Rebecca Merlic – Digital architect and artist

Dark Euphoria | Interviewer: Céline Delatte
I'm glad to be with you today to get to know more about your vision, your use of "VR", "AR" and more broadly, digital opportunities you explore as a 21st century artist... First of all, could you present yourself?

Rebecca Merlic: I'm Rebecca Merlic! I come from architecture and I specialized in digital and analog production of architecture at the Academy of Fine Arts in Vienna. So I think I still consider myself an architect, maybe a digital architect and artist.

Celine Delatte / Dark Euphoria: Did you actually use XR in architecture?

Rebecca M.: No, actually not. But for my diploma work I used game engines such as Unity to kind of produce an experience which cannot be produced in a film format or in two dimensional formats. So I always base my game experiences on real body experiments. But I still consider myself kind of an architect because creating the world, it's also designing.

Celine D. / Dark Euphoria: So how did you meet XR?

Rebecca M.: My first contact was maybe with my biggest project: *Glitchbodies*. It started as a PC game, but then I felt like experiencing other people's digital representation, bodies and stories... It helped me to work in VR. I worked on scanning real persons and telling their stories in a co-creative, inclusive way. I wanted to try out how it feels in VR; if you feel closer to the person... And it's actually really incredible. It's something you cannot produce with a projection or by just playing it on the screen. **With VR you can really get very close to the people's stories and representations.**
VR for me is a good tool, but it's **very exclusive**. I think just 1% of all humans have access to it. Not even own it, but access to it. For now the development is still not meeting the masses. Thus, **I think augmented reality makes more sense**. Everybody owns a smartphone almost, it's a more inclusive development. So I think this is the way to go further. I always develop **multi-platform projects**. Doing PC games, animation movies, augmented reality and VR. **Working on this multi-platform level is a way to reach different audiences...**

Celine D. / Dark Euphoria: What software, hardware do you actually use in order to create these experiences?

Rebecca M.: I use Unity and then I use different 3D programs: Rhino, Grasshopper, Meshlab... And of course I use 3D scanning, with handheld scanners.

Celine D. / Dark Euphoria : Do you have any tips to find some resources on XR, like tools, tutorials, channels, websites, newsletters,...?

Rebecca M.: Six years ago when I started technical university, I was very scared because I didn't have any knowledge about 3D modeling or 3D programs... **I started with processing and coding because I didn't**

know any other programs. I think I would encourage female artists to just start doing it because **I still feel that it's a very male dominated world** and also that female artists are not paid equally nor have the same opportunity; or just have to work harder to be recognized. In the field of media arts especially.

I would just encourage to try out different programs. You don't have to be like a specialist in Unity or Rhino or Grasshopper or processing. **You know, just play with it and fail. And maybe the mistakes are the art piece in itself.**
(...)
I was influenced by two of my professors: Michael Hansmeyer, he taught me processing and also taught me that **the computer can kind of surprise you**. And François Roche. The surprises, you cannot foresee. And if you try to just master one program and focus on this mastering of knowing software, you don't have the surprise anymore. So I think just using really different programs and focusing on importing and exporting files in different programs and then finding ways of production. **Finding your own way.** This way of production is maybe also how I do it. And write it down, because usually I don't. Like I produced something two years ago and I don't know how I got this result... So yes, write your ways to remember.

Celine D. / Dark Euphoria: Where do you think XR is headed and where would you want it headed?

Rebecca M.: I think new devices will come soon and it'll be more stable and more integrated into our daily lives. I think the tools we have now are just like some relics from the past. I don't know what will come, but it'll be easier to access, probably coming from merchandised marketing. And I also think that AI is a big topic to produce digital content. Problematic, but inspiring and surprising...

Challenging !

In-Dialog
Calin Segal – Experience designer
& **Codin Segal** – Developer

Dark Euphoria | Interviewer: Céline Delatte
So excited to discover about the complementary XR competences you combine into the "In-Dialog" collective in order to create multi*media* pieces of art: from physical to digital – back-and-forth… Please; let us know more!

Calin Segal: I am the artistic director and founder of In-Dialog Studios. Over the past six years, what began as a collective has evolved into a studio. My roots are in architecture, but I spent a significant portion of my youth and early career as a VJ. This positions me at the intersection of underground culture and academic research. In essence, I see myself as an experience designer my work is about shaping the context and evoking emotions. Rather than merely offering conceptual stimulation rooted in academic premises, I prioritize engaging directly with the audience. My belief is that true artistry lies in the ability to resonate, captivate, and entertain, fostering a genuine connection with those who experience it.

Codin Segal: I'm the lead developer of the In-Dialog's team. I've been developing for the past eight years now. I have a background in economics and programming, and I've been working with the In-Dialog collective since the creation of it.

Celine Delatte / Dark Euphoria: How did you meet XR?

Calin S.: My first experience was when one of my managers as a VJ asked me if I could make an art installation. I hadn't done it before, but I already had 3D rendering and projection mapping skills. So I said, "Okay, why not? Let's learn something new!" We had a developer back then (it was before In-Dialog) who dropped out halfway through the project. So, I had to learn on the go, let's say. That was the first experience with XR, like just getting thrown into it… (…) But then I started to love it. It's a medium that allows me to create digital content in its native format. So I'm not anymore rendering or transposing it to a 2D format, or I'm not any more focused on one pre-designed piece. I truly have the entire experience within my grasp, allowing me to craft distinct and immersive worlds on the go.

Codin S.: My first experience with XR was one of our projects (Machinoscop) where we had to create a new way of exploring digital content in the Parc de la Villette where we were residents in 2018. It was exciting for me to use this medium because it was still **rooted in physical experience but augmented by digital tools…** It allowed me to convey my unique perspective and empowered the audience to curate their own experiences, **letting them interpret the same artwork in a diverse way.**

Celine D. / Dark Euphoria: What are your favorite XR tools?

Calin S.: Game **engines** would be the first cause that's what we're controlling the most. And we also have professionally done video games. We've launched two video games before, so we're really familiar with this tool. But also now, with the advancement of AI, tools are becoming more useful for world-building (languages models ,image generation tools, and NPC trained using reinforced learning). By enabling quicker iterations, it provides more time for refining concepts and enhancing the user experience rather than focusing solely on asset creation.The main tool that we use is Unity game engine because of its modular architecture and vast online community. At the same time we also use a wide pallet of other simulation environments like : TouchDesigner, Notch, Houdini.

Codin S.: Kind of the same, like, I've been using Unity most of the time, but then as well I've been developing web experiences, so I've been using React; three.js as a rendering engine...

Calin S.: – But also backend! He's the master of the backend. He does the heavy-lifting programming.

Codin S.: ...like setting up servers, multiplayer games we did so far. Multiplayer VR experiences as well. Synchronizing over networks...

Celine D. / Dark Euphoria: Do you have any tips to find resources on likes, channels? Where do you find your tricks?

Calin S.: The holy grail is YouTube. And then Reddit (content creators such as Two Minute Papers, The Coding Train, Sebastian Lague, 3Blue1Brown, Matthew Hallberg, Artful Bytes, and Entagma). Also, the dedicated discord groups of passionate artists spend their time sharing their experiences (one of my favorites is Art-o-Cord). Simply getting lost browsing on GitHub and exploring other people's work can help a lot when facing new technical challenges.

Celine D. / Dark Euphoria: The best way is to get lost.

Calin + Codin S.: Exactly, exactly !

Calin S.: I have a different approach. Sometimes, I contact the developers directly, and we start to build on their platform's open-source codes... I either go to meetings and conferences. Conferences are an excellent show-and-tell moment.

Celine D. / Dark Euphoria: Would you have any advice for creators who would start with XR?

Calin S.: **Don't think you're in a bubble; this hasn't been done before. XR is the combination of theater, fine arts, and video game culture,** so in a way, it takes from all the other art fields and puts them together in a new medium. So always keep an open mind that **it's not just a tech bubble, and it has broader ramifications outside of the XR world**. I think that one of the main problems is that XR kind of stands in a free-form bubble. It's being tried now with cinema to be integrated, but I think it's very limiting to narrow it down to one field. I think **XR is more of a layer on top of existing forms of artistic expression and is not a form in itself.**

Codin S.: Well, I could just advise from a technical point of view. Don't be afraid. **Jump into it and ask the community. The community will always help you back.**

Celine D. / Dark Euphoria: Wow. I want to join the community now. <laugh>. Last question, where do you think XR is headed and where would you want it headed?

Calin S.: There are two branches. One is the tech world development side, which is very gimmicky and commercial. And the other one is the very abstract and experimental part. And slowly and slowly, as with any kind of new medium, we('ll) start to see it disseminate into other fields and stop becoming an entity in itself. The same as AI, which stopped becoming a standalone experience and is now embedded into almost all the software. So, we stopped discussing it. I think as XR starts to mature, it will become an integral part of other established art forms like theater, cinema, and performance art, enriching and expanding their experiential potential.

Thank you so much.

Leon Van Oldenborgh – Play-artist / Game and interaction designer

Dark Euphoria | Interviewer: Céline Delatte

Leon, thank you for taking this time to share with us your playful use of eXtended Realities... Feels like, more than just proposing games; you actually question societal processes through your artistic projects... Can you tell us more?

Leon Van Oldenborgh: I'm classically trained in game design and now I'm active in the media art space, but I still have a focus on producing games and sort of trying to figure out what this powerful medium can do within the media art space.

The topics that I tackle quite often are related to getting people to reflect on their own behavior. Games are uniquely good at that. Especially in routines that people have. So basically, interactions that are common now, especially with technology. **We have already decided to live with technology, we didn't really stand still to think about what kind of effect this might have. If we, for example, collectively all use a certain type of technology, what kind of societal effect does that then produce?**

I try to make games that are fun, hopefully; but I also have this critical element where I want people to reflect at some point. Like, **have you ever thought about how the game influences or incentivizes you to do certain things?** It can open up a conversation about these routines or other systems that are in place that I try to describe in the game...

Celine Delatte / Dark Euphoria: How did you meet XR? Like, what was your first contact?

Leon V. O.: I didn't really play that much XR experiences. When I was younger I did play Pokemon Go actually, quite a lot. But I really started to experiment and figure out the whole space when I was doing my studies as a game designer. I was experimenting with all these technologies and I made several games in VR but also AR, with HoloLens or Oculus headsets and things like that... Also with some really cool crossovers where, for example, the players would wear VR headsets in a black box with motion capture cameras, in which we managed to track several objects and then we were actually having like, multiple people with VR headsets and they could all track the same objects, but then we mapped different digital objects to these physical objects and it became really confusing and really interesting... I experimented a lot with it and then I decided to sort of move away from VR because it actually makes me motion-sick quite easily, so for me it was kind of uncomfortable to keep on making these games 'cause you have to test them and, when you're building them, they don't run quite as smoothly as you want, so that doesn't help...

So I shifted my attention more towards mobile phones. Most of the games that I make currently are for phones. And there of course, **I'm trying to figure out the AR space in the mobile phone area**. I'm also experimenting with new ways of creating VR experiences on phones, using the phone both as the controller since it can do positional tracking, but also as a window into the VR space, so it kind of looks like the phone's camera is passing through video from the virtual space. It's not completely immersive but this is sort of your rift into the other world. I find it's a really interesting space to work in, especially outside of VR.

Celine D. / Dark Euphoria: And what kind of software or hardware do you use in order to build these kind of experiences?

Leon V. O.: Basically I do everything in Unity. I love Unity.

C.D: You're all Unity sponsored, aren't you? <laugh>

Leon V. O.: I mean some people use Unreal or TouchDesigner or things like that... Personally, as I started with Unity in my classes, I'm very comfortable with it, so for me, it's such an open playground to really look at producing new things and very innovative ways of interacting. In engines like Unreal, they have a lot of systems that they already produce that you can use, which is nice if you want to make something that is close to something that already exists. But if you want to experiment, really quickly prototype, with weird interactions... I feel such freedom in Unity to do so and sort of break the systems that are already there and link everything together with code.

I taught myself to code. **I never got proper coding lessons but it was just that I had this idea for interaction and that no one was gonna code it for me.** And in Unity... My code... it's completely not optimized or efficient code, but it does work.

