

Interview - Mark Ayres

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Photo courtesy Mark Ayres

Mark Ayres is a composer and sound designer best known for his work on the BBC sci-fi show DOCTOR WHO, and a long association with the BBC Radiophonic Workshop as its archivist and, with Peter Howell, as co-leader of the newly-revived non-BBC Radiophonic Workshop touring group.

This interview took place on 31 March 2010 and was updated and edited by Mark Ayres and James Gardner in April and May 2012.

James Gardner: The BBC Radiophonic Workshop was originally established to service radio drama rather than as an electronic music studio *per se*, wasn't it?

Mark Ayres: The Radiophonic Workshop really came about because of a desire by radio drama—in particular that produced by BBC Radio 3 (then the Third Programme)—to exploit some of the ideas that were happening on the continent in terms of new sounds and electronic music. They really wanted to bring this into their public service remit of informing and entertaining the public. Drama was really the impetus and it came about because if you wanted the sound of a car crash you would go to the BBC sound effects library and find an appropriate sound effect that someone had made before or recorded. If, however, you wanted the sound of someone having a nervous breakdown, you couldn't get that from the sound effects library so you had to think of a way of getting that across in terms of sound in a more inventive way. And there were studio managers working in BBC Radio, specifically Desmond Briscoe and Daphne Oram, who were interested in experimenting with sound in such a way as to bring this about. They had been listening to things that had been coming out of Paris and Cologne, and after hours, when everybody else had gone home —because there was no specific equipment available to do this—they would steal all the tape recorders and all the bits of equipment from all the radio studios in Broadcasting House, wheel them down the corridors to get them all into one place, experiment overnight and then try and remember to put everything back in the right place for the following morning. And using that kind of working method they did produce some of the early radiophonic pieces, or pieces that we would now regard as 'radiophonic'.

This was before the BBC Radiophonic Workshop was set up as such.

This was from about 1956 onwards. In 1955 the BBC made one of the first 'radiophonic' radio dramas, *The Japanese Fishermen*, although that had a score by freelance composer Tristram Cary. Tristram was on the periphery of what was going on within the BBC, but very much at the forefront of what was happening outside the BBC. And of course 1955 was also the year that work started on the movie *Forbidden Planet*, with its electronic score, its score of 'electronic tonalities', by Louis and Bebe Barron. They weren't allowed to call it electronic music at that time by the Musicians' Union in the States, and there was always a bit of friction in those early days between 'real' musicians and people working in electronic music. Which is one of the interesting things about Tristram Cary: he was writing traditional scores and film scores, such as *The Ladykillers* from very early on, but also doing electronic music scores such as *The Japanese Fishermen* and *Quatermass*.

But it was not until 1958 when the BBC finally decided that Daphne and Desmond should have space of their own where they could do these experiments on BBC time without stealing the equipment from all the other studios. And that was when the Radiophonic Workshop was set up in a couple of rooms at Maida Vale that nobody else wanted, using all the equipment that had been abandoned by everybody else because it didn't work properly or had been superseded by other stuff. So they started off with just two rooms and the key to the redundant stores department.

Aesthetically, then, the Radiophonic Workshop was informed by European developments in electronic music as they applied to radio drama, rather than electronic music in the pure sense.

It was designed as a department to create 'special sounds', to find new ways of telling stories using sound, and if that meant electronic music techniques then that was fine. For a few years up to the point when the Workshop was formed, the BBC had been holding 'playbacks', as they called them, where they would get tapes in from European broadcasting stations and get all the heads of departments and directors and producers together and put them in a room and play them this stuff so they could hear what was going on. The BBC had its own reputation for challenging and forward-thinking drama, but what was happening on the continent purely in terms of sound creation was very different from what the BBC had been doing up until that time—certainly internally. So what they wanted to do was to find a way of producing this kind of sound economically.

You're right in that it wasn't designed as an electronic music studio *per se* although it was recognized that it would be producing what would be loosely termed 'electronic music'. But the way that the BBC Radiophonic Workshop was set up was very different to the way that the European studios were set up in terms of its remit. The European studios were set up in order to provide a facility where the great and the good of the day could come and produce new purely electronic music works for radio. So the Paris studio, set up by Pierre Schaeffer, was mainly a *musique concrète* studio using tape techniques and they would invite top composers to come along and put stuff together for broadcast. The Cologne studio, however, was mainly electronic and—much later—computer music. Stockhausen, for instance, had a major association with that studio because he was invited to come along again and produce work that would go out on their equivalent of Radio 3 in terms of new music compositions. The BBC studio was really set up purely to provide 'special

sound' and sound effects for—initially—radio drama. It was *Quatermass and The Pit* (1958), I suppose, that first brought the Workshop to the attention of television producers and suggested to them that radiophonic sound could also contribute to their productions as well.

