

Transcript of 'Industry 5.0 and Society 5.0'

Season 2, Episode 27, Transforming Tomorrow

Paul: Hello, and welcome to Transforming Tomorrow, the podcast from the Pentland Centre for Sustainability and Business here at Lancaster University Management School.

I'm Paul Turner.

Jan: And I'm Professor Jan Bebbington.

Paul: Let's go to the future. Today we're chatting Japan and Society 5.0, Europe and Industry 5.0.

Wondering what they are? Keep listening.

[Theme music]

Paul: What version of Jan are you? That's what I want to know.

Jan: Well, version one's quite early on. Version two, probably getting to, to school...

Paul: ...okay...

Jan: ...maybe version three University...

Paul: ...mm-hm...

Jan: ...version four, early career and version five, which is a perfectable one for now.

Paul: You are at version five I. I still like to think I'm probably at version two [Jan laughs] but version two was so good, why do you need to keep updating it? It's a perfectly acceptable version. I don't need to run more updates and, you know.

Yeah, no, you, you seem sceptical.

Jan: Well, I think version 5.0 Jan sounds like the best version.

Paul: The reason I mention this, Jan...

Jan: ...uhhuh...

Paul: ...is because today we're gonna be talking about Society 5.0 and industry 5.0.

Jan: Which suggests that there's one through four, um, which we might not go into in very great depth.

Paul: Hang on, hang on, it suggests more than that. It suggests there's version 1.1, 1.2, 1.3 'cause otherwise it'd just be Society five and Industry five.

Jan: Oh. Heavens, I think we...

Paul: ...that sounds like a football score though, doesn't it...?

Jan: ... I, I think we need some...

Paul: [imitating the cadence of someone reading football results] ...society five. Industry five.

Jan: I think we need some expertise that you and I clearly don't possess between us. [laughs]

Paul: [mock indignant] I don't know what you're suggesting. My knowledge of numbers between one and five is perfectly sound.

My knowledge of Society 5.0 and Industry 5.0 on the other hand, yes, I take your point.

We have two people with us though, who will be able to enlighten us on both of those subjects. In the studio with us, we have Rebecca Liu, who is a Senior Lecturer in the Department of Marketing.

Joining us online we have Steve Kremer, who is a consultant analyst at Periphys, a company that specializes in connecting technology innovators.

Welcome Rebecca. Welcome, Steve.

Rebecca: Thank you.

Paul: Rebecca, I want to start with you. Can you tell us a little bit about your research interests and how they link into Industry 5.0 and Society 5.0.

Rebecca: My story really starts, uh, with my academic, uh, decades of experience working in the industry.

Um, back then as a manager, I was constantly challenged to come up with new products, uh, which pushed me to dive deeper into innovation. And that's what

eventually led me to pursue a PhD in innovation management and market research.

And from there, my research naturally evolved to focus on digitalisation, sustainability, and of course innovation. Um, fast forward to 2023, I was honoured, um, to receive a research award from Daiwa Anglo-Japanese Foundation. And this award, um, supported a project I called the Trinity Project, uh, which brings together design, thinking, digitalisation, and sustainability.

Um, it's been such a rewarding and eye-opening experience. What's really fascinating, um, is how our Trinity model closely aligns with Japan vision of Society 5.0 and Europe concept of industry 5.0.

Paul: Isn't that interesting though? Society 5.0 and Industry 5.0 didn't come from the same place?

Rebecca: Well, I'll make it very interesting soon.

[Paul and Rebecca laugh]

Paul: Steve, can you tell us a little bit about your background in policy and with Periphas, and how does your work cross over with sustainability and business and that general area?

Steve: Let, let me start with Periphas, which is, um, it's a consulting firm based, uh, in the south of Britain, but with, with a lot of connections to the Northwest and the founder, um, Keith Williams is actually a, um, a fellow at, uh Lancaster Business School.

Periphas is involved in helping innovative companies and high tech companies to accelerate their growth. Um, and we assist them in finding exactly the right customers through a lot of, um, detailed strategic and financial analysis, um, of customers, um, within their, within their various sectors.

And we're talking about companies in things like cloud computing, internet of things, artificial intelligence, 5G and sort of many aspects of, of new and emerging, or even industry 5.0 technology.

I'm now going to sort of fast back to the beginning of my career. So I actually started off in, in social science and political theory.

Um, and my, uh, undergraduate days in Newcastle University took me on the first undergraduate exchange between Britain and Japan. And I spent my third

year at a university in, uh, in Kyushu in Southern Japan. Fast forward a little bit, I ended up working for an agency of the Japanese Foreign Ministry in London.