Celine D. / Dark Euphoria: And how did you learn to code on your own? By using tutos? Do you have any channels that you would recommend?

Leon V. O.: Actually, well this channel stopped though, but at the beginning I looked a lot at Brackeys. It was a really good place to start. And there's some other YouTube channels, one that also focus on VR development and cool new ways of doing this... Valem (and Valem Tutorials), he makes just really quick VR useful prototypes. Some other YouTube channels that are great places to start in Unity generally or get some inspiration are: Mix and Jam, Game Dev Guide, iHeartGameDev, Sebastian Lague and CodeParade. And then of course on Twitter, on Instagram, there's just fun people messing around.. When The Oculus Quest got the hand tracking feature, people were experimenting with it. And this guy, Daniel Beauchamp, made all these crazy VR prototypes where you had a puzzle where you had to cut off your own hand, you were then locked up in a cell and then the key was behind the bars, so you had to throw your hand and then walk around to control it. I mean, yeah, just all these people that do these really quick innovative prototypes. I also really like Sander Veenhof who experiments a lot with AR interactions.

And as far as learning Unity... I had the design of the game and wanted to implement it so then **you just start Googling how to do things and then at some point you'll become good at it.** Just try to make things!

Celine D. / Dark Euphoria: Would you have any advice for an artist or creative who would like to begin with XR?

Leon V. O.: For me it was mostly first discovering what other people made already. There are tons of cool games. Like "A Fisherman Tale". This was a game where you were in a lighthouse. And then in the middle of the lighthouse you have a smaller version of the lighthouse, but if you put like an object into the smaller version, it becomes the bigger object. It's sort of a synched space. And just these crazy weird ways of looking at how to behave in three dimensions, they're super cool... You'll get inspired and then maybe you'll think "it's actually not too difficult to start.". I mean in Unity you just press the XR button basically and it

already sets up a scene that has all the basic functionality that you'd want. It is so nice that the infrastructure is already there so you don't have to start programming all of that every time. You can really focus on that one thing that's unique and that you think is a new cool interaction.

Celine D. / Dark Euphoria: Where do you think XR is headed and where would you want it to be headed?

Leon V. O.: I feel like there's quite different facets of XR. Of course you now have the metaverse, all these kinds of things... To me it almost looks like we're really out of space in the real world to sell and profit off of... So now companies like Meta are just creating new digital space to profit off of. I don't really know if I like where that is headed.

But in the art scene, I think there's some really cool experiments being done. I think it's super relevant. For example, the discussion that's opening up around bodies and gender... Since it's super immersive, you can even create out of body experiences with it... I feel like it can still teach us a lot as well by altering our perceptions and senses. **The connection but also the disconnection you can create between a body in digital space and a body in physical space is *I think* the most interesting part of XR at the moment in the art space.**

New ways of experiencing things that otherwise it wouldn't even be possible to experience. Hopefully people are gonna continue experimenting, and also not just completely replacing senses. For example, the project "The Algorithm of Care" from Leo and Marlot is not about just adding a new sense... And I think that's also really cool! You can focus more on not even adding a new layer on normal reality, but sort of **showing a layer that was already there but that we couldn't see before...** I feel like there's a lot of things to continue discovering.

The corporate part is a bit... I don't really like Meta. But it's becoming more ingrained in just everyday life. For example, self-driving cars... That's also AR in a way! I feel like there's a lot of applications like that that will continue to profit off of it, but for me the interesting part is like to discover more about being human and our culture...

Thank you!

Marlot Meyer - INTER(Active|Net)-MULTI(Media|Disciplinary)-ARTIST
& **Leo Scarin -** Artist, designer and educator in creative technology

Dark Euphoria | Interviewer: Céline Delatte
Grateful to take this valuable time with you two. "The Algortihm of Care" makes me feel like you have a very aware and sensitive (in multiple senses) relationship to eXtendedRrealities. It's soft, inspiring – and definitely disruptive. Could you each share with us your specific journey; approach and feelings about that?

Marlot Meyer: ...My work focuses mainly on **expanding the awareness of the human experience to incorporate more than just the human experience.** It has always been based in this physical body and this physical space, but still using technology as a tool to show what else is out there that we can't see with our own eyes or our own senses, but could actually, if we know it's there, it could give us more meaning.

Leo Scarin: My work is basically just playful, alternative ways of researching. I research technology's social, political, and increasingly ecological impact through the use of immersive or interactive installations. That's basically my medium.

Celine Delatte / Dark Euphoria: How did you actually meet XR?

Marlot M.: My version of XR is not linked to screens or anything. I remember I was working with a touch sensor. I was just trying to understand how it works. I was reading the sensor and it just showed a stream of numbers. I had my hand above the sensor (not touching yet) and the numbers went down and I was like "what ?". That was such a moment for me, where I suddenly realised the sensor is seeing me, it's measuring me. It's showing me: you don't end where your skin ends, you have electricity around. And then I was like "wow, if I can use that to show other people...". If you understand that there is this energy, there is a relationship between things close to each other. And then imagining how to show that to someone, how to have an experience of that; create an experience of that for someone else in a way that they can then have that magic moment as well.

Celine D. / Dark Euphoria: Wow. It's a very sensitive first meeting, it was almost like a physical contact...

Marlot M.: I guess it's not extended reality in the sense that it's not creating something new but it's actually taking this reality and extending what we can get out of it.

Leo S.: I share your enthusiasm, but for me it was less of a moment. I just gradually found myself into XR. My father was a programmer, first generation of programmers in my hometown, and he had this house office which was full with obsolete media, like floppy disks and CDs and these massive monitor screens. I grew up with this aesthetic of informatics/cyber addicts. Also, I did music (...) and music for me was exploring the sensations and messages through sound.

It was many moments... I went to London. I started working for this startup who made a product called Mogees. This was in 2015-2016. They just designed this sticky contact microphone together with an app for iOS. You could stick these microphones to any surface and they would turn any material into an instrument

by detecting and recognising the sound vibration on a local machine learning system. That was a very advanced use of this technology: it extended the concept of sound and interface. At the time, this was an emerging tool looking for a real-life application. Bruno Zamborlin (Mogees founder), however, developed his vision creatively and collaborated with artists, musicians, and recently with the collective Fosbury Architecture at the Venice Biennale 2023. So there was a clear intersection of art and design.
(...)
This inspired me to go into interactive media design. So Marlot and I actually did the same bachelor. That's how we know each other.

Marlot M.: And we're also now both teaching there.

Leo S.: ...Then I truly understood **it's not just about the technology, but it's about how systems interrupt and how to design new systems to extend your understanding of technology itself but also of society, politics, ecology and even holistic approach**. It goes all back to the floppy disks in my dad's office.

Celine D. / Dark Euphoria: That's a real journey.

Leo S.: ...I guess it's also a generational thing. I grew up with the internet, I was always looking on how to extend my sense of the world through technology. I come from a very boring small town where nothing was happening... I would spend afternoons on Google Earth.

Marlot M.: It's so funny cause it's like the exact opposite upbringing. I really hated technology. Thought it was not worth the real thing, until that magic moment in third year of I/M/D (Interactive/Media/Design). (...) So we kind of met in the middle.

Celine D. / Dark Euphoria: You were like complimentary... What is your favourite XR tool?

Leo S.: Sensing machines in the wider spectrum of what a sensing machine means. I happen to work a lot with virtual reality, although I don't like it. I just think the medium itself is not at the point that it should be. But I like to misuse these technologies. Together with Marlot, we personalized our own VR experience to be a thermal vision experience. Then it is about extending senses... So to me, the best XR tools to achieve that are sensing machines: the complex combinations of movement sensors, touch, sound, computer vision, pieced together in a customised design. For example, our VR experience allows you to generate a "thermal photogrammetry" of your surroundings through our own built-in thermal sensor. (...) It's also about scales and **how we use technologies as metaphors.** If you think about the cloud, the bugs... **There's some sort of ecological literacy to technology somehow, but I don't think it's accidental.** So yeah sensing machines are what for me achieves this other understanding of the world of technology of beings.

Celine D. / Dark Euphoria: Do you have any specific software, open source tools?

Leo S.: As an educator, I tend not to always narrow down to one software. **I always teach the students to just look for what fits your concept rather than fit your concept to the technology. It's a collaborative process.** TouchDesigner, Unity, Processing, Blender... I often try to use open software. Coding: **C++, Java, Python**. For the project "The Collective Algorithm of Care" we prototyped it in TouchDesigner and Arduino, because we needed something quick, and that's great for prototyping quickly. But if we were to redo this we would go low level cause of course then you encounter performance issues, but this is all technical

stuff... (To Marlot) You were using Arduino, ESPs, all of these technologies.

Marlot M.: Added to that, I also have non-digital tools. I work a lot with materials. How are we gonna make this thing, how is it gonna exist in a way that an interaction can *physically* take place.

I really try to have no waste when working with materials. This material I used on the headset is like forever reusable plastic. You melt it by putting it in boiled water so it becomes clay, and then in less than a minute it's hard again. When you're done with your prototype, you can just throw it back in the water and use it for something else. It's called Polymorph Plastic. (Amazon Link)

As per the coding parts, I work mostly with **ESP32** cause they can do everything faster and they already have some sensors in them like the electromagnetic field sensor... This project I coded it in Arduino. And I used **UDP** to communicate with the laptop and then the laptop runs TouchDesigner and receives the information from the ESPs, and then sends it to the Oculus. *And there's a lot more steps in between.*

It's all open source, available on my GitHub !

Leo S.: One of the reasons we use certain softwares is also like: **how can we choose softwares that communicate with each other?** In TouchDesigner, there is a UDP protocol that is so easy to use and that is sendable to Oculus through AirLink or OSC. It was a lot about networking protocols.

It's relevant to point out that this was the first collaboration and that we come from two different upbringings. I'm so detached from material, but I loved the way that it told a lot about the work during the process. We also tried melting wax at some point. We tried so many things. (...) It's again, about scales, about how you read them. Wax melts, that means it's hot. It's just a different visualisation and measure of what temperature is.

Marlot M.: **Extended reality doesn't just have to be with the first things you think of, which are like a screen or anything digital. I think you can extend your reality by leaving something in the sun and by knowing that it's gonna melt or not.** I guess humans are also special 'cause we have imagination.

Celine D. / Dark Euphoria: Do you have some tips to find resources about XR?

Leo S.: Books, tutorials, newsletters... (To Marlot:) I think actually it was you in my graduation year, you brought *New Dark Age* by James Bridle. (...) I think we both love the whole philosophy and literature behind that and Ways of Being.

Marlot M.: It's the first time I read something from an artist with information that was really tangible. He made all these concepts that people talk about a lot but they just stay kind of in the air. And you're like, okay, but how does that exist in my personal everyday life? He really uses his artist's perspective but doesn't actually talk about art. He talks about these things that are happening in technology and what it could mean... He also takes the natural, the organic, let's say non-human life and in the later book, *Ways of Being*, he really explores other forms of intelligence that are not ours.

Leo S.: I have another book which brings a lot of knowledge from different disciplines. The theory of

intra-action from Karen Barad: Meeting the Universe Halfway

Marlot M.: and... The laws of Thermodynamics. It's really interesting when you read about it and if you're really trying to understand the basics of interaction between two things. If you can apply those laws and create a meaning out of it - not just like a definition - then it could be a nice tool.

Leo S.: We should credit Newton. (...) I'd recommend the newsletter of Cybernetic Forests., talking about understanding AI and also a lot of the language behind it... **To me it's really important to allow participation in the understanding of technology,** because then, through that, you also allow participation in decision making. (...) And actually, our work started from Chris Salter's Sensing Machines book.

Marlot M.: If you're unsure on how to get started on the material side or how to make something become a sensing machine, there's this website called HOW TO GET WHAT YOU WANT. It has infinite tutorials on how to basically make sensors; out of textiles, mostly. It's super in depth and it's really DIY approach.

