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Episode Information

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Hosts: Ian M. Cook, Kate McGinn, and Lucia Di Paolo

Guest: Rafael Calado, FabLabs

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Transcript

[Music]

Episode Introduction (0:09 – 3:00)

Ian: Kate, I've got a confession to make. I went to Lisbon and I made podcast, with another podcaster.

Kate: What?!

Ian: But you know what happens in Lisbon stays in Lisbon right?

Kate: Oh, we'll see about that. Let's roll the tape.

[Sound of cassette tape playing]

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Ian: So here we are. Here I am with Kate. Hi Kate!

Lucia: I'm sorry, it's Lucia.

Ian: Yes. So it's not Kate. This is not a, this is not a normal Urban Arenas' podcast, rather, I'm here with my friend and colleague Lucia and not in Budapest, but rather in Lisbon. And actually, where are we?

Lucia: Forno do Tijolo Market. Sorry for the mispronunciation. I'm surely saying it very badly.

Ian: Anyway. And the reason why we're – and this is quite an interesting neighbourhood, we're walking like in a market around the back of a Lidl at the moment. And we have some, yeah, some some of Lisbon's high rise flats in the background. Bit of graffiti, probably not the, yeah, poshiest part of town, and I like that. That's my part of town. And we're here because we're going to go and visit a FabLab.

Lucio: Exactly. We are meeting our friend Rafael Calado. Is that the correct name?

Ian: It is. It is his correct name, and he's is our friend and he's a really interesting person because he's one of the people behind FabLab Lisbon. And the reason why we want to visit somewhere called a 'FabLab' within the context of a podcast called Urban Arenas – a podcast about sustainable and just cities – is because FabLabs, they're not just fabulous, as the name implies, but they are places that do digital fabrication. That is the sort of rapid prototyping, the building of singular or sometimes multiple copies of, well, anything that can be made with computer operated printing or cutting machines. So, you know, the most famous is, is 3D printers, they are in the news a lot, but not only 3D printers. And the interesting- like digital fabrication is interesting because it it potentially can offer for people just to produce what they want, and that's what we're going to go talk about Rafael with.

Lucia: You already know so much about this. I'm going to learn everything today.

Ian: Yeah, because I did research, I didn't like, just turn up like you. I was just like, Lucia I'm going to meet Rafael tomorrow, and you were like, oh! I'll come along, you know.

Lucia: I'm sorry, but we are in Lisbon. I didn't want to spend my time reading. I wanted to see the ocean.

Ian: [Laughs] The ocean! Yeah, it's not. It's not warm enough for swimming, but it is, uh, it is getting warm as we- as we're, as we're walking up this hill and I see ahead of us now I see, yeah, FabLab Lisbon. So what do you say? Let's go inside and let's ask Rafael all about digital fabrication and the FabLab movements.

[Music]

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What are FabLabs? (3:01 – 9:11)

Ian: Okay, so I'm really excited because I'm here, with Rafael in FabLab Lisbon, and I'm also joined here with Lucia.

Lucia: Hi.

Ian: And thank you so much, Rafael, for agreeing to come on the Urban Arenas podcast.

Rafael: Oh, thank you very much.

Lucia: All right, so thank you so much for having us here today. I have no idea what a FabLab is. Can you start from zero and explain us what it is all about?

Rafael: Okay, well, a FabLab is a digital fabrication laboratory, and it started like 15 years ago and the idea is to democratise the access to digital tools. The FabLab chart is what differentiates Digital Fabrication Laboratory from an actual FabLab. And so the FabLab follows some principles um, that are related with the access- democratised access to the tools and the sharing of knowledge, and actually also taking care of the place. So uh, any- each one comes also have to know how to take care of the tools and to share what they do here. Uh, so we are aiming to expand all this system to everybody so that it can be useful for anyone that can't reach these kind of machines.

Ian: Okay, so I think the best way for us to really find out what a FabLab is and what a FabLab does is for you to give us a little tour. So could you show us around FabLab Lisbon?