Um, working with, uh, companies on, both on the Japanese side and on the UK and increasingly the European side, advising both on doing business with each. Um, that led me into consultancy, and another little fast forward, an MBA later, and I'm involved in a lot of work to do with supply chain.

Inevitably, these, um, global companies, uh, have got sort of, uh, tentacles stretching all over the place and a lot of my work started going into both the policy side, public policy, and increasingly into things like, um, supply chain sustainability.

Um, so I've done a lot of work with, uh, companies looking at sort of exploring their supply chains and going further and further up to see actually what's really going on. For example, we've done a lot of work with, um, one of the big, uh, car tyre companies.

And only quite recently did they realise they had quite a big a, a supply chain risk in that they had no idea what was going on at the top of the supply chain. They didn't know where the rubber was actually coming from because it was, it went through several stages or several layers before it got anywhere near something they had visibility of.

So, so that, that sort of encompasses a lot of analysis and a lot of regulatory, uh, analysis and so forth.

Jan: And I think that's, it's really relevant because we also have had other people on the podcast, we've had, um, supply chain experts before, and so we, you know, our listeners would've heard people trying to figure out, you know, how do you get all the way to the source and what kind of risks and data are required to get there.

Paul: And we've talked about things such as scope two, scope three emissions, how, you know the effects all up and down the supply chain of the people you deal with, but also your customers. Yeah. It, it's such a, a broad ranging thing, it makes perfect sense to us.

Steve: Okay, wonderful. And, um, the other bit of the, of the sort of jigsaw is that a lot of my, uh, policy, policy wonkery, if you like, um, led me to working on one of the projects for the Society 5.0 that we'll, we'll talk about a bit later,

um, which is the Japanese sort of overarching policy framework, uh, for new society.

So, um, I worked in, or I have been helping out on a thing called Global Startup Campus, which is an innovation hub that they're building or, or an ecosystem in fact, in, in Tokyo to connect globally and to stimulate and innovate and fund, uh, sort of creative thinking and next, next generation business models and models for society.

Jan: And so, with no further ado, let's find out about Industry 5.0, uh, 'cause we've spoken about it a bit. What's the essence of that project?

Rebecca: Sure. Um, it, let me just explain a little bit about the concept of Industry 5.0. Um, it, it actually has been shaped by a mix of, um, policy makers, of thought leaders, innovators and academics.

And one of its biggest, uh, champion, um, has been the European Commission. Um, they officially introduced the idea in 2021 with a publication called 'Industry 5.0 - Towards a sustainable, human-centric and resilient, uh, European industry'. And in this publication, they lay out their vision of Industry 5.0.

Um, it's all about recognising, um, the role of industry, not just in creating jobs or economic growth, but in achieving broader, uh, societal goals. Um, the idea is to make industry as a resilient driver, um, of prosperity, an industry that respect our planet, uh, boundaries and, and puts our workers wellbeing at the heart of production.

Make it short. There are two key tech takeaways here. First, it's a human-centric approach where the technology collaborates with humans, prioritise the sustainability and ethical practices. And the second it shifts the focus from just being of, um, efficient and productive, um, to really prioritise, uh, societal, um, wellbeing and recognise the limited availability of our resources.

And it's a broad forward-thinking model. And it's, it's important. It's pretty far reaching.

Paul: Why is it important, Steve?

Steve: It's important because Europe in the round is facing a lot of significant challenges. Some of these came to the fore, I mean, obviously things like Covid, uh, the Covid pandemic sort of presented a lot of, um, bought, bought

into strong relief, some of the risks and vulnerabilities facing the European industrial structure.

Another one is, for example, the increasing rise of China and economies in the Far East, which have been putting European manufacturing industry under huge competitive pressure.

And so there has been a growing realisation over the, over the last 10 years that, um, Europe needs to act in a sort of comprehensive way to start addressing things like, um, international competitiveness, innovation, digital transformation, that, that's one area.

Um, another area which is sort of underpinning, this is the drive towards Net Zero. And the kind of increasing urgency to move quickly, um, to decarbonise supply chains, to decarbonise energy generation and so forth. That needed to accelerate. And then another one, which is also common with Japan and some, some of these are common with Japan as we'll discover a bit later.

Another one is the fact that, um, Europe has, is undergoing quite a profound demographic shift. So birth rates are falling across Europe. And although Europe benefits from a generous welfare state, it's kind of quite difficult in that situation to really see this as a, as a kind of existential problem.

The, the folks at the European Commission who, who take a sort of, um, a technocratic view of planning. And I'm using that in a, not in a pejorative sense, but in a, in a sort of a forward-looking sense. You know, they look at the numbers, they look at the data, and they have clever people studying things who say, okay, we need to address this.

