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START AUDIO

Facilitator: It's been two weeks since we started this research study. First, I would like just to start by asking you quickly what was the last thing you bought?

Male: Who do you want to go first? Shall I go first?

Facilitator: Yes, sure.

Male: The last thing I bought was food probably. Or are you talking repair items, that kind of thing, or just in general?

Facilitator: Anything, any object that you bought.

Male: Food, the last thing I bought.

Facilitator: Got it.

Male: Let me think. The last thing I paid my own money for was probably a filament. I actually went quickly on Amazon, it was like a filament, a magic whiteboard and some white pens, like

markers. I guess that's probably also because food was taken care of by my partner rather than myself, the past few days.

Facilitator: I've been focusing more on getting food. I'm a single parent with two kids these days, for most of the month, so food has been part of my everyday shopping, more intensely recently. But yes, just to try to start discussing what kinds of things we- What the proportion is of things related to basic needs these days.

I've been reading reviews of things that I intended to buy and I guess, if it wasn't for the lockdown, it may be that I would be buying more stuff. But now I'm spending more time reading before buying anything. I guess it's one of the side effects of being stranded during lockdown. I guess we shouldn't wait more for people to join, let's see if anyone shows up.

So I have one question for each of you, to start, I guess. I'd like to know how familiar you were with repairing things before this exercise, either professionally or on your own. Maybe XXX can start.

Male: I guess I've been repairing things since a child, so maybe the age of five, six, I had tools from my dad, from friends. So everything from my own bike or toys, I would take apart, that kind of thing really. My parents' things, I would take apart, sometimes put them back together again, maybe not.

Fast forward to I had my first- I had a few jobs as a teenager, but I had a part-time job at Halfords, the UK high street bike and car accessory place, and my Saturday job was assembling bicycles, that kind of thing, and selling car parts. Then my first proper job, full-time job, was working at BT,

British Telecom, as an engineer, as an engineer on the road with tools and that kind of stuff.

Many jobs with BT, I was with BT for over 20 years, I joined when I was three years old, of course. No, joking. I left BT 18 months ago, I was there from 19 to 39. I covered engineering and managerial roles there, but I always kept a keen interest in engineering, and still do, I still enjoy product repair, product design, cars, motorbikes, that kind of thing.

And that's probably led me to where I am now really, but it started very early. When some kids were kicking a football around, I was taking bikes apart basically.

Facilitator: And you've worked in maintenance for…?

Male: Yes, I was BT. I wouldn't say I was an engineer in BT terms, but I would say skills technician really – repair, maintenance, fault-finding, that kind of thing – as a profession, probably for about eight years. And the rest of that time in either sales, qualification design work or account management, that kind of thing. So about 10 jobs, 20 years, changed job every 2 years, 18 months or so.

But the whole- I had a three-year apprenticeship with BT, so that's where I refined my electrics and electronics understanding and some of those basic physics side of stuff, before doing a management degree, that kind of thing.

Facilitator: Since you left BT, are you still working professionally?

Male: Yes, I work totally differently now, I work for a local authority where I live. And my job is purely business-related, business development, income for the council, commercial income. I don't use my- Well, I lie actually, I don't use my engineering skills at work, although I have got a small contract, maintaining some of the clean room vacuum cleaners we've got. That's fairly new though, just a small thing.

Facilitator: XXX?

Male: I don't know, I guess kind of the- I always had some influences of my- I have quite a significant age difference with my siblings. My brother, when I was 10, he was already through his third motorcycle. So, by seeing my brother, my dad, making things- My dad was a builder. From there, I was on a similar journey of breaking things mostly.

And then I got my first computer, PC, when I was 12, that was in '94. At that point- And through a friend that I was quite- His dad was way more versed, he was working at university with that kind of thing, I started learning things. And because of that attitude at that age, it's something that I don't understand but it's something to mess with, I kept that going.

When I got older, of course bicycles and stuff like that, but never really formally trained in engineering or being anything with electronics or electricity or anything. I just kind of stumbled on things and tried to make sense of them. As I got older, I got into product design. In that sense it was more about making things than repairing, if that makes sense, but I guess there is a transferable skill set there.

Most recently- When I was starting product design, the idea of having your own printer was non-existent. Recently I got into that, into 3D printing and that kind of thing. But I guess the idea is that, when something breaks, I'm using the one that my family back home would call.

I keep joking how, when I go back and it's Christmas or Easter, I have to fix the TVs for everyone. Especially if we go to the summer house, everybody expects to have something to do, to enjoy themselves, and that's usually the TV and I have to kind of deal with that.

I guess it's generally being curious and not worrying about breaking things. And things that I've tried to fix, even up to a few years ago, I wouldn't worry about messing with my phone to change the screen but, after the third time I would attempt that, I would make the whole thing not work. So yes, depending on how much you care about either paying for it, losing it or having it working.

Facilitator: Yes, it's a matter of trying to find the balance of the pain and the risk and the cost, how much effort you have to put into it. Can you then tell me about what was your other- Because you mentioned your phone but there was another thing that you repaired, XXX, what was that?

Male: Your project made me realise there are too many things that need fixing actually. I borrowed my parents' scooter just now and I realised how big of a mess that is. But yes, the phone was a little bit of a dead end, and I'm still going to attempt some things on it, but the other thing was a chair. We keep finding things on the roads nearby, it's a pretty residential area

where we are, and there seem to be a lot of people moving in and out.

I found two chairs, wooden chairs. They look as if they are mid-century, but it was missing the seat. That's the diary I made and shared with you. And I guess in this case, because we moved into this place a year ago and we've slowly been putting things in it. And we tend not to have too many things because my work sometimes takes me to other countries and I move for a bit of time. So we try not to have too many things.

But we knew we needed chairs, so I took it in as a necessity/opportunity to do something creative with it. Especially since I was looking for excuses to use my printer, that was kind of the idea. What else was there? What else has broken recently? Quite a few things. I cannot recall right now, but I guess the scooter would be one. It's not popping out of my mind.

Facilitator: It's interesting to something that you found in the street. I might get back to that later. XXX, tell us about what was your repair story, I know you had many.

Male: It's become a bit of a part-time thing for me, I tend to take on repair jobs for other people, as well as my own. I can relate to XXX's story about the scooter and things like that, because my children are always breaking things. This toy- We have nice toys, a lot of hand-me-down toys, but small plastic parts, things break off. Even the wooden things, they come unglued. There's a little bit of a finish on something which goes bad.

And I suppose my kids sort of see me in the shed, putting things back together. They say, "Dad, can you just glue this

back on for me?" So there's always a little glue job or a little screw that needs tightening up, something like that.

I suppose in the last week, for example- And these are hobby customers, if you like, but I- A bit like yourself, I keep my repair diaries, my blog. So there have been some vacuum cleaner repairs, food mixers – I've done about four of those this week, just in the evenings – as well as I think I had a-

You'll like this. this is a 1970s calculator, which I dug out. It wasn't working. I've had it for years, many years, and it stopped working. And it just needed a little- One of the- The on/off switch just needed cleaning, so that was that. I'm trying to think if there's anything else really.

But I suppose they've all kind of failed in different ways. You might get a theme of power failures in food mixers for example, but there's always a bit of a story. And one of the things, interacting with other people bringing things to me, is- And it's something I try to go a little bit Sherlock Holmes and try and find exactly what happened, to save me time, when diagnosing the fault.