What contribution to the BBC Radiophonic Workshop did Daphne Oram make?

Daphne Oram and Desmond Briscoe were the two people who were the guiding lights of the Workshop in the early days. There was a bit of friction there, not necessarily between the two of them, but certainly between Daphne and the BBC in general. There was a definite suggestion in the early days—and indeed this was applied—that people could only stay at the Workshop on attachment. The BBC had this system where you had a permanent place of employ, a permanent job within a department at the BBC and you could be attached for three-month periods to another department mainly to learn how they worked, learn new techniques, see how the other half lived, as it were, elsewhere in the corporation.

They initially decided to set up the Workshop on that basis: that it would be a department served purely by attachees. Even Desmond wasn't intended to be the long-term head of the Workshop. He and Daphne would set it up, serve three months and then go back to what they were doing, and other people would come in and take over. This obviously didn't please Daphne. Daphne also did want a studio very much upon European lines. She did want them to be producing electronic music. She didn't want to be just a sound effects shop.

She wanted a facility where composers could come and work.

Yes. Daphne wanted to be producing new works of her own for radio, in terms of electronic music, and she also wanted to be inviting the top composers of the day to come and work with her and the Radiophonic Workshop to produce new electronic music works specifically for radio, which is what was happening on the continent. The BBC were having none of that: it was set up as a service department to service radio drama and that was it. She eventually resigned from the BBC over the whole issue and of course left the workshop, although Desmond successfully argued that the Workshop, because of the specialist nature of the work and because of the techniques they were developing and appropriating, did need continuity. You did need someone on the permanent staff who knew the way all this worked. Because otherwise you'd get new attachees in, they'd spend

their three months just trying to get their head around the way the whole thing worked and then they'd move on—you'd actually never get anything done. The only reason that things got done in the first place was because Daphne and Desmond brought with them the techniques that they'd been experimenting with when everyone else had gone home.

By breaking some rules in the first place.

By breaking a lot of rules in the first place. It wasn't exactly frowned on, but it wasn't actively encouraged either. I mean, the BBC were perfectly happy with what they were getting out of it, which was some interesting new sounds on radio drama.

Initially the BBC used the term 'assistant', rather than 'composer' for the Workshop staff that produced work for radio and TV drama, didn't they? It's as if they didn't quite know how to deal with the notion.

The Radiophonic Workshop was initially staffed by people who were studio managers. They weren't musicians: they were technicians. They were brought in from studios at the BBC purely because they had sound and tape-editing experience. If they had, as Delia Derbyshire did, experience as a composer or as a musician, or training as a musician outside the BBC, that was all well and good, and so obviously people like Delia brought a musical sensibility to what they did at the Workshop. In fact one of the requirements for studio managers was that they had some rudimentary musical knowledge.

Initially the staff were all credited as 'assistants'. That was purely because they didn't really know what to call them, because they weren't composers in the traditional sense. There was a political reluctance to call them 'composers' because that suggested they were writing 'real music'. If they were writing 'real music' then the Musicians' Union would insist they had real musicians to play it, which would rather defeat the object of the thing in the first place, which was to create new sound using new techniques. So there were a lot of complications in what to call people and what to admit they were actually doing.

It wasn't really until the mid-1960s when people like John Baker started pulling in session musicians to add strictly conventional music lines to his electronic music compositions that it became inescapable, really, that what they were doing was writing, creating, arranging, recording music. But of course a lot of what they were doing still was pure sound.

As far as Delia's credit on *Doctor Who* was concerned...there's no doubt that Ron Grainer wrote it, and there's also no doubt that Delia added an enormous amount to it through her arrangement, realization and recording of the piece. But it was a Ron Grainer composition, and even Delia admitted that. There's the joke going round that when she first played it to Ron he said "Did I write that?" and Delia said "Most of it, Ron". And that undoubtedly happened. But I don't think Delia was in any way claiming a credit. She said that Ron said she should get half his royalties. Again, I don't really think she ever thought that was a serious suggestion. He'd written it, she'd recorded it, and she was happy with that. She was very proud of that. It was, I think, very much 50/50. It was a fantastic composition by Ron that lent itself uniquely to what Delia was able to bring to it. And Delia, uniquely, brought what she could bring to it and that's what we ended up with. A fantastic and iconic two-and-a-half minutes.

How is it that the *Doctor Who* theme has transcended its time and technology?

