

Transcript



Title: Society 4.0 Symposium – Panel 3 – The Changing Nature of Work

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Recording 1: Welcome, you're listening to a recording of the society 4.0 symposium 2019, where we explore the development, maintenance, loss, and restoration of trust in the digital age. This is the panel discussion on the changing nature of work, which took place on the Swinburne University campus, introduced by Dr. Samuel Wilson of Swinburne University of Technology.

Samuel: To help us make sense of the changing nature of work. We are very privileged today to be joined by a panel of experts with a range of fastening perspectives on AI automation and the future of work. The discussion will be chaired by Professor Lawrie Zion. Lawrie is professor of journalism and director of the transforming human society research focus area at Latrobe University. And our four panelists are Mira Stammers, lecturer in law at Latrobe University. Dr. Sean Gallagher, Director of the Center for the New Workforce at Swinburne, Mr. David Yip, strategic engagement executive at DXC Technology. And Dr. Julian Koplin. He was a research fellow with the Biomedical Ethics research group at the University of Melbourne. So please join me now in welcoming our panel.

Lawrie: Thanks so much, Sam. Sean, if I could start with you in the point that Sam raised about how distrustful we are and fearful we are about robots taking over our jobs. Can you walk us through that a little bit about these well-founded that half of us think that our jobs are going to disappear in the next few years?

Sean: It's a lot to unpack in that one question. Let me do it in say, three parts. First of all, let's look at how technology is impacting on work itself. Second is maybe the historical perspective. And the third is I think that we need to reimagine work. So the first thing is that technology is impacting on work in three ways, one Sam mentioned earlier, but there are two other ways which we often don't think about. And so one of the things that's happening with work is it's increasingly being defined as the collection of tasks. And work is becoming atomized. And there's a whole heap of reasons for that for companies wanting to achieve scalable efficiency. And when you have routine predictable tasks that are consistent across an organization, that's a very effective and efficient way to connect and make sure you basically manage risk but as the whole industry to have scalable efficiency. What that means is that as we define them clearly, they can be codified, which means an algorithm can be written for which means that we're vulnerable to being displaced by technology, and as soon as the cost curve comes down, such that the technology can do that job, a human will be replaced from doing that task. That's kind of like the direct displacement that AI and automation will do with technology. But the second area is about how technology is reorganizing these tasks through digital platforms. Freelancing is the obvious example that you know of but here's a great example that I pulled up yesterday. Uber Eats serves a 1000 virtual restaurants, headline in the herald and the age or whatever it's called these days. One in 25 of the restaurants you go to one, Uber, it doesn't actually exist. It's a dark kitchen. So what's actually happening is the Uber thing, all of your technology, all your data is to your eating habits and so forth, and setting up kitchens to reorganize those tasks to another. Yes, a human is still making your pizza but not in the pizza parlor at the end of the street, while humans making it for the moment anyway, but reorganizing work to

lower-cost solutions. The third thing is that we could have complete industry disruption almost overnight. And so work itself will completely evaporate. I'm doing a little bit of work with the age care sector. 80% of their assets is in physical kit, right? Homes and beds and everything that goes with an 80% of the cost is in labor. The average stay of a person in an age care facility is 18 months. With that really wired with AI technologies that the apps that are going to keep people you know 'you need to go to the doctor today, not in six months' time. So if you're really healthier for a longer time and will actually need less time in health and age care services, their model is suggesting that they could reduce that stay say from 18 to 12 months. Overnight they've killed a third of the industry.

Lawrie: Except that there are more older people coming through.

Sean: That's true. That's very true but this is their words. An historical perspective, jobs were destroyed but work eventually emerges in ways that are unexpected. Who would have thought that getting rid of horses and cars would create motels and fast food industries and so forth? But the last thing is with respect to work itself, digital technologies is very good at doing what humans have done for 200 years, which is producing units of output. And we can't compete with this technology. I know I will have the opportunity to talk a little bit later on the program in the panel, but I think we need to flip from seeing humans as being producers of units of output to creators of value. What is the one thing that technology can't do? It can't see over the horizon. It can't understand what drives humans. It can't dream. So why thinking about work rather than going to work and coming, how am I going to do these tasks and producing these units and about putting all that kind of stuff, what unforeseen challenges that my organization is facing? What are problems or opportunities that no one has thought of, but do it in a collaborative way? Getting people from all across the organization. This isn't just the R&D department. This isn't just the sales. This is everyone from the front desk to the CEO, and talking about their insights, their hunches, what's going on in these fast-moving environments? How do we create a narrative around that and drive that forward? I think increasingly, that's what worked for humans.

Lawrie: Just bringing this back to the issue of trust and the way we see our futures that we're already living in, as Sam pointed out, of course, to what extent is there a generation gap when it comes to the way that people view the changes that are occurring?

Sean: There's a huge generation gap. And one of the yeses on two levels, one from numbers perspective. So we did a ... Sam mentioned that before we did a national survey of 1000 Australian workers and we particularly asked different generations, what do they see as the most relevant skills for the future of work. Older generations basically bifurcated it in terms of the functional expertise required to do the job or social competencies. So skills required to work with humans and understand humans. All the generations have a very mechanistic view of work. They see baby boomers, for example, they rate functional expertise at three times the value of social competencies, whereas younger generations and millennials rate them roughly equally. So certainly younger generations are showing that they have a much more interest on social competencies to work in the future of work. Now, of course, you can say that older generations haven't needed the social competencies, they've been working for 40 years and they've got the relationships and younger generation workers, they don't have any due to digital technologies and the digital age. I'm sure that's all true. But the point is, these different generations have different conceptions of what work is. And so when you're looking to transform a workforce, you're not just transforming, okay, this one size fits all, you potentially have five different generations that you need to consider in doing that.

