START AUDIO

Facilitator: I'm just… You may have heard that, I have started recording. I think the idea today is to listen to Mark and to Hugo with their presentations. I have created this Miro board. I'll post it here on the chat, just to keep some notes. I'll be turning my camera off when the presentations are going at least just to make sure that my bandwidth doesn't come in the way of the whole session. I think we have agreed to Mark and Hugo to have ten to fifteen minutes to talk about the project. I think I'll just pass the ball to any of you that want to start.

Male: Do you want me to go? Do you want to go Hugo? It's up to you?

Male: I can go, yes. Sounds good, thank you. I'll start us off. I wanted to speak to you about two different projects that I've been working with, mostly looking at the experience of sharing the joys of repair culture, maker culture, so for context I'm an industrial designer by training and I enjoy prototyping using digital fabrication tools in general. But I feel like something that is a little bit misunderstood is that it's almost seen as a kind of technical prowess or a form of entertainment you enjoy for the technical prowess of having fixed something or connected the right LEDs to the right thing that makes it shine the right way.

I've been looking for ways to engage with friends and others, I mean within the designer circle I'm part of but also just broader audiences to try and share the love of repair and making as a creative act broadly speaking that can be adopted by anyone given of course the right circumstances and the right support. That it's first and foremost a playful kind of way to tell stories and to let new ideas come to life.

In that spirit I've organised two different kinds of events and projects that I'd like to share with you. The first one is called digital bunkers and it's evolved a bit since. Can you see my screen? Yes? Great. Digital bunkers is actually something that I started because of some speculative design courses that I was giving at the beginning of the pandemic that were commissioned that had started before the pandemic and then that was a much more hands on format where I would have exhibition design students rate over the course of five days their own virtual worlds. This was in person in school with them and we were doing a lot of tailor made virtual spaces.

That wasn't possible because of the pandemic and so we had to turn to other virtual tools and 'Fortnite' was one of them. 'Fortnite' is a competitive e-sports platform where you are often trying to play in battle royale, which means you have to be the last one standing, a little bit popularised by 'Hunger Games'. In this case we used the 'Fortnite' creative mode. What that meant was that we'd come together over the course of a weekend, a Saturday and a Sunday often and try to create our own little virtual commune and really think about the infrastructure behind it.

What I mean by that is we all tried to think of, we'd do a bit of journey mapping or what we use on a daily basis and then see, "Okay, who wants to take care of everyone's healthcare needs? Who wants to take care of everyone's water needs?

Who wants to take care of everyone's education needs for instance?" Then from there we'd decide, "Okay. How do we provide these services for our community? Is there something that happens at the household level or the neighbourhood level? Is that something we build ourselves or something we import?" That's one project that was really fun to create.

Here you can see the person who was in charge of healthcare had made a hospital as the central space where she had prioritised the waiting room so that it would be a social space before a caring or a recovery space. Here these were the decentralised solutions she had found with these portals that check your fever and then send them to you as you go through them, so you can choose what to do about it. We also chose to collectively share a refrigeration service that was put on a tram that was zoomed to go around the community and so you had a schedule to go to your refrigerator and the refrigerator was the size of a container.

This is all speculation but it gets you to think about what are your ties to your infrastructure, to the maintenance it requires, to the amount of labour, to the amount of effort, and how do you make that into a discussion you have as a group. That's one quick project I wanted to share and I can answer any questions you might have about it. But that shows how I tried to bring this sort of maker DNA or low-tech DNA and concerns and curiosities into a virtual space to make it immersive and make it a little bit hands on but in a much more safe or hard to mess up environment, or rewarding if anything.

The other space I wanted to show you is actually still accessible. I think you can still see my screen, but this project is called The [___ 0:05:49] Ledger. This was organised at the last Black Friday in November over the course of a week where my friend Pedro ___ and I invited people to come into

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Miro and hack objects together. What that means is that – I need to access my… Yes – what that means is that we had created a Miro board, which again is what we are using also for these activities, but in it we had put all these different objects, like the Dyson vacuum or a sofa, but all these objects come apart. We had photoshopped them so that the pieces could be separated. You felt like you were hacking virtually.

We set this whole exercise up with a fictional premise saying we were in 2081. There was the Great Satisfaction. We don't really know what the Great Satisfaction is, if it's a legal or an environment, kind of environmental turning point where basically consumer brands cannot make objects any more, and so all these consumer products that are left in the months become raw materials that people start using. In this project we set up this sort of really short 20-minute experience that people could partake in and create their own items.

You can see in very small here a lot of different many, many collages are being made in Miro using these parts. These are the same collages you see on the white labels here, so this is from Miro. The participants came in and discovered the joy of hacking objects together through Miro. Then Pedro and I outside of the workshop made those out of 3D objects to give them a slightly different life or realism that we felt added a little bit to the story.