Leo S.: Also I'm part of RGBdog Studio where I am now developing a Data Degrowth workshop for Mozilla Festival. It is a design-thinking session to rethink data as an ecologically impactful asset, and how we could reduce their production as consumers. It jokingly takes inspiration from Marie Kondo's concept of "joyous decluttering", but then applied to our data, what data give us joy? At the end of the session, I ask the participants to deposit their dearest data in a Floppy Disk, which makes them confront the size of their images and videos in a very tangible way. Tangible becomes understandable, and understandable becomes accessible. **With the right language, scales, and metaphors, technology can become more participatory.**

Thank you !

Pedro Gil Farias - Multidisciplinary researcher, artist and designer
& **Hugo Pilate -** Designer and digital artist works

Dark Euphoria | Interviewer: Céline Delatte

Happy to meet you two and discover more about your specific approach to XR; which seems very collective and participative... But, before we talk about that, could you each tell us a bit about yourself?

Pedro Gil Farias: I'm originally from Portugal, now based in Rotterdam. My background is in industrial design. Then moved into this idea of participation and futuring, got interested in focusing on **the public space and on matters of commoning.** For me also this idea of using **DIY technologies** and approaches that are approachable, like **the accessibility of tools** to come together as a group.

Hugo Pilate: Actually we have pretty similar backgrounds. I also come from industrial design and workshop facilitation. Getting mostly for corporate clients, to come together and prototype their ideas out of cardboard or styrofoam, could be a bridge, a product, or a neighborhood, to better understand what each person was thinking or align their vision. Then, during the pandemic, I started replacing cardboard with digital tools. So turning to platforms like Miro, Minecraft, or Fortnite Creative, to see what I knew of collaborative activities could translate to these sandbox environments.

Pedro G. F.: You want the origin story of how we met? Hugo was in India working at Quicksand Design Studio and they did a project on the future of humanitarian aid that I saw Anivash Kumar (Quicksand co-founder) give a talk on at Primer2020. At the moment I was researching the intersection of speculative and participatory design and decided to reach out to Avinash...

Hugo P.: ...And he put us in touch since I had told him I was planning on moving to the Netherlands. Then we collaborated on a couple of projects for Mozilla Festival and for Extinction Rebellion. We made online gathering spaces that were often paired with weird micro-workshops. And through that we started collaborating more and more.

Celine Delatte / Dark Euphoria: What was your first contact with XR? How did you actually meet XR?

Pedro G. F.: I started to do traditional printmaking and for me the combination of analog and digital was really interesting... Now I'm screen printing, but before I wasn't. I was doing lino cutting and was thinking how I could bring a digital layer to the print, which is a more straightforward use case for XR. That was where I started tweaking and experimenting with it.

Hugo P.: My point of entry was facilitating prototyping workshops at National Institute of Design (NID) with Salil Parekh where over the course of a week, we'd get students who didn't really work with digital tools to tell a story through a space that they made. They'd storyboard it, then build it in cardboard, then film it, and then have to recreate that in a game engine. So it was more about **the digitization of experiences and digital storytelling. Trying to extend what we could do with both analog and digital mediums.** That was kind of the starting point.

Celine D. / Dark Euphoria: What is actually your favorite XR tool?

Hugo P.: We made a website for this project "whatamess.city" where we documented all our influences as well as the tools that we used.

Pedro G.F.: But in terms of XR tools specifically, we use a lot of **photogrammetry and 3D scanning** in general. We used Polycam. It's an app that's downloadable on any phone. And for newer phones, especially iPhones or iPads - that we used in the workshops - it makes use of its LiDAR scanner. It was incredible with the participants, even yesterday, someone was asking like: "but how much time does it take to do the scan? Like four hours, six hours?". Actually, you do the scan and with the LiDAR, in 20 to 30 seconds you get the scan made. And for me, it's **the confrontation of how accessible it is**. Especially with the 3D scanning. And that was also part of our project: **what's the use case of it for a non-expert, for a normal consumer or for someone that just wants to go around the city and scan things**...

Hugo P.: I think the other thing that's really nice about these tools is that even though a lot of the 3D scanning and the AR we've used has been around for quite a while, **the way it's getting now integrated into smartphones and tablets** that you might buy just to watch videos or play chess is actually really incredible... When we did these workshops, participants came out with very practical questions on how to start by themselves, whether or not they identified as creative individuals. It's not like "Oh, you had this expensive equipment that I could never get". Some even downloaded the app before the workshop ended. So **that really changes your relationship to XR work, to realize you could try it on your own device**.

Celine D. / Dark Euphoria: Do you have any tips to find resources on XR?

Pedro G. F.: With this kind of stuff, I always get surprised by how much there is and then it's like a pick and choose... You see a tutorial on SparkAR, on augmented reality... and you just mash it up together. What I like is **people that bring this technology through a different angle or through their own topic, especially urban space**... Like Tobias Revell, a designer from the UK that makes blog posts that sometimes have nothing to do with 3D or AR but then he always tries to make a 3D snapshot, 3D rendering and include it in the beginning of the text. I find it interesting **how these tools can integrate other topics.**

Hugo P.: For me it's mostly through artists like Matthew Plummer Fernandez or Theo Triantafyllidis, I gain a lot from following their work. For the photogrammetry, one thing that tipped us off was also a Corridor Crew video, they are VFX YouTubers based in LA. They had made a video playing with game engines and 3D scanning, there's a chance we fell for the product placement...

Pedro G. F.: Another is Oddviz, an artist collective with an architecture background. They go to cities, they scan a lot of things and then they make these archives of things they scan, but in a really geometric patterned way, resulting in amazing panels of it. They were the first ones, for us, coming from design, to really **try to go in between these artistic, but still research, ways of using XR**.

Hugo P.: It does feel like **"XR" is almost too specific of a term.** When you think of how porous the lines between the industries using these technologies have become: film, theme parks, new media and gaming industries Like the ILM StageCraft screens used to shoot the Mandalorian, the fact that game engines were used to create the backdrop elements to me is really crazy. So *we really need to think about XR beyond the*

headset and the smartphone. (Speaking to Pedro:) Preparing for the residency, you were looking at the XR works prior to smartphones, and that was really helpful. A tipping point when you brought this up to say: "if we are going to use a touchscreen, how do we make sure that we don't take it for granted?". At some point we even tried to do everything on the tablet: the 3D modeling, the scanning, the AR. We ended up wanting to have a little more freedom so we didn't restrict ourselves to that, but I think that was a big point that we wanted to try and make.

Pedro G. F.: That's again, coming back to the research. Coming across a screen, in parallel with screen printing, the DIY aspect of it... It's amazing that people can just start doing XR like this. Even though I don't use the face filters of Facebook and Snapchat, the fact that people are doing these things with no prior experience of 3D and they're making custom filters, it's almost punk. Except that's Meta / Facebook. But there's something there that's also DIY.

Hugo P.: I mean my younger brother is studying business administration but he has taught himself 3D earlier than I did as an aspiring industrial designer, because I was waiting for my teacher to tell me how to do it. And he's just casually 3D scanning things on holiday and putting it in Unreal once he gets back home. But even at Epic Games, they have a very clear picture of this, they call it **the gamer to creators spectrum**. They're super aware of it. So all their product suite is mapped on it. **XR is too often seen as visual augmentation with different degrees of opacity, that's very limited.** That's why we love Leon van Oldenborgh's work, for example, that uses locative media arts and GPS because that's also part of XR.

Celine D. / Dark Euphoria: It extends the meaning of extended realities... Would you have an advice for artists or creative people who want to begin with XR?

Hugo P.: We started mostly with this project.

Pedro G. F.: We don't recognize ourselves as XR artists...(...) We were researching papers from the 2000s about virtual and extended reality. In SMSLINGSHOT project by The Constitute, before using smartphones, they were making an XR Nokia catapult. They would write a message on a Nokia phone and they would slingshot it into a LED public display. And for us, the one sentence that struck first, was this idea put forward by Eriksson and colleagues that these innovations on XR focus too much on introverted devices. You put on your VR, you're introverted, even though you can put the screen so other people can see what you see. Even with Pokemon Go, what you do is also seen by others. It's like: **this cool combination of real world and digital world; how is it going to merge?** I was really skeptical and I still am. **It's like AR and VR is limited to the sense that you put the digital layer and that's it, but there's no connection of one with the other.**

Hugo P.: That's also why we chose to have one device, one tablet, that was then shared by all the members of the group. Each time we ran a workshop, we limited participants to five captures in order to give the process a sense of preciousness through scarcity. And the group of five to eight people had to deliberate on what to scan. Having one device, also brought up **the question of isolation often linked to digital experiences**. The idea that the PlayStation was meant to be played with a bunch of people side by side, and then it became alone in my room. Even if now you are likely **connecting from your room to massive online communities. But the side by side physicality is still a lot more rare. So that's one aspect we're trying to bring back.**

Pedro G. F.: Depends on how people learn and use stuff. You can have a project and you jump into a software that you don't know, but at least you know more or less what you're going for in an experiment. Other people also learn it without any project in mind.

Hugo P.: I think **the main point is to avoid doing it just for the sake of using XR.** Having a story, having something to tell is crucial. It's really crazy the amount of documentation that is online, especially with YouTube, even for TouchDesigner, on SparkAR, on Aero; there's this incredible amount of documentation.

Pedro G. F.: Coming back to the iPad and the PolyCam again, you can go to Unity and if you never code, if you never use a game engine, you can easily get scared away. And that's the first problem I had with the Lino cutting and AR. I went into Unity and I got frustrated. I managed to get something out of it, but that's why maybe I never touched it again... (...) With Aero, it's all so natural the way that they managed to do it. In the workshop we managed to scan stuff and make a prototype in augmented reality in only two hours. Which is crazy just because PolyCam and the Aero exist. Otherwise it wouldn't have been possible.

Hugo P.: And the AR took 10 minutes. It was two hours because we were walking and talking. You really have to break the bubble of the XR. For me, the path-in was creative coding and open source software development, much more than any sort of VR-specific or metaverse hype. We used Mozilla hubs for the Haul Earth Ledger project, that's what got us to start experimenting with XR. As XR artists we have a lot to gain from looking into all the work that's gone into making this space what it is before it was called that.

Pedro G. F.: And for me it's the analog. If I can find ways to combine screen printing, which is the most analog stuff that you can get with the digital thing, it's perfect.

Hugo P.: The other type of creative coding and open-source-related space we've started exploring with this project is game modding. And how opening up your game engine allows people who are gamers to then intervene on your creation by adding their mods to their games. Like the elephant in the room I think is that we're not modding our hardware compared to some others. We chose the consumer product as a way to say: "you can do it from your sofa". And that was important and valuable. But then I think the flip side is that we're not right now in a capacity to hack our tablet for instance. If you're gonna say analog, then it seems like that's the reality.

Nicol Colga XR designer, UX/UI designer and fashion designer

Dark Euphoria | Interviewer: Céline Delatte

So nice of you to represent today your artistic duo "*Studio Comrades*". As your sidekick Edith Dingemans had to leave earlier, we'll focus on your special relation to augmented / mixed reality that you explore together in order to develop multi level projects... To begin, could you please tell us a bit more about you?

Celine Delatte / Dark Euphoria: First of all, could you present yourself and your artistic journey?

Nicol Colga: I am Nicol. I am part of the Studio Comrades. We started our journey together during school time. We studied at Willem de Kooning Academy in Rotterdam. It's our third big project together under **the 2.5 Dimension method and approach that we develop, in which 2D and 3D, tangible and intangible, come together to create new and creative ways of storytelling that spark conversation. Mostly for that we are trying to combine print media with XR technology (AR/VR/MR).** In our projects we like to work with social and contemporary themes, which are sometimes dismissed or not taken seriously. By working with these themes we create more space for conversation.

Celine D. / Dark Euphoria: What was your first contact with extended realities?

Nicol C.:

In our studio, each team member has a specific role, and we collaborate on tasks within the realms of 2D and 3D design. Personally, I am responsible for the 3D aspect of our projects. My journey with 3D design began two and a half years ago during an internship when we decided to embark on our own business venture.

When starting our studio, we were in search of a unique niche to specialize in, and we gravitated towards XR (Extended Reality) technology. While we have a background in graphic design, we recognized that there are already many talented graphic designers who excel in areas such as creating graphics, booklets, or focusing on typography. This led us to explore the possibilities of working with augmented reality (AR) and virtual reality (VR).