Rather than starting with, "It doesn't work." "What did it do before it stopped working? Were there any strange noises, funny smells? Was it hot? Any smoke?" These things are all bad, right? "Was it making a noise for a long time? Was it slow? Was it fast?" To try and help me then try and maybe save some time, when you actually take the back off and unscrew things, that kind of stuff. So yes, this last week has been food mixers and vacuum cleaners, for me.

Facilitator: You have these stories and try to investigate what happened exactly. It is, I guess, part of how to make repairs more accessible. Also, there is another thing that is related to it, the

question about value and how valuable these things are, and why would we want to have them repaired.

Male: Yes. And I think there's a relationship there. For example, my blog started off as a bit of fun, just purely as a bit of fun. I've been repairing things for friends, family, exactly as XXX described, going home to see family. And I started doing it as a bit of fun. But the idea is to share the experience, to then enable other people to overcome a fear.

There are certain things that- Let's say this pen broke tomorrow, this pen is of low value, pennies. It might have some sentimental value, it may have some actual value, if it was a particularly rare example. But we all know this is a plastic pen, there are millions of these made every year. So you're right, there is that relationship between perceived value, actual value, and- You lost someone there (Laughter). She came and went.

Facilitator: Yes.

Male: So I guess- I don't know about you guys really, but what I've noticed, there is a- For example, the food mixers I work on, these Kenwood Chefs, a lot of them, different variants. To replace those with the modern equivalent would be between £200 and £400. But the repair would be a tenth, roughly, to me, of that purchase. So the old item, it doesn't matter how old it is, still has value.

And the added thing is that the old version – let's say you've got one made in the '60s or '70s – the accessories are still relevant to the modern equivalent. So there's- I don't know, I

guess it works with Apple products a little bit. There is still value, because the old one still works like the new one, so it's worth repairing the old one. And there is sentimentality, because grandma gave it to the family and passed it down to make cakes and all that kind of stuff.

But yes, there's that combined notion of perceived value, sentimentality, the cost of replacement, that kind of speed bump, to get you over. But I think it helps if the product does exactly what- The new one does exactly what the old one did, so you've got, again, that emotional buy-in, as well.

Facilitator: Hi there.

Male: Sorry, I'm on Ubuntu, so I can't use my laptop, so I'm just joining you from my phone, sorry about the quality, the shakiness. Sorry about that.

Facilitator: Welcome, both of you. May we ask you to quickly tell us what was the last thing you bought, and if you were familiar with the repairing things before this exercise?

Male: Funnily enough, in terms of technology, the most recent thing that I've bought is a battery for my laptop. So not a whole thing, I guess. I'm not sure if that's what you meant.

But basically it's my birthday coming up so my parents want to get me something and they want to get me a whole new laptop. But I feel very- I feel like there's no real need, because the only issue I really have with it is it's a bit bulky and the battery dies, so I can't really use it as a laptop. I can solve one

of those issues, so I was like, I'll just get a battery and save on that. Maybe that's a little bit like being a bit cheeky there.

In terms of stuff that I have bought which is not so good recently, I've bought- I have a 3D printer, so I've bought quite a lot of equipment for that. So that's really not great, when you look at it from the environmental perspective.

Facilitator: Are you used to repairing things? Is that something that you've done?

Male: I am used to it. I have to say, only in the past six months to a year have I really got into properly taking things apart, I think.

Facilitator: XXX?

Female: I was just trying to think of the last thing that I bought. I keep buying a lot of digital games and subscriptions. The last thing I bought was probably a game on my Nintendo. But the last physical object that I bought was these weights, wrist weights. And then I just realised I ended up making a makeshift bar bell with the weights and a mop.

Because I couldn't find a bar bell online and I've just been really missing my workouts. Then I made this with the wrist weights and the mop. It's a mop and a rubber band and stuff. So that is really good and I've just been using this to work out. So this mop is just part of the handle and it just unscrews into different parts.

So you're always disassembling it every time you use it and then reassembling it. Like to store it, you disassemble it, and then you reassemble it. But now it’s in this condition, so I don’t know how I’m going to mop my floor. But that was something interesting.

But in terms of my repairing diary and repairing things, I started off with this object, which was a pair of pants that I've- They were one of the most expensive pants that I've ever bought, but then they broke from the zip and I didn’t know what to do with them. Everything is shut, there are no tailors. I don’t know, but I don’t want to throw them away.

So I did one page of the diary but then I was kind of stuck. Although I really like this object, I don’t have a very emotional connection with it, like it’s not an heirloom or a very precious family object. And since I’m very far from home, I moved a year ago, I moved countries, and I moved countries with just one bag, so I didn’t carry anything with me, no nostalgia.

I literally just left my whole life very suddenly and just moved. I literally left my whole house to my friend, with all the furniture and the objects, and my cat. Everything, I left it to my friends and I moved, and then I moved to a new country with one bag. So I didn’t take anything with me, so I have nothing that is really nostalgic, in that sense, or nothing that is very, very precious.

So if any of the stuff- And I am usually like that with objects, if it breaks I’m not going to be very- Except my books. My books are very, very precious. One thing that I was thinking of was actually this book, which was the only thing that I actually carried with me when I came here. It’s a very nice book. But look at the condition that it’s in. So this is something that I’ve been thinking about repairing.

When I go to start writing the diary, I'm a bit like… I don't know, a bit shy or something, I don't know what. I can speak about it and show it but… That's about it.

Facilitator: There are some questions that we can return to later on. XXX, did you make any repair diary?

Male: I did, yes. I sent you some emails but I actually have a physical diary, which I've been contributing to, so that's separate to the digital version that you've seen. The thing that I described to you- As you've probably guessed, I'm quite enthusiastic about technology and that side of repair. So when people say repair, to me the first thing that comes to mind is electronics and that kind of thing.

But I've realised there's a whole world of repair that is actually just as difficult, if not more difficult, with sewing and paper and other materials and objects. But I've been trying to repair a power bank most recently, you know that you stick your phone in, to charge. And the problem I've been having with it is that, as happens with so many of these things, a few years down the line, you plug it in and it charges to about 30%. Whereas previously, you could charge your phone three times over.

So I've tried opening it up. (Laughter) And actually measuring the voltage across it and learning quite a bit about batteries along the way. But I haven't had any success. As far as I can tell, basically there is a point at which the chemistry inside of the battery is broken.

But I would say that, just knowing what is inside of the battery, documenting that, is really quite fulfilling. So not a success, in

terms of getting something fixed, but I think there is more to fixing than just getting something working.

Male: Sometimes the failure is part of that process, like you say. I used to put some of the failures on my blog, and I need to update it. There are probably 1 in 10, maybe more than that, maybe 3 in 10, failure rate really, on some of the repairs I look at.

You mentioned a power bank, it’s quite a brave thing to take on, because there are probably no serviceable parts of that. It’s not designed to be repaired, it’s a one-time thing, it’s like a Bic razor, right? But actually you can open these things up and they will have common parts, but they're not designed to be fixed, they're not serviceable. So sometimes, as you say, the learning is valuable, even though the repair was a failure.

Male: Talking of which, I’ve got it just behind me, I’m not sure if you can see that. I did open it up, but it’s not going to come together in one piece nicely, because it's completely shattered. But it is a sign of how well-designed it is, it’s really bulletproof.