What was nice about using these objects was that when you placed them in a place like Mozilla hubs where we are now some of them animate quite nicely and it gives them a nice little life that is allowing us to suspend a little bit our disbelief and play with magical realism, make these zero footprint boots, which as you can see took two seconds to make. You have a boot. You have a robot arm, a leaf blower and a fan.

But the second you see it come to life in here you really get this sort of interesting reaction and experience.

Yes. I'll stop here. This was my contribution and how I've been using speculative design and fiction to create these playful ways of thinking about maker culture and what it could do for us.

Facilitator: Thank you. That's great. I was curious to find out who selected the objects. Were there any clear criteria about which kinds of objects were you offering? Or could people bring their own objects?

Male: We did a little bit of both. We tried to get a nice range of things. We did a little bit of looking up what were some of the bestseller lists online. A lot of it was Google homes, very uninteresting shapes and objects that of course have their story but so long as it's AI or software then you can kind of just say it's there. It's not a thing. We also, we started from a shopping list and recommended Wired magazine Black Friday shopping lists and then ended up choosing our own also a little bit for the form, the silhouette and what they could evoke. Then we remained flexible if there were any specific requests during the workshop, then we made those available as well. I'll share the links that I used.

Facilitator: Great. Yes Zoom, because Zoom makes everything disappear later. Just leave everything open here. Nice. Have you, I think you came across Cory Doctorow's 'Makers' as part of [___ 0:10:23], I don't know?

Male: Sorry?

Facilitator: Cory Doctorow. It's sort of sci-fi, not necessarily sci-fi ___
                   wrote a book called 'Makers', two or three years' before Chris
                   Anderson wrote his book called 'Makers'.

Male: Oh no.

Facilitator: It was about this kind of scenario. Yes, I'll send you the link
                   here. It's a very interesting book, in which there is this kind of
                   post-economic crisis scenario in which two makers, inventers
                   have access to a warehouse and lots of ___ and they start
                   doing these kinds of hacking and recreating objects that were
                   already manufactured. It's a very interesting book. I will send
                   you the link. Any other comments, Arthur, Mark, Mary?

Male: I also discovered the term 'Salvage punk'? I don't know if you
                   are familiar with it today, but it's a nice fresh, friendly punk. I
                   shared a link again in the Zoom.

Facilitator: Nice. Yes. I'll have a look at it. Yes, I was, I don't know, maybe
                   one month ago asking around on Twitter about sci-fi prose
                   related to salvaging or reusing stuff, and there were some very
                   interesting references including one that I eventually found on
                   Adam Minter's presentation on I Fix It about [___ 0:12:16] and
                   Ray, I guess this character.

Male: Okay.

Facilitator: Then what are they called? ___. Yes, so some interesting references.

Male: Nice. I'd love to see that. Arthur asked something regarding the 3D modelling actually. What was extra fun or extra in alignment with the approach was that we did not really model anything from scratch. We used Blender, and in Blender there was a plug-in that tied to Sketchfab, and Sketchfab is a kind of YouTube for 3D files, 3D assets. In Blender what we did was we [kit bashed 0:12:53]. We assembled existing 3D files. It really was like hacking, but we realigned and positioned things that were made by others. We had to redo the file size and stuff like that but the actual objects were made by someone else.

Facilitator: I don't know if it's only me [Crosstalk 0:13:19].

Male: No, I think it could just be you because Hugo sounds fine at my end. (Laughter) The joy of technology.

Facilitator: Yes sorry. I guess we can move on to Mark's?

Male: Yes, okay cool. I'll share a couple of things actually. I think I ought to just do a quick share context and then I'll show you what I've been up to. Hang on a second. I'm going to share context. My background is – let me just put this here, see if it behaves itself – my background and PhD some years ago was

looking at innovation ecosystems. It's all really founded from this work that was originally done in business ecosystems. I'm not going to go through the detail of it here, but where I got to was to say that actually what you need to think about as you look at anything that's around innovation are these buckets. If you don't think about all the buckets the chances are that it isn't going to happen.

I've tried to apply this approach to the way I look at lots of different things these days, so I tend to take this ecosystem multi-perspective view and if I just focus in on repair, I'm not going to go through it in too much detail here but I've actually looked at mapping, and this is just a personal project, I've actually looked at mapping what a couple of repair based organisations activists cum community groups do, and I've sort of tried to look at where are they? What are they up to? Where might they have gaps in their ecosystem?

The bottom line is if we think going forward, and I know we discussed this before Philippe, is as you start to look at this you start to find that there are gaps in the ecosystem, and those gaps are all weak points that mean that it might not ultimately succeed. At the moment we know we've still got big challenges around right to repair. Yes, there is some legislation. It's nudging in the right direction.

