Is Recording Engineering?
Focus group discussion
University of York, 7th December 2011
Transcription

About fifty people were present at this event: students and academics from the University of York (Departments of Music, Electronics and Theatre, Film and Television), students from Leeds Metropolitan University and the University of Huddersfield students and staff from York College (Music Technology courses), a student from a school in the region and three audio professionals from the local area. The session was led by Jez Wells (Department of Electronics, University of York).

Jez gave an introduction to the project and then began the discussion

JW: Is Recording Engineering? Does anyone have a strong opinion that they would like to express straight away? If not, then let's start with a straw poll: put your hand up if you think that recording is more about engineering skills and the discipline of engineering than it is about musical skills and the discipline of music. So, if you think recording is more about engineering skills than musical skills put your hand up.

[hands go up]

JW: There are twenty one hands up – about half the people here, and some people were split on that question, felt that engineering was the biggest part of recording. Can I now pick on the people who had half a hand up? Paul [audio professional] you had half a hand up, why?

Audio professional 1: In the early days of recording of course it was engineers that did recording, they wore lab coats (going back to the days of 78s). These days in order to get the best possible result you have to know all about the music and you also have to know about the physics of sound, so it lies in the middle, you've got to know about both.

JW: So, it's not that music has replaced engineering, it's that music has come to sit along side engineering.

Audio professional 1: And, to a degree, it depends what sort of music you're recording as well. If you're doing a very complex rock or electronic-type thing then maybe you do need to be a bit more 'whizzo' with the electronics. If you're recording an orchestra then maybe if you just know about stereo mic'ing techniques and a bit of acoustics that would be enough but then you need to know a lot more about the musical side of it in that situation, I would say.

JW: Are you talking about what might be called traditional music skills, such as being able to follow a score.

Audio professional 1: That, and how sound works in a space.

JW: The acoustics as well.

Audio professional 1: Yes, both.

JW: [to everyone] In terms of what you do in a studio, or what you would like to do in a studio (and those people here who are currently in education, I'll allow you to dream a little bit!), if you're aspiring to get a job in recording, or in terms of what you actually do, if you're a professional, which of you're skills are you looking forward to bringing into the role. Put your hands if you're looking forward to bringing your musical ideas into the studio.

[hands go up]

JW: That's about a third of people, compared to half for the question before. OK, nest question is: how many of you are expecting to bring your interest and knowledge in the technical areas, your technical expertise to the studio.

[hands go up]

JW: About half. So more people are expecting to bring their technical expertise into the studio than are expecting to bring their musical skills. I'm now going to present you with some controversial points of view and I'd like you to speak to them (or we can take another straw poll). If you'd looked two months ago at the Wikipedia entry for audio engineering – not at the actual entry itself but at the 'talk' page for it – then you would have seen a heated discussion going on saying it's wrong, in fact some saying that it's illegal, for recording engineers to call themselves engineers because they don't have a professional qualification in engineering. How many people in this room would agree with that statement.

[hands go up]

JW: Three or four people. Let's break that down a little more: are we talking about audio engineering (designing, making, engineering audio equipment) or engineering as sound recording?

Student 1: I think you need to differentiate between the two, that's all.

JW: You mean, if we were to do that then audio engineering would involve people who were professionally qualified and accredited engineers? OK. But for sound engineering we don't have to have a professional qualification? OK. Would everyone else agree with that? To what extent do you think that if you're going to call yourself an audio engineer

and you're going to design audio equipment then you need to have an accredited professional qualification - that's usually a degree in an engineering subject plus a certain number of years experience in that field – but if you're going to be a recording engineer then you don't need to have that professional accreditation. Is there anyone that wants to disagree with that.

HE Academic and audio professional 1: Me! I'd disagree with it because there's no formal body anywhere in the world which is the audio engineering society, I know there is the Audio Engineering Society because I've been a member since '75! – but there isn't anywhere that accredits engineering degrees in the way that the IEEE and the IEE does for electronic or electrical engineering. You have to be very careful because, in that sense, there are no audio engineers if you really require a professional body to accredit them. So in the formal sense, as was discussed there, then no, there aren't any audio engineers, but there are clearly tens of thousands of audio engineers around the world and I think the main accreditation is the fact that they work in the industry and they produce good results.

JW: That's a good, strong statement and that's the kind of thing that I'm interested in for this discussion and I'm more than happy for people to express contrary opinions or controversial opinions. Is there anyone that would disagree with what's just been said?

Audio professional 2: If you're involved in building equipment, for example, you must know something about audio engineering mustn't you? You might not have an official qualification but, if you're building something, I wouldn't want to buy a piece of equipment built by someone who didn't know what they were doing.

JW: But to counter that, from discussions that I've had with some people already for this project who consider themselves to be engineers but are not involved in sound and audio, one of the opinions that I've had expressed to me is that someone who makes something, let's take the example of a radio: a radio 'ham' (amateur) is someone who can build a radio and get it to work, can 'lash something together' but is unable obtain the optimal result, the maximum benefit from what they're doing: they are unable to demonstrate that what they have produced works as well as it could do.