We need to start looking about how our future society is going to look and what we need to do now in order to address the fact that in the future we're gonna have more older people, fewer younger people. Industry's gonna be different. Society's gonna be different.

There are others, but those are some of the main, those are some of the main things that are driving this policy framework.

Jan: And I suppose in some ways, uh, you know, given how you've described it, it suggests that Industry 4.0 ambitions did not address these things. It was maybe blind to environmental impacts, et cetera.

But I do wonder with the, how you've described it in terms of your more digital innovation and, um, reliance on AI, which itself is quite energy intensive,

whether or not that sets up some tensions and some conflicts in trying to be sustainable, human-centred and resilient.

'Cause we like all three of those things. Don't disagree with any of them. But how do they come together as opposed to being in conflict with each other?

Rebecca: Um, honestly, that's a great question.

First, sustainability, and this means in moving away from take, make, dispose model of industry, um, which is actually is the industry 4.0 that has dominated for decades.

And instead the Industry 5.0, the focus is on adoption um, the green technologies and reducing carbon emission, minimising, uh, waste, and working towards a circular, uh, economy.

The goal is for industrial processes, uh, to operate within the limits of the planet, ensuring long-term environmental health and resource availability.

Second is about human-centred, and this is about putting people, not just profits or machines at the heart of industrial processes. And in Industry 5.0 technology like robots, AI, or, uh, automation doesn't replace human, humans, but works alongside humans, enhancing their roles. It's about, for example, creating better working, uh, conditions, um, upskills workers and prioritise their safety, wellbeing, and creativity.

Essentially, it's saying, how can we make industry work for people rather than the other way around?

And finally about resilience. Here we are talking about building industries that can adapt and thrive in the face of challenges like, as Steve just mentioned, the pandemics, the supply chain disruptions or climate crisis.

A resilient industrial landscape is one that, that is flexible, innovative, and able to withstand shocks while continue to deliver, uh, prosperity.

So when we put it all together, the vision is for an industrial ecosystem that's environmentally sustainable, deeply respectful of people, and strong enough to navigate an, an uncertain future.

Um, it's a shift from just being productive and efficient to being responsible, ethical, and adaptable.

Paul: So can industry in its current form be sustainable? And if not, what needs to happen for it to be sustainable?

Steve: The question about whether, whether industry can be sustainable. It, it's sort of useful to think about how the European Commission comes up with policy frameworks, and so Rebecca has very sort of crisply outlined what Industry 5.0 is.

That's the outcome of the process. Inside the process, you've actually got a lot of contending interests and ideas. For example, on one side you've got the German steel and coal industries and trade unions and, uh, and owners of those businesses who are perhaps a little bit less keen on rapid decarbonisation.

On the other side, you have, you have environmental groups who want to go sort of straight away, could do it yesterday if they could, and everything in between.

So the, the clever thing of the European Commissioner, one of the things they're very good at is, um, engaging with their stakeholders. And coming up with compromise at multiple levels of the process in order to come up with a, a single framework and a single vision.

Um, and so within the, um, Industry 5.0, there are actually quite a lot of compromises, and there are quite a lot of strains and stresses, um, about how quickly it's gonna go.

Um, for example, the, the, the issue between making technology work for the workforce is quite interesting because it means there are some industries who are saying, this is great, this is like a green light to automate as much as we possibly can.

And there are, um, on the, on the, the groups representing the interest of labour they're saying, okay, great, so we're gonna, we're gonna have labour at the centre of this process.

Now the, the policy itself, sort of the words of it, capture both, both positions. So there is a kind of strategic ambiguity within the overall framework.

Nonetheless, that framework provides a context for progress to be made with compromises. You know, various parties are gonna have to give ground along the way, but it does provide a, a sort of a, a direction of travel and a framework in order to do that.

Rebecca: Can I add something, uh, on top of it?

Um, this is a big question and my short answer is it's complicated. [laughs]

In its current form, industry is struggling to fully align with sustainability. And that doesn't mean it's impossible, and let me explain. Right now, many industry, um, operate using systems and practices that are resource intensive and often, often, um, wasteful.

Um, think about we rely heavily on, uh, limited resources like fossil fuels and production process are designed, um, for efficiency and profit rather than environmental stewardship.

It's very much a linear model. We take resources, make products, and then dispose of them, and that's the opposite of what environment calls for.

For industry to truly fit with sustainability, it needs a major shift. That's where concept like circular uh, economy come, in where materials are reused, recycled, and kept in circulation as long as possible. And there's a growing focus on, uh, green technologies.