The *Doctor Who* theme appropriated techniques that had been used elsewhere but used them in a way in which they hadn't really been used. The Workshop was pioneering at the time what I always call 'analogue sampling'. Nowadays, it's very easy using a digital keyboard or computer sampler to just record a little snippet of sound and then play it back on the keyboard at whatever pitch you like. Back then that wasn't easy at all.

A lot of people were doing *musique concrète*, specifically in Paris, where you made electronic music, or made music out of found sounds. Sounds being anything, like a door slamming or a car starting or a saucepan lid whizzing across the floor—whatever sounds you could find, reorganizing those and creating music out of them. But the music they were creating was largely atonal. It was largely music of pure sound. And yet here came the Workshop and they used *musique concrète* techniques to create what was really conventional tonal music. So the *Doctor Who* theme is very much a conventional piece of music, but created using *musique concrète* techniques. It was something new: nobody had really heard it up until that point. Obviously the Workshop had done other things along similar lines, but this burst into people's homes on peak-time Saturday evenings when all the family were sitting watching television. And so suddenly this new sound entered people's consciousness in a very, very big way.

The other thing about it is that because of the way it's done you can't really tell how it was done just by listening to it. You have to sit down and analyze it or read about it to really know how it was done. When you hear it, you can hear there's no conventional instruments on there and yet it doesn't sound played in any way, shape or form. It was created before synthesizers were invented, so it sounds really rather grown than performed. And it has that very weird, unique, other-worldly, organic sound to it that nothing else really had at the time.

Am I right in thinking that in the early days of the Radiophonic Workshop the BBC had no multitrack tape machines [1] so that many mono tape machines would have to be run in parallel and synchronized manually in order to produce layering?

Yes. For the *Doctor Who* theme, for instance, they ended up with four lines, each mounted on a separate tape machine and they just counted "three, two, one" and hit 'play' all at once and hoped the machines stayed in synchronization from beginning to the end.

And if they didn't, you'd have to do another take.

You'd do another take, and then you'd edit. Or if it went wildly out of sync it'd be obvious that you'd got an edit in the wrong place on one of the tapes, and you'd go through all the tapes and work out where the wrong edit was, and redo it to bring it all back into synchronization.

So you could do multiple takes and then edit a final master out of the multiple takes. Sometimes it would stay in sync for five minutes if you were lucky. But it's one of the things that contributes to the sound of those early recordings: the fact that it's not mechanical, it's not robotic. There's this analogue drift in there.

For many children growing up in the UK in the 1960s and 1970s the work of the Radiophonic Workshop was their first encounter with electronic music and it was, moreover, part of the soundtrack of their lives, not only because of *Doctor Who* but also because of the many schools programmes and local radio signatures for which the Workshop provided the music.

In the '60s the Workshop sound was really rather prevalent, I suppose. There wasn't just *Doctor Who* on the Saturday nights. If you were a child of the '60s in England—like I was—you would frequently end up standing in chilly playgrounds pretending to be a tree to the sound of the BBC Radiophonic Workshop— there

was a show called *Music and Movement*, which was a schools radio programme for which the Workshop provided sound backgrounds and it would be suggested by the presenter what the sound might represent and how you should mime it and act it out. So that was a massive part of a lot of kids' school lives. It was something we all grew up with and all associated with and that sound just sort of got into our brains by osmosis, really, without us really being aware of it. The television programme *Blue Peter* as well. *Blue Peter* had a segment called *Bleep and Booster*, which was about the adventures of two characters, Bleep—who was an alien from the planet Myron, and Booster, who was a bespectacled earth boy who travelled with Bleep on space missions for Bleep's father. That had 'special sounds' by the Workshop's Brian Hodgson all over it. So we'd get it not just at weekends but on a Monday and Thursday night as well.

The influence of the Radiophonic Workshop, as disseminated by some of the programmes you've just mentioned, is often cited by people who went on to make 1980s synth pop...

Yes, I think people who in the 1980s suddenly discovered synthesizers were first exposed to that kind of sound through programmes like *Doctor Who*. Not just in the 1960s with the 'classical' tape studio sound that the programme was using but also during the '70s when the show was experimenting with pure synthesizer scores. When the early EMS synthesizers came out they were seized upon by Dudley Simpson as a way of producing new-sounding scores for *Doctor Who*.

And of course it wasn't just children's programmes: numerous *Horizons* and *Chronicles*, which are major documentary strands in the UK— they were using a lot of Radiophonic Workshop music. There was a lot of peak time drama, adult drama, such as *Vendetta* and *Out Of The Unknown*—they were using scores from the Radiophonic Workshop. So this whole sound was getting into people's brains to a very large extent. And when people got hold of synthesizers, when synthesizers became vaguely affordable in the '80s it was obvious that the sound of the Workshop was the influence that people were going to seize upon.