Facilitator: Mark?

Male: It's a long way away.

Male: Mark?

Male:	Yes?
Facilitator:	I just interrupt you, I can only see the left side of your screen.
Male:	Oh wow, what's going on here? It just says it's stopped pausing. Sorry. I will try and start it again. No. Try that. Behaving? Is it back?
Facilitator:	Yes.
Male:	Okay sorry. If I look at the current situation there are lots of issues out there in terms of our ability to make better use, reuse stuff. Like we talked about in one of the last meetings around regulation, fiscal incentive, so regulation alone is probably not enough. You need to nudge ecosystems in the right direction. Then when it comes to things like repair itself there are commercial repairers, personal repairers, community repairers, municipal repairers that I'll go on and talk about now, but there is almost nowhere what I would call an association of repair. If you are a repairer you are pretty much on your own. About the nearest equivalent to it would be Vengerow in Germany, sort of creator, a sort of pseudo-community of repairers but they themselves are independent repairers. I always try and take this ecosystem perspective, and what I actually want to show you is, so this is just positioning, what I actually want to show you is what I've actually been doing for the last few years. I'm going to stop that and share this, if it lets me.

Yes, I might be an engineer by background. I might have studied ecosystems and innovation but actually I spend more time these days doing documentary photography projects. The particular project that I'm showing now – come on, behave yourself – which is off my website is this one here. It's just called Unbroken. There is a summary of images here but this is the main project. It's essentially stories about repair.

They range from impact, in other words what's the impact on the planet of us not repairing to the culture, the never-ending life of Cuban things, to what happens in places like Ghana. I've looked specifically at things like car repair in Cuba, just because they are pretty unique in terms of what they do. I've also looked at things like what they are doing in Scandinavia at a reuse mall called Retuna and a citywide solution in Helsinki called Kierrätyskeskus.

Then in the UK, or actually not just the UK but then I've always looked at the attempts to rebuild capability because we've really lost it in Anglo-Western culture, but rebuilding it through the restart project, the repair cafes. I've also looked at that rebuilding of capability through organisations like I Fix It. I've been and done some work with them and for them in their European headquarters in Stuttgart, just outside, well actually just in Southern Stuttgart. Then I've also looked at commercial repairers.

I'm trying to look, if you think of it from an ecosystem point of view, I'm trying to look at lots of different areas and a little bit around activism. I'm not going to go through the details of these but the whole thing is basically you can have a look, I'll provide you a link, you can have a look at stuff I've been doing, but there is a series of images on – come on, open up. Be brave. Be brave machine – looking at impact, ranging from the weird and the wonderful.

Obviously as it's Earth Day tomorrow I'm currently running a stream of images all around the impact of electronic waste, starting with, "Here's an exploded view of your phone. Barely 20% of it is actually recycled. E-waste is a total nightmare because we don't know where most of it ends up. Lithium iron batteries are not the solution. They are like a dark thing waiting to catch us out. Information and knowledge is still contained within the manufacturers and that's inhibiting."

Then this silly image here is, this is the footprint of your phone, one mobile phone weighing 150, 170 grams, something like that. It needs about 35 kilos of the planet to make it. That tiny little phone there would require you to dig something that big up just to make the tiny little phone, trying to get over that there are huge amounts of waste. That's the impact bit.

Then I've got – bear with me two seconds – then as I've said I look at repair culture in Cuba, and this has been a series of visits probably over about three or four years working with a local photographer and a professor, and working with a number of community repairers. I've got a whole series of images looking at the things that they do there. The classic thing they'll do is they just scavenge all the parts and then look to use them. Here's an example. If something is not repairable they'll still just scavenge all the parts from it and that will become the basis of potentially repairing it in the future.

These places, they will offer three-month warranty cards on their repair, even though that repair may have only cost maybe $1 or so. They'll repair everything and anything. Here they are repurposing single use lighters to make them multiuse lighters. This guy, [Yalasan 0:21:51], literally just sits at the side of the road and repurposes lighters rather than just throwing them away as single use. Car repair and all the usual stuff. Let's just

come out of there. Some of the car repair shops are weird. Some very strange people run those.

Then I've done the same thing in Ghana. Agbogbloshie really hit the news a decade ago and Greenpeace did a report on the fact that all this e-waste was ending up there. Yes there are some issues. There are still small groups that do burn waste, but they are actually pretty small in comparison to everything else that is going on there. Actually there is an enormous amount of repair, reuse, repurposing, recycling going on in the community. Most of my photographs are more about that than they are about people burning stuff, which of course makes for spectacular shots but doesn't necessarily tell the true story.

I've described it as they are looking at places that never really lost the culture of the repair. They still have it. Sorry, my website is being very slow here.

