

A DISCUSSION HOSTED BY DR PAULINE PHEMINSTER

THE INSTITUTE FOR ADVANCED STUDIES IN THE HUMANITIES

THE UNIVERSITY OF EDINBURGH

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- [?___] Inaudible.
- [0:00] Time stamp.

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Tim Collins: Can you believe that people inhale the gasses we expel?

[Dr Phemister thanks Tim and Reiko. Applause.]

Reiko Goto: Isn't it amazing – with the lights turned off, the tree is fast asleep. Now it's starting again.

Woman: All the time it was sporadic and yet, things didn't seem to change too much in the room and yet, sometimes, you'd hear the sound, and sometimes not.

Reiko Goto: I don't know about the scientific data but, basically, in this room, the tree is sleeping but it still goes through cycles, so the sound goes up, and then really, really low that we can't hear; and then it's coming back and this is repeated – so, there is a kind of durational cycle that I have noticed. But I was surprised that, when Tim started showing the video, it became completely quiet!

Pauline Phemister: If you want to field questions – I'll keep an eye open ...

Tim Collins: Yes ...

Woman: Picking up from that – thanks very much for that. Can I ask you to expand on the tree and the sound, and how this is working because I'm totally fascinated by that, but I don't know what I'm hearing and what that sound is representing.

0:02:24.9

Tim Collins: The system that we've assembled monitors humidity, temperature, CO₂, and [flow] and sunlight. Now, when we originally assembled all of this, it was intended to be run through two equations that would give us a photosynthesis reading and a transpiration reading. Now, over the last year, as we tried to get the real-time

sound working, we realised that we had to keep simplifying it – so, at this point, what you’re hearing is a differential equation of CO₂ [*in the*] atmosphere, subtracted from CO₂ [*in the*] leaf – or, CO₂ leaf, subtracted from atmosphere. What you’re hearing is the sound of the CO₂ that is actually being removed by the leaf in relation to our atmospheric condition.

Woman: Sorry to be thick, but ... So, the sound is the medium that you chose to convey that? It could have been a graph, or it could have been something else?

Tim Collins: Exactly.

Woman: And the tree is obviously doing this silently.

0:03:48.1

Tim Collins: This is the process that’s been interesting to us. As we started to dig into this ... Originally, the idea was that you could run a quantitative system and have an aesthetic impact, but what we realised – more and more – is that what we’re looking at, is indications of life; what we’re looking at is the breath of a tree. Now, the breath of a tree is something that we’re interested in as artists and it’s not really something that the scientists are interested in, nor is it something that the data-system can directly give us.

So, part of this is an interpretive problem which we continue to work on. We’ve set up a series of meetings with a group of logarithm-enabled composers last week when we were talking this through – how would you actually get to a sonic event that would suggest breath? On a certain level, the realisation of breath is an essential part of our day-to-day lives. I know, in my darkest moments late at night, I’ll roll over and just watch Reiko breathing while she’s sleeping. I just need to be reassured that she’s ok. I know – we do it with our pets – we’ve had a bird die in our hands recently and we just watched the breath go out of him. It’s just [*snaps fingers*] – it’s gone; done and dusted. So, it is curious that, through this process of scientific-enabled perception – what we found is that we’re back in the realm of breath, spirit, chi, kami – all of these things – and if you were to ask me to think about a relationship to my work ten years ago, I would have pushed them aside as being things that I can’t really pursue.

0:06:02.4

Part of this is to understand the limitations of the scientific sensing equipment; to understand the limitations of the transmission of data and its application through sound, graph, video, or text. We chose sound because it is the least referential. At the same time, we haven't found a proper voice, so we've settled, in this experimental phase, to just using the sound of a piano – but as long as it is the sound of a piano, we know it is not the sound of a tree. So, part of the struggle, at the moment, is to actually find a group of musicians that are willing to help us find the voice of a tree, or the breath of a tree (is a better description) as we've evolved the discussion.

0:06:50.1

Woman: Or sound designers, possibly, rather than musicians.

Tim Collins: Yes, it's interesting. We've had a number of conversations with different people and finding somebody ... Some people just want to write a piece – a lot of people just want to write a piece – and every once in a while we find a group of people that want to talk about the complexity ... On a certain level within the public planning discussions, we talk a lot about representing the Others' voice, and misrepresenting the Others' voice. There's an incredible potential to misrepresent the voice of a living thing that hasn't a way of communicating.

So, how do we put a set of moral and ethical boundaries around that where we ultimately do no harm, but start a process whereby that living thing starts to reflect a reality that shapes our day-to-day subjectivity and consciousness and it's curious – we've been living with these same trees for – what – two years now, Reiko? Even today, as we brought the oak and put it in the car, there was an insect – a wasp – on it and Reiko was laughing as I walked it through the yard, it stayed with the tree. Then we went through the house and down the steps and put it in the car, and she turns around and she goes, "It's still with the tree", at which point we had to stop everything and get it out and put it back in the backyard. It is interesting – we're starting to see things in different ways.