For me personally, **AR holds a significant allure due to its mixed reality nature. It allows for an augmented layer to be added to the user's environment, creating a unique and immersive experience**. Falling in love with augmented reality was a turning point for me, and it became my passion.

When it comes to 2D design tasks, I find myself feeling somewhat bored. However, in the realm of 3D design, I am awakened and filled with joy. The interactive nature of 3D design keeps me engaged and excited, as it allows for a more dynamic and immersive user experience. Additionally, I appreciate the UX (User Experience) component that is inherently tied to 3D design.

In my opinion, **XR is the ideal realm for individuals who enjoy problem-solving**. **It presents a myriad of challenges and opportunities to find creative solutions. Working in XR provides a platform for exploring new frontiers and pushing the boundaries of design.**

Overall, I feel fortunate to be part of a team where I can pursue my passion for 3D design and contribute to the exciting world of XR.

Celine D. / Dark Euphoria: With which kind of specific tools do you solve your problems?

Nicol C.: My journey started with the very simple Adobe Dimension, but I skipped that software really quickly because it doesn't have many features that you can really use. So I then jumped to Blender, and currently I'm working mostly on Blender to develop 3D models. **The easiest way to develop an augmented reality is by using social media softwares for face filters/effects.** (softwares like; Effect House, Snap AR) For example SparkAR is also a free software to use. You don't have to publish it all the time to Facebook or Instagram because it also has the view on the app. So you can use it by your phone or your tablet, and then show it in an exhibition. This is what we have actually done with our current project. It's not really required for you to have coding skills. I only have the basic knowledge in HTML, CSS and Java Script but I'm not really advanced. We have a lot of tools right now and most of them are for free. **Everyone who just has access to a PC or Phone can start with XR.**

Celine D. / Dark Euphoria: Do you have any advice on how to learn that kind of tool or to find XR resources?

Nicol C.: To be honest, I still think that there's not yet one really good resource. I would recommend people to use a lot of YouTube channels (Blender: Blender Guru , AR tips: Doddz and Emiliusvgs). When people have some problems to solve, they can just look it up online or go for specific community forums, like the Blender Market or GitHub. People also with the same kind of problematics share the experiences that they have, and I think this is the way to really learn stuff. I personally never had any courses. Even at my school, we did not have something like this. We do have a basic Spark AR usage, but it was just a one day workshop. And for VR, we also had a one day workshop. And that was it. **It's really something that you learn on your own. Mostly by fails.** What I really like in AR and dislike at the same time is that; in VR let's say the images that you are producing are always the same as what you are showing in the headset. With augmented reality, the challenge is that your model can look brilliant in Blender, but when you bring it to the reality, it can look weird, or some textures are not included. You're like "I really want this transfluent color, how I can make it". This is very challenging and fascinating, but at the same time frustrating.

Celine D. / Dark Euphoria: What would you recommend for an artist or creative that wants to start with XR? What's the entry point?

Nicol C.: To excel in the world of XR (Extended Reality), there are a few important factors to consider. One crucial aspect is developing spatial imagination, which allows individuals to envision and create three-dimensional experiences. It is not uncommon to encounter artists or designers who primarily possess a two-dimensional vision, leading to VR experiences that lack the full three-dimensional aspect. It is essential to understand that **VR and AR require thinking in a three-dimensional world, encompassing a 360° perspective rather than solely focusing on what is directly in front of our eyes.**

For those interested in XR, it is essential to assess whether they possess a natural sense of spatial imagination. This ability can be honed and developed over time. Drawing upon personal experience in fashion design, my background in creating three-dimensional garments at a young age made the transition into the 3D realm more natural. This serves as a foundation for embracing the possibilities offered by XR.

Furthermore, individuals pursuing XR must familiarize themselves with modeling techniques. Learning how to sculpt and shape objects in a three-dimensional space is crucial. Additionally, acquiring some knowledge of coding can be beneficial in order to develop and refine XR experiences further.

While it is possible to download premade assets, it is often necessary to manipulate them to suit specific requirements. Various software tools such as Blender, Maya, ZBrush, Cinema 4D, Unreal Engine and Unity enable the manipulation and modification of 3D graphics. However, it is important to note that mastering these tools may involve a learning curve.

In the realm of XR and technology, continuous learning is paramount. The landscape is constantly evolving, and staying updated is crucial. It is essential to embrace the fact that everything related to technology is a constant learning process. Standing still is not an option; one must constantly seek to expand and update their knowledge to keep pace with the rapid advancements in the field.

Celine D. / Dark Euphoria: Where do you think XR is headed and where would you like it headed?

Nicol C.: Good question. This is also like, how we perceive XR... When we talk about AI, the future can be really pessimistic, but in the same sense could be really bright. It really depends on how the new generation, like alpha and gen Z are gonna use those technologies. I personally see a lot of potential in that. Especially for education and for people with visual impairment. People with phobias already use VR and AR. So to treat people with some mental struggles. For medicine it's also used a lot. It has a lot of really positive usage. But of course, when it comes to our data privacy and publicity, we could be very skeptical. So the question is how we're going to manage this part of not giving all the power to external parties who could manipulate us.

I think this is also up to the whole society. We shouldn't be like "I cannot do anything. I am just blindly using Instagram and Facebook because everyone does it." People have to be aware of the consequences. Even when you are using it, you have to know that the Meta can have your data and they are allowed to do almost everything that they want, right? You are not in control of that, but you have a service and you accepted it. I hope that there will be a shift, and that social media will be perceived a bit differently by society. We could then make this shift more positively, being more aware of how we gave these data to those external parties; to be more in control. So then that XR world holds immense potential, offering a vibrant and promising future.

Celine D. / Dark Euphoria: *Let's wait for this shift. No, let's make it!*

I hope yes. Because We still miss it. I mean, the European Union starts making laws that will regulate that. But for the past 20 years, we were just happy to have technology and not really thinking what consequences it can have... I'm happy we started wondering and I hope that the two new generations will go further. Our future could be finally something that we have control of, right? Maybe it's too optimistic, but...

We need optimism!

Eva Iszoro (Accidental Cutting) – visual artist, fashion designer architect and researcher

Dark Euphoria | Interviewer: Céline Delatte

Looking at your artwork, we definitely can feel multiple reality layers. So, to begin this interview, I'd be curious to hear your definition of eXtended Realities...

Eva Iszoro: **It's a way of adding new layers and new features to physical/daily life reality. It's like opening doors to new worlds that are part of the same bigger world**. It's a global concept that consists in incorporation of the unreal into the real world, in different ways. And, after, inside, we have virtual reality, augmented reality, AI, and so on...

Celine Delatte / Dark Euphoria: It's a way of extending reality, but you have so many different ways actually...

Eva I.: Some people, when you say virtual reality, they think about the VR goggles. I don't agree with that. **Virtual reality, it's just that it's not real. It was created in a digital way. But it's not always necessarily immersive. It's complex. Sometimes the border between real and unreal is confusing.** In my last work: "*Expecting Forward*", I have incorporated a demolished building in the scene. It was a real building but it was scanned. I just bought it, and I put it inside.
(...)
That's why we try to explore and try to find ways of bringing topics together. To know a bit more about how we want to evolve and what we can do with that. What are the possibilities, but also the challenges and the dangers. Because it can be very dangerous. It can be used in bad ways or good ways. It's like everything in life actually.

Dark Euphoria | Interviewer: Céline Delatte

Indeed, always depends on the use... Thanks for this great intro! Now, could you tell us a bit more about you?

–

Eva Iszoro: My name is Eva. I'm a visual artist, fashion designer, architect and researcher in the field of experimental and creative pattern cutting. I have my own method that I decided to denominate "*Accidental Cutting*". It's focused on obtaining completely new volumes. Original volumes that didn't exist before, through random accidental and abstract patterns, flat patterns. So it can be used in fashion, but can be used in art, like for new sculptures or design, as well.

I have a fashion brand as well, "*Accidental Cutting*". And I currently present collections at London Fashion Week. I have already presented six collections. I started presenting collections in the period of COVID 19; in London in September, 2020. I proposed a virtual collection and they accepted it but I was not an expert at all in virtual things.

Celine D. / Dark Euphoria: Had you ever met XR before that?

Eva I.: I´m an architect as well, I did architecture, so I was used to some 3D software, like AutoCad / Rhino – and 3D Studio Max. But it was many years ago. My practice of experimental pattern cutting / method, it was

first by hand. It was not necessary to do it virtually. I was even against doing it with a computer. Because one of the important things of experimental pattern cutting; it's that it's very intuitive. You can get those volumes very easily. You don't need to have big knowledge of pattern cutting to get very complex experimental volumes with my method.

Normally in design, the classical way, not always of course, but classically, the designer imagines something, has the inspiration, and after works to get it. This doesn't exist in my method. The mind doesn't participate in the process of designing at the beginning.

Celine D. / Dark Euphoria: You actually design the process.

Yes, and through the process, you get those unexpected volumes. But **when you start the research, you don't know what you will get. You are looking for something, you just find something.** That's completely different. **You don't look for a result, but you get a result.** Maybe you like it or you dislike it, or you use it, or you don't use it... The method is focused on obtaining original and non-existent volumes. (...)

Celine D. / Dark Euphoria: What tools do you use in order to create?

During the pandemics, I started to learn software to create volumes with flat patterns, like CLO 3D. There is also Marvelous Designer, but it´s of the same owner of CLO 3D and has some little differences, people say that CLO 3D is more for fashion designers, has more production options, and Marvelous Designer is more for video game designers, I don´t know the exact differences because I use only CLO.

I realized that it's very easy to work in virtual and I loved it from the beginning. I started in March 2020, and I applied to London Fashion Week maybe in April. Like one month after. I proposed my virtual show, and they accepted it. (...) This software is intuitive. So I was able to do all the virtual garments, but I was not able to do all the the animations, the movements. I needed help for this for the first show... But then I decided that I want to do everything myself to have bigger creative freedom and I had to learn some additional applications for the five next shows. I think at the moment, I manage about 10 different engines and softwares (CLO 3D, Mixamo, Blender, Unreal Engine, Maya, ZBrush, ZWrap, PhotoShop, Metashape, Rhinoceros). For example, to make the hair, the best one for me is Maya which has a plug-in called XGen. I the moment when I had the feeling that I only need to learn two more to have enough control, specifically: Side FX Houdini and Cinema 4D, AI applications disrupted strongly (Midjourney, DALL-E 2, NightCafe etc.), and I think they are very interesting for my practice too. It is a never ending story, I have the feeling that I´ll never stop learning.

The best way is to experiment. To find your own way.

Celine D. / Dark Euphoria: And where do you actually find the resources in order to approach these softwares?

Eva I.: Everything I have learned is on YouTube or from online courses. I also have some consultants. Like, if I find a YouTuber who explains very well, I contact him directly if I have a specific problem. For instance, in Spain, I have a very good consultant. If I have a problem with Blender, I always contact Oliver from Blendtuts, and for Maya XGen, ZBrush and ZWrap I ask Jorge for help from the UOD Youtube channel.

When I was young, when I wanted to learn a software, I had to go to a specific academy or buy a book.

Now with the internet, it's really incredible.

Celine D. / Dark Euphoria What advice would you give to creators who'd like to start with XR?

For me, I didn't program that I would learn this. It happened accidentally, just because of the pandemic. I knew before that a software for virtual fashion existed, but I never had enough time to start with it, and then, when I was staying home, it was finally the moment to do it.

My advice is to be passionate about something. I think some things just happened along the way. My first goal was to make virtual garments. Not necessarily to make art. **When I started to explore virtuality, the most interesting thing is that you can make things that are not possible in our physical world. We don't have gravity and other material or physical limitations ... The possibilities are amazing. The thing I'm interested in it's to search the unknown, the inexistent.** With my pattern cutting method I get volumes that didn't exist in fashion history. Nobody can say that I have copied something, you know, and for me, VR is exactly the same.
(...) So, my advice is to be passionate. Sometimes you cannot program. It's just by the way, on the way, and by the corner. (...) I insist on experimental things. It's not rational sometimes. I love errors.

