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Fashion, 3D "Digital Twins" and Heritage Dress Collections

Patterns for All Bodies
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SPEAKER
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TRANSCRIPT

Danuta Sierhuis: Hello and welcome to the Zoom-room recording studio. My name is Danuta Sierhuis, and I am the Digital Development Coordinator at Agnes Etherington Art Centre, and I am stepping out from behind the computer to have a conversation about digital technologies, fashion and heritage dress collections in museums with Yasmin Koppe. Yasmin, would you like to introduce yourself and your background in the fashion industry?

Yasmin Koppe: Sure. It's a pleasure to join you, Danuta. Thanks for having me. My name is Yasmin Koppe. I am a digital fashion designer and educator, and I'm based in Berlin, Germany. Yeah, my work sits at the intersection of tradition and technology in the fashion, or in the wider garment industry, let's say. So, about my background, maybe briefly, I actually trained as a traditional fashion designer. So that's truly, like, the craft, you know? I studied garment making, pattern construction, fabrics, trims, even a bit of fashion history and sociology. And then I went to work with both leading and emerging brands in London, Barcelona, and here in Berlin. And yeah, to be honest, at some point I began to question the industry a lot and also my role in it. And luckily, at the same time, around that time I became part of a cross-disciplinary collective that was called Wearing Pixels. And, yeah, it was a really nice mix of designers, developers, anthropologists, academics. And this exchange within this group, that was what sparked my decision to then transition into digital fashion. And yeah, use technology for hopefully new paths in the garment industry.

Danuta: That's so cool. What was Wearing Pixels?

Yasmin: So, Wearing Pixels was just the name that we chose for this collective.

Danuta: Okay.

Yasmin: Yeah, it was this notion of rather questioning what's it like to wear pixels, you know? Because we've all heard of the VR glasses, or we might all run around soon and have, wearing these, like, small lenses and just look through that. Like, you know, we have these Meta glasses with the Ray-Ban collaboration now that we can use to make calls or listen to music. And yeah, this idea of when everything started out with digital technologies in fashion and in the garment industry, it was this group met up to reflect on that and think, like, but what does it mean? What is Wearing Pixels? And we met at a workshop in Prague, and we experimented with body scanning, you know, 3D body scanning to create avatars of ourselves or, yeah, eventually also 3D software. And I was so interested and fascinated by that and I thought, Oh, maybe there's some, you know, answers to what I was questioning in the fashion industry that I, yeah, that really actually inspired by hardcore nerd technology.

Danuta: Wow. That is, yeah. Wow. Okay. Yeah. Like, at first, I thought you were going to talk a bit more about, like, wearables, like wearable tech, but that's also so fascinating at the same time. Like, we have a studio here at Queen's called the iTextile or iStudio, which is, like, e-textiles and things like that.

Yasmin: Yeah.

Danuta: But no, yeah. When you're thinking about, like, yourself in, like, an avatar, like, in space, like, what do you wear? Of course, your, like, little avatar needs clothes.

Yasmin: Absolutely. I mean, e-textiles were definitely part of the conversations. And I think the great thing was that we had people there. It wasn't even, like, a person, a model agent, right? What are now virtual humans. How does that translate to our idea of models? Or, you know, an anthropologist, how might this person look at the development of these tools and how we dress and identify. And, yeah, how we present ourselves. But smart textiles and e-textiles definitely have been a part of that research.

Danuta: Very cool. Alright, so my second question is what is your relationship to the dress collection at Agnes Etherington Art Centre?

Yasmin: Yeah, so, I mean, it was thanks to your instinct, Danuta, I would say, and interest in digital tools and, of course, Alicia Boutilier's openness to, you know, that you reached out and we connected, and I started learning more about Agnes and the *Pattern for All Bodies* project. And yeah, I think after our first meeting, really, I was hooked. I really appreciated Agnes for a few factors, you know, when we started talking, the inclusive concept, your critical examination of Canada's colonial past. And, of course, you know, for me it was great, your openness to testing new forms of reimagining historical garments. And then, you know, at some point you told me about the importance of the drag community in your local

community, and that you're hosting these Drag Balls as part of the project and that this is an important feature. So yeah, I was sold on that. It was really inspired.