Audio professional 2: But isn't the hifi world full of that kind of thing though, People who follow previous good practice but don't do anything new? Or people who have very peculiar ideas of what they think is very good and they run companies and generate money.

JW: Yes, any other thoughts on that?

Audio professional 3: What comes from being accredited? Why would you need to be accredited by an official body, apart from if you were going to risk lives with what you were doing or possibly entering into contracts. What is gained?

JW: I think, and people can correct me here, accreditation for engineers, for those who want to see it strictly enforced is that, for example, if you are an accountant and you want to do business you need to be a chartered accountant: you need to be professionalised. If you want to practice law you need to be professionalised. So, I guess, it is a guarantee of quality.

Student 2: I don't think it should need the qualification, because if you're the person who makes it, you're the engineer. If you're the person that engineers the recording, engineers all of the sounds, you *are* the engineer. You shouldn't need a qualification to say that you're the engineer. If you can do it, you can do it.

JW: I think from the origin of the word, 'to engineer' is 'to create'. So are you arguing then that the term engineer has been hijacked by these people who are saying you must be accredited?

Student 2: All a qualification is is a piece of paper saying you can do it. I mean, if you can do it, you can do it. You don't need a piece of paper to tell you that you can do it.

Audio Professional 2: If you have a piece of paper, can you do it?

[laughter]

JW: Are we saying then that there's a difference? The point's been made that if you can make something, and another point is that if people buy something (e.g. hifi) whether it's been 'properly engineered' or not, if you've made that thing then you are the engineer. Because you are creating something, you are the engineer. Everyone seems to be nodding in agreement with that. So, if you have made something you are the engineer. How do you judge the quality of a recording?

Student 3: Exactly, I want to disagree with that. I can take Lego for example and make something – does that make me an engineer? If you make something it has to be of quality, it has to be of some certain standard, which you need to learn somehow – from a degree. A degree will give you the tools to become a good engineer, so I think you should earn the title.

Audio Professional 2: Very rapidly though, if you produce something which a body of producers considers to be not very good or downright rubbish then you generate a very bad reputation and become less of an engineer than you thought you were, perhaps. The same would be true of the equipment as well. If you produce a dog then nobody would buy it would they? They'd rapidly discover that it was rubbish.

Audio Professional 3: With that Lego analogy though you could build a bridge with Lego and, as a happy accident, it's happened. But, if you're a fully fledged engineer you may

understand the processes and physics that went behind it so that it does stand up. So, you've approached it with knowledge beforehand, rather than by a happy accident, but you've still created a bridge. You've got an understanding of how you created it and background and the processes.

JW: Another thing that stuck in my mind when I was speaking to people about this was someone who said "engineers are people who make things happen well". How do we know whether a sound recording is any good? You mentioned that, if it's no good, it won't sell and so therefore your ability to practice as a commercial activity is limited because it's no good.

Audio Professional 2: There are plenty of critics out there aren't there, professional critics and the public as well. I think it's a skill readily at hand for somebody to say "actually, I can't hear that vocalist very well. She might look dead good in that video, but I'm not going to buy that one again and I probably won't buy her second".

HE Academic and audio professional 1: The trouble is that the sales don't necessarily reflect the engineering. I know plenty of people on our music technology course over in [the] music [department] could do a very good recording, an excellently engineered recording of me singing, but it sure as hell wouldn't sell.

[laughter]

HE Academic 1: I think you have to be careful about distinguishing between a recording engineer and a recording producer as well, in that respect.

JW: That's a really good point, and I think it's time to move on to that topic. We've talked about whether we can call people who make sound recordings engineers, but what about the identity of the person making the recording. Does anyone have any strong ideas about what the difference is between a producer and an engineer?

Student 4: I think the assessment of the quality of the final production is up to the producer, to say if the recording is actually good: if the engineering has been good or it has been crap.

JW: Does that mean the producer has to have an understanding of what the engineer does? Does the producer have to be able to engineer in order to be able to oversee the engineer, or can they do it whilst having a different set of skills to the engineer?

Student 4: I think they don't really need to know the details about the work of the engineer but they need to be able to assess the work, the final product in order to decide if the quality is good for the market and good for selling.

JW: The distinction there is the hierarchy: the producer is the one with the final say and the engineer is the person that makes it happen?
Audio Professional 2: The producer doesn't just have the final say, surely he says "do that for me" and the engineer turns around and says "oh, right, ok, quick, how am I going to do that?", the producer might say "I can't hear quite as much as that, come on, bring the tenors up" or something like that.

JW: So it really is, sort of "this is the end result that I want" and the engineer is the person who makes it happen.

Student 5: I think a good producer has generally got a good idea of how he would like it to be engineered as well.

