DTM Podcast #8: Future of Design Methods

Show Notes

In the final DTM podcast Peter talks to Elisa Giaccardi, Professor of Interactive Media Design at IDE, about what design methods will look like in the future. They talk about how artificial intelligence and machine learning are changing the design process from something that is 'user-centred' into something much more dynamic. Elisa introduces the idea of how humans and computers can design together through 'co-performance'. They also touch on the ethical issues involved when dealing with non-human intelligences.

The interview is based on a book chapter by Elisa called 'Technology and More than Human Design' which explores how technology is impacting the design process. She mentions her PhD supervisor Roy Ascott, who has been a strong influence on many well-known designers and artists throughout the world. On page 6 of his book 'Art, Technology, Consciousness' he talks about the idea of 'seeding' that Elisa refers to. She also quotes from the much-cited social anthropologist Tim Ingold, who writes in his book 'Correspondences' about different modes of interaction between humans and non-humans. Ingold has published many interesting books touching on the cultural and contextual aspects of designing.

In the discussion Mieke mentions the work of John Seely Brown, who was director of the world-famous Xerox Palo Alto Research Centre (PARC). In a video titled Sense-making in our Post AlphaGo World he explores the "rapidly changing, broadly connected and radically contingent world and the lenses needed to frame, or reframe, the challenges that technological advances have pushed forward".

Peter also mentions an idea called 'negative capability', the ability to embrace uncertainty and be comfortable in situations of ambiguity. The idea originally comes from the Romantic Poet John Keats! This short blog post provides more context and further links to explore the subject if you are interested.

Podcast Transcript

Introduction

Peter Lloyd: Hello it's Peter here. This is the final podcast in this year's DTM series and in it we explore what the future might hold for design methods and particularly how A.I. and data will change the process of design. Or maybe not? First of all, I talked to Elisa Giaccardi, a Professor here in Delft, and someone who explores how cutting-edge technologies are changing the way we think about designing. After the interview, Mieke and I try to figure out the future and surprisingly returned to some familiar DTM concepts. Perhaps the future isn't so different to how we design now? Well, to find out the answer to this question, we'd better get on with the podcast...

Peter Lloyd: I'm here in the studio with Elisa Giaccardi, who is a professor of interactive media design here at IDE in Delft, and also professor of post-industrial design at Umea University in Sweden. So you have a two major roles, but you're also an expert in artificial intelligence and designing and we're going to talk about the future of design methods and design processes. So welcome to the DTM podcast, Elisa.

Elisa Giaccardi: Yes, thank you, Peter. Thank you for having me. The expert in artificial intelligence and design might be a little bit too much, but I certainly am very interested in in artificial intelligence and disruptive technologies in general.

Peter Lloyd: You've recently written a really interesting paper that you gave me to read getting across the idea of more than human design. We'll come on to talk about that in more detail, but my first question was, how did you come to be interested in A.I. and design?

Elisa Giaccardi: Yes, I have always been quite fascinated by technology because I'm interested in how humans communicate and interact and through that build reality around themselves. Today, more so, that happens through technology. Any kind of technology that does have an impact on how we communicate or how interact. For me,

it's absolutely fascinating. Then I started to look into digital networks. Early on, looking into Web 2.0 architectures, social media, Internet of Things, now artificial intelligence it is kind of a natural...

Peter Lloyd: You've had a long history of exploring technology? I

Elisa Giaccardi: Yes

Peter Lloyd: In your paper, to quote from your paper, you say something that I thought was really interesting, actually, and it is that the design process is no longer something that happens before production. We're very used to having the idea of design that produces something at the end of it or the process results in a product at the end of it.

Elisa Giaccardi: Kind of a stabilizing process with something at the end.

Peter Lloyd: Can you describe what you mean by that?

Elisa Giaccardi: Yes. So the kind of design as we know we don't often teach it, particularly in our bachelor programs, really comes out of the logic of industrial production. And when we used to design chairs for mass-production we needed to make sure that what we were designing was right and we developed ways of doing that, methods for prototyping iteratively and trying to minimize risks of mass replicating faults or shortcomings in what we were designing. But the kinds of technologies that we have now, like data technologies and artificial intelligence in particular, really challenge and are very different from that kind of logic. What happens is that not only what we design can be constantly updated at a lower cost. Before if we didn't get it right, then it was a problem; all the thinking and all the testing has to be done before production, because changing something afterward was very difficult and complicated and very costly. And now not only can we do it in a more agile way, but the very product that we are experiencing is coming into being, so to speak, at runtime. Is assembled at runtime. So my Netflix looks very different and behaves very differently than your Netflix because it comes together as something that I can experience in the very moment of use, and it feeds on that use. With these type of technologies that are based on information and

data, the distinction between production and consumption is almost dismantled. And design in a way continues in use and after use and it fits into that.