Danuta: Thank you for those words, Yasmin! I am so glad the project resonated with you. Can you tell us a bit about what you did as part of the *Patterns for All Bodies* project?

Yasmin: Sure. So, my contribution really was to create 3D replicas of a certain dress. Okay, you could also call it, it's a so-called “digital twin” in the digital fashion speak or bubble. And yeah, so I used 3D technology to create that replica of the historical garment.

Danuta: How do you see the importance of these “digital twins” in dressmaking within the fashion world and, also, for also understanding historical dress collections in museums?

Yasmin: So, I, digital technologies, they're really key to reducing waste in the fashion, in the garment industry, and also improving transparency. So with these new tools, addressing the waste problem, right? So, we can virtually sample garments. That means that we design and we review, we fit them literally in 3D. And only then we ever produced the ever first sample, right, ever first physical piece, after we've done all these steps and decisions. And in terms of transparency, there is this concept of digital product passports and this idea of gaining momentum. So, these so-called digital product passports, they would allow you to trace the origin of a garment, you know, the resources that it was made from, who made it, where was it made. So, hopefully, the idea is that this information supports a more ethical production standards, and then also that garments, you know, if they should be resold or if they should be recycled, that we, you know, that that enables us to recycle these garments more effectively, in a more effective way. And yeah, about your question, you know, to understand historically dressed in museum collections, I'd like to, I have a little anecdote to share, because I remember when I was a fashion student, I visited MoMU, which is one of Europe's leading fashion museums in Antwerp. And I was so excited about the, I can't remember what was on show, but I remember really clearly that I was trying to peek through the glass panels, like, literally I was trying to squeeze into between them, you know, because I was so eager to understand the garments' construction, how they were made. And now, if you imagine being able to look at a historical piece from the, from all sides, all angles, even inside out. Yeah, this is really what a 3D replica, the so-called digital twin, enables you to do.

Danuta: How does that kind of help you to understand a garment? Like, if you came across a digital twin, how would that help you to kind of understand the construction or, yeah, like, how it would be put together?

Yasmin: I think it's in the word, really, 3D, right? So, it's like, from all sides, like, 360, really, if you'd like to. You know, you can also at your own pace. And if sometimes on your own device, you can turn a piece, you can look at it from all sides, you can zoom in, you can see,

you know, maybe see, like, really zoom in on some stitching details. Or, I mean, if you'd like to--and if this was enabled from the provider who's, you know, displaying this 3D replica--one could also take this piece apart. It might be really interesting if people would be interested to also, you know, via your project, the *Patterns for All Bodies*, use the patterns you provide, want to sew them, to look at, you know, this part of the sleeve, how was this inserted, or where does this piece go? It just allows you to interact somehow with a piece that would normally be hidden. Not hidden, but that would normally be displayed behind a glass panel.

Danuta: That is very true. Like, if you were in a museum visitor or – like doing research or as a visitor – you wouldn't have the same level of interaction with a garment in a museum collection. With the pattern, you might be able to piece some of that together, but that together with the 3D model and other documentation, you can definitely get a better sense of how the garment was put together – like with our project, we released the patterns freely available – but that together with the 3D model, and maybe with some of the documentation that we provide about the garments, you can definitely get a better sense of how the garment was put together by, you know, manipulating the model and zooming in, as you say. And that I think adds to the historical interpretation of the garment. So let me pose this question to you: as a digital dressmaker, can you tell us a bit about what you feel is your contribution to the history of fashion?