JW: So an approach in terms of the technique that they would like the engineer to use?

Student 5: I think there would be a certain big benefit if you're producing something to know a bit more about how that would be created, as opposed to just telling someone else to "do that".

JW: So the producer is also choosing the engineer perhaps on the basis of their ability to do the same job but in a different way?

Student 5: Yeah, if he makes a suggestion it would be of use if he had an idea if that was something that was feasible or doable as opposed to just wildly asking the engineer to create something that may not be possible at all.

JW: So because he understands the feasibility he's not going to get on the engineer's nerves by saying "bring me the moon on a stick" in recording terms.

Student 6: Moving one step further I believe the terms can actually be swappable – you can switch them about. Especially taking the modern day example of people who work in their own home studios they describe themselves as recording sound producers but they also know how to set up the mics, they know all of the intricate details, they often know how all of the engineering works and if you're running your own studio then you are one and both the same. So surely in this day and time both terms encompass the same thing.

JW: I think in many situations that is the case.

Audio professional 1: I know quite a lot of producers and an awful lot of those haven't got the first idea about anything to do with engineering sound at all but what they do have is a very good ear and good ideas and a way of explaining what they want to the guy who's pushing the faders or the artists to get what's in their head recorded. If you were to stick them in front of a mixing desk they wouldn't have the first idea about what

to do with it. I probably know about fifteen or sixteen producers and about twelve would fit into that category.

JW: And would that be a problem for you? If they were to start fiddling with things would that be stepping over the line?

Audio professional 1: They would wreck it!

[laughter]

JW: So you actually want this distinction. So you want to the producer there to tell you what they want.

Audio professional 1: There are some times, especially when you're working in post production where you don't want the producer there really. You want them there when you've done what you're going to do and they can have a listen to it and comment. If they're there saying "do this, that and the other" while you're actually working on it you often end up with a worse result, in my experience.

JW: So in post-production you like to do unattended work.

Audio professional 1: Yes, obviously on the actual sessions the producer's there. A lot of the time the producer is performing a kind of psychological role as well and keeping the artists happy, because a lot of artists are very temperamental creatures.

Student 6: I think that the producer is a much subjective and creative role, it's a lot more similar to the artists themselves. So they would come up with an idea and pitch it to the engineer who would make it happen in much more objective terms.

JW: So there's a translation process that goes on?

Student 6: Yes.

JW: So at the musical 'coal face' is the producer and they are then saying, in broadly musical terms that they want this particular thing to happen and then the engineer is one who is translating those musical imperatives into 'things' to do with the equipment that's available.

Audio professional 4: I'd say it's about team-work ideally but if push cam to shove I'd prefer to have an engineer and talented musicians and no producer rather than just a producer and talented musicians.

HE Academic and audio professional 2: I put myself in the category of engineer because I have the technical skills to get a perfect finished product that's technically sound, but

I'm not a creative engineer. I can make an album that's technically sound – the bass is where it should be, the high frequencies are where they should be but it doesn't sound like artist 'X'. A producer will come in and say, I want it to sound like artist 'X' and a good example of that I think is Todd Rundgren who, years ago, worked with a group called XTC. XTC the musical group couldn't stand Todd's mingling with their vision of how it should sound and Todd had his vision of how it should sound, even XTC sought out Todd for his vision and, at the time in the 80s and early 90s, was a guy who was doing a lot of producing work. The engineer in that equation just gives you "just tell me who to listen to" if we're going to go with what Todd wants then I'm going to put the fader here, I'm going to put this reverb and that's what you've got. If I'm going with what the musician wants then they want the kick drum to be really loud and to be able to hear the bass" so I think it becomes vision-based and creative ideas-based and the engineers role is to make it technically sound.

JW: Are we coming back to this idea that the engineer is someone who makes something happen well, whatever that something is (which is up to the producer).

HE Academic and audio professional 2: Yes

Student 7: I just wanted to comment on the point that sometimes getting rid of the producer can help a lot.

Audio professional 4: No, not necessarily. I'm saying that if the choice was to have a producer or an engineer, plus your talented musicians, I would say if you have the engineer and the talented musicians then you'll get a result.

Student 7: But in that case, as an engineer, wouldn't you need good musical skills in order to communicate with the musicians? Coming back to what we said first, is musical knowledge important for engineer to communicate? I think that's essential: communication between producer and engineer. As they said, producers don't know much about engineering. I've had some ridiculous requests from producers and I do know how to move the faders to get that.

JW: Yes, I've heard of a producer ringing up because they couldn't be bothered to go to the session asking the engineer to play them the bass line over the telephone.

[laughter]

Student 7: So I think a good musical background can help bridge that gap between engineer and producer – you can translate what he's trying to say to you. I think there has to be a balance.

JW [to HE Academic and audio professional 2]: So, in the light of that, how much is there an overlap between doing something well and also having an idea of what that 'something' might be?