Lawrie: David, I want to bring you in here. For those who are not familiar with the kind of work that you do at the coalface of workforce change, tell us about what DXC Technology does and what your role is there, and how you see the points that Sean's brought up with respect to how we perceive the kind of changes that are going on in work.

David: Yeah, thank you. So in a nutshell, DXC Technology we're a very large global technology services company. It came together from the automation of HP, CSC and a whole bunch of smaller technology companies. We do large transformational projects that fundamentally change

how client organization operates, be it for cost reduction purposes or new capability purposes of going to markets. We partner with our clients to really transform them in alignment to achieve the strategy so outsourcing their transformation projects and so on. And my role there really is to lead the largest engagements that strategically suits really driving these large scale digital transformation projects and issues. So you could say I'm an appointee in the arrow and causing these changes.

Lawrie: Can I pick up one thing you said there is, when you talk about outsourcing, which we tend to think of, of jobs shifting offshore, a lot of the time or just whole jobs disappearing, are you're talking about whole jobs going away from being done by humans, or is it that certain components of jobs, certain roles are actually shifting back the people who are in the workplace or just doing different things?

David: Well, actually, that's a really good point. The term outsourcing means in an industry outsourcing was, back until the 80s 90s and 2000s, it was a big industry and the way you outsource, we sort of call it ...

Lawrie: It's a good night for dope kitchen restaurant outsource.

David: Go mess for less or something like that but it's a really...

Sean: That's a UCS.

David: Taking over some like a departure like say an IT department or a finance department, and then offshoring it to a low-cost country like India, Vietnam, whatever. These days though, everyone does that, right? So there's no real advantage any more competitively or differentiation to really do that kind of offshoring type of work. And as a competitive business, you have to differentiate or what do you do? An Island sounds really, really well, because people don't really want to have their start-up offshore to a different location, they want to have the cost benefits and maybe such real benefits and maybe AI can do all that without offshoring your employees to another country. We can fundamentally reduce

the cost of delivering services using robotic process automation and other technologies without necessarily having to get you to do it for a lower cost than offshoring to a different country than my people. That preserves local employment and actually helps create new opportunities for the business to invest their people in higher-value tasks.

Lawrie: So people can actually get rid of some of the crap work that they have to do, and focus on interpersonal skill-related tasks and other things like that.

David: Absolutely. So for example, one of the things that is commonly outsourced to IT organizations is like payroll. I mean, it is very manual, it's very repetitive. I haven't met anyone who gets out of bed and saying, I'm looking forward to processing 50 payslips today, it's not a very mentally stimulating role.

Lawrie: So not necessarily missing the tasks themselves that are recurring?

David: Correct.

Lawrie: Whereas that person would stay in an HR department or finance department ...

David: And engage with employees. Really engage with them, really look at ways to better support fellow colleagues and deliver better service to all the things that people find a lot more fulfilling and much higher value than sitting there punching out payslips.

Lawrie: Yeah. I want to come back to some of those things and how well people are actually visualizing what is actually happening as they start to enter the workforce but Mira I want to talk a bit about what's happening in law because you've worked at the cutting edge of the legal profession and you're researching it as well, what's changing due to technology at the moment that, how does law look different now from say 10 years ago as a profession, and in the kinds of things that are being automated for the people that use legal services?

Mira: I think the main thing in law is that technology has been around for a long time, right? Lawyers even often think its technology that's being disruptive in the legal profession. But technology's been around for a long time. We're very used to, even using AI for large scale discovery and

review of documentation. What's happening now in law is really there's a shift to a different business model. So it's one of the last professions to be disrupted. And people are realizing there's really big markets out there that they can capture that the incumbent kind of old school law firms doesn't want to touch because not profitable to go there. So with the use of new business models and technology, they're really taking advantage of that space. So it's really interesting access to justice from that perspective. And it's really interesting because, like you were saying the discrete tasks, the really boring work that the junior lawyers don't want to do, is being taken over by AI. So, yeah, so last year in Cambridge, they created an AI platform called 'k scratch'. And they said, okay, we're going to test 100 of London's top lawyers against that platform. And said, alright we've got 775 already decided claims that were heard and set to befall. We know the output of that decision, we will put all the factual information into the system and will give all the lawyers the factual information as well. And we'll see what the accuracy rate is of the platform and the lawyers. Now, the lawyers got for that one 62.3% accuracy. The platform got 86.6% accuracy. Now the importance of something like that for the legal profession, is that if you can go to a firm if they utilize that technology as a competitive advantage, you can go to a firm and you can say, here are the facts in my case, can you run through the system and find out whether it's worthwhile pursuing, and what are my chances of winning? Now, that's really interesting to me. And I think lawyers often bury their head when it comes to AI because it goes against their cost model, their pricing methodology. But I think there's lots of what it can be used, and it's starting to be acceptable.

Lawrie: So that provides a better entry-level, someone might say, well, I've got \$1,000 to spend on legal advice, and get a lot more bang for their buck than they used to get. And you've also had a look at a company called Alira, which is also made a lot of changes to the way that people are accessing the justice system if you like. Can you tell us a bit about that and how that is actually a function of improved technology?