What I've also done is looked at where, I'll call it municipalities have tried to rebuild or create a capability to make better use of things. Probably the best places for this at the moment are Sweden and Finland. This is a place in a little town called Eskilstuna. It calls itself the Swedish Sheffield, so it was an old steelmaking town. They have a shopping mall there that is all about stuff that has been reused or recycled or repurposed, sorry. I was out there a few years ago photographing this.

By the way, I always wangle piggybacking these on the top of something else, so I was actually out at a conference in Cuba and used the fact that I was going out to an academic conference to just stay on and do stuff. This was actually exactly the same. I was presenting some research. I just stayed out for a few extra days to shoot that. Same in Finland. I was actually writing an academic paper with a professor at a Finnish university. I just stayed some extra days and then shot one of these Kierrätyskeskus, which is a reuse centre. I've

tried to include in here I've tried to interview some of the people and include some information so that you have got an idea of what these places are about. It's not just about the images.

But these are places where people can drop off goods that they no longer really want. They don't consider them to be commercially repairable. They don't just want to throw them away. They'll drop them off in places like this and they will endeavour to repair them. There are all the obvious things, bicycles and stuff like that, but you'll also get old Commodore 64 gaming computers for anybody old enough to remember what one of those are. I suspect most of the people on this call are not.

But they'll repair just about everything and anything. There are bicycles. They will take old sports gear and they will repurpose it. They'll turn it into stuff, so here they've taken old squash rackets. They have made them into noticeboards. Skis become a coathanger, a hanging rail. They do it with almost anything. This is the one that I really, really loved. They'll take clothes and if they can't repair the clothes and then resell them as "vintage" they will literally just strip everything off the clothes that is reusable or in some way shape or form and then they sell the…

What do you want to call them? Oh God, I've forgotten the word for them now. Handicraft kits I guess is the best way to describe it. You can just use these, buy these and just use them to make stuff, make your own stuff. One thing that is pretty popular out there is making these crazy hobbyhorses, which are all made out of other things. People will just buy a kit and they can make their own hobbyhorse. It's a thing in Finland.

Then scavenging, so exactly as I saw in Cuba and as I saw in Ghana, you'll find that in Kierrätyskeskus in Finland they will scavenge stuff, so these are all motors out of washing machines. The washing machines will be on repair but the motors are still usable so they just scavenge them all and they'll reuse those motors to repair other goods.

I guess the thing that I know I've sort of alluded to before is that you see patterns of capability behaviour, patterns of features in many of these locations where they are trying to rebuild this capability. Then a shop, you know a classic repair café, Restart project, and I've done a lot of work actually a lot more with the Restart project. I've shot a lot of their events over the last few years. I'm really just taking images there of community events. The Restart project here in the UK will actually use a lot of these images for their own publicity postings etc. Far more so than maybe some of the repair cafes have done. I'll do some stuff with them.

I've also just been working with local commercial repairers as well. I'm trying to look at that, as I said, trying to look at the ecosystem from lots and lots of different perspectives. This is my little local repair shop. These are the people who very kindly gifted me all the junk that you can see on my Instagram feed, so all these computers, all these old lithium iron batteries, all the material to make this, they gifted them to me for a few days so I could take the images and then I gave it all back to them, because they are actually planning on eventually stripping all the bits out. They do the same. They strip all the bits out and reuse them for repairs as well. Yes, so lots of others. That's probably about it.

One last one, if it's behaving itself, is I've been to quite a few of the Restart Fix fests that have been, including the ones in the UK and in Berlin. I sort of started shooting a few of those as

well, and probably my intent would be try and shoot a few more of those as part of this. I'm trying to take this sort of project to try and take a multi-perspective view of repair and reuse and looking at the range of potential solutions that there are for people.

I want to focus not so much on the impact, I know I've shown some of those images, but actually the idea is most of this project if you look at it is people looking at providing solutions, albeit small solutions, but they are all solutions. I've got this belief that if you showcase and you highlight solutions and people see the solutions then they might go, "Ah, you know what? We could do that here." You get other people saying, "We could adopt that. We could adopt that." I'm really just trying to use this to showcase some of those, and then I'll literally try any outlet going to make people aware of it. I have managed to get quite a lot of this stuff into UK newspapers, which is good, including a lot of the major national newspapers.

But the idea is to just keep at it. I don't intend getting in at the moment. I've got some ideas for the future around what I do and where I take the project but at the moment the focus is to just keep working on finding new ideas, new angles, taking images and then publicising them. I mean as a result of this I've actually had some organisations commission me to do some work, so have actually paid me to do the photography, including an organisation that refurbishes and resells mobile phones. I've done some work for them at mates' rates I describe it, because we've got common interests, which is trying to encourage people to make better use of the things they've got, or not send them down the recycle/landfill route.