Rafael: Yes, I can. So here we are in an ancient slaughterhouse. It was converted like seven years ago, and it was set with some tools and stuff that can help anyone to come and to do whatever they want. So the tools that we have and the prototype- digital prototyping machines we have are 3D printers, we also have vinyl cutters, we also have a laser cutter. We have CNC Routers, a big one, and a small milling machine. We have reconfirming machines, we have hot wire cutting machines, we have heat press machines, and, and sewing machines and, well, um, scanners, 3D scanners. And that's almost everything we have.

Then we have also a woodshop that we have normal saw the- all that stuff and all these tools are accessible in open days. So twice per week, we have full access from almost all day and the staff is here to help anyone with their projects.

Ian: So here we are, like in this FabLab and you say you have these open days. So if someone like myself or Lucia says, okay, you know what? I want to do something I want, I want to, you know, maybe I want to make something for my house, but I'm not quite sure, but I'm interested in the technology. I'm interested in the idea of, you know, making something. So then what would happen? We would walk in the door. We would see yourself and these other friendly people we ca- we can see now around us. And then what? What happens?

Rafael: Well, first you someone will get- notice that you come and will ask you, hello, what you are here for? And you will tell what is your project. So for example, if you want to make a shirt, let's say, and we have just a drawing. Maybe you should do it in uh- we need a digital file to do it, unless you want to go to the woodshop and do it by you- by hand.

But if you want to do- and use our machines, we have to translate that drawing to a digital file. So if you don't know how, we can sit here, we just tell you how to start, and then you can see some, some videos, how to use it, and you can stay here just for learning and then to do it. If you already know how to work with it, and we just say, okay, I am just- you can have your file, let's check if it's okay. We check if your file is okay, and then we teach you how to use the machine. So, for example, if you come for the laser cutter, we just check if your drawing's okay and then in 10 minutes, we teach you how to use the laser cutter, then you're by yourself, and you don't bother if you don't get it well. So there is no problem wrongdoing here. Of course, we teach you the safety of the machines, how to work with it properly and things like that, and just not to harm yourself or the machine or whatever. But if you don't do it at the first time, you can do it in the second time on the third and fourth. No problem for us.

Lucia: Can you give us an example of someone who came with some cool project to develop and how used one of these machines and something they created?

Ian: Hey, hey, hey, wait for me, wait for me.

Rafael: This is a loom. This is a nice project that we are proud of. We have a woman, weaver. She's a teacher for weaving, and the problem she had was that the looms were too expensive. They were around 100 euros per student. So a class of 30 would be three-

3000 euros in looms. So it's too expensive here in Portugal. So we accept the challenge, and one of our designers, uh, started to work on that loom with her. And the Loom, now this is version V- V2. But it has, I think, five iterations of five modifications of the loom. So in the end, we got the loom that's just cost two euros. So it's two euros in material and the time you have to cut the loom. So if you come in open day, so the loom is free. So we're going to put that- this- this object in open source. We are preparing, um, not a site, but a page with this project so anyone can, in their city going to a FabLab, going to FabLab Lisbon, just download the file, put the file in the 3D laser- eh in the laser cutter and mount that loom. So this is a nice project. I think it is.

Open-source and the Risk of Exploited Labour (9:12 – 12:14)

Ian: So it's beautiful. So let me then be- let me put on my, um, sceptic's hat, you know, and say, okay, so here we are. Somebody made this, uh, this loom and it's wonderful. And this, is in some way this open-source ethos shares many of the principles that they're open-source software movement also had, and it was really exciting. I was really excited by it when, when I first encountered it and I had, you know, a Linux operating system on my computer, and then about two or three years ago, I just went back to windows like a terrible person. And so much of the the labour that people put in to producing open-source software ended up getting sort of, you know, taken over by- or just basically creating profit for in the end large companies.