Over the last few years there's been an enormous growth of interest in the work of Delia Derbyshire, which is well deserved, but she was by no means the only talented composer at the Radiophonic Workshop—one thinks of such figures as John Baker and Malcolm Clarke...

Yes, I think 'The Cult of Delia' has rather taken over and is unfortunately overshadowing a lot of fantastic work done by others at the Workshop. Delia was brilliant, there's no doubt about it. She was charismatic, and she was a woman in the business when it wasn't quite so common, or rather, it wasn't quite so common as far as public perception was concerned. In fact the BBC was, thankfully, full of women in top positions because they were very good at the job and brought a particular sensibility to it. They'd come out of the war really, when the men were away fighting and so women, thank heavens, managed to take on the kinds of jobs in broadcasting that the men couldn't do because they were away fighting. And luckily it didn't change after the war. It was still a bit of an old boys' club, the BBC, but people like Delia just got on with it, quietly, and did fantastic work.

But she wasn't the only one: John Baker was an immensely talented jazz musician and as I've said before, he actually managed to make *musique concrète* swing. It was fantastic, what he did. He could cut tape in syncopation and produce the most astonishing rhythms and cross-rhythms, and then he would bring in a drummer and an oboe player and he would play the piano himself and produce these sort of jazz/electronic fusion pieces in 1964, 1965, when nobody had thought of this, really. What he was doing was quite astonishing.

And it's worth remembering that each of those rapid notes in John Baker's compositions, are individual pieces of tape transposed to the correct pitch and cut to the appropriate length for the desired rhythm, all spliced together by hand.

Yes—you'd record your original sound, whatever you decided your sound would be. In John's case it was things like bottle pops and glugs of water in wine bottles and things like that. You'd record all these on a bit of tape, you'd pick the one you thought had the best recording or the best tonality, you'd snip it out and leader it, you'd make it into a little tape loop, so it went round and round and round. You'd then record that tape loop on to another machine while you pitched it; varisped the first machine with the loop on it until it played the sound back at all the different pitches you wanted, and you'd tune it up with a piano as you went. Then you'd record one of those pitches to another bit of tape, and end up with a tape with lots of different pitches of sound on it and then you'd cut all those bits of tape out and assemble them in the right order. And depending on the

tempo of the piece you knew that if it was 60 beats a minute you knew that 15 inches was one beat, and therefore a quaver would be seven-and-a-half inches. So that kind of thing was going on.

Delia used to compose with manuscript paper and a slide rule because it was the only way of doing it. But yes, they were producing music in the most laborious way you could think of. And they still had to get it done by Monday morning because the programme was going out on Monday night. The time pressures, as allied with the creativity, were enormous.

And in the case of Delia Derbyshire, perhaps—and certainly John Baker—it burned them out.

Yes, unfortunately I think it probably did. Delia got very disillusioned around the turn of the decade, in 1970, '71 when synthesizers came in, because she was very much used to her tape-editing techniques and creating music using tape.

She didn't feel comfortable with the VCS3 or other synthesizers that were around at the time.

She didn't, although she bought a VCS3 of her own when she left the BBC. But she really understood sound and timbre, and so she would find a sound occurring naturally that contained all the elements she wanted and then she would filter it to death until she got out of it precisely the bits she wanted. And then she would create her music out of that. Now the VCS3 is a fantastic piece of kit, it really is, even now. It's wonderful. And it's designed like a scientific instrument in that it's got these little Vernier dials on it where you can precisely dial in the exact frequency you want, using this little dial on the knob. The problem with it was that that's all very well looking at the machine, but you've got your sound set up, and you've got all your filters set up and Delia's happy. And then someone opens the door, the temperature drops half a degree and the whole thing goes out of tune, all the oscillators and filters change their settings and suddenly the sound you've created is no longer there. That was incredibly frustrating. The early VCS3s promised something they weren't able to deliver. With her tape work, Delia was doing a kind of subtractive synthesis—she found a sound and filtered out the bits she didn't want until she was left with what she did want. The VCS3, on the other hand—although it also had subtractive filters—also allowed you to modulate one sound with another and therefore build sounds from scratch, from the bottom up. That was fantastic, but it just didn't deliver because it wasn't stable enough.

The other thing that happened was the VCS3 was designed by Tristram Cary [2] really as a machine for generating pure electronic sounds that you could then use to create electronic music using the tried and tested tape techniques. He did—and other various VCS3 pioneers did—create music purely on the VCS3 by in effect programming, by putting little pins in the matrix patchbay so that the oscillators and filters interacted and you could actually create whole evolving pieces on the VCS3. Just press a button, set it up and let it go, which would go on for hours. And they were experimenting with that kind of thing, but it was pure electronic music. What then happened, of course was that somebody went and put a keyboard on the front of it. And so it did what Delia didn't want it to do: it suddenly dragged electronic music back to playing pretty tunes rather than creating pure electronic music, which was what she was more interested in.