Another piece of advice is to work a lot. If you make a lot of things, you can learn more things. Experiment to be experimental and reach the unknown. Do not think too much, just do, do, do and learn doing.

Celine D. / Dark Euphoria: Where do you think XR is headed and where would you want it headed?

I think XR is our complimentary world. For example, in architecture, when you have to present a competition; they used to ask for a real model maquette. In some countries, you even had to send this real model for the jury. But now it's possible to send a VR version and the members of the jury just put on the headset and see the building, and even a politician can see the proposal much better... **So the unreal implementation becomes necessary in our actual real world. (...) It's in medicine, it's in architecture, and of course it's in art as well. XR helps in many things.** And, where is it going in the future? **I think now we are in an orthopedic time, because we have all these big uncomfortable assets. (...)** When the computer started, the screens were like very big boxes. 20 or 30 years ago, they were 50 kg. I think in VR, we're now in this moment. And it's going to be faster. **We're gonna have some very transparent devices, or a chip, or maybe technology based in holograms.** I would like it to go to holograms, to be kind of common worlds. It probably would be very dangerous but I imagine installation, exhibition, fashion shows where you just make people sit in the park and it goes; and you cannot distinguish what's real and what's not real. I think it goes in this way, and I think it will be less orthopedic as it is now. The technology goes in that way. In any moment a new technology can appear and turn everything upside down, as it's happening now with AI applications. In general, in my case, the biggest goal is to search for non- existent and explore things that we cannot do in the physical world.

Exciting!

[RESIDENCY] *CREW is a pioneer collective based in Brussels, specialized in constructing and interrogating wide immersive forms, mixing performance and technology in large scale areas. As part of Realities In Transition, they were mentoring the second residency of the European program – with the selected artist Letta Shtohryn — which took place at our partner's venue: iMAL –Art Center for digital cultures & technology, where they've been experimenting for a while. Dark Euphoria asked them about their relationship to XR, their favorite tools+inspirations and the different resources they shared during the residency…*

Dark Euphoria | Interviewer: Céline Delatte
Glad to finally be able to meet the three of you, Eric, Istjar and Haryo! Thanks for accepting this interview as you finished the collaboration with Letta Shtohryn on her project "Чули? Чули". To begin, could you give me a quick word to introduce your collective?

Eric Joris:
We are a small collective of artists, technologists and scientists, active mainly in XR + VR. Our background is theater, which explains **the performative nature of everything we do**. We like to develop the tools that we feel are necessary to push the medium.

Dark Euphoria | Interviewer: Céline Delatte
How would you actually define extended realities?

Isjtar Vandebroeck:
There are a lot of discussions about this. The original term actually comes from virtual production because it was "set extension", so you have your camera, you have your real world scene and then you have your set extension with projectors or LED walls. Apparently the name comes from there. Generally people were looking for a name which can kind of group together the different types of alternate realities such as VR, AR, MR… Such definitions, except the one for VR, tend to change all the time. At some point it was spatial computing, a term from a while ago, which Apple is picking back up. The nomenclature and the different types of definitions are all the time in flux but for us it doesn't really matter. **We tend to speak about immersive technologies.** Now it is XR so we use XR because that's what people understand, but it does make it a bit complicated because many people have no idea what XR really is. It's a porte-manteau world for AR, VR and MR, but even the definition between AR and MR also changes all the time so it's not very clear…

Eric Joris:
What we do is mostly what used to be called in the recent past "mixed reality".

Dark Euphoria | Interviewer: Céline Delatte
What term do you actually use to describe what you do?

Isjtar Vandebroeck:
I think our main effort is in VR and we just use the term VR generally, but then we kind of take the idea of XR to actually extend the VR in a way into scenography and things like that. This is the way we're working right now, I think.

Isjtar Vandebroeck:
I'm working on a new one: “fragmented realities”.

Dark Euphoria | Interviewer: Céline Delatte
This is definitely a pertinent one… As immersive performance pioneers, how did you actually meet XR? And how has it evolved since then?

Eric Joris:

We made a performance with a paraplegic performer (‘Philoctetes’, 2002), and we needed to develop tools for him so that he could handle a robotic arm/leg that was like an extension of his body. That ‘prosthetic’ concept we took later to the VR medium. Could the audience be where the paralysed actor was, inside the machine so to speak? Virtual reality did exist at that moment, but you needed big and expensive equipment like Onyx Computers and very heavy headsets ….

We had the chance to work with the University of Hasselt with a brilliant engineer, Philippe Bekaert. We developed a different type of VR, one that we could take on stage. It was video based and could perform many things the digital variant was not capable of. Philippe built nearly everything from scratch: 360° camera’s, code for live stiching and streaming, a tracking system. The biggest problem however proved to be the use of this new medium in relation to an audience: how to communicate, tell, act ourselves, and how to make the audience experience, understand, and interact…? The limitations of our configuration forced us to come up with solutions that we use up till this day.
In 2014-15 approximately, we moved back into the 3D digital version of virtual reality, at that moment still very much a ‘seated’ thing, mostly limited by the tracked area. Again, we tried to have things moving which is still the basis of the work we do.

Isjtar Vandebroeck:
There's an important aspect which is still continuing in the way that we work. From the beginning, there is like a mix of what is going on *live* and these type of things, which is very atypical because from an industry point of view, XR was always approached from: *“you have something at home, you download something at home, whether it's a movie or something like this”* and it was not at all conceived as a theater or a performance type of thing.
And we continue working in this way and this continues to be a friction in the field, because the investments go in one direction and we think we have to develop it in another direction. Recently, with the XR-thing and location based experiences, we are kind of proud that our vision, even if it is sometimes in a commercial and kind of tacky way, is taking more form in this way.

Eric Joris:
An important advantage that we had/still have, is the working together with researchers, not only technologists but also art- and media philosophers, neurologists, psychophysicists,…: what does our medium and our senses and mind produce in terms of understanding on what's around you, the world, your own, your self, your body, …? We came to understand VR as a transitional medium: it could well create strong illusions, but half of its existence lies

anchored in the real and physical world. Unlike cinema you are transitioning in between two realities. Your agency in this ‘in between’ state is the most interesting and outstanding aspect of VR, and precisely because of that it is also the most difficult to handle from the point of view of the maker, director, artist.

Dark Euphoria | Interviewer: Céline Delatte
What are your favorite XR tools? The specific tools you like to use in order to build your experiences?

Isjtar Vandebroeck:
When I arrived at CREW, they were already working with mocap and game engines in a certain way. I had a background in a different game engine, so we kind of changed from Unity to Unreal, which I think was a good choice because we saw that there was more potential, especially in the research projects where we were, where our partners were using the same things.

A big step was to change from optical mocap to inertial mocap, because we want to do things on large areas and with optical mocap, you were always limited to a smaller volume because you need to have cameras around. If you were in inertial mocap suits, you could walk around more freely in different types of spaces. This gave us a much larger surface to work on. And then we work with Unreal Engine, mainly because for artists it has a bit more tools than Unity. We also work a lot with 3D scans that we process. I personally work a lot with Houdini for 3D modeling, procedural modeling. Haryo uses more Blender. And we have our own pipeline of working with things. We also use tracked objects (Vive trackers + custom ones from UHasselt). Now we're using different types of ways to render things over Wi-Fi. For us, **the idea is that we kind of make a machine, like a rig that we can adapt to spaces**. And in these types of spaces we can start making our performances.

We're always checking the latest updates of different things to see if we can do new things, which makes it quite challenging. There was a time where we had to have lots of things developed specifically for us but now we can work more with tools that are available because there is an industrial push. But we also noticed that you're still tied to these companies which have a certain commercial (or privacy) policy which can be very limiting sometimes. I mean, if it exists in the industry: we use it. If we have to invent our own stuff, we try to do that in collaboration with our partners in the EU research projects such as PRESENT, MAX-R, or EMIL in which we are now.

Eric Joris:
To add to that, the tools we like most are those that take us into a shared live and embodied experience where they can empower the actor, the performer, and in a very near future the audiences.

Isjtar Vandebroeck:
A very important thing which we also noticed is that; when I was in Zagreb for the Realities In Transition – XR Camp in Kontejner, there were a lot of young and emerging artists. I think it's very important from a technological artistic point of view: I don't think you should just look

at what exists and try to do things with it. **You should try to develop a technological vision and try to engage things that already exist, but also try to develop new things and new directions and not just follow the flow of what is going on in a way.**

Dark Euphoria | Interviewer: Céline Delatte
About Letta's residency now: what tools, insights, methods were you able to share with her to go further on her project?

Haryo Sukmawanto:
As Isjtar was saying earlier, we are working with lots of these technologies like motion capture and Unreal Engine, which Letta also uses but in a different way. And that was really interesting to see how she utilizes those tools. For instance, **with motion capture, where we would want to have a higher fidelity; she was using more of the destructive inaccuracies of her motion capture suit and how to incorporate that into her experience…** We were going for full immersion; she was using Unreal Engine almost from a gamer background like with Twitch streams and stuff like that. So it was nice to see how we have the same routes, same roads, but different paths.

Isjtar Vandebroeck:
She had an historical scan of an archeological site in Malta that she was struggling with. As we have a lot of experience with 3D scanning (Leica BKL360, Lidar), we could help her a bit on how to optimize it for her to actually use it because she couldn't use it before. She was very limited by her computing power. We have powerful computers so she could try new stuff, work faster, which I think helped in her to speed up the creative process and to reduce a bit the friction of what you want to do and how you can do it.

Dark Euphoria | Interviewer: Céline Delatte
Would you have any advice for a collective or an artist who would start with XR?

Isjtar Vandebroeck:
It certainly cannot be an easy thing for young artists, you need to acquire tools and skills, it requires time and money. I studied film in a country without a film industry. How can you possibly develop a film language if you cannot practice all the time, like a painter or a writer does? **VR is complex by nature.** You might not be a technological or digital mind, but be very good artistically. So how to bring everything together? Which is why we built CREW a few decades ago. For a while we were dreaming of building an infrastructure, based on our vision for Large Area VR, an environment that we could share with and introduce to other artists. We are still pursuing that dream.

What many artists naturally do is to abuse the technology in a way that it was not necessarily intended. I think that's a very good way of approaching it. Otherwise, it's a real challenge because for example, there's a real problem right now, I think in VR artworks it's that very often people are alone, it's very labor intensive, it's also too expensive in terms of equipment and it's hard for people to make something which kind of goes further than the first stages. There's quite many exhibitions of very simple artworks where you can touch something and see something. But I think it's good if artists work together to make

something which is a bit more sprawling, a bit bigger, to see if we can push the medium; more looking towards the fringes and not just use it as some kind of, *“oh, this is just an audiovisual experience”.*

Eric Joris:
Yeah, it certainly is not easy for young artists because you need to acquire skills, you need to carry maturity by doing a lot of things. I studied film in the past and in Belgium there is no film industry. Everybody was dreaming of making movies. But then how can you if you cannot work every day or every month and use the material… You can only look for a budget, and then once every seven years you are able to make your thing. How can you possibly be a good filmmaker if you cannot practice all the time? If you would be drawing, you need to practice all the time, you need to work, you need to be confronted all the time. In VR it is very complex by nature. How can you handle all that? You might not be a technological or digital mind, but very good artistic or whatever. So how do you bring all that together? In the performing arts, you have a structure. Then you have a composition, you work with people together and that's a solution. But the individual artists in a world that is not easy to enter in terms of *“how do you survive? who do you sell your work to?”*, I think it must be very difficult in the beginning, so there must be a space where people can act and meet. For a while we were dreaming of building that environment based on a large area type of thing, where other people could work. But at the moment it's still kind of a dream.