And so, you know, this is obviously a wonderful project where a teacher has made a loom for her students. And this can, you know, possibly, you know, benefit other teachers. But also, it could possibly benefit, you know, a company that wants to make a bunch of money. And you know what they can say? You know what? I can produce a loom not for two euros, I can produce it for one euro fifty because I'm going to make a thousand of them. And so I'm- so I could say that maybe what everyone's doing seems wonderful, but actually they're just feeding their labour into the big machine of capital, you know, like we all do.

Rafael: Well, actually, that's true. But I think that's not a problem at all, because the meaning of this loom was just to fill that, that need that the teacher had. So this can be reproduced. No problem at all for us. And the, the nice thing here is that the teacher gave here at the FabLab for two and a half years, I don't- maybe eight workshops and people paid for at the workshop. So she earned money also with that project.

Ian: Mm-Hmm.

Rafael: I don't think that's a problem. It's the same that happened also with, um, the OpenDesk. You know, the platform OpenDesk? Okay, uh, we had, uh, here last- last year a- a workshop, uh, of, um, OpenDesk Brazilian guy that made a chair. It's an open source and it's in the platform that's called open desk. So anyone can go there and download, uh, a file, for example, chair or desk, and they can, with the CNC router like the one you saw, uh, build a chair. So just have to buy the plywood and then cut it and mount, so they don't earn money with that.

Okay, but if someone like the chair, but doesn't have the skills, don't want to make the effort to do that, she goes there and tried to find in, in the platform, search the nearest place where I can get it, not where I can do it, where I can get it. So there must be the nearest FabLab or in a digital fabrication place that has a connection with OpenDesk.

They'll say we do it for some amount. So- and that that money goes for the place and goes for the designer. And the designer also comes here and he gives workshops. So the workshops also gives him some earning.

Examples of FabLab Projects – Prosthetic (12:25 – 15:26)

Lucia: And what is this hand here hanging on the wall?

Rafael: Okay. This is an open-source project. It's called Enable Your Future. And actually, this is a prototype of hand we built for a young boy. We had a project with the Children's Hospital here in Lisbon. And the idea was to test our machines um for good. So we invited them to find the children that could come here with a problem like doesn't have a hand or a limp or something like that. So with the doctors, they found one boy that were okay- that it was okay to come here because this is kind of scary for someone, for some. Uh, and the idea was to show him these hands, you see here on the right and tell him you could have something like this, but you can customise it.

So we scanned his hand. We've made this one with this project. So he got his hands for 30 euros in plastic. So actually it- it's it works so he can grab- the idea is to grab a bicycle, so he doesn't have fingers in one hand, he just have the palm of the hand. But when he does this movement, you can grip, you see. Uh, so uh, the idea that this young boy could ride, for example, a bicycle with his hands. The good thing here is if you wants to do it again, you can do it again if it's broke, you can print it again. If he grows, he can do it again.

Lucia: What material are these hands made of?

Rafael: This is PLA, it's a plastic material usually made from corn.

Ian: From corn?

Rafael: Corn.

Ian: Wow. Yeah, just for the benefit of those who can't see. So it's like we basically have this green, orange and black hand, basically, which- which somehow slides over the top of, of a, of a, of a hand, and then so the fingers are basically the part tha- that move. It looks, it looks amazing, actually.

Rafael: And it was- the colours were chosen by the boy. So we had some colours and it's nice. Some of them, even it can be customised, for example, with, uh, Lego parts, so you can build something over it and then you can put lasers and things like that and then show them [to] the girls to school, and then they are not ashamed from this hand. They are like superheroes. So the others will then say, wow, what a nice hand! That- that empowers him, you know, that's completely different from having small hand or those hands in plastic that doesn't move and are more, more expensive than this. So the- the idea is for a small amount of money, you can do this. And for this, of course, we gave the plastic, we didn't demand anything for it. But uh, it's really cool. And it was a nice project because involved, um, university students for moulding the hand and to scan the hand. So we got- we always like to involve a lot of people in the same stuff, in the same process.