Delia often started out with rich sound sources—most famously her “tatty green BBC lampshade”—and then found out what was in the sound by slowing it down, processing it and so on, whereas on the VCS3 you're starting with a pretty raw sound and you need to do a lot to it to give it the sort of animation and dynamism that are already present in most concrete sounds.

That's true. If you're programming an electronic sound you have to give it shape. You have to use the envelopes, you have to use the oscillators, you have to use the filters to give the sound shape. That's very creative. On the other hand you can find a sound like the green lampshade Delia used, which is incredibly rich, which already has a shape to it: it has an attack, it has a slight bloom of harmonics and then a long decay. You can take that and you can then listen to it, you can reverse it, you can speed it up, you can slow it down, you can filter it and pull out just the little partials that you want. Delia, certainly, as soon as she heard a particular sound, could hear exactly what she could do with it. She could hear exactly how she could turn it into a piece of music—indeed numerous pieces of music—using one simple sound source. It was, to her, far more laborious to build sounds up purely from scratch using something like the VCS3.

Whereas people like Delia were really steeped in tape techniques, and perhaps rather put off by the incoming of synthesizers and that sort of pure electronic sound creation, someone like Malcolm Clarke, for instance, absolutely seized upon it. Malcolm was an interesting character in that he was really a 'Fine Artist'. He saw what he did as 'Fine Art', which was quite unusual at the Workshop. Most of them turned up, did

what they did and went home again. One of the engineers actually labelled one of the sockets in Malcolm's studio 'Fine Art Output': there was 'Left', 'Right' and 'Fine Art' on the patchbay. And that's really the way he saw it.

Malcolm was an interesting guy. If you said to him "I want something that sounds like Palestrina", he wouldn't know what you were talking about. But if you said to him "I want a big, square, blue sound", he'd know exactly what you meant and he'd go away quite happy and he'd do it.

But he really seized upon the Delaware in particular. The Delaware was the Synthi 100, which was a massive folly of a synthesizer, really, also made by EMS and it was about six VCS3s in this huge great box that took up half a room. And it had a very early computer-controlled sequencer attached to it as well so you could put sequences together. You could synchronize it to a tape machine so you could then layer up sequences. So it was very advanced, really for the time. It had all the same problems as the VCS3 in that trying to keep it in tune and everything was a bit of a challenge. But that's what Malcolm seized on. Malcolm loved that, Malcolm loved the fact that the thing didn't quite stay in tune, that what it did was unpredictable.

Take *The Sea Devils*, a 1972 *Doctor Who* story, for which he composed the music. This was one of the first scores that the Radiophonic Workshop had done totally off their own bat for *Doctor Who*, having done the 'special sounds'—and of course the theme—for many years. The sound of *The Sea Devils* score is Malcolm quite literally fighting with the Delaware to produce an hour of music for those six episodes. And you can just hear him trying to keep the thing on track all the time. And it comes across, that sort of challenge—that raw creativity really comes across in the music. And it's totally anarchic.

It's totally bizarre that they should think that they would get away with it, really, for teatime television on a Saturday. But it's also interesting in that it's quite naive, because I don't think they ever really thought that they wouldn't get away with it either. And yet you listen to it now and it's completely out there. Nobody, I think, would commission anything like that for television now, which I have to say I think is an enormous shame. Because I think it is some of the most wonderful music I have ever heard on television.

Interestingly that season, 1972, was when I first started watching *Doctor Who* properly. I was 11 years old, and we started out the season with *Day of the Daleks*— the Doctor's most famous

adversaries, of course—with a score by Dudley Simpson, done at the Radiophonic Workshop consisting of very conventional music but using the VCS3, mainly. There were a couple of other scores in that vein and then we got *The Sea Devils*, which was like a complete slap round the face. And then we got *The Mutants*, with a score by Tristram Cary, who was working as a freelancer again. Again, this was produced entirely using VCS3s and it was fascinating to compare what Malcolm had done using the Delaware at the Workshop— which was total anarchy—with what Tristram had done freelance using the VCS3s, which was equally odd in terms of its sound but was incredibly organized and there were obvious themes and developments in his score that didn't really exist in Malcolm's. So listening to *Doctor Who* that year was what made me think “Ah, right, I'm interested in this. This is fascinating, this is great. I want to do this.”