Yasmin: Yeah, it sounds quite humbling to contribute to the history of fashion, but I think, I hope that my contribution will be, my humble contribution will be to, I'd love to make fashion history more accessible to a wider audience, really. So, at the moment, I mean, technology is not fully there yet. So it cannot, in my opinion, replace the delight of standing in front of a piece from, like, several hundred years ago, right? And to look at that beautiful stitching, sometimes hand-stitched, the delicacy of these fantastic materials. And obviously, sometimes there's this element of surprise. I stand in front of these pieces and get an idea of proportions, like, wow, how much shorter people used to be, or, like, what kind of tiny shoes they wore back then, right? Still, with my digital creations, you know, I hope to just, I want to spark some of that fascination, those feelings I get with standing in front of pieces. And most importantly, I want to share it with people who might not live near a, you know, one of the fancy museums, or any museum really, or who don't have access to travel but they still, you know, they might still want to explore historical pieces. So yeah, that's what I hope to contribute.

Danuta: That's amazing. When you say that the technology isn't quite there yet, what did you mean by that?

Yasmin: I think we can create really beautiful full replicas, renderings, you know, images. It's just sometimes, you know, there's also technology like AR filters that will enable us to

try on these pieces even in a very playful way, or some of, you know, your listeners, you might have experienced that on, you know, using technology like Snapchat or Instagram, you know, these face filters. But sometimes these can be a bit glitchy. I think some people find it a bit alienating. And I think there's still something, it has such a, God, I'm trying to find the right words without sounding too sentimental or romantic, but there's something like this aura of, like, this really historical piece and it has its own character. And I think technology was still, even with AI now. AI is so perfect and the thing about historical garments is that they're not perfect. That they've been, you know, lived in and travelled through time. And, yeah, I think that's probably where I'm getting that, that the certain feeling we're getting from, we cannot touch them often, we're not allowed to, we shouldn't in a museum. But, yeah, I think we're quite close to it. It's just technology can sometimes feel still like there's a level between you and the piece you're looking at.

Danuta: That's really interesting that you kind of, like, speak about, like, the, not cleanliness, but, like, perfect, like, aspects to what these, like, digital twins kind of end up manifesting. And do you think, like, the digital twins will ever have that kind of lived-in quality without somebody kind of baking it in at the beginning, like, during the digital fabrication process? Like, how can it acquire that kind of lived-in quality? Like, how can you live in, like, a digital garment to this, in the same kind of way?

Yasmin: That's kind of looping back to the beginning of, like, the question of Wearing Pixels, in that case polygons, 3D meshes. Yeah, how can it be lived in? I think if we further push and explore the technology that will allow us to interact with these 3D replicas, it's one thing to look at it, but another one to, I think we have, there's some really great immersive, you know, virtual worlds out there. And also with the generation, you know, like Gen Z and the generation even after that, they're so much more used to move in these environments, you know, also in game settings, etc. And I think that will play a huge role to de-alienate this whole idea of 3D replicas and then, you know, you might build own persona in the virtual space, which might be different from, you know, what you're wearing, how you're styling, who you are in the physical realm, in reality. And I think the better these, and they're all really quite amazing experiences out there, the better these amount of platforms become, and the more we allow ourselves to explore those and embrace that, I think, yeah, I think the more real possibly the feel of these 3D replicas might become. And maybe that's not even the right thing to aim for that. Maybe we should not, maybe we shouldn't really even try and create that perfect copy of reality. It's just, like, a new reality maybe at some point.

Danuta: Yeah, something different, something else. That's really fascinating. So, can you explain a little bit the process behind reverse engineering historical garments and how 3D digital twins or replicas are created?