0:08:41.2

I've looked at different scientific projects; I know that there have been artists and scientists that have worked on the sound of sap rising – and that was part of the conversation with a group of music people last week – what is an appropriate sound?

Man: Wasn't there an actual recording then?

Tim Collins: The thing is, once you get a recording, you can actually use it as the voice and then you let the data run the voice. Now, the sound of sap rising is actually a crackly noise as it moves through the phloem in the bark and you can actually hear that in real-time with the proper equipment. This is all very experimental work and the philosophy stuff on the video comes out of the conversations I was having with Pauline – so, any comments or criticisms are warmly welcomed.

Man: It seems that, when you talk about the tree, or the aesthetics of this event, your conversation stops at a certain point which seems to be the tree. I'm not sure where the tree stops – maybe the leaf, or something like that. But of course, what we're hearing – this comes back to the last question – and what we're responding to is actually this assemblage that's been put together – it's not the tree - it's also the wires, the computers in the box and anything else that's on the go.

0:10:30.3

I guess the question is, if this is [an event] – an aesthetic engagement with nature – then, aren't we editing out the socio-technical possibility of this aesthetic engagement that you've actually put together – that, actually, what we're [studying] is aesthetic engagement, it's not nature – but this kind of wonderful, complex assemblage that allows us to hear a tree breath; that allows us to hear the [logarithms] it describes – the differential of carbon dioxide that constitutes a tree breathing in. In one sense, it measures the tree breathing in. And so, yes, I'm just wondering how one incorporates this entire assemblage into our ethical appreciation of nature because it seems to be indivisible from the work you're doing.

0:11:29.6

Tim Collins: It's an interesting question. We've gone back and forth on this. We did initial work in 2000, looking at long-term ecological research projects in the

United States that were using a much more sophisticated version of this technology – and what we realised was, in real-time experiences – four stories up in a pine forest – was that the tree was reacting to clouds going over the sunlight and, indeed, when the CO₂ delivery truck showed up at 7:30 in the morning which the scientists hadn't experienced before, it happened to be out of the way and the trees were having a very immediate reaction to the CO₂ that's been released by this truck. If we set the system up in a busy street – every car that goes by has an impact on it; our breathing ... So, basically, CO₂ parts per million are now around [_____] parts per million, and people are going to bring it up to seven hundred or a thousand parts per million very quickly and, of course, the tree reacts to those kinds of things that actually increases its metabolic rate.

0:12:36.8

I guess, for me, what's interesting ... One of the people on the [Berkeley] panel talked about this – it was, 'How do we get at those invisible truths that are part of nature?' On a certain level, technology is one path into that – it may be the only path into that. Reiko and I had a long conversation with a [DOS] at Robert Gordon last week and she said, "So, do you guys think at some point that you will be able to transcend the technology and you'll be able to 'sing' the tree?" I was just like ... I said, "Great idea, but the bottom line is, I don't think I'll ever be able to send CO₂ [_____] parts per million level and I don't think I'll ever be that sensitive, although – Lord knows – my wife amazes me at times with her sensitivity to living things" – and we all just kind of laugh about that.

0:13:32.7

So, part of it is realising that there are essential realities that are happening in our world that we can't perceive with a face-to-face [process]. I had moments where I doubted this. It is interesting – my mum died a couple of years ago and, at her worst ... She was hooked up to all sorts of stuff, and I can read that stuff pretty easily. I've been around sciences for a long time of my life. I could see – not only that she was holding her own physically, but things would happen like my dad would get off the elevator, and he has a very distinctive cough, and he coughed as he stepped off the elevator, and all of a sudden her heart-rate would go up. My sister is sitting there,

crying, and say, “Oh, she’s completely gone! She’s not there anymore!”, and I said, “She’s with us. She’s completely with us” – and the only indication that I had of her consciousness was through her heart-rate and her breathing data. I think these things can tell us things that we don’t know and, indeed, in the process ...

I’m a pretty rational guy. When I first started thinking about how the system would go together, we saw it as a very logical process that would lead us to a sonic event that would give us a sense of the source and density of CO₂ in cities through trees. We’re thinking of trees almost as a canary in a coalmine. But what we’re finding is that the idea is moving more towards an interest in breath, in life, in spirit – which is complicating the hell out of the sonic representation of what we can sense with the equipment, and ultimately, we see this ...

0:15:41.8

Part of the argument for this comes out of environmental aesthetics – I can’t remember the woman’s name in Minneapolis – she argues that we learn from a mix of cognitive and experiential activities – ideas that are about the aesthetics of health – that we can actually learn to see a healthy eco-system in the landscape over time by training the mind and the eye; by walking and being in that place in a meaningful way. When I first read this stuff, I had a really hard time with it. She writes with another friend of mine, Joan Nassauer from the University of Michigan. I struggled with the stuff for weeks until I finally began to remember that we see aesthetic health in all sorts of stuff: I see aesthetic health in Reiko – she can get out of a car two blocks away, and I can tell if she’s had a bad day; I can tell if she’s physically ill – you know, I can tell all sorts of things because I have a model in my head of her aesthetic wellbeing. We also understand that in our pets; we understand that in things like our computers – and the reason we understand it is because we have intimate long-term relationships with these things – living and technical. We understand it in terms of our relationship to our cars: we know when our car isn’t healthy, even though we may not know what’s technically wrong with the car.