So I guess it’s a good and a bad thing in some ways, because it’s designed to be durable, the problem is that things that have batteries in them have got a finite life span, because batteries only last for a certain number of charges and discharges. You can tell I’ve been reading quite a bit about batteries. But yes, it means that, if there is a battery in something, either it’s designed to have a finite life, or it can be opened, with a slight risk of it being more breakable in some ways. I guess that’s what I’ve learnt.

Facilitator: Whatever you consider well-designed depends on what is not repairable. It depends on where you're coming from, as to whether it’s well-designed or not.

Male: There’s a whole idea of appropriate technology, which is quite interesting, and I think applicable here. Because sometimes the most advanced and most high-tech solutions aren’t actually the best ones for what you need. There’s a brilliant book called Small is Beautiful, which some of you might have come across. It’s quite old and it’s quite hippy in places, but it’s a good read.

And I quite like the ideas that it has, because they're applicable to people who are in reasonable to rich countries, like Britain. In general, we basically have access to anything we want, effectively, at fairly low cost. But the issue is choosing something that is actually going to fulfil our needs, and perhaps also psychologically fulfil what we want. And sometimes that isn't the thing that gives you the most features, it’s the thing that has just enough features and is designed to do those really well for a long time.

Facilitator: There is something that I’d like to ask, before we- XXX and XXX were repairing your own objects. XXX found something in the street. For those who arrived later, XXX found a chair in the street and he decided to repair it and he even used his 3D printer for that. XXX is always repairing something for others, but I assume it is often people who bring you things to repair, as with your neighbour with the vacuum.

Male: Yes, it’s interesting, listening in. Some of it is paid work. It’s a hobby, I can’t live off it, I do it for tea and biscuits, as well as a bit of pocket money. But it’s interesting, listening in, because a lot of the stuff- I do turn work away as well. Things like lawnmowers, older ones, vacuum cleaners, food mixers, if they're of quality- You know, you can buy a food mixer for £30, you can also spend £1,000. If it’s designed to be serviced, I’ll take those things on.

It’s just interesting, listening to XXX talk about the power bank, which is like a big battery, it has a life expectancy, and has been designed, as you say, to be rugged, maybe waterproof, drop-proof, shockproof, you name it, heatproof. But it probably- Whereas a Kenwood Chef, for example, is designed with user-serviceable parts, to sort of- Almost with low regard for built-in obsolescence, it comes from a different era.

Whereas the power bank is a different era again, where it’s actually designed to, as you say, last for 100 cycles maybe, and then its life diminishes depending on load, that kind of thing. But it’s to be treated like a big battery itself, and to be disposed of and not serviced. You know, the design is never needed to talk about repair and maintenance for that.

Where it gets a little bit grey maybe is actually unpicking the products that lie in between, and I take great joy in doing this. Let me elaborate, the Kenwood Chef, a 1970s Kenwood Chef, is designed- It’s an old-school British design, big screws, big nuts, as it were. Proper electronics, that you can see, touch, feel and take off, it’s just like a big Meccano kit.

And then you’ve got your power bank, that XXX has just described, a sealed container with a couple of USB connectors. You're going to have trouble getting into that without breaking it. And then there’s the bit in between, and I’ll give you an example.

I repaired a Bosch – so a mainstream brand – battery vacuum cleaner. And Bosch don't list- It's an expensive machine, £150, £200, and the batteries within are lithium iron, laptop batteries effectively. About 40 volts, it would give you a little bit of a shock if you shorted those out. And there is some sensing technology.

But you can tell, even though the perceived value by the owner was actually, "Look, I've just spent a lot of money on this, it's a Bosch, it's German, its well made," I'm looking at it and parts of it remind me of Christmas cracker plastic, but we'll move on from that. But Bosch only supply like a roller brush for it, maybe if you spill something on that, they don't really list many spare parts.

And when we open it up, we find that it's actually constructed using tangs rather than screws, it's heated together, and glued in places. But actually the bit I really enjoy is getting around that built-in obsolescence. And, even though Bosch don't make a battery for it, you can't just take the back off and put a new battery in it, Bosch had probably carefully calculated so many charges of that battery, so many revolutions of the motor, normal use. And said, "Hey, at the end of it, the customer is likely to throw it away and hopefully buy another one."

Now the people making the Kenwood Chef didn't think like that. Different times maybe, different pressures, built to a specification rather than price maybe, who knows. But what you can do, if you're prepared and bold, and what I always tell other people is, take it apart anyway – if it doesn't work, what have you got to lose?

And actually those batteries inside are abundant, you can buy them from eBay, you can buy them from battery suppliers. Yes, you might have to dig your soldering iron out. Yes, you

might burn yourself, because they're really tricky. But actually the cost of those batteries- The last one I did, I don't know, £18, £20. With a little bit of careful soldering, that machine, you've given it extra life.

Now, it's never going to be perfect, because the plastics, the bronze bearings on the brushes, the motor has been designed all around those batteries and the plastic casing lasting for a certain amount of cycles, getting back to the power bank example. But again, the rest of it was actually pretty good, all it needed was new batteries.

Where I'm going with this is that you can kind of beat the system sometimes. So one extreme to the other really. You've got a serviceable item, a non-serviceable item, but there are a lot of products that seem to fall into this vacuum, and this kind of perceived value.

XXX mentioned that kind of sentimental pull, that, "Why should I? It's not part of me, I have no interest in it." But there are an awful lot of things that people are not quite sure what to do with. "Hey, I paid a lot of money for this but it's only lasted two years, it's a Bosch, shouldn't it be better than that? They don't do spare parts, what can you do?" Time to get the screwdrivers out.

Facilitator: There is the idea of repairability and the right to repair. That is one take about it. But whenever you ask someone who works in Shenzhen, they say everything is repairable. Even though there are no officially-sourced spare parts, there is no documentation, if you just go to the markets there and you start looking for things, there is always someone who will tell you where to find the spare parts that you need. Or a replacement one or a new version that will work.

There is this kind of informal makeshift sense of repairability, wherever there is abundance of resources.

Male: Guerrilla engineering is what I like to refer to it as, that kind of- It's a bit like older cars – why are there lots of old Toyotas and Renault Clios and old VW Golfs around? They've kind of fallen out of that repair/service relationship with the main dealer, because it wouldn't cost in right. You know, you can buy an old car for a few hundred pounds, with an MOT. But it's kind of fallen off the radar.

But you go on YouTube. You get an engine warning light up there. The main dealer may say, "That's going to cost you £1,000," but actually there's a little hack. There's always something out there, where that community has responded and come up with maybe not the perfect solution, but to squeeze a bit more life safely out of that product. Which, in my opinion, should be amended.

But I'm going to say something unpopular, I think. As much as I love repairing things, and I write about beating the system a lot, I think there are some things which, like the power bank, it's designed, it's done its job.

It's a bit like- Take your can of Coke. You buy a can of Coke, it's sitting there on the shelf, the packaging has been designed purely to, first and foremost, advertise the product, list the ingredients probably, sit on the shelf, protect the product until you've opened it. As soon as you've opened it and drunk the contents, that's it. What do you do with the can? You might recycle it, you might put it in the general bin. Or, if you're a slob, you might dump it on the road. Either way, that can has no value at all, maybe some scrap value.