From a technical point of view, did the Radiophonic Workshop pioneer anything?

It's difficult to say whether they pioneered anything specifically in terms of technique. I think they undoubtedly did, but quite quietly. I think they certainly refined things. I think the way they developed *musique concrète*...they refined it into something that happened on a daily basis and they created conventional music out of *musique concrète* techniques. But all the time they were inventing little gadgets. Maybe they didn't come up with anything radically new in terms of actual form, but they certainly did in process. They had a couple of full-time engineers there who were constantly inventing little gadgets that would make things a bit easier, or would do something that hadn't been done before.

A lot of the BBC mixing desks at the time had slightly crackly faders, because it never really occurred to anybody that it was necessary that they weren't. And when you were fading up and trying to create—before the days of VCAs— enveloped sounds, imposing envelopes on to sound, you were having to do it with a little manual fader and of course a crackly fader was something you absolutely did not want. So they developed little 'glowpots'—little optically-controlled faders—to do that job. There are all sorts of other things. They developed this wonderful thing called a Crystal Palace [3], which is a very complicated source-sequencer. It's basically a massive capacitor in a box driven by an electric motor and you have 16 input jacks and four output jacks. And as the capacitor rotates inside it slowly fades and crossfades between all the different inputs so you could put all these different sound inputs in it, turn this

thing on and it would slowly evolve between the sounds coming out of the outputs. And you could vary it electronically so the fades were at different rates, you could speed the motor up and slow it down. So at its really high speeds you were almost creating granular synthesis.

So they were developing little things like that for everyday use at the workshop, but they never really thought of them as being fantastic inventions. It was more a case of “we need to do this—wouldn’t it be fun if...?” But that kind of thing sort of got into the consciousness and people were hearing the kind of sound that the Radiophonic Workshop was producing and thinking “well how did they do that? I don’t know but it’s a nice sound for me to aim at.”

The Workshop’s attitude to experimentation and building gadgets sounds similar to what was happening nearby at Abbey Road during The Beatles’ era.

It’s exactly the same kind of experimentation that was happening at Abbey Road with The Beatles: “We want to make something new, how are we going to do it? Right—let’s go and have a beer and then we’ll come back and do it”. And that’s exactly what they were doing. “I want to produce this, I’ve got to produce it by Tuesday. How am I going to do it? Right—I’ll just go away and think about it and I’ll work it out. And I’ll talk to the lads down the corridor, see if they’ve got any idea.” And that’s the way it happened. It was an incredibly creative place to be. I’m not totally sure that they invented anything they could really lay claim to...they certainly didn’t invent *musique concrète*, they didn’t invent computer music, they didn’t invent the synthesizer. But they took all this technology, combined it with a lot of creativity and produced something that was unique in broadcasting at the time and I think is still unique in broadcasting.

In fact, one of the things that really disappoints me is that nobody now is doing the kind of thing the Workshop did. Most TV shows now are taking their sounds off libraries. When the Workshop was doing, for instance, *Doctor Who*, there were no libraries. So if you wanted a sound you had to create it. There was no option, and obviously that’s why the Workshop was set up in the first place, But now we’re spoilt for choice in terms of libraries and the classic libraries like Distorted Reality, which everybody uses now: you hear those sounds on absolutely everything from James Bond to nature documentaries—absolutely stock sounds, and you’ll recognize the same sounds over and over again. You didn’t in the ‘60s and ‘70s because they

didn't exist. So the Workshop was creating everything from scratch. Occasionally they'd re-use stuff from within themselves, of course they did. But it was a completely original sound world. And I think we've lost that to an extent. Because there just isn't the time now.

And now there is a vast quantity of easily accessible off-the-shelf sounds, but little incentive to create a sound world of one's own. It's like going to a foodcourt.

Yes, indeed. And certainly there are tools like Logic: I use Logic, it's a fantastic tool. But you have to strip it down. In a way you have to not load the presets. It is very easy now—and we've all done it: you have something to do; you boot up Logic; you load a preset; you load a loop; you load another loop; you maybe put a melody over the top of it and you deliver it. Unfortunately lot of people think that that is what electronic music is now: just a kit of parts. Which is incredibly depressing, because it's a kit of other people's parts. And so what's happening is the whole thing's become very incestuous. A lot of electronic music now is just made up of loops and beats and sounds that other people have made and all you're doing is assembling them in a different order. And I hear that all the time and it's not creative, and it's frankly rather depressing.

Turning to your role as the archivist of the BBC Radiophonic Workshop: is that an official role or something you've just ended up doing?

It's something I've ended up doing. I don't get paid for it. I'm not on staff. It was a question of me doing it or all the tapes going into a skip, really. So I did it.