Mira: So Alira is one of my favorite pieces of AI. It sits on the mahogany desks of disinterested computers and sits in a shocking territory. And basically, millions of documents related to tax law was input into this system so that you can go and use natural language that uses natural language processing so that you can just type in a question about tax and get the answer free of charge. What was great about this is the millennial lawyer that generated the system said, "I want to put it to a test and I want to test my girlfriend," who I think she's a physio or something and that projects knowledge. And he said, "I will train you for 30 minutes and then I'm going to get your cheapest tax law exam," and he said here you go and she got 75%. So again, amazing patience for access to justice because ...

Lawrie: Because now she runs business, she'll do your taxes, attached it.

Mira: But that system will stand to advice in domestic violence because survivors and lots of other people that can't either afford to access lawyers or maybe don't even know it as a legal issue.

Lawrie: But there's still a curatorial process involved, you still need a lawyer to evaluate what the machine is come up with. Is that it or?

Mira: I think that's the issue is where on the risk profile to see it to ensure that maximum amount of people get access justice, but unharmed by a lack of regulation.

Lawrie: Now that we've looked at another program, which is seemed to be problematic in the way that it's related to predictions of recidivism in the state of platform called campus. Tell us about that and what the concerns are, that raises on terms of how justice works when you automate certain tasks.

Mira: So this is what I don't like, the idea of campus. So anyway ...

Lawrie: Not the failed airline of course.

Mira: But basically have the offender undefended answer number of questions, and then that pops out of school, which predicts your risk of refunding. It's used in parole hearings. It's used in sentencing. And it helps to inform the judge of the length of sentence and when they

should be released. The problem is that it was created by a private company. It is protected. So in terms of due process, if you want to challenge that decision, you can't and in fact, the Supreme Court has ruled you can't in the US. That you don't have the right to question the algorithm, to look at it from a standard form, to see whether that is actually bias. So there's real issues in relation to the rule of law.

Lawrie: And people really don't know what's in the algorithm. It becomes sort of herbs and spices and method that we people just don't actually really understand?

Sean: In some respects, so it actually is an extension of the sort of the law culture in the United States. You know, polygraphs, for instance, are highly, they're valued and they're seen as being trustworthy and true. So in some respects, we may not like this AI, but maybe we need to see this AI through the lens of an American who also understands that they've actually been using technology in this kind of way, not AI necessarily. And this may just be an extension of it.

Mira: The difficulties of polygraphs we may not be able to like it. So you think well, if when we're sentencing people, what is our responses as African Americans if we should sit in today's Congress. What if then we're sentencing people to terms twice the length of the sentence that they should be sentenced to? So how then does that affect the jail system, natural justice moving forward and I agree you have to look at it through a different lens but I personally don't think it's helpful.

Lawrie: And that concept of algorithmic bias seems to permeate a lot of areas that relate to employment, including when people go for jobs. When you've got a machine rating job applications, certain biases reinforced that there's a whole range of issues that we will return to on that. John, I want to bring you in here we heard a bit about natural language processing and what it can do. But I noticed recently that you had an article in Melbourne University magazine pursuit, where you've been playing around with a program that actually can generate text that looks remarkably like real articles. That called for your demise as a

philosopher. So I want to hear about what happened to you personally and what you're thinking about this on an ethical level.

John: Okay. So, I guess in the last few months, there have been some advances in natural language processing and the ability to use AI to generate text. Urban AI released one model the GPT to model the elements, the chief artificial intelligence to introduce another. And as a philosopher, the way I imagined it working is that the systems have been fed text from a few million web pages, something magical happens and it learns how to speak like a human. And you can write and prompts them in various ways or fine-tune them on new data to make them produce certain kinds of text and ask them to write things for you. And so when I asked one of these systems to write a piece called 'why Julian Copland, she resigned as a philosopher' I got, when it comes to exercising his constitutional role as a philosopher, Julian Copeland's come up short. Put plainly, the academics has been out of his depth ever since becoming ACC chairman of the National Association of philosophers in 2015. Since he's moved to Canberra, a poster of chairman now hangs in his office alongside another of Winston Churchill on the front window sill. The former, which is probably the more controversial is an emblem of his organization stands against censorship. Under those circumstances, Koplin said last week, "should scholars be told whom to speak to and even more controversially, whether they can speak at all?" I mean, that personally, I am happy to be attributed the view that I think that philosopher should get to choose who I want to speak to. But the interesting thing is that this kind of style of writing has a lot of the trappings of trustworthiness and there's been some studies recently that have asked people to evaluate how trustworthy they find AI-generated new stories about things that didn't happen compared to real nice stories about things that happened in the AI-generated ones for the majority of the audience and quite close to the real.

Lawrie: So just to be clear about what you just read out there, is there a factual basis to what was put together?

John: No, no.

Lawrie: So now that's true. You're not a philosopher?

John: Well, I am a philosopher, but I saw it that I should resign as a philosopher.

Lawrie: Do you live in Canberra?

John: I do not.

Lawrie: Okay. So how would it be coming up with that kind of material?

John: So I imagine it has enough ... Well, actually, I'm not sure I can give a good answer. So I have sort of vague suspicions, I encountered similar kind of narratives before that maybe it worked out cause I'm Australian, because I've published in the places and sort of distributed applications, but it's so natural ...