So the power bank has been probably designed around that mentality, I guess. So is it worth repairing? Well, if you're bloody-minded, like me, maybe, and like XXX. But actually, most people most of the time will just say, “Hey, it was £10, 15, I’ll get another one.” And that’s the way- But it’s been deliberate, its deliberate.

Now, whether it’s right or wrong or not, whether that’s a good use of materials, is another debate. But the product has probably fulfilled its objectives. I don’t know, there’s a whole debate about if that's responsible use of lead or lithium iron, getting into the environment, all that good stuff. But it’s done its job.

Male: Yes. This is a really interesting- Sorry.

Facilitator: Sorry, go ahead.

Male: With that, I like the way- That’s a really good way of putting it. There’s the fact that you’ve only paid £10, £15 for this power bank and it’s kind of done what you want it to do, so why- Most people would go, “It’s got no value to me.” I look at it in a different way, partly because I’m interested in the environmental impact of things. And I go, “What is the impact of me throwing it away?” And then there’s the value to me of not causing the damage.

So I think, if it was more clear what- If it was better known and there was a culture of understanding about what the impacts are of disposing of things if they're not disposed of correctly, disassembled and then any parts that are in it, which are actually incredibly valuable, taken and reused-

Male: Hmmhmm, there are a lot of precious metals in there.

Male: Exactly, yes, there are some metals which are absolutely crucial to create electronics, like tantalum, but which are incredibly difficult to extract, and we've got limited supplies of, 50 years perhaps, at most. Which, when you think about it, 50 years ago, we didn't have any of this technology, will we have none of this technology again in 50 years' time? Will we be forgetting about iPhones, because they're just infeasibly expensive, because we've run out of tantalum? And there are some minerals which already the supplies- We haven't had an increase in the supply of.

But beside that point, culture, it doesn't just have to apply to electronics and so on. One thing about something like clothes or books is that they've got a great attachment to us. So a book might not have cost even £10 or £15, but we still may be less willing to give it away, because it's got a lot of meaning to us.

Like XXX, the book that you brought with you, I'm guessing that you probably wouldn't throw it away even if someone said, "It doesn't have any value, even if you sold it second hand it would only be 99p you'd get from it," but there's that value.

So maybe if electronics were actually designed- Or we had more of an attachment with it, it wasn't just a replaceable item, maybe people would be more- Maybe there would be a bit of a change in culture. I don't know, what do you guys think?

Male: It's an up-front cost thing, I think. Taking the fashion and clothes, I am no trendsetter, I'll tell you that now, my clothes

are pretty bad, I spend all my money on my children's clothes these days. But I guess my grandparents- My grandmother was a dressmaker by trade so, if you wanted a suit or a dress or whatever it was, she could make that sort of stuff from scratch. Maybe it's a bit of a wartime thing going on there.

But we all know you can buy a t-shirt for a couple of quid in H&M, or you can spend £100, if you go to another shop. And I guess it's almost maybe too cheap, the things. And I come back to some of the reasons bring things is, is because they paid a lot of money for it.

And the fact that you can buy that power bank for a tenner, or the t-shirt for £5, if you spill paint on it or it gets a burn hole in it or it just shrinks, whatever it is, or you simply don't like it anymore – "Hey, I only paid £5 for it, I'll give it away to a clothes bank," or, worst case, throw it away and it goes to landfill. But sometimes it's that relationship starts at the point of purchase, I guess is the point I'm trying to make.

I've got a bit of theory about cars. There's a lot of old Mercedes and BMWs still on the road, and I've owned old BMWs, and they're no better made really than a Ford Fiesta. There are a lot more Fiestas on the road, I guess, but there is that perceived value – "Hey, I paid a lot of money for this BMW" – but again, it still has the same things that go wrong in the Fiesta, it's still a car, at the end of the day. But you'll see more older BMWs driving around, because it was a £35,000 car, as opposed to one costing £15,000.

Just a theory, but I think you can kind of- It's a very quick and dirty way of looking at it, and there are all sorts of variations – emotional attachment, sentimental, other factors are coming in. Obviously we haven't talked about the supply factor as well. Going back to the pen – millions of those made, are they in

short supply? No. Are they abundant? Yes. Are they free? Often. So it has little value.

But if I then say, “This is the latest iPhone” – it’s not, it’s a Chinese copy Samsung – and we’re only going to release 100 of those a year, and to join that club you're going to have to spend £5,000, Apple would sell them all in an hour, less than that. Would they be valuable in a year’s time? Yes, of course they would be, because it’s a rare and exclusive thing. If you then pump them out, 20,000 a year, maybe more, the value goes down.

So there are all sorts of things working – market forces, sentimentality, point of purchase. I guess that relationship starts right from the moment you hand over the hard-earned wedge. Anyway, I say too much, I’m waffling on now. (Laughter)

Facilitator: XXX, you were about to say something?

Male: I’m not sure if it’s worthwhile, it was a quick kind of- Building on the things that were mentioned about the power bank. To build on that idea, that they are built to be used and then not repaired, there was even a video I watched the other day by a Canadian PC YouTuber, that was sponsored by Anker, on repairing a power bank. Essentially, he was showcasing that you can do it, but most people would not bother to go through the trouble.

But I guess I also, other than the environmental interest that you sold, in terms of looking into it, I guess for me it’s also I repair things sometimes just because I’m curious just to learn

more about them. Not only in terms of environmental, but just how they work. It's just another way of learning, I guess.

I had a similar experience with this grooming Phillips thing, the battery has died after a few years of use. I was like, "Oh, I can probably replace the batteries," because usually they use standard sized cells, right? I just bought these and I'm like, "Okay, I'm going to swap them out and then that's going to be okay." But then, when I swapped them out, it was not working, and it seemed that the electronics died.

And that reminded me of when I was young, whenever something was breaking, my brother would tell me, "A human being put it together, so a human being can put it together again." But I guess, going back to the chair example, not all things are being put together by human beings these days, some of them are put together by very precise robots. And there is this breadth of knowledge that you can acquire by fixing them, but also that is a requirement for fixing them.

In this case, I decided to just pull out a couple of cables and just connect the battery straight because, at the end of the day, this is still something that can work even without the electronics.

But what this also made me realise – I'm sorry for going in a slightly different direction – is how much we rely on the software side of things. And how, there, the shift is that you don't have to physically manipulate an individual item, and that you can kind of pass on the update, the fix, the back-fix, whatever that is, on a bunch of things. But then, if nobody does that from the central- From the company that makes them, then you also have a thing that is broken that you cannot use.

And I kind of realised that, because also I tried to build my own electric thermostat for an old boiler we have at the flat, and when I messed it up, it was a very critical thing to have working, I guess. (Laughter) But also it was old software. The hardware-

I guess going back to the idea of thinking of repairs, I guess I was thinking, as you guys were talking, that repairs are not always- Don't have to always be physical, they can also be digital. And I guess that's a different frontier for DIY-ers, probably more relevant to people that are younger, I guess.

Facilitator: Yes, there is a lot being discussed about software maintenance and hardware maintenance and archival, how to preserve artworks that rely on one specific version of software. And this kind of brings something on top of whatever uses people have for technology.

