Introduction: Time 00.00

Karen: I’m Karen Westland. I’m a PhD student working between Physics and Design, and we are in the exhibition space where I’m showing a work-in-progress for my research so far. So I will be looking forward to having your input on what I’ve been up to.

(K gestured to A1 to introduce themselves)

Anonymous 1: I work across the university so in a sort of interdisciplinary fashion, not necessarily an academic one but quite widely across the university.

Karen: Anonymous 1’s been helping me with the aspect of the exhibition which is how we have managed to meet.
Anonymous 2:

I’ve now been working at the engineering department, civil engineering, mechanical engineering. I’m heavily involved in the design and manufacture assistance training, and academics, research and undergraduate, postgraduate projects.

Karen: Yes, I was going to say you have been helping me a lot with all the technical things from the offset of my project: in approaching the workshop for the first time you’ve definitely helped guide me through the technical side of this project which has been very important.

Anonymous 3: I’m design and I’m in the school of... (speaking to A2) you’ll need to have a

Anonymous 2: Yes, yeah

Anonymous 3: .... If you haven’t been in before, because it’s quite a different space

(Directed at A1) You might get a bit nervous because its got flames at every bench.

Anonymous 1: Oh I’ve been in and its great! We did the extinguisher training for you as well for just in case!

(laughter)

Anonymous 3: Most of my work is academic and is very interdisciplinary. I’ve got a project just now working with chemists... So, we’re just waiting to hear if we’ve got a big EPSRC research grant so fingers crossed and touch wood!

Question 1: Time: (02:52)

Karen: Sounds good! So we will start with the first question or theme of discussion which is: What are the benefits of interdisciplinary collaboration? Why would you decide to work with someone from a different discipline in the first place? Any of the general benefits that that might have, whether that’s
from your own discipline into another. You could even start from using my project as an example: is it worthwhile doing a project like this?

**Anonymous 2**: I think it’s nice to see collaboration between engineering and art. I know I have said to you (K) in the past that mechanical engineering for a while had a tie in with IPD, Innovation Product Design, and it was one of the things I enjoyed doing, with the guys who would come in and look for ideas and you would work with some, and at the end of the day they would look to do something you could actually manufacture and then market and sell the thing: which was good to see the whole process. I think a lot of the time working where I work: you get a drawing and make something and then it goes away and you never see it again. It’s good to actually see that project all the way through from the engineering side and the design and marketing side of things. I used to enjoy that but obviously that’s died out now, so I miss that a wee bit.

**Anonymous 3**: It’s a shame that fell apart. I think it was the academics who fell out probably. Which was maybe to do with issues of power and control I suspect: of determining who was the boss in that project and they couldn’t agree whether at different stages of the workshop they would both be leading on different things. Because it was a good collaboration.

**Anonymous 2**: It was and I enjoyed it: it was interesting work all the time.

**Anonymous 3**: And I’m sure the students would have really enjoyed being in your workshop.

**Anonymous 2**: They did yeah. A lot of them wanted to actually use the workshop, but as you know that’s not an option. I know you have your own workshop up here (DJCAD) but down in the workshop with us we have more industrial sized machines and I think for insurance purposes you can’t have them near them.

**Anonymous 3**: Its interesting, when I was working with the chemistry department, I was curious to see whether they would let me play with their tools because obviously I’m not a chemist, but they were very good. They put me through a basic risk assessment and health and safety induction, so within an afternoon I was able to play with their toys which was great and I was there one day a week working mainly with a group of PhD students, but they were so good at encouraging me to use their equipment, and I was working on the biggest scale in their labs. They have a big five-liter flask which was the size they could go up to. I was working with different acids, and I had my white coat on and felt like a proper scientist which was fun. I do think for collaboration it think it is quite important to be able to share different technologies and tools (noises of agreement), and particularly for the sciences I think, the option of having an artist such as yourself (K) coming into that space and seeing what you can do may have... some of these machines like the Fresnel lens, is obviously for a very specific purpose, but because you’ve been playing with it, you’re using it in quite a different way: working with enamels and you can see lots of other applications for it out in developing countries for example.
So I think when the scientists can begin to see what designers and artists can do it can be quite exciting (noises of agreement). I think most of the time they get excited about it. Not all the time, but most of the time!

