initial focus on children, young people and their carers. And we actually went into that pretty open minded about how we might approach, sort of, solving or, I say 'solving', that's somewhat aspirational, but addressing that problem and making progress on that problem. And I think, where we've landed is trying to build-, I was talking earlier about infrastructures of public engagement, so trying to-, trying to build citizen communities that can help give us meaningful and, and engaged feedback on, you know, new, new technologies and new solutions in which we're-, which we want to develop around AI and to build that into-, you know, there was the comment made earlier about-, that Virginia you made, about how ethical and moral thinking needs to be built in from the ground up. So, to do exactly that. So, to use these citizen communities to provide us with feedback and engagement and challenge on the-, sort of, through the full lifecycle of development of technology. So, that, that was a good example and all of that enabled, naturally, by some wonderful technology and magic, but the fundamental core of it being about this-, these engaged citizen communities that are empowered and enabled to, to, to feed back to us through the process.

So, that, that's something that we are building, we have built and that we'll start to develop and, and deploy, as part of our approach, through Scotland's AI play book and, and Scotland's AI strategy. And, you know, to come to the second part of the question, that's also an example of where we've learnt from elsewhere because, you know, the, the people we're working with on that have brought lots of experience from, sort of, things like algorithmic registers in places like the Netherlands and so we're building on the shoulders of, of others and, and trying to contribute to that shared endeavour, if you like. So, yeah, just one example.

Virginia Dignum: It was about Scotland and I think we-, given the time, we can go on.

**Shannon Vallor: Sure. Yeah, we only have time for a few more questions but we do have the opportunity for a question from the audience. James?**

James Stewart (audience): Thank you very much.

Virginia Dignum: Hi.

James Stewart: I, I've got lots of questions that came up in that discussion. One I'd like to start saying, you hardly mentioned-, actually talked about what it is we're talking about. I'd like to hear some more, quite concrete examples, of this new computer technology in its particular places and the context-, (talking over each other 54.17).

**Shannon Vallor: James, just so the online audience can hear-,**

James Stewart: Oh, they couldn't hear it? Sorry.

**Shannon Vallor: Yeah, yeah.**

James Stewart: Yeah, so I wonder, could you-, could you give some more concrete examples of, of this use of computer tech-, new computer technologies, because we've talked in very vague terms about AI, but I've actually no idea, what is it we're talking about? So, one approach is to think, very much, in terms of, particularly, industrial sectors, industrial uses. Each of those, each of the sectors in our society has very different traditions of regulation, of accountability. How do these new technologies get, get taken into each one of those sectors and developed? Do we need any, sort of, overarching AI principles and regulations? Does that make any sense? Or should we really be focusing on how it's incorporated into medical devices or to automation or to automobiles, into workforce monitoring or any of the 100 other things? What's the point of having a general-, us talking about AI at all? And can you give some concrete examples of how accountability, responsibility works in particular sectors or use cases?

Virginia Dignum: Wow. The definition of AI, that's-, if, if you want. I, I, I do agree with you that it is very important to bring the responsibility and accountability down to the sectors and to the, the, the specific requirements, the specific characteristics of sectors like healthcare or automation or things like that, but in other hand, it is important to have a, a broader view about the field. And basically, when I talk about AI, and there are-, there are many, many definitions and no one really agrees on what AI is or not, but when I talk about it in this type of generic level, I mean, basically, any type of computer mediated decision making. So, whenever there are decision making issues in which, in one way or another, you do have some computational support or computational intervention within the decision making process. And because decision making processes are so widely spread and appear in so many different fields of, of industry or fields of society, I do believe that it's important to look at it from a common perspective and, therefore, think it's important to have some agreement, in terms of general principles for AI, whatever we mean by AI, but at a general level. Because it's really, decision making is all over the place.

Albert King: Yeah, I'd agree with that. I mean, I think, well, you'd expect me to, wouldn't you? But I think-, I do think of it as being about, sort of, providing a, sort of, horizontal framework for understanding how we use these technologies and that might be about things like, you know, what we were discussing earlier about how we engage citizens meaningfully in the development of these technologies, when that's the right thing to do. Or it might be about the, sort of, horizontal principles we apply to them, but that doesn't mean that the, you know, job done-, as you say, if think about, I don't know, you know, application of algorithmic decision making in the context of healthcare, it's clearly, particularly when, you know, it's a medical device, it needs to comply with software as a medical device regulation. And, and that applies across different sectors, so that, that sectoral regulation, the, sort of, vertical regulation, needs, needs to build on that, sort of, horizontal framework, if you like. And I, in a lot of ways, I don't think that's necessarily all that different to, I mean, I guess data protection is-, yeah, I mean, it's, kind of, related, I suppose, unfortunately, but data protection is another example of where that happens, you know. So, we have some horizontal regulation across the data protection domain and then there are particular, in the case of medicine, again, in-house care, there are particular approaches adopted and sets of medical ethics that sit around that, in that field, in healthcare.

So, yeah, I think these are necessary and there are lots of-, yeah, I can't remember the first part of your question but, you know, concrete examples, I mean, yeah, things like imaging diagnostics or, you know. If we think about that definition of AI, you know, it could be, sort of, as we were saying earlier, almost any, and as Virginia was saying, I suppose, almost any kind of algorithmic decision making where a data driven technology is used to drive decision making operationally or, yes, what have you.

**Shannon Vallor: So, we are unfortunately running close to the end of the hour and there are a lot of great questions on the Zoom that are gonna be stranded, but hopefully we can just, sort of, use them for, for future conversations because this particular one is, is never going to be finished. It's going to be an open-ended, lifelong challenge for, for us to meet in this century and beyond. To figure out how to innovate responsibly, in a way that's compatible with human flourishing, with planetary flourishing, with wisdom and in a way that brings the technical power of creation with the moral power of creation together, in a way that, that we want and that we can justify. So, I wanna thank you all for coming here today, both in person and those of you who joined us on Zoom. I wanna thank our fantastic and generous speakers, Virginia and Albert, and our PhD students and post-docs for their thoughtful questions. We hope that you'll all want to be part of future conversations in this series, so to sign up for our mailing list for more information about this series and other events at the Centre, please email us as ctf@ed.ac.uk or visit our website or follow us on Twitter at @CentreTMFutures. And, until next time, thanks again from all of us at the Centre and the Edinburgh Futures Institute. Have a wonderful day and thanks again.**

Virginia Dignum: Thank you.

Albert King: Thanks Shannon.

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