Dark Euphoria | Interviewer: Céline Delatte
But I guess residencies create these kinds of spaces…

Isjtar Vandebroeck:
Right! It’s also good that since a couple of years now, the separation between who’s artistic and who's technological has become less clear. For example, Letta, she was very independent in her way of working. There's a thing in VR that when people start, they kind of have the wrong conception of what it is. So they start working and usually they get a bit lost because they're trying to apply concepts of film or different types of ideas that they have of what it's supposed to be. This idea that Eric mentions of total reality illusion which doesn't work. But it's also kind of good that people already have some basis to work on so they're quite independent in a way. They can work and we just help them out by talking about their concept. I don’t think the word mentorship is really accurate. It's more like a guiding partnership or something like that. We were not telling her what to do. She does it all by herself.

Eric Joris:
Unlike in other arts there is yet no standard as to what is ‘good’ or ‘bad’ XR. Which is a luxury situation: the medium is still kind of open in many respects, while curators seem to borrow artistic standards and needs from cinema, from visual arts, from gaming…

Dark Euphoria | Interviewer: Céline Delatte Where do you imagine VR going?

Isjtar Vandebroeck:
There's definitely **a push towards multi-user experiences that we see in industry.** Unfortunately, right now the budgets are mostly reserved for more commercial works, but I

think that **there's definitely a better direction than playing golf at home on a Quest headset.** The good thing about the term XR is that it becomes easier to explain that you're working with different media at the same time. So this, I think, is a good evolution in a way. Otherwise I don't really know. There's all these hype cycles and everything, but we kind of ignore them. We just work on our thing in a steady manner. But we're happy when there's a bit of hype because it delivers some technological advances which have in VR consistently come slower than expected.

Eric Joris:
I think the collaborative, the online and the large area concepts in embodied VR remain most interesting and promising. Our large area concept and development of live tools are meant to be an answer to this. Extending VR, or see VR rather as part of a chain of other media and information also seems to be a logical next step towards a wider use and implementation. In niche markets VR will become ever more useful, even become a need. It will take a while though before VR becomes a consumer type of article.There is still so much room for experimentation, for uncovering unknown usecases and experiences. In arts we should be leading this exploration, rather than waiting for the industry to deliver us the tools or formats.
agency

Isjtar Vandebroeck:
There is the technical advancement that we're kind of waiting on. I mean, we're trying to push to get there, but it's quite hard. It's that we're trying to make some type of **porosity between the different realities**. First of all, having a body in VR when you're wearing the headset is still a problem that is not completely solved. There are solutions for it but they tend to be kind of weird. It takes a lot of your space, you can't really work on anything else. This is then the subject of what you're doing. This is an area which is advancing but which is not there yet.

Another thing is we would like to see if it's possible with some kind of mocap or whatever to have the audience having some presence to people wearing a headset so that the barriers become more fluid and we can start working again on how can we work with this friction between the different realities in an interesting way. There are a lot of advances in this area right now, which are until now too expensive for us to use. But they have a lot of potential artistically, I think, of really developing this idea of XR to more than just a term which brings things together, but really as a concept of "how can you you tell this with this", but maybe that interacts with that and you get all these different layers that get stacked in a way which I think is artistically very interesting…

Dark Euphoria | Interviewer: Céline Delatte
To conclude, what are your main inspirations? If you have books, movies, video games or whatever that inspired you in conceptualizing XR? And also where do you keep getting more inspirations?

Isjtar Vandebroeck:
We actually have a running joke inside CREW with one of our actors. Every time we put on the headset, he says "Do you know the film The Matrix?" (Laughs)(...)

I'm a big fan of science fiction. I read a lot of science fiction, but also science fiction like J. G. Ballard and things like this. But we try to make our work not too *sciencefictionny* because it very easily becomes a cliche and you're immediately in the video game aesthetic. This is something we avoid, even if I love video games, for example, Death Stranding is a big inspiration for me. Different types of things: Stalker by Tarkovsky, Hellraiser by Clive Barker, Ghost in the Shell, The Atrocity Exhibition by J. G. Ballard, Journey, a very emotionally bonding videogame, Titane by Julia Ducourneau, Cronenberg, Junji Ito, etcetera.).

Eric Joris:

Eyeopeners for me were the performances of the Japanese Dumb Type collective in the nineties, the work of Stelarc, the videos of Matthew Barney and more recently those of Laure Prouvost. In literature, Carlo Rovelli and Alva Noë are of inspiration.
I just read an interesting reflection on 'Peer Gynt' of Hendrik Ibsen. The play was beyond the capacities of the theater of the day: the sequences of images in language and visual composition became technically only possible in the later medium of cinema. With that observation in mind: which present movies, games, performances would we pick that go beyond the capacities of their medium and in fact should use XR?
(...)
Anyway you need to have a good view of what's happening around you in terms of books, movies, and all kinds of things. But that is not leading us in a direct way to making something. It's rather: "oh, can we use this or that". But if you are looking for things that could have been inspiring or that were really worthwhile for me, another one I would name is *La Jetée* of Chris Marker (...)

Isjtar Vandebroeck: I think there's another film which is very important to us. It's not a film that I'm particularly fond of, but it's very illustrative of some of the concepts that we work on, which is *Inception (Christopher Nolan)*. I think this is a film which has influenced us because it works also with different layers of immersion that interact. For me personally, when I saw this movie, it also made me want to create worlds…

Eric Joris:
We used the example of 'Inception' during a 2011 CVMP conference with a slightly provocative claim that we would rather DO what Inception is about than TELL its story. With our 'headswap' configuration at that moment we could indeed 'engineer reality'.
In fact, if you look at our daily use of technology and media from a distance it is clear that our whole reality is already very much layered. It is what Ballard called "the science fiction of the present day".
(...)
Our whole reality is already layered. It's already a science fiction type of reality.

Dark Euphoria | Interviewer: Céline Delatte:
A huge thank you for this very philosophical discussion on realities… I'm heading to consume some science fiction right now.

[RESIDENCY] *Letta Shtohryn's work had been selected for the second Realities In Transition residency which took place at iMAL – Art Center for digital cultures & technology, with the help and advice of the Belgian collective "CREW". A perfect occasion to work on the multiple layers of realities involved in her project "Чули ? Чули". Dark Euphoria asked her about her relationship to XR, her personal journey through it, her experience of the residency, and her favourite tools+inspirations.*

Dark Euphoria | Interviewer: Céline Delatte
Happy to finally e-meet you! Thanks for accepting this interview as you finished your residency on "Чули ? Чули" with the help of CREW. To begin, could you give us a quick word to introduce yourself?

Letta Shtohryn:
My name is Letta Shtohryn. I'm a Ukrainian artist and a researcher living in the EU. I mainly work with XR, CGI, video narratives, post-humanism and the embodiment with machines and humans + non-humans. I find myself positioned between being a media artist and a contemporary artist. I wouldn't want to limit it to XR alone, as my primary background lies in visual arts. I consider myself more of a visual artist who works with technology, as I also reflect on technology in my work. However, it doesn't drive my practice; it's not the initial catalyst for my work. **Technology is employed when it's relevant.** Ultimately, I see myself as a visual artist who engages with media arts.

C.D.: Could you tell us a bit more about the project you worked on as part of your residency in iMAL, and on which aspects you had the occasion to progress with the help of CREW ?

Letta Shtohryn:
The project I worked on is called "Чули? Чули / Chuly? Chuly," which in Ukrainian means "Have you heard? We've heard / Have you felt it? We've felt it." The title suggests hearing and feeling are intertwined, which was later translated into the theme of the work, focusing on **cognitive manipulation and online disinformation and their real-life consequences.** I was exploring the emotional impact of cognitive manipulation—similar to what we encounter daily online with inflammatory posts and manipulative content.
The project is **both a video game and a dance performance**. The main narrative that the audience hears in the work revolves around an urban legend about an encounter with giants, but the narrative that guides the player follows the mutation of stories when they are used for disinformation. In the game world, the player hears voices in different locations that project various attitudes towards the giants' narratives—from disbelief to exaggeration, to fake authority supposedly confirmed by "researchers," and so on.

I initially conceptualised and demoed the project in Linz at the Ars Electronica Founding Lab in autumn 2023 with Julie-Michèle Morin (dramaturg) and Junjian Wang (dancer). After the initial demo was shown to the public, I continued exploring the choreography and the calibration/uncalibration of the MoCap suits at iMAL, focusing on how these aspects depended on the dancer's movements and the theatrical, audience, and dramaturgical elements of the work. Working with CREW was particularly beneficial, as their expertise in XR performances and audience engagement validated some of my ideas about the dramaturgy and helped me develop alterations for future audience experiences.

The work heavily centres on the narrative mutation of the original story, so we carefully considered how and when to present this original narrative. Based on this idea with CREW's mentorship I have worked on adding additional intro and outro to the work, which has a VR/ VR on screen element in it. We decided to extend certain scenes, which led to the work mutating from its original form. Ultimately every showing of the work offers a slightly different experience, whether the difference is in the narrative itself, in the choreography or in the way the narrative is experienced by the audience.

C.D.: Next question is about the tools that you used during the residency, the more appropriate tools to build the kind of complete experience you propose with "Чули ? Чули / Chuly? Chuly" ?

Letta Shtohryn:
My tools primarily include conventional commercial CGI software and Unreal game engine. I use Unreal for world-building, camera work, interaction, and any activities within the work that can be blueprint coded. I begin with the conceptualisation of the project and then create a level map. After that, I sculpt and texture the world, building a complete environment — weather, sky, lighting rules, and so on. For example, I decide how many suns there are and what the day-night cycle will be. When technology permits, I incorporate procedurally generated natural features such as rocks and plants.

However, in this particular work, there are no procedurally generated objects because it is performed in Edit mode, live from my laptop, which outputs a video over 4K. Procedurally generated objects can destabilise the entire process by, well, crashing it. This adds an additional layer of error and unpredictability.

After the world is built, I move on to the characters. If the work is interactive, I consider who Player 1 and Player 2 are—what they look like, what clothes they wear. For this, I use Metahuman and ZBrush for additional feature sculpting. If the clothes need to be customised beyond standard options, I design and sew them in Marvelous Designer, then export to ZBrush for mesh fixing, and finally to Maya for remeshing. For texturing, I use Marmoset and Substance Painter. Once the avatars are created, I calibrate the rig to match the motion capture suit I'm using.

When all these elements are in place, the dramaturgy and dance can begin. This marks the point of liveness and performance. The motion capture data is streamed live into the Unreal Engine world, which is then displayed on a multi-projector setup. From that point, there's a lot of back and forth—the concept, dramaturgy, and dance evolve to fit the vision, and vice versa.

In this work, the concept (bodies behind digital personas, manipulation, embodiment) and the technology feed into each other. In one part of the work the motion capture suit gains technological materiality, and through the magnetic interference in the performance space it influences and directs the choreography of the dance. The suits I use are inertial motion capture suits, which are susceptible to magnetic interference. This means that technology and metal objects in the room can interfere unpredictably with the calibrated avatar on the screen—the avatar gradually deviates from the dancer's movements, causing a slow uncalibration.

This element of error entered the work through the suit, and I felt it aligned well with the concept. Moreover, because of the interference, the dance is always slightly different. At iMAL, dancer Marion Busetti and I worked extensively on this aspect, exploring whether we could control this uncalibration. We developed a sort of movement language that somewhat influences it, but ultimately, the suit determines how and when it will fully uncalibrate. We only managed to exert some influence on this process with the choreography we devised. I find this **potential for error and imperfection quite appealing, as it subverts the audience's expectations.** The work presents a crisp, shiny, AAA game-style realism, yet gradually, the giant avatar deteriorates into a disjointed pile of limbs. This is why the technology and the concept worked together so well, guiding each other throughout the process.

Of course, these elements of error and liveness can go horribly wrong. But when everything functions as it should, that Windows doesn't suddenly decide to update just before the performance, and the spirits of technology are on our side, the audience will experience the show we've intended to present.

C.D.: How did you actually meet XR?

Letta Shtohryn: Before gaining access to the tools needed to work with XR, my practice primarily involved video, imagery, and machine vision. I then moved into working with Machinima, which involves recording videos within video games. Certain video games have left as lasting an impression on me as artworks I've encountered in museums, so combining the two felt quite organic. Machinima was the first time I brought these elements together. In Machinima, one creates films or narratives within video games. I enjoy both the medium and its culture, though it also raises many questions about ownership, which I find quite intriguing.