FabLabs and Issues of Inclusivity (15:27 – 20:03)

Lucia: So you touched upon help and support that your stuff, gives, and the fact that you're open to everyone. And I was wondering, how do you make sure that this place is actually inclusive and is open to everyone and everyone has the possibility to access it?

Rafael: Well, actually, we have open door, so it's- there are sometimes some difficulties, of course, usually with communication, some- there are some people just come here, want to do something, but they don't have the skills. And um, they know the place. They think they can get here and get anything then. That's true, but it takes some time and some effort for them. And so the problem is actually, um, that people get, uh, what will be their, um, effort to get it done.

Okay, we have the machines to do it, but also they have to have the idea. They have to- sometimes we help. Uh, we always help. But sometimes it's not enough. Uh, okay. Of course it's, it's not perfect. But when you say if you are inclusive, anyone can come here. In the first year, we had even a, um, homeless guy that slept nearby and he came here and started to use a word processor. He just sit here, grabbed the newspaper from the supermarket and started to type it just to learn how to do it. So no, no problem at all. And you see these girls come here and then they are some refugees and people, they are doing a workshop there so anyone can come. So that's not a problem for us.

Ian: Yeah, I mean, maybe just because we don't know Lisbon, we just- but we just walked up the hill and like through this market to maybe say a little bit, maybe about the neighbourhood where we where we're situated.

Rafael: We are in Mouraria, one of the most, um, I don't- I can say the most diverse, uh, neighbourhoods in Lisbon, if not the most. And we have so many people from everywhere that if you just walk around, if you go to the next room, you'll see people from the neighbourhood. Would you like to come?

Ian: Yeah, let's go.

Rafael: Okay. Before we enter, it's a project related uh, with, uh, FabLab, uh, BIP/ZIP, it is a programme from the City Council, uh, ACC, it's um, organisation that works with mallets. And we also have, uh, uh, another, uh, church organization related. That is the one who gather the people that come here, usually people from fragile situations, women, refugees, um, people from the neighbourhood that don't mix, that don't have work. So they come here to get some skills. And the idea is to that after they learn, they start to mix with us. So now they are learning how to use the sewing machine and things like that. For example, the last workshop, we had a Syrian tailor here also teaching them, and they started to learn Portuguese at the same time. So it's um, it's a nice thing.

[Sound of teacher in the background]

Rafael: So we have the project, so actually today we don't- we just have women here, but we already had some men, usually it's more woman, but they are learning how to make a small production. So you- the sewing machines are from the project, some are from the FabLab. And so the idea is that they after they get those skills, they will make small productions. So we have some partners in the neighbourhoods. For example, if you go,

there is a big brewery that for Christmas demanded some aprons and they built a lot of aprons for them. So the idea is to start a business around these kind of skills. And then if you can use the digital tool machines, mixing with this will be a plus.

Ian: So, where are we now?

Rafael: Now we are in the wood shop. Today, it's empty, but usually there is someone here doing- not no, no, no digital fabrication, but it's a- it's, uh, also a need, so we also fill that needs.

Ian: Should we go sit in your office then or…?

Rafael: Yeah.

The Role of FabLabs in the Future of Sustainable Cities (20:04 – 27: 46)

Ian: All right. So now we're sitting in sitting in your office. And so my last question was maybe a bit too sceptical. So this one, I want to be more optimistic and utopian even. So, when I see something like a FabLab and I see, okay, this is people coming in, building and creating things for their own needs or for their communities' needs and learning from one another, not really producing any waste because they're only producing what it is that they need and also being able to adapt things for people with special needs or special circumstances.

And I think, wow, what would happen if something like a FabLab was scaled up, you know, or was replicated in many different places? I mean, what do you think? What are the possibilities? Is this a movement that could transform our cities more widely? Can we, can we imagine like cities where there is, you know, just, you know, sort of this rapid prototyping becomes the norm rather than the exception? And we begin to have a more self-sufficient cities where we're not bringing in desks from China, but we're just bringing them in from the FabLab located at the back of the Lidl around the corner?