**Karen**: In a sense that working with different disciplines that it opens new windows to avenues that you do see new ways of working or approaches to things that might seem ordinary to you.

**Anonymous 3**: I think your point is really important as well (referring to A2), about how often in University, our work can feel quite fragmented: you’re just responsible for one really small part of it. There’s an analogy if you are building a cathedral: don’t know who its accredited to.

Someone’s wandering through the countryside and they come across some stonemasons, and they ask them what they are doing. The first stonemason says, “I’m chipping away at this piece of stone.”. The second stonemason gets asked the same question and he says, “Oh I’m building this turret, or I’m building a piece that’s going to fit in this turret”. The third stonemason, he says, “I’m building a cathedral.” It it’s about ‘what is your cathedral’, because most of the time we feel like we are chipping away at a bit of stone. So to have that broader vision and to actually see things through: from students or colleagues actually producing pieces of work right through to completion.

I think it’s great to see your exhibition (K’s research Exhibition), particularly for colleagues in physics and colleagues in art and design to see the complete picture of what you (K) are working on, because we don’t often get to see that.

**Anonymous 2**: No no (in agreement with A3’s comments of not getting to see projects through often)

Like I was saying to Karen, I hadn’t seen all of this: you come into the workshop for a wee bit of this to be made and the frame for the Fresnel lens skew, and it’s like, ‘what’s that going to do?’ But now I’ve seen the finished exhibition, it’s really interesting.

**Anonymous 3**: So there’s something to revere with the holism of the experience, that’s not just one small part, but it’s part of a much bigger picture that’s important.

**Karen**: Okay. With the exhibition, part of the intention was now that I am almost two years into the research, it’s quite a good point to stop and reflect on what I’ve done. As you say, a lot of the technicians I’ve been working with, they have been seeing a very fragmented slither of what I have been doing. It helps for you guys to see where I come from in terms of the silversmithing background: as there was another technician I had been working with, who were mainly showing me how to use equipment in the building, but at no point had I stopped to say I was a silversmith, not a physicist, so they had no idea what my background was in.
So, having an exhibition like this or an opportunity to show the context behind what you are trying to do...

**Anonymous 3:** Was it yourself (A2) or another colleague who does gun engraving?

**Anonymous 2:** Oh no, that’s

**Anonymous 3:** I was going to say that I’m always surprised by how much other colleagues have similar kinds of experience: like that you’re talking about when we met, he does gun engraving and gun restoration work. He’s got his own silversmithing workshop, so it’s always surprising to me the broader range...

You need to invite him to this exhibition as he would really appreciate what you are doing here, and the scale that you are working at is in correspondence to the scale of teeth too which could be really interesting.

**Anonymous 1:** It’s interesting, a lot of dentists are like that: my’s a dentist, my’s a dentist and the again, is a similar age to the he has a tiny Arabic coffee pot that has a lid that opens and everything that he made, and its less than a centimeter high. It was just something they were expected to do in the 1960 – 70s probably to be able to do that level of fine work: to be able to do fillings and everything with precious metals and model that. Again, things have changed.

Similar to what we are talking about here in terms of interdisciplinary, its not a fact that dentists will see just one small part of that, and then send it off to the lab, and the lab guys will then do that. I think the generation is a member of, they’re kind of going a way where there was an interdisciplinary feel to it and the idea was that someone could sit down and do a treatment plan from beginning to end involving all of these things, where we now we are into a (inaudible word) system in that, it has happened in some cases in education.

Going way back, the idea of a scientist was someone who knew the natural arts and all these things and did a lot more, where as now we specialize: “Oh I’m a biologist, I’m a chemist, I’m a physicist. Oh no I’m not an artist, I don’t do anything that involves design, I just work on elemental things” and there isn’t necessarily any creativity in that.

I think you (K) mentioned Leonardo Da Vinci, and that sort of approach in his idea of what science was.

**Anonymous 3:** is interesting because he talks about in his generation they mixed with basic metallurgy as well: they used to have a store of gold which was quite open to access. It was probably thousands of pounds worth in today’s money. So yeah it was all easily accessible chemicals were all
available, so they were doing a bit of chemistry, a bit of jewellery and metalwork as well as dentistry: so he would be a really good one for you (K) to speak to.