Lawrie: So there's a certain amount of extrapolation, and yet it does sound like real sentences. And this seems to be quite common. I know the economist put up. I've got a one of those automatic text machines or computers to generate an article on climate change. And while it seemed quite badly written, the kind of overall structure I mean, I think we're in a room of academics where some of us have seen essays from students that are particularly good. So there are a whole range of that, there's something especially the way a lot of us scheme articles rather than read them closely. So what are the ethical dangers with having these kinds of machines on the loose, which sounds like fun?

John: Yeah, well, they offer, I've been using them, some fun things. I've got a website where I basically, like approximate humans of New York using AI-generated text and AI-generated 3D graphs in there and there are no humans involved in part of this process, except for me, sort of putting these outlandish stories of things that didn't happen to people that don't exist, but I guess the technology... There are all kinds of really worthwhile things that could be useful. You could use it to help summarize long passages of text without anybody having to read them. You could use them for AI writing assistance. There's a group that's using them to help draft patent claims just by having trained it on existing claims. But the same kind of

tool could be used by actors that are interested in spreading this information. And now suddenly, you can generate tens of thousands of unique tweets without anybody having to sit down and write each one. Or suddenly you can generate a whole heap of fake news without anybody needing to write them without the need of any kind of trial.

Lawrie: So you got the whole thing with trolls and bots and fake audiences and deep fake images, which I've seen. I mean, you can tell the difference if you're trying to look at which Donald Trump, what Donald Trump really looks like. There's only just sometimes, so is this just an exaggeration of previous trends culminating something you're entering a completely new kind of era? Do you think in the whole issue around being able to determine what's real and what's not? And how can we control it?

John: Yeah, so the question of control most of the attention in the AI community at the moment, my sense of it, and the machine learning community is looking at release practices. So if we develop something dangerous, what do we released publicly and urban AI who developed one of these models still haven't released the full model because they're worried about misuse. But then to masters students, I think at Brown University recreated it sort of casually as a side project and released it onto the internet. So that didn't quite work. I think it's worth thinking birth earlier in the pipeline of this kind of pipeline by which these things might be realized later. So earlier on, we might think about well, in the life sciences ethics review for dangerous research is very common. You can be proposing to do something the might yield the new way to create bioterror weapons that passes through an ethics committee and people will try to weigh the costs and the benefits of the research. As far as I know, nothing like that exists for sort of as far as I know I may not be across all the options, but you can imagine setting up something similar for dangerous kinds of AI research. Further downstream, the amount of harm you can do using machine-generated fake news and this information is it's going to track the amount of harm that you can do using general forms of disinformation. So the more media literate gets, the better able students are and adults are

to evaluate news that they read, the less of a threat this is going to pose or the more we can reduce the risks of AI-generated fake news.

Lawrie: Yeah. So after what we know now about the 2016 election in the States and the way that information was manipulated, there, are you optimistic or pessimistic that we're going to have a cleaner information US election next year? Everyone could have a go at this one.

John: I read to you in science about all of the strategies that we are employing to try to deal with fake news. And for I think just about all of them, it said, we don't really know yet whether or not they're working. So, I guess it's very optional question.

Lawrie: So I want to switch from looking at some of these issues that have come out now to get back into how well people are being prepared to deal with the new kind of realities of the partnership between humans and machines and the increasing role automation is playing and maybe some of these trends have been going on for quite a while, and it's certainly qualitatively new. But, David, what do you think about the way people are being trained to understand changes in work and the way that their futures might connect to that?

David: Well, actually, one of the things, maybe just liquid linking to the fake news part is that to distinguish between what's real and what's not, I think at the end of day requires people experienced people to look at it and experienced people to really start to tell the differences and manage it and then disseminate as trusted sources. And we're seeing that reflected in, I guess, opportunities in the job market in terms of growth now, and the second-highest, role or category, a role that's forecasted to really take off the next couple of years is social marketing manager. Not necessarily from a marketing perspective. But if you're someone who doesn't understand social media and is better able to use that curated and help organize your businesses, and obviously to use it, and following on from that there's like a 12.3 million new roles that will be created in the next year.

Lawrie: In Australia?

David: In Asia Pacific. Coming from the LinkedIn report that we just published a 'future of work' And, you know, the top three jobs in Australia is Social Media Marketing Manager, continued immigration and there's another one coming on now. But it really is to linking back into all these things are happening with AI, how can people actually curate a lot of these generated digital assets and use it either to filter it out or to use it in what they do really use as a tool to help us do our job better?

Lawrie: Are our schools and universities doing a good job?

David: At the moment, absolutely yes. In general, because there is a lot of emphasis on recognizing that there needs to be this fundamental shift and change to keep up with industry demands. So, from that point of view, recognizing that there is this need to change, yes. So, because of that, people start to get to do things right, invest in new initiatives and get people to think differently and so on. So schools in the US definitely may have a role in that because there is more to be done, a lot more. Yes, absolutely, as well.

Lawrie: Sean, what's your view on how the education system is preparing people for the way that work is changing and their role in it?