Peter Lloyd: What you're describing is a much more fluid... there's more fluidity. We're very used to the idea that at the very beginning of the design processes, those are the decisions that you have to get right for production because they're cheap to make at the beginning, but they're expensive to make at the end. But that turns around that whole process into something. What are we actually designing then?

Elisa Giaccardi: What are we actually designing? We are designing conditions for a certain type of interactions and experiences to come to expression or for certain value propositions to become with interacting with the product or with the service. There is a fluidity. There is a malleability that is intrinsic to the different type of material that we're working with. But there is also, I like to think of it as a more probabilistic character to what we make.

Peter Lloyd: Can you give an example of a product? Maybe in healthcare or something like that?

Elisa Giaccardi: For example, there is this startup in the UK called Vitality, and I believe you can call it as often it is referred as an Intertech, it is using data technology to monitor people's physical activity and then use that to provide a certain type of insurance plan and benefits. And so that insurance plan does not exist prior to you buying the wearable, wearing it and performing everyday activities or exercising, taking walks and so on and so forth. In that sense, it's probabilistic because there are of course a set of parameters that are set. But the outcomes of that is not necessarily always predictable.

Peter Lloyd: Defined.

Elisa Giaccardi: Defined completely upfront.

Peter Lloyd: It's more like setting a sequence of... or a set of parameters, in motion, as a as a kind of design or rough design and then seeing what happens. It's constant prototyping.

Elisa Giaccardi: It is, yes, it's sort of a constant prototyping. Roy Ascott, who was my PhD Supervisor a long time ago, used to call it a kind of seeding, seeding conditions. And in some cases, these may be parameters. In other cases, might be constraints for a certain type of interaction, but it's seeding rather than planning ahead completely.

Peter Lloyd: I think it's really interesting, just the idea that we in education we're still teaching a design process is very much aimed at a certain product and an outcome and assessing that outcome. But the loops are...

Elisa Giaccardi: It's really tricky because in a way we need and want to be able to anticipate, to an extent, the outcome, but we cannot fully, completely anticipate it at design time so we need to be able to anticipate, not the outcome in and by itself, but the type of interactions that may feed into certain type of outcomes or produce a kind of consequences. And that's a shift that I don't think we're conceptually and methodologically really prepared.

Peter Lloyd: There are two aspects that you talk about in the paper, which I think are really interesting. They're sort of at different ends of the design process. One is the idea that we're used to the user or the person being at the center of a design process. You know, we design for people. The design process is aimed at sort of understanding people's requirements. That's one aspect to design. Then the other one is the stakeholders in a process and how we bring various groups to participate in the design process. You know that maybe a client, it may be certain user groups or manufacturers. But we're used to this idea of thinking about stakeholders. And I want to kind of explore those two concepts. First of all, the user, what does it mean when you, you're not having that that user at the center of the process anymore?

Elisa Giaccardi: They're actually very interesting questions. I never really, I guess, try to articulate it in that way, but it is quite interesting. The critique of focusing on the user is, not so much because what people want or need matters less, but because of this

logic or industrial production that has informed the way in which we think about design. We still approach the design of these type of technologies and the products and services platforms that come with it as something that is there to be used and consumed in a certain way, according to a particular intention. But because of this intrinsic character of the object of design, which is probabilistic. The reality is that there is not just one single use. There are many different uses. And if you take, for example, Facebook is quite a classical example. The way in which it makes sense to me as a certain type of user might be for how it allows me to curate certain events or certain relationships in my life. But for another user, or shall we call it stakeholder, it's instead about the data that I can use for advertising purposes.

Peter Lloyd: They're kind of unknowable uses?

Elisa Giaccardi: The same system is basically serving the needs of many different users, many different stakeholders.

Peter Lloyd: And then the device is trying to understand that use somehow or respond to it?

Elisa Giaccardi: Yeah, it does offer a value to all of them, all at the same time. Yeah. And so maybe we need to think in terms of stakeholders rather than just simply users.