HE Academic and audio professional 2: I guess I should have also said in that specific example that I gave Todd Rundgren is actually an excellent engineer, so Todd in the early seventies was doing his own stuff and he was one of guys who could sit at the [mixing] board and do it. I think in that case it was a matter of convenience: if you're sitting at the board doing the stuff you get involved in the tweaking and you can't keep a fresh ear and say "you know, we're going in the wrong direction, we're over-tweaking here. I really do want something dark and murky and cloudy like Radiohead, like Coldplay" – I know I'm ten years behind the times! In the same vein it has to do with the skill set of the people that you're bringing to the job. I mean if you've got a producer who's asking for bass lines over the phone then that makes me shudder. If you have an excellent producer with engineer skills, and engineer who can communicate well and musicians who can, even though they might be married to a certain idea they can free themselves up to listen to input; if you've got all three of those cylinders going then you're going to hit, I reckon.

JW: So, there are quite distinctive roles but there needs to be overlap otherwise there can't be communication?

HE Academic and audio professional 2: Yeah, it comes down to chemistry.

Audio professional 3: I think it's been covered really but I was just going to say how it seems that sometimes an engineer is employed to bring their trade along. They ply trade, like you might get a plumber in to do something; but then it's difficult because you're dealing in a creative process and you're having to cross that boundary between bringing cold, hard skills and a job done but then having that creative flexibility as well with those skills, as I think a lot of other comments have covered.

JW: So you need an ability to work with ideas which may not fit your own logical way of working, an ability to adapt to an unusual approach to an idea?

Audio professional 3: If someone's come along with scientific skills, saying you want to get the bass in the right place and using those scientifically learned skills but it is a creative process even though you're coming to do a cold, hard job of getting it right.

HE Academic and audio professional 1: I would say that all engineers, not just audio or recording engineers, all engineers are very creative people, they can't be anything else. The only sense in which an engineer is a non-creative person is in the old British sense of engineer being somebody who sits at a lathe and turns a bit of metalwork out. In the sort of sense that we're discussing engineering it is intrinsic that you are creating. It may not be really obvious but you are.

JW: I've heard that view expressed particularly by engineers. Is there a difference, if you're a structural engineer or a civil engineer, in terms of the scope to do something different?

HE Academic and audio professional 1: A few years ago there was a car advert that said "engineering without compromise" but there's no such thing. Engineering *is* compromise and the creativity is in making the proper compromises. They're not written down in rules, they're written down in people's heads and what they know and how they actually think "well, if I just did that"; and that's creative.

JW: Would everyone agree with that? Are there any dissenters from that notion of creativity? It's not just about creating a recording or writing a piece of music or painting a picture or something like that, but it's about making something happen within quite strict limits?

Audio professional 1: That's absolutely correct really and you should always be thinking "how can I make it better?" If you're not then you're going to fall by the wayside because someone else will be and they'll zoom forward.

JW: Coming back to the idea that the engineer is creative and creates something, and thinking also about the idea that engineers are people who "make things happen well". How, if someone doesn't have some form of accreditation, some form of acknowledgement by their peers or by a professional body, how do we know that the thing that they have created has happened as well as it could do, or is as good as it can be? Do we think that there could be examples of bad engineering?

Audio professional 2: Yes, there frequently are, due to time, due to money. The editing process: you don't just say "I'll give you as long as you want this up to your specifications" because people change their minds all the time and it just becomes infeasible. There was a talk a couple of months ago in the music department about a certain group making a surround recording and the director was saying that it was always intended to be a full surround recording but at the last minute the record company said "we don't do surround"" which sounds like a disaster – somebody hasn't listened.

JW: So in that case there's had to be compromise because the funding wasn't there?

Audio professional 2: Absolutely.

JW: I suppose that what I'm getting at is whether – let's say you have a particular compromise to make, you have a certain budget, you have certain constraints – how do you know that the person you're going to get this job done for you is doing it the best way that they can?

Audio professional 4: Their track record, if any. What they've done already. That's one way.

JW: Yes, any other ways?

HE Academic 1: From an artistic point of view, if you are an artist who comes to that engineer who has done work with other engineers beforehand who've produced better results then that's another way of comparing them.

JW: It's either a building up of a reputation of what you've done before or working alongside people who have a reputation and you gain that reputation from them?

Student 8: It's so similar to loads of other jobs in the same respect. For example, if you hire a plumber how do you know he's good? It's the same thing, he does a job and if he does it well then you're going to hear about him - people are going to say good things about him. You have to think back to why you've trusted certain people to do a certain job and why you would trust a certain engineer, for instance.

JW: That's interesting and we'll talk more about that later on when we come to discuss how you get to do this kind of work. It's all tied up with what comes first, I guess: the recording opportunities or the portfolio of recordings which leads to the recording opportunities.