The notion of the polymath, if you are a Leonardo or whoever: we lost that a few hundred years ago, easily. Where people had a little bit of everything, and I do feel we have lost something quite important.

**Anonymous 2**: I was just saying to Karen downstairs (DJCAD reception) that we have a police officer up from [name] and she’s working on her research up here and she is researching dead bodies in water. We have these dummies harnessed up from the crane down there (SSE Workshop) and we are putting them in the big tanks of water with different clothing on and different weights of bodies to see how they react to the water. And that’s in the civil engineering lab, so we needed to build a rig to put over the tank to drop them (the dummies) in from. It was quite a strange combination: but again it’s a bit different, and when you get something different like that it keeps you interested in what you are doing.

**Anonymous 3**: I feel that working with the chemists [name] that I’ve learnt so much more about my own disciplines: I have learnt so much more about my materials and how they respond and learning some of the chemistry. The great thing about the PhD students that I was working with were that they were all really keen and happy to talk to me about their work, and as a non-chemist it was forcing them to explain it in a way that I could understand which I think they found really helpful because they are used to talking within their chemistry group where they all have their own jargon; they have their own language, so having to explain to me: I haven’t done chemistry since O-grade at secondary school, which was a few years ago. They were fantastic at explaining to me, but what was great for me to see is that they were seeing things they had only read about in books. Like when we were taking copper nitrate in liquid solution and adding some zinc to transform the copper back into a solid again. They’d never seen it before: they’d never seen it actually done: and yet it’s the simplest experiment to just sprinkle some zinc powder. I have this fabulous photograph of [name]’s big beaming smile. They said to me, “we’ve read about it in books but never actually seen it happen.” So to see the liquid turn into a solid and drop down into a test tube was hugely exciting for these guys, so there were lots of benefits in that situation for both disciplines. We were both getting a lot out of it. For me I think the other big thing is though, some of the problems or issues whether that’s the police work or chemistry is that you can’t tackle it with one discipline alone.

We are looking at [name] So by working together we can address these problems, but the chemists alone couldn’t address them. To tackle some of the bigger questions I think its crucial for interdisciplinary research.

**Question 2 (18:48)**

Karen: I think this ties us onto the second question which is: How can different disciplines communicate better with each other? as you (A3) have just outlined. If anyone has any examples of good
experiences or anything that just really didn’t work. There’s verbal communication and visual: what’s appropriate sometimes? Is it a quick sketch or do you need a technical drawing or CAD design dependent on the project?

Anonymous 3: How have you found it working with the police? (A2?)

Anonymous 2: Personally I’ve not been involved in it that much: It’s just the one girl. It’s her own research, as she is funding it herself and its just quite interesting what she is doing.

A lot of the time we will get requests into the workshop and the students haven’t got much of a background in technical drawing or engineering so you won’t get a proper drawing so you just get a wee sketch. A lot of the time its fine because you can sit with them and go through it but the problem with University with us where we are, there’s a high portion of Chinese students at the moment and there is always a bit of a language barrier there as well. I think sometimes I know there is meant to be some sort of standard the students have to be set in the English language before they can get into University but that seems to be breaking down a wee bit.

Anonymous 3: They find ways to get round it.

Anonymous 2: Sometimes it causes a problem with us because they don’t have the technical knowhow about what we can actually do. I’m not just saying its China, its all foreign language students sometimes. Even British students aren’t getting the same technical bit at school nowadays, because there is very little technical stuff taught at school now. So when they are coming to university, they don’t know the basic how to do a two-dimensional 3D drawing.

Anonymous 3: We’re having the same issue in art and design I would say with the schools. I think the government and schools are prioritizing in the so called STEM subjects: Science, Technology. They should be prioritizing engineering and maths … (audio break-up)... Close observational studying from them and getting direct experience of it. So I think its a common problem across the board.