There's obviously a huge amount of recorded material there. Are you still uncovering new things or has it all been logged and catalogued?

No, it's still very much a voyage of discovery. When they shut the place down they wanted to re-use the space the Workshop had occupied so all the tapes were shoved into a couple of rooms, slightly higgledy-piggledy, and I had to go in and sort them all out, put them all back in the right order, label them all and build a database. It took me about 18 months to do that and so for the last ten years or so we've had a database of all the labelled tapes. So if someone asks for a specific project I know which tape it's on. But half of the time I don't know exactly what's on that tape. It might be just a master, it might be just some make-up materials. And that's what's ongoing.

There are nearly 4000 reels of tape, ¼” tape. And because of the nature of Radiophonic music, a lot of those tapes have edits in them every inch or two. So you can't just put a tape on and play it because frequently you get a tape out, it's 40 years old, you put it on the machine, you hit 'play' and if you're not careful the tape will just fall to bits and you'll end up with a room full of tape confetti. So every tape needs a lot of TLC to make it play. Either the edits will all have dried out and you put the tape on, you play it and they just all fall off or they will have gone into a horrible gungy gluey mess and you don't get more than one turn of tape before the whole thing just locks up and stretches and you've ruined it. So there's a lot of work in playing and transferring and cataloguing the precise contents of the tapes. Sometimes you'll put a tape on and it's a half-hour tape and you'll play it through in half an hour and it's done. Other times I can spend two or three days on one reel of tape.

Because it's not an official position, there's no funding for it, so it's something I do very much as and when there is some funding. So someone will come to me and ask me to make a CD or a compilation CD. A couple of years ago, for instance, someone said "It's the 40th anniversary of BBC local radio, we want a copy of every BBC local radio jingle that the Workshop ever did". Well, that was an enormous job that took me a few weeks but at least there was a little bit of funding there for me to go in and do that. For the rest of the time it's more like a hobby, and I always have a pile of tapes in the corner of my own studio that I've taken out of the archive and I go through slowly when I have a bit of free time.

You're still discovering little gems here and there, presumably.

Oh yes. I did a CD in 2008, *BBC Radiophonic Workshop – A Retrospective* and there's a couple of things on there. There's a thing called *Dandelion Countdown*, which Dick Mills did. I was actually playing a reel of something else—I can't even remember what it was now—and this track came on after it and I thought it was really rather lovely. I wasn't expecting to hear it. I think it said *Dandelion Countdown* in my database but I hadn't a clue what it was. It sounded great when I heard it so it went on the CD. So yes, I'm always pulling tapes out and finding something I haven't heard before or something that just sounds interesting in a different kind of way.

We've done a couple of re-releases of albums that were released in the '60s and we did that retrospective compilation which in fact used as its basis two other vinyl albums but I then doubled the amount of content. There's a couple of other similar

compilations we could probably do. But then I'd like to do specific albums of Science Fiction music or Children's music or Documentary music. That kind of thing. Or composer-specific collections. Perhaps a John Baker collection, a Delia Derbyshire collection, a David Cain collection. David Cain is very under-represented on the retrospective [4]. The reason for that is that most of David's stuff is long form and it's five to ten minutes at least, and it doesn't make any sense just to put an excerpt of that on a CD. I wouldn't do it anyway. The retrospective CD that I did by its very nature was little jingles and stings and themes, so I need to do something that allows me to explore some of the more long-form things in a better way and that'll probably mean composer- or genre-specific albums.

The Radiophonic Workshop tapes are not the only archives you've been entrusted with: you were also given with the Delia Derbyshire archive. How did that come about?

After Delia died, her partner Clive Blackburn was sorting out the house and knew that the attic was full of stuff, but he wasn't aware of what it was. He went up there and found all these cereal boxes full of tapes, so he brought them down and handed them over to Brian Hodgson and me. They ended up in my safekeeping. The problem was that there were nearly 300 reels of tape, and all of them had little sticky labels on them saying what was on them. That's the way Delia worked—she just put little sticky notes on each reel saying what was on it. But over the years in her attic they'd all dried out and so in fact what we had was cereal boxes full of tapes, and then at the bottom of the boxes all the sticky labels. So you might have ten or twenty sticky labels on each reel but they were all at the bottom of the box. So what we're trying to do is slowly work out which sticky label goes with which reel. That's going to take two or three years.