But here's the thing, it's not just about technology. It's about a mindset shift. Uh, Industry 5.0 emphasise a mindset shift from efficiency and profit to human-centric approach.

And honestly, um, there are already industries and companies leading the way from adapting carbon neutral goals to implementing innovative waste reduction strategies, and they prove, they are proving that change is possible. But as a whole, um, I believe most in industries still have a long way to go.

So can industry in its, uh, current form fit with the sustainability? My answer is not without some big changes, but with the right innovation policies and commitment to rethink how we do business I believe it's definitely, we within reach.

Paul: We want to move on to Society 5.0, but I've just got a question.

We're, we're aiming towards Industry 5.0. How long has Industry 4.0 been around and what was Industry 3.0?

Rebecca: This is a very interesting question because we actually are talking about the, the progression of humanity. You know, for the version 1.02 and three and four. The, yeah, Industry 4.0, we are still in there.

And, and you know, it's, it just happened not long ago because we are talking about information, we are talking about all digitalisation, and then it create a lot of, um, worries.

Will, AI replaces us? Will we know the loss of job? Will, you know, here and there, and that is the key issue. Why a bunch of people, a forward thinking, um, thought leader, think about, hey, that is not, probably not right, and, and think about the environmental problem, think about the society, and we have to think about future.

I'm not sure how long that we can jump from 4.0 to 5.0, but we definitely need to have a vision for our generation, generation to come.

Jan: And my, um, uh, Wikipedia based, uh, analysis ahead of this...

Paul: ...uhhuh...

Jan: ...is that, uh, Industry 1.0 was the Industrial Revolution.

Paul: That was gonna be my suspicion as well...

Jan: ...yeah...

Paul: So, yeah, you're talking about the 18th Century essentially?

Jan: Yes. So, uh, 4.0, well, uh, 3.0 was sort of mid-20th Century, four sort of later, so I guess this is the...

Paul: ...mm-hmm...

Jan: ...the two thousands in the brave new world.

Paul: Okay. So four and five are quite quickly on the back of each other.

Jan: Yes, yeah.

Paul: Moving on to another five then. Let's talk about Society 5.0. Can you give us that same context of what Society 5.0 is and its origins?

Rebecca: So Society 5.0 is a concept that originated in Japan. But before we dive into its origins, let's look at where the term comes from. The term 5.0 represent the progression of society through five distinct stages of evolution.

So it's very much like you just discuss, discuss about, you know, Industry 1.02, Industry 5.0.

And these stages chase humanity journey from the hunter-gatherer era to agriculture age, um, the industrial age and the information age.

And this concept was first introduced by Japanese government in 2016 as part of its fifth science and technology basic plan. Um, the initiative was aimed at addressing both global challenges and Japan's own demographic shifts. As Steve just mentioned, such as aging population or the need for greater, uh, sustainability.

At its core Society 5.0 is a vision of a super-smart society. And where advanced technologies like AI, Internet of Things, big data and robotics are seamless, integrated into everyday life to solve societal issues, improving wellbeing and creating sustainable development.

It's about blending the cyber world with physical world to create a harmonious um, environment, environments where technology serves the needs of people in more profound and personal ways.

And since we have an expert about Japan, so our you know, throw this to, uh, Steve to help to elaborate more about Society 5.0.

Steve: Uh, I think it would help if I give it a little bit of backstory, taking it to a more kind of historical perspective without going down the rabbit hole.

I just wanted to say that, I mean, this, this comes in the context of post-war Japan, which saw a kind of rebuilding of a, of a society that had been destroyed, pretty much.

Um, and there was an incredibly powerful role of the Ministry of Economy, Trade and Industry in coordinating investment, in technology licencing, in foreign exchange, and basically directing from the centre Japan's economic recovery. And of course, there was a vast help financially from the United States and elsewhere.

Um, and there was a huge thirst for learning from foreign sort of experts such as Deming, who helped to transform Japanese industry. But the, the Society 5.0 that we're talking about is really following on that tradition of a actually quite a centralised or quite a powerful role for centralised authority, um, in bringing about, um, a kind of profound change in order to address, you know, fundamental, and I would say existential challenges, facing, facing the country.

Um, and so the, I think we'll get onto the comparison with Europe a little bit later, but what's really, from my perspective, really important to, to realise is

that the Japanese approach is saying - if we don't do something, it's going to be really bad. Because we're faced by not only natural disasters, earthquakes, tsunamis, 111 volcanoes, we're surrounded by hostile or potentially hostile countries.

You've got the far east of Russia, North Korea, China. Taiwan is visible from southern Japan. Occupied islands in Northern Japan are literally occupied, still, under international law, by Russia or by the, um, former Soviet Union. Um, and that's an unresolved geopolitical issue. There's a whole bunch of things related to, to the geopolitics, to, um, demography, to the economy, losing competitiveness.