The first Machinima work I created was in 2019, titled *Algorithmic Oracle*. In this piece, I used *The Sims 3* and its somewhat random fire algorithm to recreate the event of my own house catching fire (based on true events). I would set the initial actions for the avatars and then film the outcome generated by the game. After that, without saving, I would start again. I became the camerawoman of my own house catching fire in *The Sims*, observing what the algorithm decided for me. I think I captured more than 100 different scenarios, but only 10 made it into the final work.

As for my expansion from Machinima to CGI and XR, I think my interest lay in immersion—the variety of worlds one could create and the idea of being in multiple places at once. I reflected on which specific types of immersion suited my work, and this led me to pursue a PhD in Media Art, with a focus on immersion. Once I had access to the necessary technology and a lab, I began experimenting. I was also deeply interested in **the entanglement of the body with technology within this immersive space**. These questions gradually led me to transition more towards an XR practice.

My biggest motivation came during a residency at Goldsmiths College in London in 2022, which was centred around livestreamed motion capture. I had the opportunity to work with and explore the technology. This is how one becomes involved—by having access and being able to play with it. It's not just about thinking about technology; one actually needs to

engage with it hands-on. That's when I started working more with motion capture and began experimenting, often trying to break it.

C.D.: So "immersion" was kind of your bridge between performance and technology…

Letta Shtohryn:
Yes, and the performance introduced a present and live element. With motion capture, you can use pre-recorded animations, which is nice, but the live aspect is where it truly stands out—each performance looks different every time. It's incredibly stressful because it sometimes doesn't work as intended, but you learn to live with the errors. That unpredictability was quite fascinating for me. **The live element enhanced my interest in embodiment and immersion, and it seemed like a perfect match.**

C.D.: Where do you actually find your main inspirations?

Letta Shtohryn:

I'm fascinated by anything related to sci-fi (currently, I'm reading pre-moon landing sci-fi, — "Three-Body Problem" etc.), visual art, video games (*Horizon Forbidden West* is my favourite at the moment), weird historical facts, and archaeology. I also have a strong interest in early modernist cinema.

It's fascinating to see what people decide to do with innovative technological devices. There's a certain weirdness that emerges as people experiment with everything, and eventually, these innovations become standardised. I'm not claiming technological novelty in my work; I'm simply combining relevant tools at my disposal, though I am intrigued by the unconventional uses of technology.

Since I work with speculation, I'm particularly inspired by gaps in knowledge, whether they're current or historical—these gaps are where speculation thrives. In "Чули? Чули / Chuly? Chuly", I collaborated with Heritage Malta to adapt into my work a 3D scanned model of a temple in Malta that's around 5,000 years old. It's an unusual subject: archaeological, yet tinged with science fiction due to its age and the lack of data surrounding it, which allows space for a myriad of urban legends.

I'm also fascinated by speculative futures. I once worked on a project with geologists to identify Martian lava tubes suitable for the first human habitats. My role was to visualise these concepts, and this project provided enough inspiration for my installation *Life on Mars Might Not Want to Be Found* (2022). That experience has now led to a project I'm currently working on—a CGI documentary about the largest meteorite in Europe that fell in Ukraine, which is questioning space heritage and its ownership.

All of these inspirations are intertwined with my lived experience and the political reality I face today as a Ukrainian artist living abroad, working with CGI while my home country is under attack both physically and cognitively by Russia and its pervasive and globally reaching disinformation machine.

C.D.: And if you would have any advice to give for an artist or creative who wants to start with XR?

Letta Shtohryn:
You need access to technology, but I'd say don't rush to buy anything. Instead, find a place where they have all the tools so you can experiment and discover for yourself what's interesting and what you enjoy. Ideally, as a young artist, having a space where you can truly push the limits of technology—not physically break it, but explore what it can and cannot do—is invaluable. That's where the most unusual ideas emerge. Personally, I do everything myself, which I think stems from my visual arts background: I want things to look a certain way, and I need to make them look that way. I'm willing to spend the time learning how to achieve that, even if it takes months. But also, It's a kind of call and response—you want to create something and have it look a certain way, but when you can't, you're forced to ask, "Okay, what does it look like now? How can I build on this?" **The tools we work with are always somewhat alive, almost as if there's a ghost in them subtly guiding the process.**

C.D. :
We might call him the *technologhost*! (Laugh). How would you define eXtended Realities and how does it actually redefine the idea of reality itself?

Letta Shtohryn:

XR incorporates MR, AR, and VR, adding a digital experience to physical presence. As Milgram+Kishino's famous scale and its subsequent revisions tells us: **MR (mixed reality) overlays digital elements on physical space, allowing for interaction; AR (augmented reality) adds a digital layer to the physical world, enabling you to see both simultaneously; and VR, of course, locks one's vision out of the physical space, visually and mentally transporting you to another setting.** I'm particularly interested in XR experiences and settings that cannot be fully experienced in physical space alone.

As for immersion, I believe it can be found in many things. For me, VR alone isn't quite enough because my body eventually realises it's not actually in the setting it perceives. AR adds to what is already present, and MR introduces interaction. **But immersion can exist both within XR and outside of it—it can be found in a seventeenth century panorama, a podcast, a cave painting, or a story.**

I'm particularly interested in extended realities where technology enhances your physical experience. To work with motion capture, for example, I needed to see a screen of a certain size displaying an avatar guided by the motion capture. This setup helps in working with the body and its technological extensions simultaneously. I think many people define XR differently today, but for me, it's definitely something that enhances physical reality—using technology as an addition to it. Without this technological layer, the experience of physical reality would not be the same.

C.D. : And to conclude, where do you think XR is headed and where would you want it to go?

Letta Shtohryn:

I want to move away from defining XR solely as VR experiences, as it's often used in contexts where it's not necessary. Extended reality is also a form of immersion. Not all immersions are extended reality, and not all extended realities are immersive, but I believe **we should broaden the tools we use for extended reality and combine them with those used in theatre, stagecraft, visual arts, and storytelling—even those that are quite analogue.** That's the direction I'd like to see it take, and I think it's already beginning to expand in that way. There are initiatives like this residency, as well as numerous programmes, grants, and projects aimed at making XR something more than just a single type of technology—something broader and more inclusive of other disciplines. Perhaps it's just wishful thinking, or maybe it's the bubble I'm in, but I'd like to see it delay standardisation and evolve into something weirder.

C. D.:
Weird-R is the new XR! Thanks a lot Letta!

[OUT OF THE BOX] *Peder Bjurman's "Slow Walker" was one of the "XR" art pieces programmed as part of the L.E.V. Festival 2024 in Gijón, which took place in May. For Realities In Transition, Dark Euphoria asked him about his relationship to XR, his artistic path and favorite tools…*

C.D / Interviewer: First of all, could you give us your personal approach to XR?

Peder Bjurman — Artist, Writer & Director:
I like the combination of things and I like to use several layers in all my productions. If it's a stage production, it's very rewarding to push forward in new technologies, and I try to do it in every project. For this project, **this AR program came up as a solution to a problem, movable full AR experiences**. And, knowing that, I developed the piece. **I have worked in Quebec a lot, and all of the conceptual artists are called "Idéateur"**, a word which doesn't exist in France. So I like to see myself as the ideator of this project, but of course I'm dependent on a lot of other people; technicians, animators, composers.

C.D / Interviewer: Indeed, technicians are needed for these kinds of experiences (laughs). As you come from the performance field, what links do you see between performance and XR, I mean the connection with the concept of "space"?

Peder:
This is not a walkabout performance but it definitely comes with a narrative: it has a beginning and an end and it works as any theater production. You ask your audience to immerse themselves in the story and to stay there. In this specific experience, I talk directly to the audience but through the "tardigrade", the animal. It's my writing, but it's her talking to the audience. It's a blind, fat little piglet-like or Buddha-like character. I think of it as a character, and I enjoyed writing for it. Some years ago in New York, I had a cloud as a protagonist. It's good fun to find unhuman principal actors, to tell their stories and to enthrall the audience. I still see it as a performance, more than an installation.

C.D / Interviewer: And actually, how did you end up beginning with XR? How did you meet XR for the first time?

Peder:
I did a theater production in Stockholm using a very famous Swedish novel, Doctor Glas, and the actor Krister Henriksson from Wallander. I started thinking about how could this performance continue, as it's been touring the world for the past ten years. And then Corona came and I thought "why not do an audio walk?". And the XR solution we found for it was the perfect tool. We ended up doing a very popular app that you could walk on your own, when theaters were closed, hearing the voice of the actor. When you turned a corner you would turn a page, so to say. So it's like you could walk the pages of the novel in real time.

C.D / Interviewer: Was it involving AR already?

Yes. At some occasions we used the phone's haptics, the screen image with AR objects, and geopositioning to track the audience's speed, to synch all the texts and the spatial

soundeffects to the exact positions. The experience was built and distributed through the app Promenad. GPD, navigation, map was built in Unity, and the AR tracking in ArKit and ArCore. A combination of stereo, binaural and spatialized audio was applied throughout the experience, for both the VO, music and all FX. Very challenging timing-wise, but rewarding in the end.

C.D / Interviewer: What's your favorite XR tool? I mean, we could guess it's augmented reality but could you tell us a bit more about it?

Peder:
I'm not fidèle to AR but I like **the illusion making device of it**. I want the illusion to kick in, I want it to be awe-inspiring and enormous. I guess **I'd use any new tool for my own purposes to convince the audience of an illusion. But I also tell them that it is an illusion because I believe in revealing your tricks, as you pull them along.** This thing we're showing here is a perfect vehicle. You could almost believe that the tardigrade is there, it's 30 meters long and appears out of nowhere: it's like if there's a crack in time and it suddenly starts talking to you.

C.D / Interviewer – And what concrete technical tools were needed to build such an experience?

Peder: We're depending on Google, which is good and bad. They have a fantastic tool, called ARCore. It allows the phone to connect all kinds of different information sources. Your GPS and gyro is involved, the compass as well. The hundreds of pictures taken from the site are processed live by an AI that reads the buildings and detects where your point of view is, and that combination makes it able for us to direct and choreograph the tardigrade around the square. It can then "detect" and talk straight to you. It addresses the audience wherever you are in the square. I love that the digital object, our Tardigrade, can actually be directed like an actor.

C.D / Interviewer
Definitely sounds like a play! And, where do you globally find your inspirations?

Peder:
I read a lot of literature on reality and objects, like OOO (see below) and neuropsychology, to find **where and how the fictional and the reality interlace.** In this project, I enjoyed playing with the reality and the conceptions of it. It's been a major issue for me; **how we perceive digital objects, and how we learn to adapt to them and to believe in them. I think we'd better start believing in the digital objects and their world as real, because we're going to be living in it soon enough**. I'm not a transhumanist, I'm more conservative but I think we'll have to take control of the technologies and adapt them to our needs and to humankind and make them serve our own purposes, rather than the big tech companies'. Right now they're running the world and calling the shots.

(...) So there's this interesting philosopher, Timothy Morton, who has got a lot of readers in my generation. He has collaborated with a lot of artists like Laurie Anderson and Björk. He's an eco-philosopher, we could say, with his famous book "Dark Ecology". But he's also an

avid OOO - object-oriented ontology follower, and he coined the term “Hyperobject” - human made phenomena and objects too large to grasp by the human mind.
With these objects we can't really understand their extent, or how large they are, like with the internet, global warming, as with a lot of other man-made things. Acid rain for instance, who can really understand or encompass it? Yes, you can touch a raindrop, but you can't grasp the whole picture.

My Tardigrade project was in part inspired by reading this, and Edmund Burke’s texts on Beauty and The Sublime; ”a delightful horror, a sort of tranquility tinged with terror” as he describes the experience of an artwork or natural phenomena.

C.D / Interviewer: In my personal vision of the reality, we’re kind of small moving and evolving circles and loops incorporated and imbricated in bigger circles
and loops which are themselves in bigger etcetera. So this makes a lot of sense for me… (laughs)

Peder:
There’s also Catherine Malabou, a great French writer speaking about neuropsychology and the brain, and how to best adapt to the new conditions.