Peter Lloyd: That leads me onto the stakeholders, which I think you make a really nice point, which is that when we think of participation in design, we think of it as a kind of democratic, that you're giving people different voices in the design process. But when one of the participants in the design process is an artificial intelligence, it gets rid of that idea of democracy because they don't have any rights. Or we're not giving them any rights to express themselves. So how does that affect the participative process?

Elisa Giaccardi: Right no, I think it's an important distinction to be made. The claim that we make in that article, that in order to move forward in how we think of the conceptual space that we need for dealing with this new type of complexity, and we talk of intelligent products, artificial intelligence, being a participant in the design process, it's not because they have a moral stand in the process, because they need to being voted

on on the basis of that moral standing. But because the data-driven logics that come with machine behavior are logics that we do not fully understand because they...

Peter Lloyd: They're sort of intelligent on their own terms it's a non-human intelligence.

Elisa Giaccardi: Exactly. They participate in making things. In making your Netflix come to life, in making the price of your next Uber ride. In making your insurance plan. They take part in that. And in a way they are actively involved in the design process and they do it according to logics and perspectives that are non-human. I just want to be able to understand them and account for those, and factor them into the design process. And for doing that I need to bring them to the table in a different way than just thinking of them as tools that I can use for a specific purpose because that's just not what happens. We have developed methods and techniques to interrogate those kind of logics and to try to understand them and factor them into the design process.

Peter Lloyd: I think you make a good point about, human participants in design processes have some sense of responsibility too. Whereas artificial intelligent agents, they're responsive, but they're not responsible. They're reacting in the same way that we react to situations, but they're not responsible for the decisions that they make.

Elisa Giaccardi: But that's where it becomes interesting, right, because they're not responsible in moral terms. But there is this beautiful quote, but by Ingold that says that ultimately all responsibilities are a matter of responsiveness. I can be responsible only when I can respond. So even if for a moment we bracket a notion of morality as a way to understand responsibility and we start considering responsibility as the ability to respond, I think he becomes very interesting because then also machines may have different ways of responding or tuning their responses. And that could be quite an interesting design challenge for us.

Peter Lloyd: I guess we're used to the phrase of codesigning. The idea that everyone contributes something, you have a phrase that's 'co-performance'

Elisa Giaccardi: Co-performance, yes.

Peter Lloyd: Which I really like, because it suggests that you really have to do something a little bit differently. With co-design you sort of think everyone in the room kind of knows what they're doing or what the purpose is, with co-performance it is much more of a sort of exploration.

Elisa Giaccardi: But I think also that the co-performance really is about the interplay between humans and machines or non-human entities. And it's an idea that is fundamentally based on the acknowledgement that the kind of things that a human and a machine can do - quote unquote - well or quite differently. They're quite different. Co-performance is a way of taking advantage of that complementarity, but it's very much positioned in use. You could also say the co-design continues after an initial design phase with these types of technologies. In another article I talk about this sustained co-creation that's enabled by these kinds of technologies between humans and machines. But the co-performance really stresses the element of how we contribute to shaping certain type of social practices together.

Peter Lloyd: I really like that. We've been talking around the idea of responsibility. The interesting thing about how processes and methods might develop in the future is they become ethical questions that they embrace ethical issues to a much larger extent than I think then design methods have in the past, which I think opens up interesting discussions. We're used to thinking of the design process as about anticipating consequences or being able to somehow predict consequences. And we try to limit unintended consequences. We want to limit accidents happening and really back to the user, we want the user to have this experience that we've intended them to have. Does embracing artificial intelligence in design, does it open up unintended consequences? Is it more liable to that?

Elisa Giaccardi: I think that, or at least let's put it in this way. I hope that by better understanding machine behavior, we can account for those unintended consequences better and in a way what I think is needed is not so much developing ways that can help us really fully anticipate these consequences in terms of outcome. But understanding what are the distinct rules for the interaction or for the way in which different, let's say, stakeholders participate in the design process, one that is ethical, one that gives enough handles for humans to still be autonomous in their decisions, or that gives

enough space to find meaning in the outcome of that specific interaction. In a project, for example, that we have just wrapped up last year, we did take some of these ideas into practice, and in doing that we really critiqued what we thought was quite an ethical push of using, in that case, machine learning as a way to impose a certain type of behaviors on to elderly people, which was the specific target for our project. We're looking into assistive technologies for older people, and how using machine learning can become instead a way of empowering them. When you understand that there are different ways in which you can design the algorithms not just for accurately predicting the outcomes, but for facilitating certain type of interactions in daily life. And in this case, we are just very simple and resourceful strategies that older people often put in place to cope with their aging skills. So how can machine learning reinforce that? Facilitate that? In that sense, I would say that the ethical uptake is what we refer in that article that you read, as an ethical know-how, rather than an ethical know what?