0:17:17.4

Part of the challenge here is to create work that starts to give us a sense of the aesthetic health and wellbeing of those living things around us that are more sensitive than we are to things like CO2 production in cities.

That's a really long answer – and a [funny] question too.

Man: Have you looked at the early studies of ionisation projects – you know, ionisation [____], for example.

Tim Collins: [____].

0:17:55.7

Man: No, it was interesting – the history of the context – the philosophical context of the sublime which is obviously not the research, but it could possibly be – but the way that, for example, ideas – particularly (I find it very interesting stuff) for [____] to have so many connections with Patrick Geddes – by leaves, and that notion of [____]. But there are very strong and very deep, early [____] experiments in idealised science by taking you into another level of empirical consciousness.

0:18:47.9

We have been working in [Gaia] with somebody there who has been developing the relationship between the ioniser and the [____]. He is toying with developing a new [____] device.

But going back to Geddes – I was just thinking that, wouldn't you say that the concepts you're working on are kind of [____] – you know, the idea about [____]– is it perfect sensation or is it the perfect sensibility?

0:19:27.7

Tim Collins: I should say, I haven't read that ...

Man: Well, this notion of [ideation] of a site is quite interesting. Geddes was also very [____] a kind of visual sublime.

Tim Collins: Interesting.

Woman: I just want to say ‘thank you’ and it is great to see your ideas developing and to give us [_____] to think and [_____] as an artist. First of all, I think that you might wish to [_____] it’s us and the tree – what about other things in response to the tree and their responses, including the [_____] of people [_____]. *[Inaudible – tree too loud.]*

0:20:21.9

But just as a very particular point – at the moment, to me, the sound isn’t very pleasant and I almost wish it would stop which is exactly the opposite of what I do wish. So, I just wondered about replacing it and having a sound that wasn’t [_____]? [_____] silence, and other processes. At the moment, as it stands, that would be more satisfactory sense for me. *[Inaudible – a softly-spoken woman, and very loud tree.]*

Tim Collins: Interesting. The sound is interesting to us on some level. We’ve listened to a lot of it, so we kind of ... We’ve got it. But it is not satisfactory to us either because it doesn’t provide that sensuous attraction that would encourage you to spend time with the system and the tree and that’s the evolution of the work that has to come. But, as I said, the development of the system is a lot stickier than any of us expected it to be.

Woman 2: With the piano – at least we’ve got distinct notes.

Woman 3: Well, it’s percussive, isn’t it? This is the thing that is sort of bothering me, I suppose, too. [_____] a string instrument, or a violin – that kind of [_____].

Reiko Goto: It changes sound now.

0:22:05.1

Tim Collins: Reiko can change the sound. In California we’ve had a more open system, but we weren’t working in real-time. We worked with ...

Reiko Goto: [Christa].

Tim Collins: So she worked with human voice; she worked with woodwind; she worked with crickets with [_____] ... For the exhibition, we went with the piano because it does have that tonal readability which keeps the scientists that we talk to

and who are interested in what we're doing happy, although ... It's interesting – we're trying to get back to work ...

0:22:52.8

So, basically, the struggle in the next step is to get aesthetic truth and scientific truth into the same boat in such a way that we come up with something that is sensuously pleasing.

Woman: Also, you were talking about the 'breathing' of the tree, but then, when you describe what is actually happening, you're measuring the CO₂ that the tree is taking in – so, in a sense, what is being represented is the 'breath in', but not the 'breath out'.

Tim Collins: We're measuring the breath in because we don't have an oxygen sensor that would measure the breath out – but that's one of the questions that I'll take up with the technologists next week and, of course, it's all tied to these microscopic stomatal openings that have different forms in different trees, but they basically open and close in relation to the tree.

0:23:55.3

It's interesting – we've had really odd experiences with trees in California, particularly. We hit some hot weather while Reiko was back in Japan (her mum was really sick) and a willow just shed all its leaves – like over one day! I just hadn't watered it properly, and I was completely freaked out because Reiko would kill me if she came back and found out I killed the tree. But it was interesting: she's gone for two weeks and by the time she came back, all the leaves had returned. So, understanding these things ...

The scientist we've been working with in the Midlands has told us that we've looked at stomatal openings under microscopes, but there may be something we can do there in terms of better understanding of that.

0:24:51.0

Woman: If you can manage to get the oxygen as well, it might be less staccato.

Tim Collins: I suppose the other thing is, of course, the humidity – the rise in the humidity rate is part of the exhalation process as well – although, in this particular instance, all we are hearing is CO₂ differential.

Pauline Phemister: If there are no more questions, or if you have got questions – there is coffee and biscuits – so, I would suggest that we have a break and do our talking next-door.