Japanese companies struggling now in the face of Chinese competition globally, we're not just talking about locally, but in the united, in the American market and, and elsewhere.

And we're also talking about three decades of basically stagnant growth in Japan. In which Japan went from this kind of shining beacon of, uh, of, you know, an economic miracle up until 1990 and literally three decades of very stagnant growth, deflation, falling population, falling birth rate, declining number of PhD students, for example. And a kind of educational crisis in which fewer Japanese students were going overseas, uh, fewer patents files.

So there's really, really profound things going on. And I mean, in a similar way to Europe, but in perhaps a more drastic way, Japan is saying, okay, we need to think about what Japan is gonna be like in, in five or 10 years time.

Um, and it's not just about improving industry, it's about improving society. and, and looking at and dealing with a lot of these, these sort of human level challenges that, that, um, that are facing us at the moment.

Jan: And did Industry 5.0 and Society 5.0, did they, did they independently come into being or would the people with making the thinking behind each one of them, would they know each other, would they be aware of each other?

Are there any points of cross-fertilisation or just naturally occurring similar themes coming through the, the, the two different strategies?

Rebecca: I, I think this is a very interesting question. Um, we actually started talking about Industry 5.0, which actually officially introduced in 2021. But Society 5.0 actually is introduced in 2016.

So that means, you know, a few years ago, Japan already have the, the idea. Um, there's a, a little bit background, um, when, when, um, I studied the Society 5.0. There's a, a Japan Business Federation and they realise that four point, um, Industry 4.0, so they've been asked, you know, study 4.0 and come into something similar for Japan. But a, a group of people in that Federation say, no. Uh, Industry 4.0 is not appropriate for Japan.

And that's why they study how we can improve from Industry, uh, 4.0. And that's why they start thinking about society, they start thinking about the human-centred idea, and then they put it into the Society 5.0. As the human-centred, sustainable and resilient.

And then few years after, the European think about, okay, maybe there's some problem that we are facing and challenges we have to, um, tackle about the Industry 4.0. Because people start worry about losing job to technology. Start thinking about, oh, this is not the sustainable enough.

And then they kind of like, you know, combine all the, the ideas from, uh, the thought leaders, the policy makers. And there's surprisingly, you know, uh, coherent between Society 5.0 and Industry 5.0.

How far, you know, the two regions can go, we don't know yet. And that is my mission to go further, um, from, from here.

Paul: Do you have thoughts, Steve, on why they might be emerging at the same time?

Steve: I think it's, I mean, they both, um, they both reflect concerns in societies, both at the sort of government level and at the, and at the popular level, in fact, that, you know, thing, things have to change.

And there's, there's big concerns in, in Europe. Um, not to the same sort of level in Japan. Japan, if you walk around in Japan, you are, you're well, if you're somebody like me, you're kind of aware of the fact that, you know, Tokyo has been destroyed twice in the last hundred, hundred odd years. There are, there are really bad things that can happen.

Um, and this, this, this sense that, you know, life isn't just gonna continue as normal all the time is challenged on a regular basis by natural disasters or, you know, fire-bombing in World War 2, which, which was more catastrophic for Tokyo than, than Hiroshima and Nagasaki were in, in terms of, um, uh, death toll.

So, I mean, there's, there, there's major things within living memory, um, that tell the Japanese that, um, you know, things won't always be like this. And we, we, we face major, major challenges and it's down to the kind of human, uh, energy and creativity to, uh, plan for them and to make a society that's gonna be resilient in the face of these things.

And just, uh, actually another rider to that is the fact that the, the - and this is a slight difference with the, with the European one. The Japanese approach is saying, you know, we wanna develop, we wanna be innovative at a social, societal level using technology, but we want to give this to the world. We want this to be something that we can contribute to a better world. We can kind of export our ideas.

Almost like a, almost like a sort of the, the, the soft power that we've seen grown a lot in the last few years from Japan, and Korea as well. The European approach doesn't have that so much. It's more about how are we gonna, how are we gonna reform Europe to compete? Japan is, yes, we've gotta compete with the world, but we wanna give to the world as well.

We know that there's been academic papers, there's been conferences and meetings, and there has certainly been human exchange between, between Europe and Japan in terms of developing this kind of policy. So, you know, there is regular discourse and interchange between the two sides about how to think about, you know, future social and technological change and development.

Paul: So there's a lot of talk here then about these concepts of Society 5.0, Industry 5.0. What challenges are there in turning these ideas and these ideals into a reality?