What we need to do is to go through all those tapes and work out exactly what is on each one, what it is, what it's part of. Because with this kind of music it's sometimes difficult to tell whether what you're hearing is a complete master or just a little bit that went to contribute to another master. So we're trying to work all that out. We also need to work out who owns what so that we can actually release stuff in due course without being sued. The problem is that this stuff, having spent years in Delia's attic, then started spending years in my basement and it was obvious, when I started working on it, that there were at least two or three solid man-years of work in order to go through it. There was no way I was ever going to find that time—I have enough

problems keeping up with my day job to pay the mortgage as it is, as well as looking after the Radiophonic Workshop archive—so it got to the point where the Delia stuff was just going to sit there and nothing was going to happen to it. Which obviously wasn't right.

I was then approached by the University of Manchester who initially wanted to do something on the Radiophonic Workshop and I said “Look, I've really got that covered, but there are all these boxes of Delia's tapes—do you fancy taking those on?” So that's how that happened. I handed them all over to the University of Manchester. I still own them nominally on behalf of Delia's estate, but they're on permanent loan to the University of Manchester and they're doing all the research from now on. David Butler is the academic chap from their drama and music department who's in charge of all that.

What are the highlights so far?

One of the highlights for me was that we found a make-up tape for *Blue Veils and Golden Sands* that is a recording of Delia's voice, but then as the tape goes through she's kept all the treatments. She took a recording of her voice and then treated it massively by repeated passes through filters until she ended up with the sound that she wanted. But she kept all the different stages. So that's fascinating, listening to that go through. You can hear the creative process and hear how laborious it was and how many different layers of tape and how many different passes it took to get to where she ended up.

Dance from 'Noah' is interesting. I knew that existed because it was actually used on an EMS demo record, but I couldn't find it in the Radiophonic Workshop archive. But then it turned up on a tape in Delia's collection. Even better, though, she also had the make-up tape, and that's where we got that rhythm track from. If you listen to the final mix of *Dance from 'Noah'*, the rhythm track is slightly buried, and because of the many tape layers that went into it it's ended up slightly muffled. But there's a very bright, very inventive sort of electropop rhythm behind it.

And you remixed it.

That's right. Basically I rebuilt the mix from the original make-up layers to match Delia's original mix but of course because it didn't have to go through ten layers of tape to get there it's a lot brighter and you can actually hear all the individual sounds a lot better. So I just thought it was an interesting exercise.

There was a strong reaction to that track in the UK, wasn't there?

Yes, it was interesting because Manchester University had had Delia's tapes for about a year and done a sort of preliminary catalogue. They then decided to issue a press release announcing that they'd got the tapes. And the press did this thing about 'the long-lost tapes of Delia Derbyshire', and of course they weren't 'long-lost' at all. We just hadn't told anyone we'd got them. But there you go. David Butler let the press have just two or three little examples and one of them was the rhythm track from *Dance from 'Noah'*. And it was interesting because on some of the internet forums, electronic music forums, it was generally suggested that this was a fake, that it wasn't Delia, that Delia wasn't working using that sort of technique, that there was absolutely no way that could have been produced in 1972 and so on.

They didn't believe it could be done technically in 1972?

No, they didn't believe it could technically be done, and they said Delia wasn't working in that sort of vein anyway. Well of course Delia was working in that sort of vein. Delia was doing the most extraordinary things.

But a lot of her work has a rhythmic drive!

Yes, yes, although maybe not as much as John Baker. I mean John Baker thought very much in terms of rhythm and syncopation because he was a jazz musician. Delia thought very much in terms of timbre. That's where, I suppose, the two differ. Delia was really interested in the pure sound of it. But of course that doesn't mean to say that she didn't produce rhythm tracks, because that's part of music and occasionally she had to produce a rhythm track. And when she did, boy did she! But the *Noah* one is very simple, I mean it's just a couple of very simple sounds, sequenced, and then the whole thing goes through a number of delays and echoes. If you actually listen to it, what's underneath it is very simple. It's just the fact that she's used tape echo and things and layered it that makes it sound completely out there.

Just as people today use tempo-synchronized delays.

Indeed. That's precisely what she was doing, but it does sound enormously ahead of its time.

[1] In fact the Radiophonic Workshop had a custom-built Leavers-Rich 1" 8-track machine by November 1963 at the latest, as evidenced in a BBC engineering monograph from that date. Delia Derbyshire described it as "a bit of a white elephant" with poor sound quality, and it could record on only one track at a time. The Doctor Who theme was realized in August or September 1963.

[2] The EMS VCS3 synthesizer was designed by Tristram Cary, David Cockerell and Peter Zinovieff

[3] This can be heard on Brian Hodgson's 'special sounds' for the Doctor Who series 'The Krotons' from December 1968 in the tracks 'The Learning Hall' and 'Kroton Theme'.

[4] David Cain's 1969 music for *The Seasons* was released on Trunk Records in 2012.