Now we'll move on to knowledge and competence. What are the skills and the knowledge that you need in order to be a recording engineer? You can think about this from an educational point of view; you could think "if I was on the perfect course in recording engineering these are the things that I would learn, these are the things that I would practice and these are the things that I would be marked on in order to be evaluated in terms of my quality of doing things". So we are now moving the discussion away from the idea expressed a moment ago of having a track record of having respect from people, and from the idea of having a 'good name'. If you are, or you were doing a course which involved recording engineering, what are the skills that you need to learn, what do you need to know how to do?

Student 8: I think above all it's about communication with people. It's not just your technical knowledge – obviously that's important – I think communication with your peers and the people you're working with, going back to that example with the surround recording that's a clear example of where communication lost something big, inter-communication skills like that are a key thing.

JW: So communication but alongside technical skills as well?

Student 8: Obviously, yes.

Audio professional 2: You need a body of knowledge don't you? What's happened before, what other people have done previously. Whether it's been revolutionary or whether it's fairly standard procedure, why you think that's good, whether you're seeking to emulate that, or whether you're going to do something very different. And musical skills: whether something would actually work, whether you're going to be able to hear if you put certain instruments together, or if you record in a certain way, you've got to be able to balance. It's listening skills isn't it.

JW: How would you go about acquiring those listening skills? Is that something which is innate, or is it something that, if you do it enough with enough guidance....

Audio professional 2: ...score reading, score reading! You know, the only real way of knowing if you're hearing everything which you're supposed to hear is to really understand "right, that instrument is critical, it really must come through there". Quite often broadcasts because the camera actually goes straight for the instrument which supposedly needs to be highlighted at that point; that could be a useful guide, for somebody to watch a professional production.

JW: It's learning by doing?

Audio professional 2: er, yeah.

Student 3: I wouldn't agree with that. Because listening, for example, most consoles have visuals where you can actually check your levels or you can even check the frequency spectrum. So, even if you don't listen you can actually balance something quite well, just by looking at the meters and if you have the frequency spectrum you can see if something overlaps or not.

HE academic and audio professional 1: I'm sorry but that doesn't play.

Student 3: Why not? I believe it's important to understand the physics of sound first.

HE academic and audio professional 1: What you need to do is to learn to use these [ears]. The prime thing, before *anything* else is you need to learn to use these.

Student 3: I agree, but as an engineer I believe that technical skills are more important than musical skills.

HE Academic and audio professional 2: If I could just add on to that. If you're looking at a spectrum analyser and you're balancing your levels that way, how do you know that what's in the high frequencies isn't noise?

Student 3: Obviously you have to listen, I wasn't say you could do it by being a deaf producer, I'm not saying that. I'm saying that you can have a visual feedback nowadays, even if your ears are not that attuned and not very good, if you see the meters, you're going to notice something. For example, if you don't hear a noise and see you in your spectrum you have a spike somewhere, you're going to say "hang on, where is that? I don't hear that?

Audio professional 2: If you had a stereo pair you wouldn't though. If you just had a stereo pair meter in front of you, you wouldn't really know really detailed information like that. If you had everybody on an individual track, or a microphone, then that might happen.

JW: There are different applications: there's multitrack recording and mixing and there's straight to stereo which happens more in live situations and in classical recording as well.

Audio professional 2: It's still your ears though really isn't it? Because that's the end result.

JW: Just to open this up now to people who are more involved in multi-track recording and mixing, which particularly tends to be associated with pop music, rock music – I know there's an overlap between film scores and certain ways of recording classical music. If you agree that you need to be able to use your ears, how are you going to learn to use your ears? What is it that you can *learn* about what you do?

Student 9: Expose them to music or ready-made sounds.

JW: But is that all? You're listening a lot. Is that in a situation which is guided by anybody else, or are you just listening?

HE Academic 1: I think you have to be open to criticism, I think that's very important. I think you have to be able to accept that, as a first-time engineer, when you put out something, the bass may be too low or the vocal may not be heard, and somebody has to point this out to you.

JW: So it's having someone else listen to what you do and then getting the feedback on that which helps you realise, and learn to listen out for those things.

Student 9: I think visuals can really help if you're analysing something you've done. Say if you're listening to something that you've recorded and something just doesn't sound right you can have a look at the sound file itself and from there you can see "oh, that's clipping, that's why this doesn't sound right" and then you know, for future reference, that the gain was set too high. Maybe you've never heard clipping distortion before but

once you've heard it and you've seen how it looks visually then you'll know what to do in future.

JW: So it's useful as a diagnostic tool? You hear something and you do more investigation with the other things that you have available to you. You seem to be saying that it's not just listening, not just being able to use your ears, but using your ear and then...

Student 9: analyse why your ear's unhappy, to use a simple term!

JW: Is there anyone here who doesn't think that we need to use extra things apart from our ears in order to arrive at a solution to a problem that we have with the sound.

Student 8: At a basic level all you need is ears. Going back in time when we had very good recordings, but before we had a lot of these visual meterings all that was available was listening. I think, as was mentioned earlier, the basic thing is being able to listen.