Rebecca: Well, when we talk about strategic initiatives like Industry 5.0 and Society 5.0, it's easy to get excited about the potential. And this concept promise a future where technology works seamlessly with people, and where we tackle major societal issues like sustainability, inequality, and aging population.

But the reality of turning these big ideas into actual functioning systems is far from simple. And first of all, technology is a major, um, hurdle. Which we have the tools, using like AI or robotics, we are still in the process of optimising these technologies, um, and figuring out how they can scale.

And next there, uh, there's the challenge of infrastructure. Um, for Society 5.0 to succeed, we need to integrate smart technologies into, um, every part of society, from transportation to healthcare, to urban planning.

And that means we need to rethink and often rebuild critical infrastructure. Not alone to say it will require the new level of global co-operation and cross-industry co-operation where different players, um, often have competing in, uh, interests and different priorities.

Then most important, there's a human factor. And I think this is often one of the most overlooked challenges. Um, for both Industry 5.0 and Society 5.0 to take off we need to get people on board. And the idea of human-machine collaboration in Industry 5.0 sounds great in theory, academics think, but how do we prepare the workforce for that change?

And we are talking about, shifting not only the, the way we work, but also the mindset about work. Um, and that's not easy. It requires changes in education policy, and even cultural attitudes. So in short, it's a complex web of hurdles.

Steve: So very, very, um, briefly from the European approach, I think the biggest challenge is gonna be political because there we're, we're on the cusp of a major change in the way the world operates.

Um, we are already seeing misinformation. We're seeing the rise of political parties that basically don't, like, I'm, I'm talking about within the European context, um, that are kind of anti-EU, anti-integration, um, who really don't want any of this.

They, they're interested in national sovereignty. They see technology as a threat. They see, they see large corporates, um, using AI and automation as a threat to their interests. Um, and they don't see the European Union as being an entity that will deliver for them.

So those, those forces are quite strong across Europe, uh, particularly in central and uh, Eastern Europe. At the moment, most political parties are in favour and have signed up to this.

Um, but there are signs that, you know, maybe 15, 20% of Europeans are going to become increasingly vocal and will start to challenge, as we've seen in, um, Hungary and, uh, Slovakia, um, and elsewhere. Yyou know, real serious pushback against, uh, against this kind of grand, uh, strategy. So at a political level, that's one thing.

There's a question about whether innovation will be enough, whether there's the kind of the skills base to bring this about. Uh, because it's a very large project, and whether it can be spread across Europe, encompassing all of the nooks and crannies of Europe, where there are agricultural communities, there are kind of post-industrial communities, whether it can reach into those areas, that's a big question as well.

Japan, it's different. Japan, the issue is, um, I think the political consensus is strong. Uh, I don't think that's under threat at all. But the question is, is it enough? Is it, is it too slow? Is it too late to save, um, Japan and its kind of declining population, which is getting drastic and can only really be addressed by either mass immigration or mass automation or something or other.

The policy makers are trying to, are trying to find a path that doesn't result in sort of major social turmoil that could occur if there's in, in the case of mass immigration, to address the labour crisis.

So I mean, there, there's questions about how, how, how feasible it actually is. Um, and the, the, the third thing which underpins both of the, both Japan and Europe is de-globalisation.

Both of these economies have grown on increasing levels of globalisation. We are now in reverse, there's no question about it. That, that supply chains are getting fragmented, economies of scale are declining globally.

And how do, how do both these economies deal with, um, these fundamental changes that, that, that are gonna affect a lot of lives, while they try to sort of rewire the, uh, the economies and the societies to, um, to address these issues.

Paul: [half-joking] Right, I've had enough of challenges, obstacles, difficulties and negativity. [Steve laughs]

I want to end on a positive note and, what are you hopeful about for the future when it comes to Society 5.0, Industry 5.0?

I'll start with you, Steve, and then we'll end with Rebecca.

Steve: Okay, sure. And in a way these are kind of, um, um, flip sides of the same coin.

But I mean, starting with Europe, you know, a, a potential weakness of Europe is also a massive strength, which is the diversity of thought, of culture, of language, of food.

Um, and, you know, great diversity brings about a great, great sort of, um, creative, fertile soil for great ideas. And, uh, you know, not everything is gonna work everywhere all of the time.

But from that diversity, you can get local solutions, you can get things you can learn from, best practice, um, and you can share, you can share brilliant ideas, um, and adapt them for local conditions.

So I'm very, very positive about, about the capacity of Europe to come up with good ideas, um, and to collaborate.

And another factor, which also, which also is a positive thing both for Japan and for, um, and for Europe is something, well, I mentioned this before, is the kind of technocratic approach. Um, they value experts in government, in business. They've got a lot of PhDs, a lot of professors, a lot of people who are kind of learned and they respect the kind of technocratic data driven approach to decision making.