Sean: What distinguishes this industrial revolution to previous ones is what I think is the fundamental dynamics that are driving the change and will be as true in 10 years' time as they are today. So it's not focused on technology so much, but underneath that, and I call it the Pie of the digital age, the pace is unprecedented interdependency, we are becoming one with the network identity is becoming more with everyone else. And the third is we're always evolving, so pace, interdependency and evolving and where we're failing, I think as education institutions, let me use the analogy is like learning a language when you enroll in a class and you know, the community college or school or whatever and you want to learn French or whatever language you choose to have an interest in, you get some familiarity and understanding in the classroom but it's not until you immerse yourself in that foreign culture, that you really truly understand that language not just explicitly but also implicitly,

the tacit insights that you get. With respect to the future of work, work is where the disruption is occurring. It's not happening in the classroom. The pace, interdependency and always evolving is happening in the workplace. How do we take education increasingly off-campus and into workplaces where that disruption is occurring so that they may have some base fundamentals in the classroom, but to truly become fluent and understand the dynamics of the digital age, that's where we need to increasingly integrate learning.

Lawrie: Are you talking about ... sorry if I make this sensibility, are you talking about learning a new skill like how to use a new version of PowerPoint so that you can do great presentations, or about changing ways of thinking for people who are already in the workplace about their relationship to the whole notion of work?

Sean: I'll give you five different domains in which I sort of see digital environments are carrying. One, the technologies themselves. So, we've got a, for example, I think one of the great things that swimmers doing in vocational education, there's a construction certificate for I think, at Croydon, and the students are learning how to use drones to fly over buildings to do 3D scans so that they can then import that into a computer so that they are then able to, rather than climbing up and doing various things in a dangerous way. They're actually learning how to use that digital technology to transform the way that they do construction. The second is digital platforms and so using freelancing and so forth. David, I actually you mentioned before about offshoring, we've got all the value that we can out of that. I kind of disagree in the sense that work is in a daily sense, we're still focused on production. I spoke to a student I won't mention the company that they're with here in Australia, they're doing design work in their in-house and in 90% of the students' time is spent on doing pretty menial design work. Why wouldn't you actually start to use freelancers in other countries that can do that design work at a very much a fraction of the cost, but the work that person is able to do much more highly creative work, but it's about a most so using freelancing is a digital technology and understanding how these digital platforms work is a way in which we begin to come fluent in the digital age. Digital ecosystems, for example,

the Amazon, JP Morgan, Berkshire Hathaway health platform, maybe we should be getting students to-do apps to immerse themselves into that platform because that potentially could completely disrupt the healthcare system. So getting that first-hand experience. The other two agile environments, which are responses to digital technologies and the other is co-working spaces. Imagine if we had a class of 100 students, and we split them up into 10 tribes of scrums and each one had to deliver a particular outcome, but all 10 had to combine for greater collective output for the entire course. We are providing them that agile experience and co-working space ...

Lawrie: Can I pick up a bit with you on that because you also say I think in that report in order for people succeeding in work organizations must also empower their workers. So how do you do that if the work unit if you like or the means of production is shifting and becoming more fluid? And referring back to what Sam said in his introduction, if it's less of a traditional, to use the media analogy, it's less the newspaper newsroom with 300 people working in it, and more a group of people who might be freelancing in either solo or in teams across a whole range of different platforms. But how do you empower workers in a framework like that?

Sean: I'm a short term pessimist, but a long term optimist, it is going to get a lot worse before it gets better. IBM has just put out a study which I only came across yesterday, which is astonishing. Three years ago, it took three days, three to four days a year to train a worker to bridge the capability gap in terms of the skills based on the advancement of technology. Today, it's the 36 days in to bridge that capability gap. So in the space of three to four years, we've had a tenfold increase in the time required to train to keep a worker current in their job. So at some point, workers are going to have to begin to see, this is not working for us, we cannot continue to upskill and reskill our work as fast enough in order for them to remain current.

Lawrie: Is that true also for law? What do you think Mira? Is it possible to compare what's happening in the way that Sean's outlined it to the legal profession?

Mira: It's a little bit different. I think the agility and the vibration point in terms of tech

Knowledge, it'll be great, I'd love to have a tech class so we can create something like that. But in terms of practice, I think it's kind of working in the reverse. So we are seeing disruption in law firms. And we're also seeing new practice groups the more. So AI practice group lawyers really learn about AI in support of their clients. So those lawyers go back and do short courses in those areas to understand how to move forward. So it's more integrated with law firms, I think. It's not cheap at the same time. But we do try to integrate a lot of that business kind of disruption knowledge around to undergraduate and postgraduate students so that when they leave, they know there's an option other than just being a traditional lawyer in a big corporate law firm in the city. They can do other things.

Lawrie: And people are using them with a brace for broader range of things.

Julian: Can I just maybe add to the theme of Sean's short comment and the result. I think we were talking about education and workers. There are two separate things that we do, we go to university, you get a degree and then we're going to workforce. And but I think moving forward increasing so now is that work and learning are two intertwined activities, you can't really separate them. And in future in the not too distant future, it's going to become even more intertwined. And we shouldn't really think about learning as something separate, it is part of work. It's part of evolving.

Lawrie: Is that part of a new thing? Is that a new thing?

Julian: It's not a new thing, but the way it's being integrated now is new. The way it's actually affecting these two parts of our society is new. The way it's integrating it hasn't been the way it's been done now, in the sense that educational institutions are being disrupted. There was an article written just last week about the lines blurring between representations universities, right training is this blurred line of middle? It's not new but the extent to which it's happening now is definitely so and can education and industry collaborate a lot more and a lot deeper? Absolutely. And we need to do so, we need to be collaborating a lot better. Right now I don't think we are anywhere near as well as we should but we're still very

separate, it is still very much vocalist to learn something and then when you go back into the workforce, you kind of have to relearn and again, in an applied way, and that has to change.