Peter Lloyd: Thinking about the future: what will a design method of the future look like? How will designers interact with them, if we think now that methods are things that we write down in books and on websites. I think maybe it's useful to think in terms of which bits will become more automated? It's very difficult to think about AI isn't it? It automates these things that you're not quite aware of...

Elisa Giaccardi: I mean there are already aspects of the design process that are automated and I think we will see more of that. But then again, going back to the co-performance, what are we good at and what machines are good at certain type of data collection or parameterisation? That can very easily be done by machines, right? Even benchmarking, for example. But any interpretation of the data, or the patterns that are extracted, for example, through machine learning, any kind of sense making, that is not something that you can fully automate. What I think that a method, assuming that methods are not fixed and that you need to appropriate them and make them yours. What a method of the future might look like, perhaps thinking of some of the methods that we have developed so far to deal with this are methods that help you to gain access to these non-human perspectives. For example, we have developed a way of conducting ethnographic observations that we called thin ethnography where we can either add sensors and software to objects of everyday use to understand how they are already connected before being connected to the Internet and how that type of

ecosystem will have implications for how people will interact with the product or to interrogate existing products. For example, right now we are being asked increasingly to use some of the techniques we've developed, like interview with things, to look into the biases that are built into conversational agents. You can imagine a method that helps you gain these insights. It challenges you to consider things that you thought were not relevant, not only that you couldn't see because they're a different scale perhaps, but also that you perhaps thought were not remarkable or not relevant for that specific problem. And indeed they are.

Peter Lloyd: You describe a whole range of design outcomes, you tend to think of intelligence as a computational thing? It is a computational thing, but it doesn't only apply to interactive products. It could be something like buildings or cars. You know, the parameterisation and the suggestion by a computational agent of certain solutions and that dialogue or the co-performance that you mention.

Peter Lloyd: That partnership…

Elisa Giaccardi: I can see that developing in the future as much as, you know, something like a design method bot sitting on your worktop, monitoring your performance and telling you what to do.

Elisa Giaccardi: I mean, I think that certainly what we will see is the rehearsal of these new partnerships. If we take the idea of machine intelligence seriously, we can imagine that there will be an array of methods and ways to bring that intelligence or that type of perspective to the table in the design process, as co-ethnographer, co-designer, as just a way to question maybe certain choices. But I see it very much as a dialogue, not so much to automate the process, which of course it will happen, but it's more of a tool.

Peter Lloyd: The co-performance.

Elisa Giaccardi: The co-performance, the hybrid design partnership. The hybrid sense-making process.

Peter Lloyd: Because I think in some sense a design process is, it's a c0-performance in the sense that you when you have other people in the process, you're trying to work out what form of intelligence they have somehow. It might be expertise, but it might be, you know, the believability of the things that they say in the process. And I think the artificial intelligence, it's the same thing. You're trying to work out what that intelligence can do, you can set it certain problems and it can solve them within, you know, five hundred milliseconds.

Part 2 Discussion of Interview

Peter Lloyd: So that was Elisa. It was quite a complex and abstract discussion. I thought it touched on quite a few sort of philosophical issues almost. And I have to say that I did f$%k up with the recording. I missed the last bit of the discussion. There was only a little bit more and I did thank Elisa at the end.

Mieke van der Bijl: It did sound like it ended very abruptly!

Peter Lloyd: I wondered what you thought Mieke.

Mieke van der Bijl: It made me think. I really liked her thinking, this is not usually a way I think about design. And I know you are also interested in the role of intelligence and artificial intelligence in design methods, because if we're talking about the future of design methods, I guess I've always been looking at it from the other side. And it's nice to kind of bring the two sides together. When I say the other side, I mean that what we've seen over the past 10 years or so is that design has really expanded in terms of its application areas right? So more in the areas of what can design do for businesses and for what it can do for society in general. And I've actually studied how designers are kind of adapting their design methods and practices to this new expanded field. But what Elisa was talking about is more how technology is changing design at the same time. It's actually quite interesting to compare those things and bring those things together.