Anonymous 1: An interesting note was a colleague who came across a student who wanted to do a technical drawing so he (the colleague) gave him a pen and paper and he (student) was like “No no no. Do you have a pc? I could do it” I think it was for a 3d printing thing so there was an advantage to it being on the computer, but he (colleague) went “Just give me a rough idea” and he goes, “No no I need to do it in CAD. I can’t do it on paper. I can’t get my head round that: I can’t draw in three dimensions but I can do it on CAD ‘cause then I can rotate and do all this” Technologies: I guess again that’s coming from school or college where that’s what they are given rather than a large board, a bit of paper and a pen.
Anonymous 3: I don’t know if you (A2) get it but the technicians in our wood workshop, ...are trying to encourage the students to make it. But most of the time they don’t want to make it, they just want someone else to make it for them. And their response is usually, “No I’ve got my degree thanks very much, it’s up to you to make it.” And they will show them how to do it.

Anonymous 2: Like I said the students don’t get to use the equipment in the workshop (SSE Workshop) but we have a similar problem with design. They (students) will come in saying they want to do this. And we say, well what do you want: can you give us an idea of your design? And they will say, can you just make us something that will do this? And we say “no, you have to go away and come up with the design, it’s not for us to come up with the design: we will manufacture the parts.”

Anonymous 3: It’s tricky as well though: if you don’t know how the technology works then it’s also hard to come up with a design: so it’s a chicken and egg situation.

With the chemists, I think I found it the best experience working with other disciplines. I’ve had some bad experiences working with computational biologists who work mainly on the computer. And there was a real tension between myself and another artist. We’re all about getting stuff out in the public domain and sharing. But that particular computational biologist was really nervous about his intellectual property as he saw it. So I often find the biologists can get really twitchy about intellectual property and ownership. I also felt from that experience that he was not an individual that I would choose to work with again. For me, finding people that you like, that you get on well with, irrespective of your background or experience is really important. Since then I have always tried to work with people that I connect with in some way and relate to. If there is a shared set of values about getting stuff out in the public domain then it’s a more equal partnership.

I have also had in the past, like up at Ninewells in been asked to “make things look beautiful”. So its expected where you come in at the end and do a nice bit of engraving or something to finish the piece off and make it look beautiful. So in those situations where we are more seen like the handmaidens of science: which I have a problem with.

If it’s a more equal partnership where they see me, “oh no, you’re actually bringing something valuable to the table as well”

Karen: Where you are actually part of the development as well

Anonymous 3: Exactly. So in that sense the chemist experience has been much more positive: it took maybe a bit of time to develop but certainly now there is a good appreciation of what we each bring to the table which is good. The language thing can be tricky, it’s a bit like America and the UK: we
are two countries separated by a common language. We have the same words but they mean different things: and it can often be the same working in different disciplines. A silly example that I first encountered years ago was in a research sense when scientists talk about significant results, it has a different meaning to when I say, “oh that’s quite significant”. So their (scientists) understanding comes from statistics and can be quantifiably measured, where as the way I would use significance is very loose about something quite important.

So yeah, language can be tricky I think. And its about constantly having a willingness to be a bit of a dummy in that situation and say “I’m sorry, what are you meaning by that?” and constantly asking for definitions or trying to clarify terms.

Karen:

I guess from my point of view doing the research so far I’ve found it incredibly helpful audio recording technicians or lecturers and [BLANK] in particular: recording the majority of what he says so that instead of asking him the same question six times I can listen to the recording of him six times over. And it helps the relationship with all these individual people that you aren’t tiring or boring them with the repetitive ...

Anonymous 3: Does he record you?

Karen: No, thankfully not! ...But yeah its funny how even something as simple as that (audio recording) can make such a big difference and I think that’s one of the most helpful things in terms of the language barrier that I’ve had: that you can record it then later take notes or look up things online and start reinforcing some of what you’ve been trying to learn this is out of your normal comfort zone in terms of language

Anonymous 1: I think one of the things you said earlier when you were working with chemists is very interesting as well was the fact that they gave you an induction: that you weren’t a chemist and they gave you that induction. And I find sometimes when groups do that and say “right are we happy for this person to work in our environment? ... Yes.” Do we really need to know all the other rubbish we know? Have we distilled down to what you really need to know: the focused thing. And if this person who hasn’t got a background understands it: maybe we’ve used common language, maybe we’ve explained it in a way that everyone can understand it and we can shelf the technical terms and the jargon and the abbreviations. You know the university if terrible for this idea of you know, “are you going to the WTB, or MSI or DoJ or DJ?” again and someone coming from the outside won’t have the feintest idea what building we are talking about or what department we are talking about. So I think sometimes that can be very beneficial as well when you are working from both sides to distill down what’s the important stuff and how do I explain it to someone who isn’t working here, and that can be beneficial for even people who do have the knowledge.