That's basically me, my project and what I've been up to. With that I'll stop sharing and I'm back hopefully, or you are back.

Facilitator: Thank you Mark.

Male: Anyone interested the website is there.

Facilitator: I've just got through on [___ 0:31:29] myself as well right now.

Male: Yes. I mean because it's Earth Day tomorrow I've been popping a few out, a few feeds out over the last few days and I intend to throw a load more out tomorrow when I've got a bit more time. It's all been about the problems the last couple of days, and I'll probably put one or two more up tonight. Then tomorrow it will all be about solutions.

Facilitator: Nice. Will you give any presentation tomorrow?

Male: I'm actually giving a presentation tomorrow but not around this. I got asked to give a talk to a bunch of photographers so I'm actually giving a talk tomorrow night to a group of photographers in the north of England. But I'm planning to split my talk. They don't know it yet. The beginning is going to be photographic stuff, and then the backend is going to be this project. They are going to get it anyway whether they like it or not.

Facilitator: (Laughter) Whether they want it or not.

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Male: Yes.

Facilitator: Nice. I had seen some of your pictures before, some of the albums, but I hadn't seen that one of the smartphone footprint. It's very impressive.

Male: That's pretty new. I only took that last week. (Laughter)

Facilitator: Ah okay. Yes.

Male: That's pretty new. Even though we have still got issues around it's not easy to get to places and there are no community events going on at all art the moment. I'm still trying to find work that I can make that's relevant, so I've been looking at things like the piles of waste, the lithium iron batteries, the footprint of your phone. I'm creating, I literally create them in the back garden.

Facilitator: Yes, your studio universe right now.

Male: Well in my view anywhere is a studio. At the end of the day if I've got a camera and I've got something or someone that I can work with then that's good.

Facilitator: Nice. Yes. It's very impressive work. Cool. Anyone has comments about or questions for Mark?

Male: I mean in this advocacy work or trying to make these alternative systems and services that are more visible who has been the most responsive so far in regarding municipalities, private businesses, outside of maybe I Fix It and Restart?

Male: I Fix It and Restart are obviously the two biggest. I mean I actually have got boxes and boxes and boxes of I Fix It tools, all gifted by Kyle. They were sent to me from the Stuttgart place. What I'll do is whenever I go to any community event I'll usually take a couple of those along with me. If they haven't got some of the tools I'll just gift them the tools and tell them it's free from I Fix It. I'll just try and make sure I get a few shots of the tools in use. Then I just send them over to Kyle. I look at it, it's a win-win.

That, I mean yes, Restart project are probably the ones that I've worked collectively with the most. They've managed to get work. When they've managed to get into the media they've used my own images to illustrate their articles or their campaigns in the media, which is good. Hopefully we can continue to do that.

Commercial is not really my big thing but I'm quite happy to go work with commercial organisations if they've got, if their mentality is the same as we are trying to achieve here. Are you trying to pull out some of my research stuff? Oh yes, that's a really old one. (Laughter) I just noticed what you are popping up there.

Male   That actually was for my own use. I can share something else with you actually. Do you know Zoe Laughlin's work?

Male: I know the name but I don't know if I know.

Male: She's running a show right now on BBC4 called 'How to make', something like that, where she is making her own trainers and a toothbrush and another one, and she is apparently working with Tom Sachs also to test the Nike crafters group where they are pressure testing the trainers. She runs the Institute of Making in London. But she has a really nice public facing love of making type of approach that is not restricted to repair. She has been doing also repair workshops during the pandemic.

Male: Yes. I know, so I know off but I've never been actually involved. I also know the BBC is about to run a multipart series on repair and reuse starting next week, but I've not seen any of the details of it yet.

Facilitator: Oh nice.

Male: Yes. That is due to start. Actually someone has put a link in here to a BBC programme. What is this?

Facilitator: That's the one I was speaking of with Zoe Laughlin as well.

Male: Oh, 'How to make'. Yes but there is a new one. I literally just happened to hear it on the radio today. But I have no idea

quite what it is. I'll go hunt it out. But one thing I will say is it's starting to become, it's starting to get a little bit more media presence now. I mean some of the stuff is a little bit, there is this 'Repair Shop' stuff that is on in the UK. It's a bit twee. It doesn't really get to the root of the issues. It's people's very personal objects that get repaired by some craftspeople. But at the end of the day it is getting repair into people's mindset, but we need to do a lot more.

As we said in one of the earlier discussions I still think some of the big issues are not just around the regulation. They are also around the incentives for people to consider repair versus the other options. They are sort of in my view what some of the big gaps in the ecosystem are.

Then the other big gap I think is that there is just no, you know if you like to think of a trade union or if you think of the General Medical Council as an association of professionals there's nothing analogous for repairers. Every repairer, commercial repairer I'm thinking about now is almost working as an independent in isolation. That I think is a challenge. I think there needs to be some sort of collective that helps repairers, particularly commercial repairers build community, because if they don't it's very difficult to do.