Lawrie: Even with things like work-integrated learning becoming passwords, in experiential learning.

Julian: There's a lot of change, and there's still a lot of new things to be created. So one of the big things about AI, and I think Sean mentioned saying before about the testing, you have to learn a lot into AI, you're not really teaching about using the AI tools, because that's not very valuable. What you really need to teach the employees is using their skills, transferable skills, and finding how they can actually solve other business problems. Because what they have been doing might be automated away, right? And so using those transferable skills, how can they apply that incomplete different areas of business? And that needs to be created the whole curriculum, how do you teach them? How do you, what do you teach them has to be kind of created as you go because like building the airplane as you're flying it, it has to be that at that pace, and to that extent.

Lawrie: What about the education gap state, say educating people about things like governance and what society means at a time of constant change and how rules get determined and what concepts like justice mean when a lot of decision making is being assigned to machines, algorithms, and programs?

Julian: But that's another one of these things where, and I'm dealing with it, all the time, in fact, because how do you govern your major transformation? Well, a lot of times we're venturing into new capabilities at the same time as our clients applying AI in these fields, how do you govern the change process and that's one of these things where we kind of building the airplane as we go, right? And we need to bring on board an education partner with our clients and collaborate in this three-way relationship where we're helping them transform and change, whilst an education partner helps reskill their workforce for deployment.

Lawrie: But what about when the socially consequences of an act that you're building, that there are questions that we raised about who benefit and who doesn't benefit? We know there's drug trials in the medical sphere, how much real testing of the kind of ethical boundaries of new programs and how does that actually get determined in regard with the systems in place?

Julian: Fortunately, I guess, certainly, in the work that I do at a large enterprise-scale, a lot of things that we're automating, not sort of really bleeding edge type of things. Because it's not such a large scale, we're actually just making process a lot more efficient, and that kind of stuff. So that's well known, I guess the things that we're automating and making more efficient is typically quite well known. And we're just using technology literally as a tool to make them more efficient. But some of these more cutting edge apps, yes, I can see, you have to be very careful about it, maybe do it in a controlled pilot way in a small scale and see the effects and iterate and be agile and sort of new releases pushed out incrementally and see what happens. And then if, of course, correct along the way. But so large scale to do transformation is still very much taking the known aspects and making it more efficient.

Lawrie: So anyone else want to pick up the discussion?

Julian: I mean, I guess as an ethicist, I think ethics training is great. I think it's maybe even more valuable than getting ethicists into comments or think about these technologies is having the people that are developing them engaging thinking through the ethical implications themselves as people were the best place to understand how they would work or what they would do. And I mean, I think ethics sort of by definition is the study of things that matter.

Samuel: Toby while shooting, very famous computer scientist at USW, he gave a talk for a little tribe last year where he said, "we need more philosophers now than computer programmers", he saw a greater need for what philosophers do in this kind of accelerated change that we're seeing in so many areas of life.

Julian: I read I can't remember the author. It was very famous, it's kind of embarrassing, but a book called 'stand out of our light' which was called the nine dots prize and was about the effect that

social media and smart devices are having on our lives. And the author made the points that if you were to try to propose some kind of try to get something like the introduction of smartphones into the world, past an ethics committee instead of an ethics committee looking at medical research, something that would have these really, really far fetched implications on the way that people relate to each other, that you'd be very, very unlikely to be able to do that when you're adjusting something on such a large scale and the consequences are so hard to anticipate, be very, very hard to get ethics approval clearance. And so we have in some domains is very, very high standards and other domains that are much lower. And I have forgotten what the question you asked me but I ...

Lawrie: But it was a wonderful answer and really about, do we need, what do we need more ethical engagement and all that see in the classroom, the kids being taught enough about how to look at issues like justice and controlling and consequences as they relate to what machines can do.

Julian: Again, as an ethicist, I'm biased, but I think that sounds good. I know that modern data.

John: There's also statistical ethics and I think it's important not to, you know, we're talking about micro ethics in some respect of what you meant, and everyone I think, should have ethics training. And ethics is a muscle that you should always exercise. But there's a is actually a swimmer, an alarm, went on to do his Ph.D. at Melbourne is now at MIT and he does a lot of statistical ethics and the ethical dilemma if you're in an open autonomous vehicle and you're about to take out five or six people, sacrifice the passengers for the sake of a massive life. Globally, he said like 20 million people do this ethics thing and it depends on which region of the planet as to what is ethical. And it doesn't make it necessarily right or wrong in some respects, but the fact that Asians might have a different view to Westerners. It's just something that we need to be aware of.

David: Yeah, I'm just kind of a nerd. Of course, I don't want to sound about that. So it turns out one of the statistically significant findings I think this was across cultures, but I'm not certain of it was

that people thought or that some people like a majority of people thought that it would be better to get fat person and skinny person and I nor have nor ethical theory that attributes less moral status to fat people than skinny people. So I think even when we have this kind of research, we can draw in about what people's opinions are, we can't necessarily just sort of stop the ethical reflection there are not solely source our rules from these kinds of large scale. But if you go to, like if you go to China, for example, I mean, as you know, there's a lot of social engineering that's going on there and facial recognition, making sure people, if you ask the average Chinese person, they're happy to have to be encouraged to be good citizens, because they're going to get cheaper ones, they're going to get better access to, you know, services and so forth. And is that right or wrong? It depends on the perspective of which you're seeing it.