**Anonymous 3:** There were times with the chemists where I was actually having to say “wait a minute, stop. I don’t need to know that. I don’t have to become a chemist. I just need a basic level of information in order to develop my work. I had to keep reminding myself that I’m an artist and a maker first and foremost and my job overlap was to act as an artist in residence and produce work that was inspired and informed by what they were doing but I wasn’t becoming a chemist.

So I would ask a lot of stupid questions but then I would reach a point where it was messing with my head and would just go “No, stop.” *(laughter)* And they similarly would ask me a lot of questions which was really good, and I actually took the chemists – one of whom did a jewellery evening class before. So I brought them up to Dundee to our workshop and we worked with some of the wax and we made little pieces, little idols for the chemistry lab and made a couple of rings for themselves. So it was fantastic for them to see the other side of things as well. It’s part of what you *(A2)* were saying about seeing the way the metal gets used as they never get to see that side. So I think you’re *(A1)* right that they managed to distill the basics for me as a non chemist, things like wearing the coat, the goggles, where to ask questions if necessary: so it was good. I think it does force people to, well all of us to speak in more plain English. I mean there is a place for jargon at times, but in interdisciplinary work, if you can’t explain it in plain English then we’re struggling!

**Question 3: Time (32:40)**

**Karen:** The last question: What could be realistic goals for interdisciplinary research in the future in terms of ... *(pause)*... looking back to our previous discussion there: I’ve seen examples of some PhD students who have 3D printed a model when I look at it and think that it would have been so much easier just to have some lightweight material on a lathe. And for the 5 minutes it would have taken to literally make that thing on the lathe, they’ve spent hours probably 3D printing this object overnight. Would that have been solved if they sat down and had a conversation with a technician or a lecturer, someone, to say, “this is what I’m trying to do, this is the design and actually have that technical discussion about what their intentions are and developing that idea.

Is it as simple as having those conversations? From my point of view there the perceptions people have about other people in the sense that I perceive that technicians are very busy and don’t have much time so its almost like... its also me being a slightly anxious person as well, that you don’t want to take up too much time from people. But would I actually save time in the long run if you sat down or booked a time slot with the person you are dealing with and say “This is what I’m trying to do” and then discuss the solutions rather than nipping in quickly and saying “I’m doing this. Can you make this thing for me? A and go from there in quite a disjointed sense”

**Anonymous 2:** Yeah, we get that all the time, the students will do a CAD drawing and get it 3D printed, and they will come to you with these two bits and say, “They didn’t go together. Can you do something” and you need to drill holes in them and thread them to put them together. And like you say half the time it’s something pretty simple but because they perceive that technicians are busy. If they come into the workshop, there is a list of jobs and we have to work through them, unless there is a
priority on something. And they (students) will just be able to look at the computer screen, and see on the computer screen that they can get it 3D printed and like you (K) say it will get done overnight: they don’t have to wait in the queue to get it done. They end up having to wait in the morning till the technicians free to look at their part and maybe modify it. A lot of the times they (students) will have to get it done again: to get it 3D printed there’s a cost involved with that as well. Like you say it would be better if they spoke to somebody first.

Anonymous 3: We see it with our product design students: they’ll often come into the jewellery department and they’ll say, “Oh I’m making a light, I want to make it out of this and its this size.” So they’ve got rough idea, but then [our technician will speak to them and] say, “You can’t make it because we don’t have that gauge of copper. You can’t do this because you won’t get tube that diameter” or whatever. So there is a lot of discussion and negotiation around what they can and can’t do. I think there is a structural thing though within the organization: our courses were modularized a few years ago, and the suggestion at the time was that they were becoming modules so they could fit in with other courses in the university. At one point there was the suggestion that an engineering student could come in and take a jewellery module or a jewellery student could take a module in life sciences or wherever: but that’s never happened.