Rafael: Mm-Hmm. Yeah, I agree totally. I think in the future, FabLab's will be like the libraries. Okay. Um, I've been in- last week in Helsinki and the library has a FabLab, and it's even more open than ours it is open every day. It's wonderful because you see the mix you have here, people that you have here, with special needs and everybody at the same time in the same place, and uh, it's like a real public service as a library.

And um, about the self-sufficiency cities like the Fab City movement, for example, like the ancient, the notion of the um, the city sta- city state. I think that's possible. Um, and I find that very interesting. The idea of produce locally and uh, it's much more sustainable, of course, than bring things from China. There will be always stuff that comes from China or- it's impossible to not live globally, but, uh, produce locally. Uh, not just objects that we are used to do at the FabLabs, but also we are going to open a Bio Lab so we can also produce your stuff, your food. And so, so the idea is not just people come at the FabLab, but there will be some tools that you have at home. So there will be tools that you have at home because it will be something completely normal. Uh, and some tools that are not. So you'll go to the library, you go to the FabLab, you go to somewhere to do it, but there will be also factories.

I think what will happen will be the new industrialisation of cities. Uh, because many cities are just service, uh, I think that's not sustainable. Mm. So- so everything comes from other parts. And if you can grow your stuff, if you can build your stuff, uh, not your, but someone can do it. If you go to some cities in developing countries, for example, go to Istanbul, they have everything there. They- they built everything. If you want, they also have FabLabs, but so they have artisans and they have FabLabs. Now we ha- almost, uh, finished with artisans. There are not many. Uh, but they are new ones, new generation that uh, and if cities become again sustainable, I think they have to have the right mix of people and, uh, expertise around doing things. And so of course, I see it in a perfect way to be.

Lucia: Okay, so you said 1000 interesting things, I would like to ask you a lot of questions, but I pick one. You mentioned Finland. You also mentioned Istanbul and you mentioned FabLabs in these places. And I was wondering what does differentiate FabLab Lisbon from the other ones?

Rafael: Oh, what differentiates? Actually, they shouldn't be so many difference because they are FabLabs, of course. But what differentiates the FabLabs could be there are public FabLabs, There- there are institutions FabLabs and there are private or association- uh, associative, uh, FabLabs. Our is a public one. So we are a public service. Uh, other FabLabs like an association are not so open. They are just open to their community of subscribers or whatever. And, but in the end, they do the same.

Here in Lisbon, there are five FabLabs. There are FabLabs um in universities. We are- we are from the City Council. One is from the biggest energy company in Portugal, EDP. It was the first one in Portugal, actually. So um, there is one that is an association around electronics is our friend is nearby. So those are the FabLabs we have here. To have open doors, we were the first and we are of course, the biggest one too.

Lucia: Yeah. When you say private FabLabs, don't they lose a little bit of their spirit? What do you think?

Rafael: Well, I think so. And actually, EDP FabLab in the beginning um, was open and now is just open for special projects. And so they don't have open doors as that sometimes happens with FabLabs and especially for private ones.

Ian: How do FabLabs especially FabLabs like yours with this sort of, you know, open door sort of spirit, how do they relate to other movements that want to sort of reuse, repair, you know, build new things? What's the what's the sort of overlap between those movements and yours?

Rafael: Okay, okay, that's nice. Actually, we host the first repair cafe here in Portugal. We started it's like three and a half years ago, and we have a community of people that repair. It's growing always. Now we have people repairing bicycles, repairing like furniture, electronics or home appliances. And the idea is to not throw away stuff and anything that can repair, we will repair and we want to to share that. One of the areas of repair, reuse, recycle, we- we are centrally in the repair, but we are also aiming under use. So some stuff that we don't use, we can give it another use. So, for example, a toy, if it doesn't work in the same way, you can change it in the repair cafe to do it and another thing. So and you also- there is something that relates completely with the FabLabs is sharing knowledge.