Lawrie: I guess my question is more about how these conversations is being handled or sufficiently not whether we all come up to the same conclusion in terms of answers but yeah you were right.

Mira: But what I want to say is this is what I think in terms of laws, laws are a reflection of society and changed whichever country you're in. And that's I think we need to be cognizant of that. In terms of your earlier point about the introduction, adaptation technology, I think for lawyers and other areas, if you go back to your integral juicy comment, go back to your ethical obligations, then whether or not you're utilizing technology to the best of your ability to increase access to justice, or whether or not you're utilizing technology to block due process. The answers come back, the answers are fairly clear when you reflect on them on those lines.

And I think that something like the FDA in the states for any kind of AI that bring diversity to any other, medical release that needs to be factored into process also.

Lawrie: And we know people who are competent to have the conversations to evaluate what's going on. And that becomes who we elect into power and becomes what kind of laws get drafted up as

well. I just want to open up the room. So if, if you do have a question or comment, maybe tell us who you are and where you're from, unless you're a robot.

Ann: I am Ann Smith and an organizational consultant, as I said earlier, I wanted to pick on something that you mentioned, David. It was in relation to governing the change processes in the kind of environments you're talking about. And it kind of triggered in me, a thought that might sound a bit weird. And that is there is actually a lot to be learned about governing change processes, believe it or not in the not for profit sector, the community sector. And particularly from a co-design and a collaboration perspective. So listen, I, for example, do a lot of work in that area. And we work with our clients in a really genuine co-design perspective around way of working in a collaborative way working with the community clients and key stakeholders all the time. And those organizations have developed I think, some really simple non-bureaucratic or relatively non-bureaucratic mechanisms for governing in a really agile sort of why if you like. So the larger point is, what is it that stops us learning from other sectors and are we about doing things in particular wise?

David: We don't because it's usually a couple of reasons that I think from our observations and experiences that we're comfortable inside our sectored industry, and we know everyone inside our industry so it so that we tend to just feed off that. To branch out into a different sector, different industry is one of those things where you have to actively reach out whereas it may not be as convenient or not be as natural. So it's not that we don't want to says, it's just that it's more convenient to do it within the sectors and industries. So that's what I think. But if you give you the opportunity to partner across industries across sectors, I don't think there is any pushback to that.

Lawrie: Did you want to say something to that as well Mira?

Mira: That just made me think about looking at the industry's a couple of weeks ago, I was in LA at a conference and I was doing a workshop to about 20 very old school, smaller law firms that very traditional, no kind of disruption happens in their mind. And so I started talking about

their business model and how they might be able to iterate their business model to protect against vulnerabilities and they were hidden and not interested and it was only when I started looking at ... because we look back at factual data, right? And we had to think whether it's relevant or not, but then to look forward, we have to look at theory. So I kind of brought theory in a practical way to them and talked about disruption theory through the lens of what's happened to lots of corporates. And one by one, the hits, looking at paying more attention, "oh, how do I change my business model, I don't want to be a blockbuster, or Kodak," or whatever it might be. And it was such a simple example. But a lot of them said they really only turned them on when I realized it could happen to them. They're not so insular protected.

Lawrie: Which is an analogy you could take into media, especially local media. We're actually of all the, of all the cuts that we've seen across the media. It's regional newspapers that have suffered the most in terms of job cuts and a lot of them haven't been able to, to adjust to what's happened and to adjust their business model in a way that this is stable. We had a question here?

Julian: Yeah, thanks. I'm Julian Koplin, you forgot already? One thing was the natural language generator was quite scary from an academic thinking. How students might use this to create their essays and our ability to detect that. So that was one thing and I think it's related to the second point, which is that it almost comes across as like quite easy to talk about repurposing roles and changing from being producers of outputs to adding value and things. But then I think about what if this technology comes into marker essays for us and now 20 to 30% of our workload is now evaporated. How easy is it for us to repurpose versus how easy is it for the university to downsize the department as we have already seen happening? So I wonder you know, whether it's a little bit of lip service to say, the future this will be that will find different ways to add value. And then we give two examples. There's a maintenance crew on the M7 motorway in Sydney and if you don't know the motorway M7, there's a huge interchange and they have a lot of landfills and they created this huge pyramid. And this

maintenance crew said there's no way we can do that in right on nose. And they explored digital technology moving and short, cut a long story short, they figured it out. Not only are they able to do this in a safe way using autonomous ways, they've saved the company money because they don't have to close down lanes to mow these verges. They also, traffic flow hasn't been impeded. But they've also realized that they can mow parts of the landscape that they never thought were mobile. They can mow and swamps now and various other things. These guys aren't PhDs with all respect, they saw an opportunity to use digital technologies to create value for their company. And, but one of the ways in which we're going to, I think at some point change is that there's an atomized, markets becoming increasingly fragmented. You know, give the old anecdote you know, Henry Ford said you could buy any car color you want, as long as it is black. Increasingly, everything is becoming individualized. So potentially, I'm just making this up, but maybe as lecturers and academics, instead of teaching 100, a class of 100, you're teaching 100 individual students directly. So all of the technologies doing all of your hygiene and marketing and stuff like that. But you're giving individual services to each one of those students in a way that reflects their learning ability, their aspirations, their ambitions. That's what I think and working with your colleagues to think about this, how do we create value using these technologies?