I do feel if we could start that in a small way, it would be really beneficial to enable the students to move about. I think you’re right as well about the discussions with technical staff who know how things can be put together and made. But academics having those discussions never mind the students. What about academics that come to you (A2), where they are like “I want this.” and its like “nope.”

Anonymous 2: I’ve got an example from years ago: a professor in civil engineering, he had lead window weights: he wanted them smaller but he wanted them the same weight. (laughter) To make them smaller to fit the bit in the window we will have to machine some off it. He says, “Can you not keep them the same weight?” “Well not really no.” (A2) (laughter) And he was a civil engineering professor y’know. And he said, “Have you not got a machine that can crush them smaller?” It made me think, this is a civil engineering professor and he couldn’t work this out.

Karen: Moving from there, do you feel that there is almost a separation between lecturers and technical staff in projects where you are trying to make physical things in terms of the expectation from people that don’t have the making knowledge?

Anonymous 3: Well I know that our students love technicians and they hate the academic staff. They love the technical staff because they get practical support and they hate the academic staff because we have to grade them. And why in art and design we are grading people to be honest I don’t know. We would get far further if students were a simple pass, fail or distinction. But yeah they love technical staff because [ ] will sit with them and explain what can and can’t be done and help make their idea a reality. We’re just seen as asking difficult questions like what’s the concept behind the work.
Anonymous 2: I think a lot of the time the academic staff don’t seem to back-up their students enough: like someone will come in with a job and we will say, “We can’t make your idea, you will need to go and redesign that. Can you go back and have a word with your supervisor?” And they will go and their supervisor and come back and will say, “oh my supervisor is too busy and can’t do this now. Can you help?” And I understand...

Anonymous 3: My supervisor is too busy checking research grants.

Anonymous 2: ... and they seem to just leave them to their own devices a lot of the time

Anonymous 3: I think as well in the university there is a separation between head and hands. Students are seen as empty vessels to pour knowledge into, and they don’t seem to understand that knowledge is created through making things, through doing stuff. When the art college first merged with the university I was hugely excited because I thought the university might begin to embrace some of what we do and the way we do things, but in the years I’ve been here that hasn’t happened. If anything I think its gotten worse. I think its and even bigger separation: knowledge is seen as something in the head, they don’t particularly in our practical disciplines – I think medicine has the same problem- because as you know we are working with human beings who are unpredictable and different. So this separation between –in a craft sense we would call it – head, hands and heart, because for us the way it feels the aesthetic experience is really important as well. So I just feel that the head and the hands in particular have become so separated.

So structurally I really think there is a lot the university could do to address that. You see it in the hierarchy: academics are paid more than the technical staff. What kind of institution would we have if we were all at the same level? - which would make a huge difference to everybody and the institution, but the university’s got to find a way of recognizing the value of the practical side of the work, and how theory and practice are integrated and can’t really be separated from each other I feel.

That’s my rant over with for this morning. Always good to get a rant out before twelve o’clock!

Karen: I think there’s been a couple of recent examples of- like in medicine: people needing surgeons who actually have those hand skills, so they’ve got students that can actually perform surgery rather than having no hand-eye coordination. Astronauts as well, they need to physically fix things and do things with their hands beyond just being intelligent. So its one of these things that you end up needing this balance, particularly if you are working in making practical solutions or...

Anonymous 3: The thing is: its all intelligent work, its just different kinds of intelligence we are talking about and its recognizing that. In the old days, school was very bad at perpetuating that:
academic and non-academic. Vocational is just as intelligent as a lecturer: we’re talking different kinds of intelligence and that’s the crucial thing. To recognize and value it in the institution, I feel.

What was the first part to the question for the future?

Karen: What could be realistic goals for interdisciplinary research?

I guess it could even be the question of who is responsible for the research? Who is most responsible within interdisciplinary projects? Is it that student that’s running between lecturer and technician or is it all three of those members? And how do you manage those project outputs: what’s the expectation? Like my PhD for example, I’m technically in Physics but I’m also partly in Design and how do you assess work like that that where its not strictly physics but its not strictly design. How do you try to evaluate something that has qualitative and quantitative data there? How do you evaluate the quality of what you have done?