Yasmin: Yeah. So, I think in our very case, in the project we just did for Agnes, we first looked at several pieces, right from Agnes' collection before landing on the day dress. Okay, so, and after we've decided for that dress, I began by diving into existing research that you also provided, and I've been also looking at other garments of the time, actually even including how they've been represented in period films, just to get an idea of, like, how they would move and silhouettes. Agnes provided a very excellent, you know, high-resolution images, very helpful. And then there was just the pattern from historical pattern maker, Carolyn Dowdell. And yeah, I traced that pattern in 3D software, assembled the pieces, simulated them on an avatar. And the avatar, you know, that itself was its own, required its own research. I then looked up the average height and, you know, bust, waist, hip measurements of the time, and adjusted the avatar's figure. So, the dress that was based on the original pattern, that was simulated correctly on the figure. Tiny waist measurements, I can only say. But yeah, there was also the dress print. We have this beautiful rose pattern. And because at the time of creation we didn't have access to the piece itself, the, yeah, the garment, the original, I had to work from the photos. And none of them, I think, showed the full repeat. So, there was a lot of, like, piecing it together in Photoshop until we made it work. Yeah.

Danuta: So, you mentioned using Photoshop as part of your process. What other or software do you use for this process to make a digital twin?

Yasmin: I use different software for each stage of the project, I want to say. Like, I use a software that's called CLO-3D. C-L-O-3-D, to recreate the patterns. Literally, I saw them in 3D and fit them on the avatar, so just described. And then the next step is, and that's a really important one, to actually breathe life into 3D models, which are basically they are polygon meshes, to hit you with the technical terms. And texturing, you know, applying texture is really important. And I do that with the help of a program from Adobe called Substance Painter, Substance Sampler. And then there's my favourite tool, which is probably my favourite tool, which is called Blender. It's an opensource software. And, yeah, I love that. There's a great community around that software, too. And I use it to set up lighting, background, cameras, all for the rendering process. And then, you know, we have all the rendering done. And then I do the post edits in Blender. either the animation or the still images in Photoshop and Premiere, Adobe Premiere. So you see, it's quite a journey. To be honest, I also always refer to my work as digital craftsmanship. It's still a craft, it's just digital now.

Danuta: That is quite the software stack [laughter]. Your poor computer.

Yasmin: Oh God, I built a desktop computer myself.

Danuta: Amazing. Just having two Adobe programs open at the same time usually crashes.

Yasmin: I hear you, yeah. It has really good fancy cooling systems, trust me.

Danuta: Yeah, you probably need a quite powerful machine to do the kind of work that you do, so that's amazing.

Yasmin: I do. I do.

Danuta: So, the next question is, “how do you balance honouring a historical garment's legacy while reimagining it digitally for a contemporary audience?”

Yasmin: Yeah, I mean, that's a good one. I think the success of re-imagining the day dress, right, while it's true to its legacy, and then truly that came down to our collaboration, because I can be, you know, an expert in all these tools that I just listed to you. And, however, I benefited from input from your side and Alicia's side, because, you know, throughout the process we had several review sessions. And your feedback, each time we had a review, like, really helped me to then balance the then and the now, right? Because it gave me perspective on me being, like, very much in the now and technology and you bringing ideas about the historical angle, too. Maybe to give you a good example, when we looked at posing and animation, Alicia shared how she imagined the person who might have worn the dress, you know, and at what time of day and what setting. Was it a garden at tea time or was it getting dressed, you know, dressing room? And yeah, that input was really, it was very valuable. Actually, I even started listening to specific music while doing the animation just, you know, to capture the mood and hopefully transport the vibe then [laughter].

Danuta: That's really cute. What were you listening to?

Yasmin: I don't even know at some point. I mean, sometimes there was literally this ambient music with, like, some, like, animal sounds. But also, I put in some, you know, some romantic composers of the time. Like, you know, some Chopin, Schumann. Yeah, quite the --

Danuta: Yeah, I feel like that kind of came through in the sound that you chose. for the animation.

Yasmin: Yeah, that's the mix. I'm happy you bring that up.

Danuta: Yeah, it was, like, quite romantic and, like, you know, the bird sound, which was, like, a local Kingston bird that Alicia chose. It definitely had this kind of, like, very romantic feel to it. And yeah, it kind of did feel like she was just walking, like, this little ghost dress was just walking around in the garden doing a little twirl.

Yasmin: Oh, yeah, that's so great that it transported that. I mean, there's also some points, you know, where we turn and where the ambient, a bit more beat hits. We're transitioning, but yeah.