So in a repair cafe, we teach people how to repair. We don't just repair. We teach people how to repair. So it's the same idea as the FabLab. We teach people how to use our machines.

Ian: Then as my, as my last question, and this is an important one, what's the best thing you ever made in the FabLab?

Rafael: Well, actually the best thing I have, I think, is the community. Yeah, yeah. I think it's creating the community, for sure. And relate people doing projects together. It's what I like most. It's really mixing people.

Lucia: Obrigada. Thank you so much for having us.

Rafael: Oh, I thank you, both of you, and it was really nice to have you here at the FabLab.

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Post-Interview Discussion (27:47 – 31:25)

Ian: Alrighty. So we left the FabLab. We've been on a bit of a walk. We've had some low-quality vegan food and now we're sitting in the square, digesting and thinking about what it was like to be at the FabLab. So for you, Lucia, who knew nothing about FabLabs as of 9:30 this morning, what is it that you found interesting or surprising about, yeah, FabLab Lisbon?

Lucia: First, can I actually say that the vegan food was good.

Ian: If you, if you must [Laughs].

Lucia: All right. I really liked it because I chose the place where to eat. I was definitely expecting FabLab to be a place with all these high-tech machines and to be open to everyone for them to use them. And also, Rafael repeated several times how much they are built upon this structure of support and help, where all this stuff is willing to be helpful to other people and welcome everyone. But I wasn't expecting them to have such a big focus on the whole inclusivity question. It was really nice to see that they have several activities where they support people from disadvantaged groups so people with disabilities or migrants or, yeah, children as well. So that was really interesting for me and I was really surprised. As you said, I knew nothing about FabLab and I'm going back home knowing a lot about them, and I actually think that will look for them in Freiburg, in my city, and to see what they do, or maybe even get active with them.

Ian: Yeah, you know what I was- I'm always a little bit wary about going into places because I- I'm actually sometimes a little bit shy about going into places where I don't know how to do stuff. And the- even there is like the tech, maybe like a tech barrier that somehow scares people off. Like even though I think, you know, I'm quite comfortable with technology. Still, the idea of sitting down and suddenly with people watching, having to be able to use a computer to make, you know, to use a 3D printer or a laser cutter or whatever would probably scare me off.

But then I realised actually, after being there, it wasn't- it was a really, was actually quite a welcoming place, and that's the whole point that he was saying. Yeah, you go there and you say, listen, I really don't know how to work anything and then they'll help you. So I guess that's also, I guess that's also interesting in terms of the fact, okay, the technology is a thing, of course, but actually it's the technology plus the mission together and that goes to the openness, the open source-ness of it and like trying to bring people in as well. Like call people in and say, come on, let, let's try to do stuff together. I think that was that's- that's really nice. I think there is, there probably is one in Budapest, I don't know, but I'm going to try and check it out. So let's make, let's have a challenge. Let's see who can be the first person to enter a FabLab and make something.

Lucia: Yeah, I agree, although I'm sure I will have to ask for help because those machines looked so complicated to me.

Ian: No, but the machines won't be complicated because you don't actually touch the machine, what you do if you just play on the computer and you, and then you just, the computer actually operate the machines so

Lucia: So you just need a really good idea. But yeah, challenge accepted!

Ian: Anyway, so if you're listening at home and you do know something more about FabLabs than Lucia, or you are interested in FabLabs, or you go to a FabLab, or you want to go to a FabLab, or you want to tell us that after listening to this podcast that you've been inspired to, you know, take your first steps inside a FabLab and build something yourself, then tell us about it or tell us about this podcast in general. And you can do so in the following ways:

Lucia: Yeah, you can find more information on our website: www.urban-arena.eu, or you can follow us on Twitter and Instagram at @arena_urban.

Ian: Yeah, or you can also drop us an email at UrbanA@ceu.edu. Thanks so much for listening. Bye!

[Music]

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Disclaimer

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