I'd like to touch upon something, the discussion about value and ownership, and the other about, I guess, responsible production. But it's not that specific about responsibility, but there is a sense of a populist way to make things, in which the true cost of production is externalised.

So it's not like this power bank is just made to become trash as soon as you stop using it. It is right after it is made, but there is a cost to the brand and to the people who actually made, manufactured, it. And an environmental impact that is not taken into account. The corporation that made these things is not accountable for these costs, but they are there, it's being just transferred somewhere else, to some other country or to some other group of people. This is the idea of externality in industrial production.

There is another aspect that I'd like to discuss – the way in which repairs and adaptations and customisations of products are made often into the private space. Or, if it's in the city, on professional repair shops. XXX said that everything is closed, there are no tailors open where she could have her pants repaired. On the other hand, I don't know, if you were back home, XXX, perhaps you would know someone who has a sewing machine that could probably help you.

This kind of contrast that there is between the private space and these people who repair things, and taking it into the city to have someone repair it for them and we pay for it. I just lost XXX? No.

What do you see that the cities could have in order to make society reuse more of the stuff that is usually discarded? For example, XXX, when you said that you found the chair in the street and you said this is more common where you live today than in other places you've lived, I felt that differently.

More than 10 years ago I lived for some time in Barcelona and every week there would be large volume waste collection. And the night before, our neighbours would just put things in the streets and everybody was free to just collect whatever they wanted. And someone who lived in London for 20 years said that, when she moved to London, about 20 years ago, she would see people just putting people in the streets for others to collect, but now this is not common anymore, at least in her neighbourhood.

So what kinds of practices and facilities and infrastructure or policies do you see, that can allow society to reuse more, or to make people not reuse things? How do these aspects unfold in the city, in the urban context, city, town? XXX, you raised your hand.

Female: Yes. I just wanted to say that one thing we really had back home were local markets, and local repair markets, something like the Shenzhen model. I don't know if there- I haven't seen one of those here in the west, but in Asia I think they are pretty common. And from every city that I've lived in - Hyderabad, Mumbai, Kochi and even Shenzhen – that- I do not have the expertise to repair everything.

Something like the iPhone, it's commonly known that it has around two-thirds of the elements in the periodic table, so it has over 70 elements in it. The extraction of each of those elements, the exploitation of each and every one of those people, and the supply chains, are so complex, that it is beyond my capacity to even understand how to go about repairing this object.

And the local markets are actually amazing, because the people who work in these markets, they are amazing. One of the examples is I've had this MacBook now for 10 years, it's one of the original MacBooks from 10 years ago, and it had water damage, I dropped water on it. Usually, water damage, if you take in a laptop with water damage to the official Apple store, that's it. You're either paying a bomb or it's over.

I took the laptop to a local market in Hyderabad. This guy is really famous, he's called XXX and he actually fixes Apple products. And he fixed my MacBook for £70 and it's been going for six years since then, it runs like new, literally. The battery is like new. None of my data- Everything was there. It was basically brand new. £70. Insane, completely insane.

I'm generally not a person who really breaks my electronic products. When I'm buying an electronic product, I make sure that I'm buying the best. That is where I feel my responsibility

starts, is in actually buying the product, so I do hours and hours of research before I buy any electronic product. Which is why most of the electronic devices- And then I use them also efficiently, and most of the devices that I have, I've had for over 10 years. I have the original classic iPod, which I've had for 20 years now almost, and it still works, it works very well. And my MacBook, which I've had for over 10 years.

I find that the problem for me- First of all, when you repair something there is a big risk. So the problem, when you repair something, you're basically disassembling it, and there's always a risk in that disassembly. And I find that, whenever I disassemble something, it usually remains in a disassembled state, it's quite hard for me to reassemble. I don't know, maybe that is just my nature. Even the stuff that I DIY is usually in a very disassembled state.

But with the iPhone and these devices, it's just insane. Do we need a device that has 72 elements from the periodic table in our pockets? Really, do we really need this? It's crazy. And how am I going to repair this myself? It's not designed…

And then the software part. The software is crazy because there have been several lawsuits actually against Apple, including by the French government, saying that Apple has been tampering with kind of planned obsolescence, but from a software angle. And I know that's what's happening with my phone.

I know that my phone actually does not have any physical issues but, since I installed the latest update, it's been malfunctioning. And I know because I'm an engineer, I'm a technology designer, I know that this is not a problem with the physical device, I know that this is some kind of planned obsolescence.

And that's a problem with the software update, you can manipulate how the hardware appears to work. And my mother is actually going through the same thing, so she's been calling me and saying, "My iPhone has been malfunctioning." She's barely had it for a year, there's no way this is an issue with the hardware.

Now she's an old woman, she doesn't know this. In fact, most old women would go out and now buy a new phone, because there is no other option. But I said, "Look, it's not, the phone is fine, it's this stupid thing that they do with the updates." You really don't know, it's very easy now for the software to be abstracted and present you with some kind of malfunction.

So I'm usually very angry with the whole scenario with the technology design and repair. With the book or with a pen, you know where its broken, you can see, you actually know how it works and you know what's broken and why it's not working, because it's a simple object. And it's the same with mechanical objects, and some old media and old technology, and the analogue technologies.

But with electronics and silicon-based technologies and digital media, I just- It's often almost impossible to even at least put a limit, in terms of repairability, like me. Even though I'm extremely- As I say, I'm a computer engineer, I'm a technology designer like that, it's my speciality, but yet I have no clue what is malfunctioning, why it's malfunctioning. I cannot see, I have no idea what's going on.

So it's just really crazy. And the whole thing about the iPhone, there is this company, a couple of companies, that have done breakdowns of the iPhone and actually disassembled it part by part, each and every part of the iPhone, and there are 72 elements, which is two-thirds of the periodic table, in that phone. It's crazy.

Male: That’s a really good point, particularly about the actual physical elements within it, not just the parts that are in it, but physically what it is made of. In my job I do life cycle assessment, and what that looks at is the environmental impact. You can also look at social impacts as well, and you try to quantify what those impacts are.

For instance, the classic example of a life cycle assessment is the carbon footprint – how much energy is required to manufacture it, to mine all of the elements, the fuel consumption, buy all the equipment, if it is a modern mine, the transportation? All of that which, if you think about it, is an absolutely crazy problem.

But there are tools now which allow you to quantify that. Admittedly, they are rough estimates, I do think, and I do believe it’s actually quite possible that a lot of the results are manipulated quite a bit, because there is a real dearth of data about exactly how things are made, because it’s very sensitive information obviously. And in other cases, it’s extremely difficult to get hold of it, because it’s in conflict zones and so on. But a lot of people have gone and done that.

The issue is that it’s very difficult to verify a lot of the information and reproducibility, which is a key thing in science, is nigh on impossible in some things, particularly for very specialised, niche things.

But, that aside, and there are challenges which I think are going to be addressed, what is really crucial is communicating that to people. People, I think, are generally aware that electronics are environmentally very bad but, even though people are very conscious of that, when you're making that

choice about what to buy, you don’t base it on what you know about the environmental impacts.

You aren’t conscious of that when you're making the choice because, when you're in a shop, you're about as far removed from the process of making that thing as it is possible to be. It’s not like being at a tailor’s, for instance, where you can see how it’s made, or even at a food shop, where you understand what goes in. And perhaps that is a crucial issue.