I know my local repairers. I spent quite a bit of time with them talking through stuff that's got nothing to do necessarily, with just how to repair a particular thing, and yes, they do find it difficult. They get challenged by Apple. They get challenged, and they are on their own. I think lots of things like that. This is the reason why I think an ecosystem perspective is important, is because if you don't think about all these other things then you potentially can come up with some nice ideas but they just never get either enough critical mass or momentum to go forward.

Facilitator: Yes I think you touched on an important point. I think I have considered that absence, this sort of class identification or field identification when I spent some weeks in [___ 0:39:55] in France. There was an association. I guess Julian will be with us on Friday to present things, and they used to host this community repair event every Tuesday. The workshop was open for anyone. What I noticed there was there was a lot of design students in their 20s and there were a lot of retired engineers in their 60s, but I couldn't find any professional repairer. I wondered what was happening, why the professional repairers didn't go to these events.

One of them is that as it was on their business hours they would be working in their shops and they do not have time to do this time of community event. But by then I think I have articulated this absence of a kind of identification that would bridge these young designers and the retired engineers. There seems to be something lacking in the middle. Maybe something akin to a trade union or an association of professionals-

Male: [Crosstalk 0:41:19] association, yes. They are trying. The nearest I've seen to it anyway is organised through Vengerow in Germany. Vengerow, he must be now, I'm going to guess, in his 60s. But two of his sons are running the business with him now so he's not on his own. There is like another generation. They are based just outside Stuttgart, just southwest of Stuttgart.

Facilitator: How do you spell that?

Male:	V-E-N-G-E-R-O-W. Vengerow. I apologise, my German is not that good. (Laughter)
Facilitator:	Vengerov probably.
Male:	Yes.
Facilitator:	Vengerov. Nice.
Male:	Yes. He's been pretty active in the repair. They host a repair café event in their own workshops. They used to do lots and lots of repairs but they've now focused very much on doing what I call sort of some high-end audio equipment type repairs because there is quite a bit of money in it and it doesn't need you to have massive facilities. Then they do more esoteric stuff, so they'll repair electronic key fobs for cars.
	For example if you have got an old Mercedes with one of those weird shaped key fobs but it's got an infrared on it. It costs like 200 or 300 Euros to get a replacement if it breaks. They have got a guy who can do the micro-soldiering that is necessary to repair the things. They actually do a good business just repairing old Mercedes Benz electronic keys.
	But they run some communities and services and they host some web services for small commercial repairers, and they'll help them with things like their publicity and information and stuff like that. But they are one of the few examples I've seen but they are not a formal association. I think they just do it

because old man Vengerow just really fundamentally believes in the importance of repair, so he just does it, and because it's his own business he can do what he wants. (Laughter)

Facilitator: Yes is free to do that. But yes, it's interesting, because even when it comes to right to repair legislation it seems to be there is a lot of non-profit involved and there are for-profit corporations on the other side fighting the right to repair, most of them, and this sort of small business doesn't seem to be much part of the discussion, possibly because they don't have this kind of representation, you know political representation.

Male: Yes. My sense, and it's very much my sense, I've not really done what I would call any formal research to back this up, but my view is that if you are going to have a viable ecosystem there has to be space for the community. There has to be space for people to be able to repair themselves. There has to be small independents. There has to be something that is maybe a bit bigger.

You know, the idea of these community, sorry municipal based ones like the ones in Scandinavia, I see that in almost any other ecosystem you have a lot of different species and a species deal with niches and they are successful in niches. There is clearly a role for commercial repairers as there is a role for the municipal facilities where it's gone beyond economic repair but it's still repairable. Then your options are either municipal or if you don't want to do that and you want to keep the thing you've got community repair.

These options need to exist. It's not a one-size-fits-all solution. You need a range of different options and therefore I almost think of it as species in the ecosystem for it to be viable.

Facilitator: Yes. Small business repair shops, sometimes there is this kind
                    of, an issue of trust, you know who to trust. I had last week my
                    ex-wife was here in Berlin and her phone had a screen that
                    was broken. She asked me where she could repair, what shop,
                    because here in this neighbourhood there are hundreds of
                    phone repair shops. I was just wondering, who can I trust with
                    that kind of repair?

Male: Yes.

Facilitator: But then, yes it's tough. Then you have to resort to, I don't
                    know, Google Maps to see the rating. But this kind of thing
                    perhaps could be improved with this kind of collective body or
                    association.