Peter Lloyd: It was interesting when you think of a computational future, how many familiar concepts you can talk about, too. We talked about stakeholders and co-design in a slightly different way, it adds this different aspect to the discussion in terms of introducing a different intelligence and the idea of a computer, or computational intelligence, being a stakeholder in the process. It makes you do a double-take doesn't it? You know what would that be? One of things I thought right at the end of the interview there were two concepts that I thought were interesting to pick up on and that was, one was when you talk about machine learning and obviously a lot the course has been about learning, you know, learning in the design process. And the other thing, right at the end, Elisa mentioned the idea of dialogue, too. And I think there were two of the fundamental things that we wanted to introduce in the course, the idea that design is this kind of dialogue and also that the design process is a learning process. I wondered, you know, bending back to the first podcast about reflective practice, that using computers in this way makes you kind of reflect on what you're trying to do and what you learn and what other intelligences learn during the process.

Mieke van der Bijl: Yes, and how that in turn just comes in to those learning loops.

Peter Lloyd: Yeah. And what kind of dialogue you actually have with people? Because I mean in a sense it is an artificial distinction between people and computers, because people are very different, too. I think we talked in the interview about in a co-designed session, you're trying to work out what kind of intelligence other people can bring into the discussion. Not everyone is equal. Are they trying to, you know, they bring their expertise in and you in a sense, you're trying to work out what that expertise can bring and how you can work on the design together.

Mieke van der Bijl: One of the things I was thinking about is I read an article a year ago about the term artificial intelligence. So when the first car was introduced, it was not called a car, was called a horseless carriage because they could only compare it to a carriage with horse. When artificial intelligence was introduced, it's always been called artificial intelligence. As in, you know, it's similar to what people do. But actually, it's artificial. It's not that. But if you think about it's really something fundamentally different because it's not a different version of a human being it just brings something else in. If

we're talking about dialogues between human beings and different types of stakeholders and designers and computers, then what does that type of dialogue really mean? I mean, there's still a lot we need to learn. We're still learning a lot about dialogue between human beings. Let alone when you bring other types of intelligence in.

Peter Lloyd: I think looking back over the last maybe 25 years, I mean, since CAD was introduced in the 70s, we've been used to using computational tools. I think Elisa mentioned it too, this idea that computers are a tool that we can use and that we use in a sense to reflect with. We have that kind of dialogue. Especially the more intelligent CAD these days, it gives you options. You can set a range of parameters and you can follow a kind of a process that you work with the computer in developing. What I got from that interview was that we're going up a level here, that they're not passive tools, they're much more kind of active tools. And actually computers are participating in the process of design.

Mieke van der Bijl: Yeah. And it doesn't end, actually. You know, a CAD that's something you use before the product is there. But here we talk about technology in the products that's continuously designing and changing.

Peter Lloyd: Exactly, yeah. That was really striking. We know that data is the future and I think that opens up all kinds of questions about the use of data, the collection of data, how things collect data and understand human behavior. Those things are also caught up in the idea that we're trying to... you know, design becomes much more fluid and diffuse. You know, it's like you're trying to manage this moving stream of data somehow. A designer of the future is going to have to be able to understand and kind of manipulate... during the interview I had the feeling that it was much more like playing. Design will be much more about playing and sort of seeing what happens but within certain ethical boundaries, I think that's always going to be something that humans bring, an ethical stance designing.

Mieke van der Bijl: It reminded me of this talk of John Seely Brown from Xerox PARC when he was talking about how fast society is changing, how fast technology is changing. And he says we're basically living in exponential times because things are

changing so fast that no one can become an expert in anything and everyone will always be a newbie. So that's quite a scary thought. But he says all you need to do in these kind of contexts is that you need to adapt. You need to constantly adapt. And I think that's what's also happening to design. You know, with these new technological developments, we as designers, we need to constantly adapt. And that's an interesting concept, because what does that mean then for students who are studying design? You know they're studying these different design methods. But I think we should also be teaching them, or learning together how we can actually adapt to a changing world.

Peter Lloyd: Yeah, it's that sense of, I think the term is negative capability where you're happy in situations that are ambiguous. You can live in those situations and you can you sort of play with them. You don't get stressed when things aren't resolved. And I think that's an ability that designers, you know, good design have that anyway I think. But the idea that a method is this thing that you can grasp hold of, this kind of life jacket that's going to save you, because it's a very structured process. Maybe that's not true in the future. That's an old way of designing, that idea of user-centred design that Elisa was trying to kind of shift away from, the idea that right in the middle of a process is this set of user needs that you're trying to fulfill. Once you turn that around and actually the design is all about exploring user experience and, design is a bit more automated. The abilities and capabilities you need change quite a lot, I think.