I know we’ve talked a lot about problems, and I think, in terms of solutions, maybe making people more conscious, not just through programmes on TV and so on, but actually at the point of making those decisions, would be really helpful.

Facilitator: There are some interesting developments being done, not only in terms of educational campaigns, but also in pressuring for policies and regulations to be involved.

I’d like to bring back the discussion about what could be done at the local municipal level. XXX brought a very interesting example of local repair markets and myself, coming from Brazil, this is something that I see a lot. On the other hand, there is the other side, the liability and the risk that comes form people repairing things without having the proper equipment, spare parts, tools, knowledge, safety measures – how to balance that.

Maybe XXX and XXX also want to chip into the discussion, how cities can relate to giving access to objects, parts, tools, equipment, knowledge, and how that informs repair.

Male: I guess the first part of your question there, Felipe, I think what has really changed over the last 10, 15 years has been social

media’s response to repair. There are a lot of activists online, a lot of societies, groups, clubs, call it what you will, everything from repair cafes to specialists in their own fields, that have made themselves available. And that would have been really hard to track those experts down.

I’m a generalist repairer, I’ve got some classical training and a few years of experience, but I’m not an expert in certain things. And there are times when I call in an expert or somebody with more experience in a particular field than me for advice, whether that be diagnostic or parts or to do the work that I can’t do, I haven't got the equipment, I haven't got the knowledge.

And social media has provided that platform. But it’s also provided that kind of- You know, there are Facebook groups, there has been Freecycle, there are various Twitter feeds, where people- It’s a bit like your analogy of leaving the item outside your front door, that kind of thing, free to collect or free to a good home, hand-me-down type of thing.

So I think that’s changed the way society works, certainly my area within Sussex, there are lots of- Brighton, Worthing, East and West Sussex have got quite a strong Free-Up, free to collector-type thing, where no questions are asked, hand over the goods, as it were, and you can be on your way again. I’ve given away and received items like that.

So I think that’s only a good thing, people can extract more life from something, or take something that’s broken and repair it, to inject a bit more life into it, that’s the first thing, I guess. I think that’s probably, being on social media, contacted more people, so I think more people do virtual jumble sales, as a result of that, again which is only a good thing.

And I've forgotten the last part of your question actually, Felipe, it was around- I can't remember the last part, there was another part to your question, which I had an answer to and it's just gone out of my brain.

Facilitator: Just thinking whether local infrastructure would help.

Male: I think what could help, and I think it's a big-

Facilitator: Just let me rephrase, what role should local authorities play in enabling society to repair more stuff?

Male: I work for a local authority, so obviously these are the views of me and not them. But what I will say is that I think there is a part to play. The local authority has got a kind of an enforcement arm, a civic provision of disposal and such like, but they've also got an education side. Ideally, in any society there would be no waste, but again we live in the real world and have to deal with general waste recycling – food, clothing, that kind of thing.

And repair kind of falls into that category as well. And I think it's through education, to help those people supporting- People like Men in Sheds, that group of people for example, or Repair Café, to give them the space and the opportunity for people to come together.

Because again, my needle and thread work is okay, but I may seek the expertise of a seamstress – old word, but you know what I mean – to repair an item of clothing, a suit or something. Where, if I did it, it would look like I'd done it, but

actually you might want to wear that suit in public, so someone who is an expert with thread work.

But I think local authority has got a part to play, certainly in the disposal of end of life products, but actually extending the life through education and platforms. Like XXX's example in the markets, there's always somebody somewhere that can sort something out, I'm a big believer in that. And actually there's that- No-one can be an expert in every repair.

Somebody was asking me about a microwave the other day, and a PCB which has failed, and I could only give general advice. But I know out there, going back to what you were saying, Felipe, there will be people with the right automatic test equipment, the right spare parts, the right expertise in that area, that can help. I'd only be able to do very rudimentary testing. I might be lucky, but I might not be.

But I guess the last thing I want to say really is actually that word 'expert', what does it mean? It's a loaded word, isn't it? Because actually I could take my vacuum cleaner to a repair- A vacuum cleaner expert. Has that person been on any course? Have they taken any qualification? Maybe, maybe not.

And I think, certainly in England, Wales and Scotland, it's quite- I don't know how this is around the world, but I think there is- We've got quite a liberal, relaxed approach to some of those qualifications. Obviously if you're working with electricity, you're doing domestic installation work, there are minimum standards. But actually we're fortunate in some respects that anyone can have a go at anything.

Whereas I know in Australia, there are certain states where it's forbidden to work on certain appliances. Does anyone check? Who cares? That kind of thing. There's a movement actually saying, "It's my thing, I own it, it's up to me what I do with it,

hey?” But again, going back to what we were saying at the top of the- About guerrilla engineering. There is always an expert somewhere that can help, it’s just a matter of finding them.

So I think for education, social media plays its part in making it more accessible, that actually it’s becoming more mainstream, in effect.

Facilitator: Any thoughts, XXX?

Male: I guess on a similar- Sorry, I’m listening to myself, I have feedback. Yes, along similar lines, I guess the way I was thinking about it was two ways. One is, from what I’ve seen my local council doing- For example, I get these emails about all the different activities that they set up and the workshops, etc., and they tend to be, in a sense, classical.

Like you can do dance and ceramics and you can do crafts and stuff, but you might not be able to do- Which are also useful for repairs, I guess, but not for the kind of repairs I would need, for the most part. But I have never seen something that would be in electronics or, I don’t know.

In the same line of offering space to people that have the expertise and finding those people. I guess it’s like, also, how much effort you want into fixing something, and this ties back to value. But I guess, if you don’t know somebody that has some expertise, it might be a stretch to devote the time.

Similarly, if you are leaving something for somebody to pick up for free from the sidewalk, you're probably doing it because it’s not even worth somebody’s time to put on an online platform. Because, either way, they will have to pick it up, or you have to drop it off at that point.

Sorry, I lost my train of thought there. But I guess what I was going to say, in terms of finding an expert, for me, I have been moving in and out of London, it's not as easy. To the point that I was recently, almost a year ago- I ended up staying with somebody that had his own workshop, repairing, as a side job, almost as a hobby, old '30s motorbikes.

His main struggle was finding a space that was cheap enough for him to sustain his hobby. At that point he had a garage at an old council estate building. And he was building his own knowledge to the point that he had brought in a CNC, and things that I could happily use for some of the things I have right now.

But, if I hadn't stumbled upon that, I wouldn't have found him. And if he hadn't stumbled upon somebody else that was offering that space for really cheap, he wouldn't be able to do that either. So I guess- His thing was finding locations that are in between kind of legality statuses, that have made them extremely cheap to use and rent.

I think those are the things that are at the top of my mind that the council could offer, supporting- Helping people to learn pick up skills, and also offering spaces or giving a roof to events that could potentially help people learn and fix things.

But I do really believe that the value part and I think there are very specific conditions. For example, like in that case of the chair that I picked up, I think I mentioned in my diary a few things that might have happened there. I think that apartment was being renovated.

Or, in the past, when we had to leave things behind in flats because legally you cannot leave anything in your flat. And also taking something to the recycling location of the local authority is probably- It's not even a hassle, it's actually

impractical for somebody that has never driven in London, for example.