David: So this is a question I want to cover is, Klop in something I want you to answer. I wanted to say I think that's universal. Let's say something is developed, I tested it always get the exact same mark that I would give. And then I outsource my decision making to this program. I've got less work to do great. And then the student comes to me and says, Well, I've received this mock. But it seems kind of disrespectful that you didn't look at it. The normal human guy spent this effort to put together this decent book and not nobody ever looked at it. Or we think about something like an early use of AI in determining sentencing or in delivering verdicts or something like that. Again, let's imagine the functionality is great, functionalities as good as a human in that role, but it's simply a kind of button pressing and always kind of

hacks back to the procedural justice discussion earlier. Would that still feel like justice if there wasn't human involvement in it? I raise this as a question because it feels to me like there's something wrong but I can't articulate what it is and I could just be completely misguided.

Lawrie: I'm waiting for the fight that you get when a fake student, an automated essay gets handed in, automatically marked and there's a dispute about the grading and suddenly you've gotten two robots and he finally anyway, more questions?

Ann: I just wanted to ask Mira more about that algorithm that decides on sentencing. I can't get that off my mind. I'm not an expert in this area, but I'm in the marketplace on this topic and the conclusion is not enough if we can't predict where someone is going to be given or not. So how can a program be given that importance in determining sentences?

Mira: I agree.

Ann: I wondered why that's allowed.

Mira: I don't know.

Lawrie: It is like automatic writing machines, they also determine sentences. Sorry.

Mira: I agree, there's major issues around that.

Ann: Couldn't a defense lawyer produce a literature review of all the available evidence?

Mira: Sure but then, I mean, I don't know the industry environment but what are they required to look at that taken into account when sentencing but maybe they're quantitative that score and maybe they're white, they're required to utility is high and you're able to set the order.

Lawrie: A question here?

Jane: My name is Jane Famar. I am head of the Social Innovation Research Institute. So yesterday afternoon, we spent quite a lot of time talking about the rise of mental health problems in the

workplace and a couple of examples that I can relate to myself or I think so I think this all sounds great. But ultimately, it might be the case that the machines take care of everything that's doable, and actually the only things that get left for the humans to do other really problematical awful, horrible, complicated things. And that's kind of what happens as a manager is Tim sitting in front of me, I think it was fun talking about that. That's kind of what happens as a manager these days as well and you get it's very, very stressful to just constantly be dealing with it difficult and the routines taken away. Sometimes we do need the route easy to solve, interspersed with the hideously difficult to deal with, and when we say, "Oh, it's going to be great to have more time to talk to other humans." We all know that's not always wonderful. And I guess the other the second part of I think, has to do with power and powerlessness. And I think in big corporations and experience that external consultants come in and solve the problem for the university, which might be like centralizing services because that looks rational. But ultimately, it's pretty hideous if you actually have to experience it, because it's not human. And you are a human and you need to work, you know, in a human way. So, are their dangers, I guess, that are hidden in all this world of, it's going to be lovely because all this boring stuff's going to get taken away by the system. Will it? Is it really human?

Ann: Actually, can I respond to that by giving a story of something I experience as a junior lawyer. I had that that really was a task that could be automated but really shouldn't happen. Looking back on it. I had a very senior partner come to me and say, his mates, Jordan died in a car accident as adding the country and her car had a trade and she got taken to hospital may broken bones. He wasn't contacted. The mother was contacted, the mother attended the hospital and decided to turn the life support off without the father's consent. What he wanted to know my instructions from him was to do a Freedom of Information request, get the file, review the file and put the factual scenario into a memo, deliver it to the client. I reviewed that file, I've got the file 600 pages long. And it was horrific. Absolutely horrific to the injuries is this young girl had and was a bit terrified of this partner. But I said to him,

look, in my view, you're going to re-traumatize the father, and him having access to these. He'll never forget those pictures. And in my view, I think we do a memo where we outline the factual scenarios about the decisions that were taken and give him that information but recommend that he doesn't fill the file. Now, if a robot had done that job, that father would have been re-traumatized. So I think we need to be careful about how important the human element is.

Julian: One winner, we had a little brief phone call before we came on to this couple weeks ago. And I think it's important to make the point that humans have several intelligences, common sense, logic, pattern recognition, so forth. AI just does one of them. It's pattern recognition. And so we have to remember that in what cancer diagnosis, yes, I want AI to tell me five years in advance that I'm going to have a tumor that's going to come up in that space. But in terms of common sense, no, that's where the humans' role is, yeah, maybe AI can come up with a recommended decision. But then the human has to play a role because there's so much context that has to be taken into account that AI just can't do that.

Lawrie: Well, I know in my case, I don't want go to as many meetings. So if a robot could do that for me, I've been ignoring all the windup signals that have been going on across the room, from the organizers, not people who are invited, it's day back. I realized we could keep going and we have to stop those. So I'm, I just like to thank all the panelists for their huge contributions today, David, Julian, Mira and Sean and thanks so much for having me here today as well. And thanks to Samuel for organizing fantastic program tonight, and thanks to everyone.

Recording: We thank you for listening. This was a recording of the society 4.0 symposium 2019, organized by the Social Innovation Research Institute, Swinburne University of Technology. For more information search Swinburne Social Innovation.

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