Male: Yes. I think there are ways of doing, yes. I completely agree.
                    There are ways that that can be done. I mean at the end of the
                    day the same goes even for big organisations. Yes. Offering
                    warranties is important. I just noticed Hugo has made the point
                    that actually offering a proper warranty is important. If they can
                    do it in Cuba for a $1 repair it can be done if you are any good.
                    My local repair shop will offer warranties on them. Even repairs
                    they'll do you things using scavenged parts because they've
                    got enough confidence in the people who have all been trained
                    properly. They know where the parts come from. They are
                    buying parts, but they'll scavenge good parts out of a genuine
                    Apple phone. I hope Apple's not listening. (Laughter) But they
                    will scavenge parts out of a genuine Apple phone and they can

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be reused to repair. They'll offer their own warranty. Clearly it would never get an Apple warranty.

Facilitator: Yes. Well coming from Brazil my understanding of trust in these services, it goes to a different level I guess. I remember in the city I used to live, the small city I used to live someone told me, it was a friend who wanted to have the screen on her phone replaced, and she told me that the repair shop asked for her passport. I was wondering, "Why do you need to give your passport?" They said, "The only way to repair this is if you give us your passport." I was just scared. I wouldn't do that. But then she had no choice. But then these are other levels of trust. You should trust your data and now all your nude pictures and everything else, your conversations, with a stranger. But yes, I don't know, that's the Brazilian take on trust.

Male: Yes. I guess at the end of the day, and just thinking out loud that it's not really that relevant, but I guess if you actually want to know if the phone is fully functional you are going to need to put the password back in, because you are going to have to disconnect the battery in order to change the screen. The whole phone is going to have to be rebooted from scratch. Somewhere you are going to have to put something in to know that the screen is fully functional. Even with the best will in the world you can put a new screen on and you've bought a replacement screen and the screen may not be 100% functional.

In fact it's actually one of the other crazy things I remember. This Vengerow place in Germany, so one of the jobs they do is they actually quality control check the I Fix It new screens. If

you buy a new screen from I Fix It these guys actually quality check it. They literally take every damn screen and they have a test rig, and there was a woman there and all she did all day was test screens. I can remember talking to her and saying, "Isn't this just mind numbingly boring?" She's like, "No, it's actually great. I put my headphones on and listen to some music." She just steadily works her way through these. But she said, "Yes, even with the best will in the world, it's brand new but it may not have the touch working everywhere on it. Obviously if you are a repairer you need to know that that's working. You are only going to know it when you put it in the phone." I could see why they would do that. But then yes, of course it's a big issue.

Facilitator: I understand, but there should be some sort of maintenance mode that allows [Crosstalk 0:50:24].

Male: That's back to the good old manufacturers again, isn't it? Yes. (Laughter)

Facilitator: Yes.

Male: Cool.

Facilitator: I think-

Female: I wanted just a quick comment, Mark and Hugo amazing presentations, thanks for everything you are doing. I also had

a question. Mark, have you worked in the States with anyone in terms of your photography or even come across projects interesting to you? Yes, sorry.

Male: No, it's a great question Mary. I mean I've been in contact with Kyle and Kelsey at I Fix It. We've had various discussions. I met up with Kyle a couple of years ago at the Fix Fest in Berlin. I know them. I did attempt about three years' ago to shoot this project to try and do some work around this space in New York, Brooklyn, I was all over the place in and around. Manhattan not good. Brooklyn, all over the place. But I just never found anything that was easy to access or as good. I found a couple of repair shops, but they weren't really repair shops in the same way. No, I've not really succeeded in the US yet. One day when we are allowed to travel again maybe I will try and take on the US. But at the moment it's not like top of my priority list. It would be nice to do it to complete that bit but I'm not sure at the moment.

Female: Okay, yes.

Male: A few of the activists, I'm not sure there is anything there that is fundamentally different to what I see in Europe. I think I probably need to go to the west coast, work my way down from Seattle to San Francisco. I think I'd have more success there.

Female: Yes. Let me know if you are coming this direction. Yes. This is more of a broad question or thought. I mean the culture, looking at the Western countries where economies are doing

well, less developmental countries, what is it, and you include places like Finland and Scandinavian countries, Sweden that are doing well in this area, but what is it in the other western countries that they just can't get their head round this? You mentioned the word twee. Sometimes when it's done by a company or by people it tends to be something on the side or it tends to be something, "I'm feeling good for a moment. Then I'm going to move on to something else."

Male: Yes.

Female: Have you come across any, I mean I grapple with why don't people get it?

Male: Yes. I don't know if I've got the answer to why don't people get it? I don't think I necessarily know the answer to that. I mean I have interviewed people and people know what I'm doing. I've created mini exhibitions. I mean they are literally just done on a bit of sheet board. I've literally stuck some photos on, taken them along to events and had discussions with people. More often than not I'm going to say I'm at the elder end here in terms of generations, but talking to people in their late 20s, 30s, they are just like, their immediate reaction is, "If it's broke I'm just going to go get another one." They don't even think about getting it repaired.