So yes, I don't know if there is anything- I can't think of anything in a sense more technological about it, but I guess those are the things I'm thinking about, in terms of what's missing. It's knowing where to look for people that you can in some way trust with your device or item, and having the opportunity to- Like hackerspaces do and all these spaces, having the equipment held somewhere, that people can have access safely to.

Male: Are there enough hackerspaces, do you think?

Male: I always find them- It feels like a little bit- I'm not sure if there are enough. I can think of two or three, that wouldn't be in my area but I know where to find them. At the same time, it feels like there is a certain level of effort that would require for me to go there or get introduced, to participate. I guess there is an accessibility thing. For me, it's not as straightforward.

And I would imagine, for somebody that hasn't even heard of the notion of such a space, it would be even a few steps further of saying, "I can actually go down there and somebody can help me drill a couple of holes in this thing that I need to fix." So I think they are still, in my mind, more for makers and people that are already in that mindset. And that doesn't make them approachable to people in the general public.

I don't think it's intentionally, it's just maybe their level of awareness and the level of health and safety that goes into it. (Laughter) But definitely in London, the cost of having a space to- My partner is an artist, and the idea of having to pay – I

don’t even remember - £200, £300, £400, to have an empty room with no heating and cooling, just to be able to do some ceramics, is crazy. At least, if you're coming from places where that amount of money could afford you a full house. (Laughter)

I think that’s a big issue. For me, logistics, like moving things around, and shelter in London are particularly problematic, for being able to kind of do things that require some level of scale and equipment.

Facilitator: Just one note, we’ve reached eight-thirty, that was the time planned for this meeting to finish. I am fine staying for longer, I am interested in following up this specific subject that has popped up right now. But if any of you need to leave, you are free to leave whenever you want.

Male: I’m going to make a move, Felipe, but it’s been fascinating listening to you all, it really has. And thanks for being part of it. And happy to join another one or answer any questions. What do you need from us, just to carry on, Felipe? Is that what you-Supplying information or…?

Facilitator: I’ll be in touch with each of you with different questions about the diaries and individual interviews in some cases. I guess there are some subjects that I’d like to explore more with different perspectives.

Male: Felipe, I’ve got a question for you, whilst we’re still all here. What outcome do you want to have from this?

Facilitator: Sorry?

Male: What would be your ideal outcome from this repair diary and your series of research?

Facilitator: The diary, to me, is just a way to start the conversation about repair and what kinds of infrastructure or technologies or methodologies could be implemented at a local level, that would help decrease the amount of things that are sent to either recycling or incineration or landfills.

There is a lot of research proving that the least impactful solution for these kinds of materials is to reuse, to extend the lifetime of any object. But, on the other hand, when you see technologies being mobilised for city projects, they never- Very seldom mention waste management, and I think there is no mention to reuse, it's only about increasing the productivity and efficiency of waste collection when they mention waste.

Male: So your key-

Facilitator: My research purpose is to come up with ways to reuse more materials on a local level.

Male: Just a really interesting question. So your key target is local authorities and city leaders, is that right?

Facilitator: It's interesting to think of non-profits willing to act at a local or regional level. My take is that, whatever is being done to treat these kinds of materials, is not enough and it's often inappropriate. And makes sure that- Tries to make sure that society doesn't see how much waste it produces, and take it as quickly as possible to international corporations that would not complain about the volume, because they are often being paid by weight.

And that has a lot of impact, and nobody sees where things come from and how much wealth is being thrown into the dump. This is the basis. But it may be that, by the end of my research, I come up with solutions that can be applied by city administrations, or it can be something that can be deployed to more collective and self-managed groups of people willing to take on reusable materials.

Male: That is awesome. I'd like to share something that I came across, which I think will interest all of you actually, which is the story of a recycling programme. I know it's different to reuse, but the principle I think is the same.

There was a city in India and I'm sorry, I can't remember the name of it, but if you look it up afterwards, then I'm sure you'll find it. The local council decided that they wanted to boost the rate of recycling in their city, so they took a really well planned programme to do that. They introduced a new recycling system into the city, where they had segregation into five different types of waste.

And then what they did was they set themselves the challenge to beat the world record, the Guinness World Record, for the largest recycling education event, I think it was. So they invited all the schoolkids in the city to join an event where they had

lessons on recycling. But it did seem to be really nicely put together.

They actually managed to-

[Break in audio 1:29:19 – 1:29:37]

Facilitator: Your connection seems to be unstable, you're breaking a bit.

Female: Felipe, I really need to go, but this is really good.

Male: I'm sorry, I lost you.

Female: I will catch up later. Sorry XXX, I just interrupted you because my laptop battery is also really low, it's going to shut. I need to leave. It's been really good. And I had some more points, which I'll just share via email.

Facilitator: Okay.

Female: Okay, thank you.

Male: Great to talk with you. Bye.

Facilitator: I have-

Male: Yes, sorry, I cut off there.

Facilitator: I read about this programme. I think it was supposed to be the biggest class about recycling in the world. This is how they set it up. I've seen a video actually, with lots of people coming. And yes, it was very successful, from what I read about it. But I guess there is space for innovative takes on how to make society reuse more. And that one was just classic recycling, but I guess it can be applied also for other uses.

Male: What was really interesting about that is that I think that was- The idea came jointly between the local council and also a PhD in Switzerland. The guy managed to organise- He came up with the way of figuring out how to address a large audience. And I think the reason why it was so successful is because it was very well planned, and it had the input of scientific- Into it. So you'll do something like that?

Facilitator: That's right, I'll see what comes out of this. XXX, are you still there?

Male: Yes, sure. I'm here, just muting, to make sure everything works on your end.

Facilitator: I just wanted to hear from both of you about hackerspaces and maker spaces, because that was one of the clues that I wanted to follow. How much does- Discourse about repair was very present in the origins of the fablabs and maker space

movement 12, 13 years ago. And how much of that is still around?

Because whenever I visit a new hackerspace I only see plastic, maybe PLA and I don't see much of repair, at least advertised by people who are running maker spaces. And I think the tools are there and maybe the skills are there. We say that the demand for making parts and repairing things with those tools and skills are still present. But I don't see those places as being particularly welcoming for a large part of society to just go up and ask someone to help them repair.

And perhaps different configurations of the same tools and the same skill sets could be mobilized into something called a hackerspace or maybe community repair shops, other kinds of what needs- Other ways we could describe skills that would be useful in that sense.

Male: Can I jump in there, because I've actually had some experiences with a variety of hackerspaces? I am also aware of two or three other hackerspaces in my area, which are accessible within a decent cycle ride away. And it took me a long time to really join them. I kind of found out about one of them from a friend at university.

There's a hackerspace which is part of the university and its primary aim is basically to enable students to create their own start-ups and products and facilitate teaching. And a bit of outreach as well, to the local community, they've got a whole- Half of it is dedicated to teaching, not just students of the university, but also beyond, in the local community. Which is great. But there's nothing to do with repair really.

I ended up kind of joining that because I've been interested in technology and a friend of mine was really keen on it and was

building his own electric guitar, so he said, “Why don’t you come along?” Since then, I kind of went at least once or twice a month on average, in my last two years of uni, I spent most of my summer holiday there, even got a job, as well.