JW: Just to turn that idea on its head: what is the purpose of everything that we have in the studio, all of the visual indicators that we have in the studio. We have large faders whose position gives us visual feedback about the level of that channel, we have lights that flash and we have screens that do things. Are those of any use, or are they just decoration?

Student 8: A lot of it is to make your life easier but it also opens up new possibilities in music and I think that's part of it. You're not just trundling along without discovering new things. Once you have this new technology you can experience a bit more, you know a bit more about it in-depth. The more you understand about the music visually as well the better you can do it but that's not to say you can't get a good recording without it.

JW: So the visual aspects of the studio are perhaps a way of training your ears?

Student 8: Yes and no. Yes, because you can see what you're listening to but no because you become over-reliant on it sometimes. I've personally fallen into that trap before: it looks OK but it doesn't sound OK.

JW: It looks like it's on but it turns out you have it in bypass mode or something like that.

Student 8: Yes.

Audio professional 3: Would these things in the studio not be used after the event of recording, because you have the actual recording and capturing of the sound, then you've got manipulation of it afterwards. There are two distinct processes almost.

JW: And you'd use the more visual stuff afterwards?

Audio professional 3: Possibly, I'm not sure. I'm just thinking about the two different processes: are we talking about the actual capturing of the sound in the first place or are we talking about the editing of the captured sound afterwards?

JW: For me, and I will just put one idea out there, if I've got a multi-channel recording going on – there are lots of microphones all over the place – but it's going straight to stereo and I can hear some unpleasantness in the top end somewhere in my mix then a quick visual scan of my console will tell me one my channels is getting too hot i.e. whether one of the input amplifiers is clipping perhaps more easily then by my going down the whole desk and solo'ing every channel and going "oh yes, it's that trombone which is too high in level, it's clipping at the amplifier". I said I wasn't going to get too involved in this discussion but that's where I would use visual tools and if I didn't know how to use those tools, as an engineer it would take me longer to get to the solution. So is that a valid point? You don't have to agree with me by the way, I won't be offended if you don't!

Student 10: The reason why the visual cues are there is because where you are changes. For example if you're mixing in a studio you probably may not notice that something's clipping but if you go to another room you may notice. That's why the visual cues are there – it gives a very universal feel to everything.

JW: So the listening conditions, even though we'd like to be able to use our ears, the listening conditions might not always be as ideal as we want them to be?

Student 8: Just expanding on that: speakers, you might have a broken speaker, or your speakers might be out of phase. You can hear that, but if you hear your speakers are out of phase then you might think your recording's out of phase for instance or something is amiss. If speakers are broken it might sound like clipping.

JW: So if your speakers sound out of phase the first thing you would do is get a phase scope on the main output of your mix and check that it wasn't your main mix that was out of phase, it was your speakers. Or go round the back of the speakers and check the wiring.

HE Academic and audio professional 2: One thing I haven't heard mentioned so far, and I've been waiting for, something about ear training – actual ear training like the *Tonmeister* program - and the sequence of steps you go through. I'll just tell a personal story about what ear training can do for a person. OK, I'll give two examples. One: listening to pink noise, listening to boosts and cuts in pink noise. It seems like a really boring and hard thing to do but if you can identify what flat pink noise sounds like then you'll also be able to play that same noise through a set of speakers and I guarantee if

you were to A/B [compare] the left and right speaker in this room, just go from one to the other, you would hear colouration differences and could you could sort of tell "OK, there's a definitely difference here they're not corrected". My favourite story of going through this process is in 1988, we listening not only to pink noise but music with boosts and cuts in frequencies and shortly one of my first gigs was to set up a live PA rig by myself and I was getting feedback through one of the channels. I had a graphic equaliser installed on the channel and I reached over and I took out the problem frequency, just like that. It was a 250 Hz ring, I didn't need a diagnostic tool I used my ears, my ears were my diagnostic tool. So I reached over there and I got the problem frequency and I got this tingly feeling inside like "I'm going to be an audio engineer!". The second is something I went through with my class today about latency problems and recording with digital audio workstations. So if your digital audio workstation, if the software you're working with is the problem then you definitely need to be able to use your ears. A spectrum analyser, no matter where you put it in that chain, isn't going to tell you if you've got a latency issue with a plug-in on one channel. But, if you hear some sort of smearing that appears when you take that plug-in out and put it back in then you can say "I don't think I don't have my delay compensation engine on" and you can activate it. There at least four ear training books that I can rattle off, an actual ear training program is crucial.

JW: There's the Everest book, Jason Corey...

HE Academic and audio professional 2: David Moulton is the other one with the *Golden Ears* series.

JW: So it's about using your ears but it's not necessarily about having some innate skill which means that you can just walk into a studio and go "right, I intuitively know what's wrong because I was born this way" there are actual ways in which you can train. So there's no such thing, well, is there such a thing as a natural engineer? A natural person who makes sound recordings?