Mieke van der Bijl: Yeah. Something that complements that is that in my research, I'm looking at how designers deal with complexity in the world, not necessarily in technology, but just that we're dealing with complex societal challenges. And one of the things that we're seeing is that designers are more and more focused on relationships between people. Not just users, not just stakeholders, but relationships between different stakeholders. And the tensions that this causes and the opportunities. One of the examples is I started this project, which was for primary school teachers and what we could do to help those teachers do their job better. The first approach was, well, let's just design a product or something that can help those individual teachers. But they ended up designing a speed sharing event, an event where teachers come together, learn from each other, and through that means can do their job better. So that's a good example of using the relationships between people.

Peter Lloyd: And I think in a way, you're setting up the conditions for design to happen.

Mieke van der Bijl: That's exactly right

Peter Lloyd: That's what I think Elisa was talking about. You know, she talked about seeding the design process. As a designer you just choose the important things in a kind of an abstract way. And you set things in motion and then you allow design to happen somehow. You're not in control of the process. You're kind of in control of the process because you set up the process. But there are outcomes that you won't expect.

Mieke van der Bijl: You need to be able to deal with that ambiguity, like you said. We need to think about the world in a different way. Creating platforms or things that enable or conditions. I think it also requires humbleness, because if we're not humble about what we're doing, then we won't really learn. If we're talking about adaptation, how do you adapt? You adapt by also learning from others, also from other disciplines, for example. I think the future of design methods, we will also be working much more with other disciplines and maybe feed into each other's disciplines.

Peter Lloyd: One of the future design methods that Elisa talked about that I thought was interesting, was to try and understand what's happening from the perspective of a thing, an observing thing, like a temperature sensor or something that's collecting data about human behavior, I can't remember what she called it was it digital ethnography or something?

Mieke van der Bijl: Yeah, I know the work. I think she used a kettle.

Peter Lloyd: Yeah. Yeah. Where it where you're trying to put yourself in the shoes of a physical thing to understand what it sees as an example of a new method. I think that that's quite interesting. Exciting times ahead.

Well, it's clear that I mean, the data science aspect of it all and the data that's generated. What I was quite interested in is when we began to touch on the ethical aspects and how often ethical aspects come up in this kind of discussion with data. The final thing that I thought was interesting was the idea of co-performance, too. I hadn't

really come across that term before the interview and I suddenly thought that's quite a nice way of describing - even design without computers it's quite a nice way of describing design as a sort of performance. That you're trying to stage something in setting up a collaborative process. And there is a kind of performance of gestures and language, and there's a kind of theatre of designing that's implied in that term. I think it quite accurately captures some of the more physical aspects of designing somehow?

Mieke van der Bijl: If design is co-performance are designers more like directors?

Peter Lloyd: Playing roles…

Mieke van der Bijl: Oh they're playing roles, are they actors?

Peter Lloyd: Well it opens up that that metaphor of theatre. It's quite a good one for design. Yeah, direction and role playing and the dialogue aspect I think comes in there too.

Mieke van der Bijl: Okay. Acting classes? No, absolutely.

Peter Lloyd: Well I think the third video, I think some of the videos that we've seen, the students have taken roles and acted out those roles. I've always thought that's a useful way of trying to understand situations that you haven't experienced is actually try and put yourself in those shoes. I think a discussion about the future of design touches on lots of things outside of what you'd naturally think of. I thought the interview was good in eliciting those discussions.

Mieke van der Bijl: Well the other way to think about it is if we talk about the future of design, we can see all those changes. But it's also interesting to think about what is it that will stay? Will we still be designers? What is design? Yeah, I think the more we're changing, the more we need to clarify what design really is.

Peter Lloyd: Good point to end on. Okay. This is our final podcast.

Mieke van der Bijl: Oh no!

Peter Lloyd: Well we may have we may have one more podcast, just giving our thoughts on the course. But that probably won't be for a few weeks. But this is the last content podcast. I've really enjoyed talking about all these subjects. I do think the podcast is a good way of introducing people to the different aspects of designing.

Mieke van der Bijl: I've really loved making this podcast. I'm definitely going to do it a lot more in the future. And yeah, I really enjoy the discussions we've had in this little studio, this little box here.

Mieke van der Bijl: It's been great, thanks Mieke.

Peter Lloyd: Good fun.

Mieke van der Bijl: Thanks, Peter.

Peter Lloyd: And bye everyone, thanks for listening.

Mieke van der Bijl: Bye!