C.D. / Interviewer / Can you explain a bit more how you collaborate with the companies, and with the technicians that are working on your projects?

Peder: I normally come up with an idea. I give them a challenge: “Can we do this?” Which is rather often quite a tricky challenge, a hard problem. They come up with a kind of solution or a proposal for a solution, and we start developing it. Then they say “We need the script by the 24th” and I start writing. And then I say “I need to look at the animation of the object, to write.” So it’s a give and take, and mutual exchange of proposals, deadlines and collaborations around every detail; movement, soundscape, UX etc. Every movement is animated as a real animation in Blender using Unity. DVA Creative Technologies developed both the app and the animation and I tell them how to make the animal human, endearing or more alive and real. Then we put the pieces together. I bring the music that gives the length of the piece. Then we add the texts and specific spatialized sounds. And for the first time we’ve used AI for the voice overs, in this case ElevenLabs, which was very tricky and time consuming. To soften it we had to pitch it down and had lots of micro pauses edited into it, to make it sound more human. We made her stutter a bit and whisper, which is a very rare find in these VO programs.

C.D. / When I downloaded the app to access “Slow Walker”, I saw that you had different experiences. Is it a personal choice to have all your experiences into one app?

Peder: It's going to become one separate Slow Walker app where we can only see that project, but for timing reasons, we decided to use the already existing platform that DVA have and where my other pieces are. But I think eventually it's going to become a separate Slow Walker world, bringing all the versions and languages together.

C.D / Do you have some small tips to find specific resources about XR?

Peder:
There are venues where you can see nice projects and things. Paris has a few venues for digital art and experiences (like Gaîté Lyrique, The Nemo Biennale, Bains Numériques). Montreal has been a hotspot for XR development for some time (SAT, Mutek, Elektra, the Phi Center).

C.D / Would you have any last advice for an artist or creative who wants to start with XR?

Peder: To not be afraid of not knowing. I'm normally an idiot when I start and then I try to learn the ropes. It's a very steep learning curve, as I told you. Then you can slowly start to use them yourself cerating small objects and experiences. Now there are so many gadgets and programs you can't keep track of them.

C.D. And now to conclude this discussion, where do you think XR is headed and where would you want it headed?

Peder: I think VR is too limited because it's not a collective experience. We are collective animals, we like to share things together. I have made a lot of pieces, like holographic projections, all collective experiences, and it seems people tend to enjoy being together. In my "Cloud Machine" I connected the audience through sensors, through manual palm readers where they felt like one group. We read them collectively and then reflected their behavior back into the programming of this talking cloud: a feedback loop. And they felt their own presence affecting the structure and behaviour of the piece itself. **I think that the future will have to be more collective.** Either you see your fellow players, which you can in VR. The company Tin Drum created a digital experience out of Ryuichi Sakamoto's last concert, where you also see your fellow audience members along with digital objects that float around in space. Very moving since he passed soon after the shooting and recording. I think the future of XR is within these realm, bespoke artistic and deeply personal experiences.

Intro [OUT OF THE BOX] Christina Xaos Princess was invited as part of the first Realities In Transition XR Camp, which took part in our partner's venue in Zagreb: Kontejner. Dark Euphoria asked her about her relationship to XR, her personal journey through it, her favorite tools+inspirations…

Dark Euphoria | Interviewer: Marie Point
Hello Kristina! First of all, can you introduce yourself?

Christina:
Hello. Thanks so much for having me. My real life name is Kristina Kinney. And in VR and on all online social platforms, I'm called "Chaos Princess". I'm a social VR content creator and evangelist and currently I have a project called Quantum Bar, which serves as a searching AI conversations in social VR. So you can have a face to face naturalistic conversation with a GPT chatbot on any platform which supports audiotech.

In the first half of my life, I've been a filmmaker and with a degree from Munich Film School, and then I entered Social VR in 2016 and afterwards also picked up studies again. Now I also have a masters of arts for which quantum bar was my thesis project. I was also a CMO and events manager for a social VR platform called Tivoli Cloud VR until 2022. And since then, I'm mainly taking care of Quantum Bar. I hope to expand it to an educational platform which enables decision makers and politicians and students to learn about AI through interaction with it. And I also do teaching at universities in schools about VR and consulting for virtual events of all kinds.

Marie Point / Interviewer: You said you had a degree in filmmaking, but how did you meet XR? What brought you there?

Christina:
I was dreaming about XR ever since I read William Gibson's Neuromancer in the 1990s. So there he describes a world where you can go online as avatars, and he talks to the protagonists, talks to his old mentor as an AI. I was always dreaming of being able to use this technology to expand onto my reality, but I never would have thought that I would live to see it.

Therefore, my first pick of studies was filmmaking, 'cause back in the days that was like the art form which combined all kinds of arts and also was working with technology. But then in the middle of the 2010th, I had two wonderful daughters, still have them – so my social and professional life came to a halt (...) Nobody calls you back when you can't act spontaneously on your pop invitations. So I was like so happy that then in 2016, the first consumer headsets were released and we got the HTC White. And then I was so lucky to find High Fidelity, which was Philip Rostal's social VR from basically a success of Second Life but in VR and that solved all my problems and fulfilled all my dreams.
For once I socialized, going out, staying in, without leaving the house, and still being able to hear if my kids need me, I could put on the headset and socialize with friends from all over the world. That was so wonderful. **That's the great thing about the XR community, that they're so helpful and so collaborative and so I learned a big deal of how to 3D-build, how to use the technology just on high fidelity.** And there, make a mix/meet-up by asking experts for certain fields just by exchanging knowledge. Still, this was then also a motivation

for my second study. I wanted to have like the framework and the proper wording, the proper term in the technicity, to deal also with software production in order to set up bigger, more extensive works in the VR space.

Marie: Could you tell me what are your favorite tools with XR? What you enjoy working with?

Christina: My main skill is of course narrative, that comes from film. But also I love 3D building and I love to always start within VR itself, using toothbrush or Gravity Sketch is my favorite Photoshop for VR program. Because when designing in VR, you have the advantage of the immediate evaluation: if you first do something in Blender, then bring it into VR and then look at it with a headset, you suddenly realize *"oh, too high, too big to read, too… whatever"*. And that's the huge advantage by doing the core design also going back working with your head actually in VR itself and then export the models and take them into Blender and optimize them there and do the texturing. And in addition, I also love the various building methods provided by the platform. So on the one hand, at the end of the spectrum you have for example "Mozilla hubs" who offer an easy to use spoke editor basically Unity light and that works on the web. This gives you a toolbox but it's also open source so you can also do more complicated work with it, but that one is totally for free usable on anything which is connected to the internet and gives you a first feel of how to design, how to move stuff, how to make stuff bigger… And on the other hand, there is this platform we used as a showcase platform for Quantum Bar, "Muse Metaverse", or their successor now "resonate" who offer amazing unity like building tools, but within VR. So when we built the Quantum bar, we would have building sessions twice a week. And we coding team members would do the visual scripting, I would do the 3D building and that had fantastic other advantages because it's much more motivating to meet together and to actually be in the same space while you're building the space with your developers. And also it gives you shorter evaluation times because you don't have to upload a whole Unity exit just to check if the flower is purple enough but you can immediately say "Oh, give me more purple?" And so I'm really a big fan of this collaborative building ideas of Neos Metaverse / resonate.

Marie: What kind of resources did you use to find your way?

Christina: Stunning off with the design approach I recommend everybody to read Janet Murray's Hamlet on the Holodeck. It's like a ground work written in the 1990s about immersive design and game design. This can be really taken as a recipe for creating a great and immersive working virtual experience.

To build it, you can use either simpler tools like Zalat or more complicated ones like Unity or Unreal. But this tells you like what's the golden cut of immersive design? You always need some ground rules when designing that independently of what sense you are not fancy technology used. Then in general to learn about the newest XR & AI technologies, I also have been and kind of still am a big fan of Twitter. It isn't as evil as you think. If you create the right bubbles, and since on Twitter the aim is to be the first to release a cool new story or research finding, it's always the first place where you write or hear about new headsets, new algorithms, new programs, and it's also a good place to create your own reach and intermingling with this bubble. I still use Twitter as it's like the main newspaper.

Then I have really nice blogs and I love regarding the metaverse. So for once you have Varkner James Oh, who started off as a New World Reporter on Second Life and now expanded this blog talking about any new development or what's happening with social VR or social online platforms. And then also a great blog is by Ryan Schultz. He's a library in real life, but he also was starting from Second Life and then expanding to sensors and then expanding to all kinds of metaverse platforms... He also posts on a weekly basis reports of what's happening on what platform. So these are great platforms to find VR resources.

And last but not least, member of and big fan of the XR- guild that was founded by Ivy Ball itself and other metaverse players. They also put out a manifesto of 12 rules "how to create a good metaverse", like it should be decentralized, interoperable, not ruled by only one company. So we dove into the ethics there and they also are currently building a knowledge base about metaverse like ethical, philosophical and technical topics.

Marie: Talking about more philosophical and ethical topics: where do you see XR heading now and where would you want it to be headed in the future?

Christina: The journey of XR is a really wild-wide world. Until 2015, I wouldn't live to see it. Then 2016-17, everybody was super optimistic. If you would have asked me that question in 2016, I would have said like: "*By 2020, everybody owns a VR headset, everybody has like their second additional reality in VR*". But then the curve went down and it was like also this metaverse hype created by Facebook rebranding was very contre-productive for the space because so much vapor were released under the name Metaverse that it got a bad reputation to folks actually really working in the metaverse. So we had for example the problem with Tivoli cloud VR that we had in our tagline, we're building a friendly and inclusive metaverse for everyone. And we had that since late 2019 in our tagline and then Fox told us, *"Oh, I don't want to see your software just jumping on the hype train*". That was rather frustrating.

I think at the current moment we are in a okay-consolidation phase. So there are real use cases, real applications, especially in the educational, the training, and the medical space. But you can see here at the wonderful Kontejner XR Camp or at the L.E.V. Festival, it's being picked up by the arts. Of course games are happening in VR. Schools are having VR seminars. So it's an okay business now. But my big hope in terms of where it's going is actually that the Apple Vision Pro will have a similar effect as the iPhone. Back then the iPhone was like *"why do I need my phone to go on the Internet? What can I do with it?"* And you were like *"Oh, okay, I can find a restaurant".* And now nobody can live without their smartphone. And so after the super expensive 3,000 bucks initial model, I hope that they release something at least affordable and that this brings a more massive adoption and maybe also gets in other target groups… Maybe someone will just buy it because they also bought the Apple Watch and they also bought the iPad and that those folks who are rather the Apple fans then realize what could VR and AR spaces can be. And then hopefully this fires back to the community, hoping for mass adoption.

Marie: To end up, what advice could you give to an artist who would start creating or experimenting with XR from your own experience and practice?

Christina: N**umber one, get a headset, get active**. Play, download arts, find what works for you, what job do you like, what would you want to create? But first, experience the art itself. Then, my big recommendation is to go to conventions and festivals like here the XR Camp or L.E.V. or Laval VR Days because the community is really such a wonderful and welcoming community. They're so helpful and the exchange of ideas is still so much supported. So, go to the festivals, speak to the exhibitors, do networking there.

And then, I'd start small. I'd recommend to anybody to find a social VR platform which you like. There is a whole variety out there. From Mozilla Hubs which works on stand alone headsets and even mobile phones, to kneel through the night for which you need a PC/ VR set-up. All these platforms like communities and also collaborative building/teaching-evenings and experts who can tell you how they brought in their photogrammetry model or such. This is a great place to gain knowledge from your own home. And then maybe if you don't have experienced in the technological space yet, start with a simple tool like with Spoke Editor by Mozilla Hubs and don't start doing like the whole Louvre. Start with a small piece, a small room, an island. Whatever you like without the pressure of having to exhibit, to having to distribute it right at once, just as a practice object. And then you can also see where your skills are and where you need collaborators and then you can level up to Unity or Unreal and then if you create some little pieces for yourself and if you know what kind of talent you need, you can finally level up and do like a project-lead who gathers a team. But also if working with a team, it's super important to know what you ask of the team.

Marie: Thank you so much Christina.