And it’s great, it’s very well-equipped and it’s got all the different kinds of technology that you might want. It’s got 3D printing, it’s got CNC machining, it’s got a workshop for sawing wood and metal, and all of that. But it is very difficult to keep going, and a huge amount of money goes into that. And the only reason why it’s sustained is because of the fact that it’s attached to a very successful university, it’s got a lot of funds put into it.

I don’t think that kind of level of access to technology and expertise as well, from the start, is really very easy to achieve, and it would take a lot of investment, if a local council decided to do that.

And that is kind of held up in my experience so far, which is of another hackerspace in south London, which is primarily with mechanical work. There’s a lot of woodwork. there are some artists who have workshops and they make stuff out of bits of scrap material, which is thrown out and they find it on the street. And they’ve got some amazing work with that, a completely different kind of making. Rather than electronics and high tech, they have generally so-called lower tech, but still power tools and stuff like that.

And I’ve found, in both cases, it’s quite inaccessible. I would tot have been able to access the hackerspace at the university obviously unless I was a member of the-

Facilitator: You’re breaking again. No, you’ve gone, I’ve lost your connection. Maybe XXX, if you want to jump in with any thoughts about-

Male: Sure. I don’t have any personal experience, precisely for that. Because when I look at the websites, when I kind of get a feel for what they're there for and what kind of engaging-

Male: … perhaps.

Facilitator: You're back. We lost you for a second there.

Male: I can see you, I can hear and-

Facilitator: Perhaps if you turn off the camera?

Male: Okay, is that better?

Facilitator: It seems to be now, yes.

Male: Yes, I think there’s a bit of a lag, but it will do. So yes, there is definitely- As XXX has said, and you as well, accessibility is crucial.

Facilitator: Go on, XXX.

Male: Maybe.

Facilitator: XXX?

Male: Sure. As I was saying, I basically- I've looked into a few of them and I guess, in my case, the need for accessing them is not as pressing. I always have- If I'm working on something I'll find a way to do it with whatever means I have or pick up whatever equipment I might need. Or if I see that it kind of goes out of that, I wouldn't- It seems that you have to jump more hoops than I would want, to access one of those places, and the pressure of doing it is not necessarily big enough.

But, to that end, my partner, who is an artist, continually has a need for a space where she can work on things that are quite messy and bigger. And our midway to that has been that we eventually rented a place with an extra bedroom which she turned into a studio. And then she uses the local council's workshops and education programmes, to see the spaces that they have, and decide which one to use.

For example, when you take a course on ceramics, you use the equipment there and then you also find out that, "Oh, I can also bring in and fire my ceramics for this price over those days." So also, the way of finding the information of what is possible is in some ways through participating in the educational programmes they have.

But in her case it's a much more pressing issue because that's her normal work. Whereas for me, repairing things is just kind of a side thing. Or, as you were saying, in a sense- Having a product design background, I always have in the back of my

mind, “Why not start something? Why not start a scooter company or whatever?” But then, again, my needs are so far satisfied with the things that I can do from home.

But definitely in terms of- It’s also I find it interesting, because we’ve moved into this area recently – I’m going slightly on a tangent here – even discovering the places that you can get scrap wood, or if you want to cut wood to certain dimensions, stuff like that. I am quite surprised by how many places there are around me that I had no sense of.

Or similar to what I put in the diary with the chair, I was thinking of what it would take to make a foam padding for it. I found out that my partner had already done online research for other things she is making, and showing me all different foams that we can get online.

So I guess there are things out there, but I’m wondering, contextually, what is the effort ratio? How many doors do you need to open to kind of get on the other side? And I find, depending on what I am engaging with, sometimes there are too many. And sometimes I don’t know where to look for the doors.

But in terms of hackerspaces, access is- I guess they are branding as making spaces, rather than maker spaces, right?

Male: Hmmhmm.

Male: So I think the whole mindset is slightly different, and definitely I can understand the costs related to them, just extrapolating from similar experiences with other things that I’ve been involved in.

I mean, there is definitely also- You have a group of people that are engaging, they are definitely, to some level, gone over that threshold of, “It’s okay to kind of try to fix something.” (Laughter) And I’m thinking of people like my sister or a friend of ours that- She somehow wiped off her applications in Windows and how to fix that, and had trouble figuring that out.

So I guess, even if the spaces were more accessible than they are now, I’m also wondering how much of a leap it would be for somebody that is not into repairing things to go over that threshold of, “It’s okay to try and fix this,” to actually seek one of those spaces.

And I guess one thing that I kind of hold- It’s just kind of resonated with me, when I first heard it from another artist friend, quite a long time ago. I don’t remember what the conversation was but certainly he said, “When you are saying that this is something that you throw away, it’s not really something that you have to throw away. It’s just, at that moment, you made that mental decision that this is garbage.”

I guess, from an artist’s perspective, as in your example with using the scraps, material is material and you can always get inspiration and do something with it. But from a consumer standpoint, does it- When you have something, does it do the job that you hired it for? If not, what is the easiest way to kind of get your job done?

I need similarly to- All of these things, that I’m pretty sure you’ve heard, around people are buying the hole, not the drill. hackerspaces, in a sense, should be branded as the place you can do the hole, rather than the places that hold all the drills, in a sense. (Laughter)

Facilitator: Yes. That specific sentence, I don't think I agree with. I don't even think people buy the hole, they buy the idea of being able to repair things in their place with the drill whenever they want. And they will maybe use that five times during their whole lives. But this kind of satisfaction of having that object, that's not even that used.

Male: But-

Facilitator: You know there are tool libraries that are very interesting, more specifically in that people buy things and never use them.

Male: Sure, there is always an aspirational aspect to it. But I guess you have to- To go- I guess the very bottom line is that you have to really have something to use it for in the first place. Especially if it's something as utilitarian, right? But of course, yes, the debate I had, when I was contemplating getting a 3D printer, with my partner. My partner was like, "You're not going to use it, what are you going to make with it? You don't have anything to make with it?"

And I was like, "Well, here are five projects I already have in mind, and I think that justifies it." But then I haven't used it for a few weeks now, even though I do have some ongoing projects. I printed something today and yesterday, after two or three weeks.

But it's- So yes, basically that was my point. My point is you have to have at least one thing, one hole to drill through, in order to buy something. (Laughter) But it's not always that. You're buying the aspiration, or you're probably buying the

idea of being able to do that. But practically I don't think it serves a purpose eventually. (Laughter).

Facilitator: Yes, there are at least two sides, contrasting, but both… Okay, it's almost nine, and I guess I could go on for hours, talking about these things. But maybe I will just resort to coming back to you individually later on.

I'd like to thank you again for joining the study and for being here today, it was very interesting. I have lots of notes here that I will try to bring into my research. At some point I will send also a message to all of you, commenting about how this exercise relates to the other parts of my research and whatever I am trying to make out of it.

Male: Cool. Thank you for having us, and happy to- If you have any further questions or if you have anything particular to the diary, especially, let me know.

Facilitator: Yes, I will, certainly.

Male: Do you want us to carry on our diaries? Would it be helpful for you if we shared our experiences?

Facilitator: Yes, if you have something else to add, I'd like to see. But for the purpose I had in mind, it was getting people involved with repairing things with their own hands, or at least trying to do that. What I have is good enough. But if you want to go on, yes, I'd like to see that.

Male: Okay, that’s great. Alright. Bye for now then, Felipe.

Male: Bye.

END AUDIO