Student 8: Just to flip that on its side and pose the question: can someone learn to be a sound recordist? Can everyone learn these skills? I don't know the answer to that, I tending towards thinking no, not everyone can.

JW: I think there are three things, or situations, that we would either agree or disagree with. The first one is that you can't learn this stuff, you've either got it you haven't. The second is you've either got it or you haven't, but if you have got it you need training and education or some kind of apprenticeship in order to bring that out. Or, thirdly, if you give training and apprenticeship to anyone they will be able to do this job. Who would agree with number one, you've either got it or you haven't. You don't really need any training or education you can just go in there, read a couple of manuals about how your software works and work out how to use some microphones quite quickly and then you've got it. Who would agree with that?

[hands don't go up]

JW: No one. OK, number two: you either got it or you haven't to a certain extent but in order to be able to do it and to 'have it' you need to have that brought out of you by training or apprenticeship or some kind of acquisition of skills. Who would agree with that?

[hands go up]

JW: It seems that pretty much everyone has their hand up. Who would agree with number three: it doesn't matter whether you've got it or not because the only way you can get it, and everybody can get it this way, is by training ad experience.

[one hand goes up]

JW: One person.

Audio professional 4: I think you're too black and white, too simplistic [laughs]

JW: Does that mean you'd go for number 2.5?

Audio professional 4: Well everyone's against number one which is fair enough. It's a question of degree as well. You can be a good sound recordist or you can be an excellent one: an excellent one will have some innate skills and an excellent frequency response in their own hearing plus the training and so forth; but then you can get a good one who's perhaps not so smart at being acutely attuned to the music or whatever but has done all the training and so on and has acquired lots of skills and had loads of practice too.

JW: So you could have someone who really hasn't got it but has had lots of training who might not be as good as someone who really has got it but hasn't had as much training.

Audio professional 4: Yes, it's like any field of work.

JW: Well, I'm glad that everybody largely agreed with number two, which maybe means that my job is secure for a little while longer!

**************************Refreshment break*******************************

JW: The final thing I want to cover, we've looked at identity and we've looked at knowledge and competence, is the nature of employment. What kind of job is being involved in sound recording? What do you think it's like to be involved in sound recording? The first question I want to ask: is sound recording a stable occupation? An

example of a stable occupation: is it something that will pay a regular salary and you have a good chance of remaining in the same profession for your whole working life and you'll receive good pension benefits at the end of it? A few people are shaking their heads and saying no. Is it the case that working in the recording industry is more precarious, your employment is more precarious, less secure – both in terms of what you're going to be doing tomorrow and how well you'll be looked after in ten years time – than other professions? People are nodding at that and some are saying yes.
So what are the benefits of that kind of employment, people are hear either because they're doing it or because they want to do it. What are the benefits of the sound recordist's life style?

HE Academic 1: Huge job satisfaction.

JW: Yes, I can see people nodding.

Student 11: It encourages people not to get lazy, to keep up with everything that's going on in the industry, to keep themselves in the best position stay in a job.

JW: So, there's no incumbency, there's no complacency. Just because you've arrived at a particular job doesn't mean that you're entitled to that job and that's a good thing because it's motivating. Would anyone disagree or agree with that?

HE Academic and audio professional 2: I agree.

JW: Those who are here who are professionals, have you experienced stability in sound recording? Many of those who are professionals have had to leave by now, so are not able to answer.

HE Academic and audio professional 2: I've been reluctant to say anything but since you're looking for input. Yes, I was in radio for a long time but radio has changed ad a lot of engineers lost their jobs in the States because they were replaced by automated recording, digital recording, voice tracking, as they call it. Clear channel became demonised because they were the biggest broadcaster that employed that technology; but I still have friends who work in radio. It just depends, but your job is going to change. I have friends who worked in post production who are still working in post production but, again, if you're looking at the crash that happened in 2006/2008 some people lost their jobs there because a lot of advertisers go to postproduction venues, and advertisers weren't advertising, so a lot of contracts got lost and that hurt the industry. I'm in education and it's amazing because education is doing better than anything even though the jobs are going away. So I would suggest getting a teaching job!

JW: Those people who are currently in education: we've discussed the advantages of this kind of employment role. What are the disadvantages of what you might be going in

to? Do you have any specific concerns or fears or are you think “hmm, actually no that I think about it I don’t really want to expose myself to this kind of insecurity and uncertainty [if that insecurity and uncertainty does indeed exist]” or are you optimistic. Someone mentioned “massive” or “intense” job satisfaction. Does the chance of great job satisfaction override these other concerns that you have?

Student 8: I think it depends on what you want to do. If you want to go into a professional studio in the traditional model. I was recently at a talk in Leeds with a lot of professionals present who were saying that the threat of home studios and modern technology are actually diminishing the jobs within professional studios. So, if you’re planning to go into a professional studio in that traditional model then I think that those jobs are diminishing, from my point of view. That can be quite scary if that’s what you want to do. It’s the competition, I guess, more than anything.