It doesn't always work, but there's a kind of respect for deep thinking. Uh, and I think that's a very positive thing. I mean, particularly coming from a society which occasionally has put the rhetoric first and then tried to work out what the policy's gonna be, as opposed to building policy from the ground up with data and knowledge and understanding and uh, kind of thoughtfulness.

So, yeah, I mean, I think there's a, there, there, there's a lot of positives to be had. And also, I mean, back to Japan, things like the fact it's a, it's a growing cultural superpower. You know, young people want to go to Japan, they love manga, they love the food, they love the fact it's cheap.

It, it's an attractive place, entrepreneurs and innovators, and it's a sort of, it is fulfilling that objective to make a positive contribution to, to the world in that sense. So there's a kind of cultural aspect to this as well, which I, which I'm very, very positive about.

Paul: I can safely say, I hadn't expected both technocrats and manga to be part of your reasons for optimism, but there we go. [Steve laughs]

How about you, Rebecca?

Rebecca: Well, um, honestly, when I think about the future, especially in the context, um, of forward thinking like Industry 5.0 and Society 5.0, there's a lot that fails me with hope. And we are at the incredible, um, crossroads where challenges, um, of the present are urging us to rethink how we live, work and interact with technology.

And the good news is, um, there are a lot of exciting possibilities ahead. One of the most hopeful aspects in is the potential of human-centre innovation with the Industry 5.0.

We are talking about technology that empowers us, um, rather than replaces us. And imagine a future where you have a robot, a robot helping you in the factory, or an AI assistant in the office. Um, but it's not just doing what your work for you, is supporting you to do your best work. And that's something truly hopeful.

And then when I look at Society 5.0, um, I see an incredible, um, opportunity for technology, um, to address some of the world's most pressing, um, issues. For example, aging, populations, healthcare access, environmental sustainabilities.

Um, these are problems we have known about a long time, but technology like AI and robotics have been the potential to solve the, uh, solve the problem in ways that we were in unimaginable a decade ago.

And there's something deeply hopeful, um, about the idea. I, I create, I, I really like this statement is 'technology can save humanity'. So I repeat it, 'technology can serve humanity', and I just want to say, keep thinking about the possibility to transform tomorrow and stay curious. And that's so much to look forward to, and that to me is incredibly exciting.

Paul: Thank you, Rebecca. Thank you, Steve. It's been a great conversation.

[Theme music]

If you had to pick Jan, which level of society would you have lived at? 1.0, 2.0 3.05, 4.0, 5.0.

Jan: I'd like a little bit of all of them, and I suppose, um, I'm, I'm not a technophobe because I, I, you know, I, I use technology all the time and, and...

Paul: ...you record a podcast that involves some technology...

Jan: [laughing] ...yes, indeed. But I suppose I didn't find 5.0 that appealing with me, that I would be seamlessly somehow being connected to with technology, and this would, uh, create, uh, you know, a different kind of thing. So I'm probably a bit of a, a mid-20th century kind of gal, but with better healthcare and equal pay, you see, so it, so it's quite, it's quite hard.

Paul: You're taking a little bits of elements. I don't, I don't see much hunter-gathering in there, so maybe 1.0 is far in the past for you [Jan laughs] you, you're quite happy not to have that.

Jan: Yeah. But also the Industrial Revolution for the, the industry side of things. I mean, that was a hugely, you know, I mean, in some ways liberating, disruptive, but also very polluting time as well.

So, so it's really, it's, it's interesting looking at those things and trying to sort of navigate what, what might be going on next.

Paul: Yeah. I don't think industry 1.0 was much good for you if you happened to be a young child who was having to collect things from underneath, you know, spinning wheel, well massive spinning wheels and machines and...

Jan: ...yeah...

Paul: ...you know, getting crushed and climbing up chimneys and all this stuff. But yeah, there, there, there are certain elements of those that Industry 1.0 through to 5.0 and Society 1.0 through to 5.0 that, yeah, I can see why you'd pick that, yes.

Jan: But what I've found quite interesting about them, it'd be interesting to see if, if you know, how you saw them.

They're kind of like, they're not futures thinking, so they're not like imaginative futures for a hundred years out or anything like that. They're quite near-term strategies to deal with quite concrete problems. So that was something I didn't appreciate until we had a, a conversation with Rebecca and Steve.

Paul: No, what I didn't appreciate either, and I wonder if in future, in three or 400 years, people will just consider what we are now as 4.0 and 5.0 will be the same thing...

Jan: [laughing] ...yeah...