Danuta: You know, that contemporary spin to it.

Yasmin: Exactly, yeah.

Danuta: Yeah. Bridge in time periods, too.

Yasmin: Exactly, yeah.

Danuta: So, you kind of touched on this a little bit earlier, but how can 3D models of historical garments be used?

Yasmin: That's actually -- you'd be surprised, there are quite some use cases. One, I mean, we touched on that earlier, is embedding the 3D model in a digital exhibition, say, on a museum's website and, you know, visitors then can explore, as we said, garments from all angles, at their own pace, by their own devices. Another one, we also mentioned that briefly, just to repeat, is to highlight the pattern pieces, you know, that the historical garment was made from. You can take it apart. Really, this could be an educational attribute for all those who might be interested to recreate a historical garment or to study it, better understand it. all the different components and pattern pieces and features. And then also I think animation is really a highlight. It's not too interactive. However, if you think of a historical garment, which is often, they're often too delicate to do much handling. But this digital twin, you know, they're robust. This allows us to be playful, maybe walk, twirl, have a little dance, and yeah, just, I think to really give a sense of how all these layers, these kinds of fabrics, how they used to move with these silhouettes.

Danuta: Yeah, that's definitely true of this dress, the day dress. Yeah, it can't be worn or mounted again due to it’s age, unfortunately. It’s quite fragile now, so it can only be displayed as a sleeping beauty --

Yasmin: Sleeping beauty.

Danuta: -- to reference an exhibition at the Met [laughter]. So yeah, this is now, like, and I think, like, I had a conversation with Alicia not too long ago where she was kind of saying, like, it's a little sad, you know, that you can't see these garments in motion and, like, how they would have been worn during their time periods.

Yasmin: Yeah.

Danuta: So having, like you just said, like, an animation to kind of get that sense of how, like, that fabric would have moved is, yeah, really valuable, I think, information for somebody who was, you know, coming to this project, perhaps --

Yasmin: Yeah.

Danuta: -- to study dress history, and, you know, or even just, like, a dressmaker coming and being like, “Oh, okay, that's how, like, it’s not supposed to be super stiff,” you know.

Yasmin: Exactly so. And I mean, I remember us really being very specific on -- like , the volume of the sleeves, “did we get that right?” And the bounciness of the flounces and, like, you know, the whole fall from the waist down. It's, like, really, we tried to really, really recreate what we saw in the day dress. And yeah.

Danuta: Yeah. And very sensitive of, like, what kind of undergarments would have been under there --

Yasmin: Absolutely, yeah.

Danuta: -- even though you can't see them in the model. That, you know, there would be this, like, bustle and, or, like, kind of like undergarment with, like, the little, like, cap sleeves to, like, hold the poofs out.

Yasmin: Exactly, yeah. They were uncomfortable for sure.

Danuta: Probably, yeah. All right, so where do you see digital technology going with historical fashion and these kind of museum collections down the road?

Yasmin: I mean, there are already some amazing initiatives out there. You know, they are truly at the intersection of technology and archive collections. I can highly recommend looking at the work of an initiative called d_Archive. That's d underscore archive, or the Digital Fashion Archive. It's also early days, and I believe this to be a really good use case for digital tools and, you know, beyond also digital fashion. My hope really is that more museums and cultural institutions will be inspired by – you’re doing pioneer work with this project at Agnes. And I just hope that more institutions will pick up on it and, you know, trust open, trust using technology, not only maybe for preservation reasons, but also for some enhanced storytelling. I think in the end, you just mentioned that, right? In the end, it means we can keep these collections alive. Like even beyond, there might become a point for some pieces, or every piece at some point in the future, that it cannot be, no longer be displayed physically. Maybe not mounted on a dummy, but also not at all, because it's just so fragile. And still, you know, we can show these pieces. We can show them reimagined

and hopefully sharing them for all these, like, immersive and hopefully engaging digital experiences will do its, yeah, have a contribution to conservation.