JW: Where do you see yourself? Twenty to twenty-five years ago you might have seen yourself as going into a large studio. The job is still there, but it’s changed, it’s moved location. What does that mean for you?

Student 8: Personally I’m more a traditional performing and composing musician but at one point I did want to go into this industry; and at that point, in my mind, it actually feels like you would, rather than going into a commercial studio and mixing things, you are probably going to be rendering your services to other people: people who don’t have the means to record it themselves in a home studio or just on their laptop. It seems like people are going to come to you: young bands or up and coming bands. Plus I couldn’t see myself working in massive commercial studio for mainstream bands. So if you’re not going down that route then it is more a case of “come to our studio and we’ll record your track for some money”.

JW: OK, it’s more of a cottage industry? Smaller scale?

Student 8: Around the York area, the studios that there are the clientele seem to be mostly young bands or young musicians who want to give something to a bigger label, for instance. So it’s a more a case of running a service [for people].

JW: So it’s, rather than just turning up to work in a large studio and being paid a salary, or being paid regular session fees, it’s more about you saying that “I have the skills, you can come to me and I will do this for you”. Does that involve providing your own equipment?

Student 8: Erm, probably.

JW: You are the studio? You have the studio and they come to you. Or you go to them with the equipment and you create a studio there.

Student 8: I'm not really thinking that specifically.

JW: We have situation perceived by some, that the work is moving away from larger institutions towards smaller institutions and often going to people's bedrooms, or people's domestic environment. Is that a good thing? Are there any problems with that from a quality point of view in terms of what happens throughout the whole recording process?

Student 11: So much is happening 'in the box', it's all software these days. I know of a producer, Sandy Vee who works with Katy Perry, when he made the track *Firework* there's, apart from Katy singing herself, there's only one audio track in the whole thing which is him DI'ing a bass guitar in his apartment and the rest of it is all synthesized. So apart from the singing and the bass, the rest is all done to a very high quality all in software so even major producers aren't using the major studios any more too much.

HE Academic and audio professional 1: The biggest problem with that approach are the acoustics, where are you treating as your control room. You can't in your bedroom normally afford to build a room within a room with proper acoustic treatment so it actually requires a significantly higher level of skill to allow for the mess that the acoustic will make of your sound. Actually building a proper studio control room and putting good speakers in costs a *lot* of money, not the sort of money that people can afford to put into a home studio; and headphones are no substitute. But, on the other hand, the quality that people expect from their audio has diminished so much in recent years: almost all audio now is listened to as mp3 [makes spitting gesture]. It's dire, unless you're going to really high rates, in which case why not put it on a CD or DVD. So maybe it doesn't matter too much.

JW: To summarise that: the quality of acoustic in which you can listen is diminished.

HE Academic and audio professional 1: Yes, compared to the likes of Abbey Road.

JW: To tie that in with what we talking about before the break then you can't use your ears as well as you could've done in a more expensive room.

HE Academic and audio professional 1: Yes, it makes it much more difficult for you, you need a much higher level of capability I think.

Student 12: I think the point is that when you're sampling, [direct injecting] and using VSTs you don't actually have many problems when it comes to things like ringing, standing waves.

JW: You don't have to deal with the physical world.

HE Academic and audio professional 1: But I wasn't talking about that. I was talking about the control room where you're doing the mixdown, not the recording space.

JW: But it does apply as well to the recording environment, if you want to record a drum kit for example.

HE Academic and audio professional 1: Oh yes, if you're recording acoustic instruments. Obviously if you're DI'ing and so on then it doesn't matter so much. The only effects then might be on the performer.

Student 8: I think this why mastering studios will stay quite strong because you'll have these problems of acoustics with mix downs.

JW: So you mean having a mastering engineer who is able to make up for the deficiencies in what you're able to do at mix down, because you're not in a large studio.

Student 12: I think an important question to ask is: can people actually tell? Because from one test I did that other day, they really can't tell the difference between a bedroom mix and a proper studio recording, i.e. with everything recorded in the studio; and these were all third-year music technology students. A lot of people will be able to tell the difference, but not as many as you think.

JW: That's an interesting avenue (that I don't think we're going to have time to go down) and that is: who are we doing this for? Are we doing it for the 'golden ears', are we doing this for the top one percent of listeners in the country, or the world, who might be able to hear the differences between recordings and what you were talking about. The people who make recordings: are they mass market producers or are they serving an exotic niche?

Student 8: If people are happy to listen on the free headphones that you get with iPods then, no, they're not going to be able to tell the difference.

JW: Perhaps that's why people don't notice how bad low bitrate mp3 files are. OK, thanks very much for all of your contributions.

[Discussion ends]

[This discussion was followed by a short talk on issues relating to this topic in the USA by Leslie Gaston, Assistant Professor of Music, College of Arts and Media, University of Colorado, Denver].