I think I'm going to lay part of the blame here at the manufacturers, but I'm also going to lay part of the blame at just the general culture of fast fashion, the Instagram, TikTok, everything is instant. It's instant this, instant that, and I think it just creates a mindset, and it's a very western, Anglo-western

mindset I think that is just like, "I'll just go get another one. I'll just go and get another pair of shoes. I'll just go and get another this or another that." They haven't yet worked out the implications of that.

That's not a criticism of the individuals. It's because the implications of it have never really been pointed out. I mean people have sort of got the plastic in the ocean bit, but actually that's not where the biggest problem in the ocean is. That's a completely separate issue. But when it comes to something like a mobile phone, and that's the reason why I've done some of these crazy images recently looking at what's the footprint of your mobile phone? It's because people have got absolutely zero comprehension of the impact of one mobile phone on the planet.

Apple are rainbow washing what they are doing. They talk about their assembly plan as zero waste going to landfill. Well whoopee. What they don't talk about is the 85 kilos of waste for every 170-gram phone that's created as they dig that 35 kilos of ore and materials out of the ground and then have to process it. They literally create 85 kilos of waste before it's even got anywhere near the assembly plant. They just ignore it. They don't talk about it.

I think as long as manufacturers get away with stuff like that and as long as we've got people pushing this instant karma, you've got to have the latest stuff and the implications being invisible to people the situation will perpetuate. There is a need to show some of the impact but I really didn't want my own work to just focus on impact, impact, impact, impact, because the other problem you get is when people do get it they then feel helpless. What can I do about it? I think the thing we need to do is to give people a sense of actually you can do something about it yourself. There are things you can do. You

are empowered to do stuff. If people begin to do that it might actually nudge things. That's my rant over. (Laughter)

Another? What?

Facilitator: You don't have to have this question?

Male: Chinese culture and repair? I don't know. I've not been to China for… I went to China for work maybe 15 years ago. I've not been since. I wasn't certainly looking at anything like this at the time I was there. I genuinely don't know, I've not done a lot of reading. I mean obviously they have a monumental manufacturing capability. There are some monumental environmental issues that they are beginning to think about getting to grips with. But they've also got this economy that has grown phenomenally and has probably adopted most of the bad ideas from the west. I suspect we'll find lots of similar problems to the problems that we've got. But that's pure speculation. I've not done any research.

Facilitator: Yes. I know the work of David Li who runs the Shenzhen Open Innovation Lab. He has been trying to push a more environmental agenda. [___ 0:58:54] of, this repurpose and scavenging from discarded materials and get back to the plants, it's very crazy. I went one week in Shenzhen. I visited all the markets, and it's a very interesting place but I don't know how, I don't think it's really significant if you compare with everything that is being manufactured and sent over to the whole world.

But there are very interesting local projects and there is this further sense of new stuff taking place. When I was there two

years' ago, maybe two and a half years' ago there were, if I'm not mistaken 160 maker spaces in Shenzhen only. Some of them are trying to do things in a more environmental way. Even because it is a business opportunity to come up with more sustainable practices and sell them to other countries, so there may be some interesting things brewing up there. But yes so far I don't think it's very significant in that sense from what I know.

But there are some interesting presentations and some YouTube videos of David Li talking about the Open Source Innovation in Shenzhen and how they have the potential to have environmental impact.

Male: Okay. Can you put a link to that in the notes for this?

Facilitator: Yes.

Male: We'll have a look. I just tried Googling and failed badly. Ah, I've spelt Li wrong. That's why. Got him.

Facilitator: [___ 1:00:59]. He is Taiwanese. Yes. He was the founder of one of the first maker spaces in China. I guess it was in Shanghai then, and then he moved to Shenzhen some years ago.

Male: I've got it. Shenzhen Open Innovation Lab. Yes.

Facilitator: Okay. I think we've reached an hour, and I think the idea is to share this video with the other participants.

Male: Cool.

Facilitator: I think if there are not any other questions I want to thank both of you for the presentations and the questions and the discussion Mary. Who is [___ 1:01:40]? You are from South Sudan? Are you [Emmanuel]? Are you there? Sorry, go on. Oh no, you are still muted.

We are preparing a session because there is this project in partnership with an organisation here in Berlin, ___. It's about community repair ___. Community repair events taking place in Africa, different parts of Africa right now. I'm trying to ___ with them, with people from different places in different communities in Africa and these guys who are organising some people from Berlin, some others in Brazil, and I think another session next week only focused on their work. But yes, I'll share that as soon as I have more details. I'm discussing right now.

Male: Cool.

Facilitator: Yes, so I'll stop the recording.

<p style="text-align:center">END AUDIO</p>