Anonymous 3: One thing I feel we are short of just now is interdisciplinary spaces to do work, to have conversations, to try things out. In the art college, we’ve worked hard at trying to make all our workshops open access. So in the part the wood workshop would be more associated with interior design because they would make furniture and things but now all of our students can access the wood workshop, so you’re just as likely to find a jeweller or a fine artist student or an illustration student doing something in wood. I would like to see all the workshops across the university become a bit like that, so myself as a workshop could come into your (Fulton) workshop and would be encouraged and welcomed – not that that doesn’t happen at the moment – but it would be expected and it wouldn’t be dependent on the goodwill of a handful of individuals.

So if there were workshop spaces in all the departments that were open access. I don’t know how that would work from a health and safety point of view...but I think its doable. And I think making those spaces open access, the conversations would come about naturally: because its when you start to see, “oh you do that in your place, I do something quite similar. In Dundee I first tried to find some chemists here but of course we’d closed our chemistry department. There’s a couple of chemists left in drug discovery so they weren’t really doing stuff on ... for example, so it was harder to... It was only by chance in a sense that I had done previous work with chemists. But it was only because we had worked with that lab before and there was a bit of a track record that we were able to do something.

So having spaces providing opportunities to talk to each other I think are really good.

Karen: So there’s something to be said for having academics and technicians more opportunities to see and speak to each other?
Anonymous 3: Totally, totally

Anonymous 2: Yeah, yeah. When I first started here they used to do a first year student induction in the workshop where they would come round and we would do demonstrations on the machines for them. They used to come with their academic in charge of that discipline and we would have the lathe set up for turning, and the milling machine. The academic talked to them about what was going on: how the tool was cutting and the feed and speed of the tail. They went away and they had actually seen it so they knew how things worked and were held in the machine. But for some reason they stopped that, and we used to send students up to Michelin in first year to do projects with Michelin, but not Michelin are closing so students aren’t getting the ground in how things work and how things are made.

Anonymous 3: In the wood workshop the induction they did was actually to get people to make a box out of wood, so they weren’t just shown how the equipment worked but you were actually having to use it as well in order to make a box. They did it for academic staff which was hilarious because we were so competitive over who had the best box. It was really good because like I say, it was not just your head that was learning but your whole body that was learning how to make a box: how to physically position a piece on the bandsaw to cut a piece of wood. And I think that’s crucial in the induction that you are getting that direct, full-embodied experience of doing or making something that’s crucial.

So it’s not just a lecture about … Like with our students we don’t just give them a lecture about the properties of copper. We give them bits of copper and hammers and files they learn through their making, they don’t just learn through a PowerPoint presentation.

But getting the university to see that difference and recognize that shift can be quite a challenge.

I think health and safety again is another area where you see the organization’s values and what it sees as important, and the way in which that health and safety is delivered is crucial.

Karen: I guess within health and safety as well it’s a very good way to learn about what you are about to do as well before you do it in a safe way. Doing the laser safety things last year you learn of all these things you wouldn’t know otherwise before you begin and then you can have that practical approach. And I guess it is about that balance that you need a bit of theory, a bit of practical …

Anonymous 3: They need to go together. For me its not one over the other, its about recognizing they are both equally important and they go hand in hand. For your PhD (Karen), your fine skills are what our physics colleagues have been looking for: is someone who can work on a really small scale in silver because their students just don’t have that kind of experience and knowledge. So its looking at the value of both as being equally important, not one over the expense of the other.

Karen: Okay, has anyone got anything else they are keen so say? ...Nope... (laughter)
Well thank you very much...

**Anonymous 3:** You’ve put a really good exhibition together. It will be good to get...

**Anonymous 1:** Yeah

**Anonymous 2:** Yeah, Its nice to actually see what you are doing.

**Anonymous 3:** I don’t know if you’ve done it already but from the DJCAD point of view we should get an email out to everybody

**Karen:** Will do

**End of recording**

**Time 53:00**