Paul: ...even if those silly people hundreds of years ago gave them different names. Um, it's a bit more...self-prescriptive, in terms of we decided we want to have something different to now, so let's just call it Society 5.0.

It's where my original point before we started speaking to Steve and Rebecca comes in, what about society 4.1, 4.2, 4.3? It seems more like a gradual progression building upon what's there rather than a massive, big game changer, um, particularly for society.

For industry, because industry's only been around for 250 years, I could see why you might have 4.0 and 5.0 there. Although it's crazy to think that 4.0 has only been around for 20, 30 years.

Jan: Yeah, before we started the thing.

So what about going even further back in the past? I was quite interested that Steve worked for a company with quite an interesting name, Periphas.

Paul: Sounds Greek to me.

Jan: Does it sound Greek to you?

Paul: ...it does...

Jan: ...what else? What else do you know about it? 'Cause you're our history buff. I know this is....

Paul: [laughing] ...I don't know anything about it. I just know it sounds Greek.

Jan: [laughing] ...this is not quite The Rest Is History, uh, unfortunately, you know, fantastic as that is. So it comes from Greek mythology, so...

Paul: ...well, I'm glad about that because I was worried that friend of the show, Pliny the Elder, was suddenly gonna make an appearance yet again.

Jan: [laughs] No, no. So, so Periphas was a, was a king who Zeus turned into an eagle...

Paul: ...aaaah....

Jan: ...yeah, so, so it didn't seem like we, we were so much in the courage. I, I didn't think to ask Steve about that, but I did look up what their company name was, so, yeah, uh, a king that's turned into an eagle by Zeus.

Paul: Oh, I see, I see. Very good. I would not have known that if you had not have told me.

So do you think that the Society 5.0 and Industry 5.0 are a little bit too optimistic when it comes to AI and robotics and their potential for positive change?

It was very utopian view of cyber and humans in harmony, uh, completely at the opposite end of the scale from say, the Terminator films, which I admit, there's, there's two extremes there. Um, you know, robots being all nice and jolly and making allies, brilliant in every way, and robots trying to kill us all.

Jan: Uh, for me, yes, but then I am also uninformed of these matters. So maybe I'd be more positive if I knew more about it. But also I, like maybe a few of our listeners, I try to spend less time on my phone, not more time on my phone.

So the idea of being more integrated in and the idea of a doorbell that can see who's on you and be hacked, I mean all of these things, um, fill me quite literally with horror, 'cause I'm a bit of an old fashioned, you know, sort of approach to life.

But that's quite different from maybe what you want in your industrial strategy or how you organise your, your production systems. So, so how I might feel and what industry might do I think are probably quite different.

Paul: Yeah. But you are not industry, in case anyone has made that mistake of when you are.

Jan: [laughs] But what about yourself? The same question.

Paul: I'd like to think that technology's gonna make life easier for me in terms of, I don't wanna have to wash the pots, I don't want to do all the washing and sort all the clothes out. If there's a way for it to do that for me, that would be wonderful.

If all technology is gonna do is constantly take away my ability to be creative in certain ways and things like that, I'm not interested. I like being creative, creativity is part of being human for me.

I don't want technology to suddenly say, yeah, I can do all your creative stuff. You can just lie down in bed and do nothing all day.

Jan: [teasing] We're going to see, aren't we?

Paul: If, if there is no series three, it's 'cause I've been replaced by an AI entity [Jan laughs] that has taken on all my creative responsibilities.

Jan: Well, um, I, I hope that's not the case, but there we have it.

Paul: Thank you, Jan. Now at least know you prefer me to a robot.

Jan: Yes. So what, what's happening next? What do we know? What's happening next?

Paul: We do know what's happening next because we're leaving the country.

Jan: [audibly draws in breath] Tough times.

Paul: It is. We're not gonna take the slow boat to China. We are going to take the plane and go to Malaysia.

So when we're in Malaysia, we're gonna speak to people out there with expertise around sustainability, and they can give us the perspective from over there.

We're going to speak to researchers who are members of the Pentland Centre. We're going to be speaking to people who work in business over there. We're gonna be getting a good idea from Malaysia of what's going on.

Jan: and what I'm really excited about for the wee, mini podcast series which is gonna come from Southeast Asia, is that many of the issues that we've talked about already look different when you look at it from that perspective.

Paul: Yes. So we'll be joined by some members of the Sunway University out there, who is a partner university for Lancaster.

So that'll be great to meet them in person and discuss with them.

Jan: Brilliant.

Paul: Until then, thank you very much for listening. I'm Paul Turner.

Jan: And I'm Professor Jan Bebbington.

[Theme music]