Danuta: Yeah, I'm always for digitization of anything to make things more accessible.

Yasmin: I thought you might.

Danuta: It's my job title, what can I say [laughter]? Final thoughts on creating the 3D model of the day dress for the Patterns for All Bodies project? We really enjoyed working with you and we learned a lot, you know, about, you know, what it takes to digitize a dress. And learned a lot about, you know, your process and, like, your perspective on fashion and dress history. And we really appreciate you --

Yasmin: Well, thank you.

Danuta: -- for teaching us all about that. But yeah, what are your reflections on the entire project and your experience?

Yasmin: Yeah, right back to you. Like, this is mutual, it was really nice to work together on this project. As I said earlier, it came down to our collaboration and also your input that inspired, like, how we shaped this 3D replica. And I mean, it was a journey, as you heard earlier. I'm really excited to start sharing some behind-the-scenes snippets of our progress once you launch the model. For me, this was only my second time working on a historical garment, and I definitely, you know, there were some challenges I hadn't worked with before. But I'm, yeah, I'm just really grateful for the trust you and Alicia put in me. Because, you know, you've been also open to work with a creator that you've never met in person, you know, across borders. There were moments where I wished, you know, I just wished to be with you on your side of the world to study the piece in person. There was a moment when we had one meeting and Alicia was holding a tiny scrap of the actual material in front of the Zoom camera to help me understand, you know, the weave and the fabric physics. And, you know, when it came to animation, as you just mentioned, you know, there's underlayers, undergarments, supporting garments. And it wasn't easy. In 3D, we work with gravity settings, right? And to really recreate how this dress would move, to pay respect to it, and still animate it in a fun little way. But yeah, to be true to its legacy, that was definitely challenging, but also very fun. In the end, you know, there's oceans between us and all the time zones and stuff. But yeah, I would say we made the polygons dance. And I think it was, for me, it was a really exciting way of working with history, bringing it to life, and I'm so grateful to have been invited to be a part of this project.

Danuta: No way! That was your second historical garment!

Yasmin: No, really, it was. I mean, [multiple speakers] worked with garments before, but, yeah.

Danuta: Wow, okay. Do you think you'll, like, continue on, like, with any historical garments if you've got the opportunity?

Yasmin: I'd love to, yeah. If anyone's listening, and have an archive collection, I'm super interested in this use case. I'd love to explore this further. I'd love, you know, to really study a piece in depth. It's a very different pace than when you work in the fashion industry or with, you know, current temporary garments. So yeah, I can definitely see this as an angle I'd like to pursue more.

Yasmin: Yeah, and hopefully, yeah, you get to actually see the garment in person. That was, yeah, I think the most challenging for us, too, because we really wanted to, like, be able to show it to you, too.

Yasmin: Yeah.

Danuta: I think, like, after that call with, like, the little piece of the fabric, we were like, we wish we could have just, like, mailed it to you or something… but we couldn't do that.

Yasmin: Yes, that would be nice, yeah. And then at some point we realized, "Oh yeah, all our screens, they have different colour settings," too. So, when we try to decide, like, "Do you guys think the colour is matching?" And then I realized, like, "Wow, I'm looking at three different screens here, and they also have different settings."

Danuta: Yeah, and then there's, like, the light in Alicia's office --

Yasmin: Oh, yeah.

Danuta: -- and, like, what is that camera doing? What is Zoom doing? How is it being mediated digitally to you? You had to navigate all these different layers and kind of like weird concepts of just, you know, not being able to see the piece in person and kind of, yeah, just through all these, like, different layers of challenges. But yeah, you made an amazing, amazing model.

Yasmin: Thank you so much. Yeah, it was really fun. Really happy with the outcome. So curious how your community will pick up on it.

Danuta: Yeah, we're really excited to make it available.

Yasmin: So, so excited. Can't wait. Amazing.

Danuta: Okay, well that's the end of my questions.

Yasmin: Yes, thank you so much.