A Legacy in Music

The BBC Radiophonic Workshop

All the things of the modern world obscure those of the past, the very source of what we have today, making it difficult to determine who really leaves any legacy. But, as Sir Isaac Newton observed for himself, we all 'stand on the shoulders of giants'. Similarly, in the world of art, we owe much to those of the nineteenth century who slowly chipped away at the established classical orders, followed by others who proceeded to demolish them entirely.

The earliest reference to the manipulation of sound is by Francis Bacon in his *Sylva Sylvarum*, written in 1623, along with *The New Atlantis* of the same year, in which he describes 'sound houses' for experiments in acoustics. But the necessary technology to progress such work was lacking, and still lacking in 1913 when the Futurist composer Luigi Russolo wrote *The Art of Noises*, a piece of propaganda extolling the virtues of creating 'music' from sounds.

The emergence of the tape recorder during World War II allowed the pioneer Pierre Schaeffer, followed by collaborator Pierre Henry, to actually create new sounds from old, using the technique known as *musique concrète*. The origin of the such new sounds was not always apparent, often causing discomfort to the listener, especially where something more familiar was expected.

Although many artists thought their work was 'art for arts sake', this was not the case for Schaeffer, who also created sound and music for radio and film productions, a path that the Radiophonic Workshop would also follow.

In an interview given in 1986, Schaeffer stated:

> *Seeing that no-one knew what to do anymore with do-re-mi, maybe we had to look outside that… Unfortunately, it took me forty years to conclude that nothing is possible outside do-re-mi…*
> *In other words, I wasted my life.*[1]

which is a rather harsh comment to make, considering his impact on music and sound creation over several decades. It's worth

noting, however, that one of his students was Jean-Michel Jarre, whose works accompanied the movement into postmodernism, the acceptance that classical forms of art and music, including *do-re-mi*, could happily coexist within new sound textures.

In 1957, Desmond Briscoe, then an experienced BBC studio manager, interested in Schaeffer's work, began assisting the producer Donald McWhinnie on Beckett's *All That Fall*, a radio play for the Third programme, with stylised and slightly 'off' sounds, dreamlike and alien. This and further works of a similar kind led the BBC to consider the creation of a 'Radiophonic Workshop', with the proviso laid down by the Music Department that it should create only 'special sound', and that it would be headed by Briscoe, along with Daphne Oram, also a radiophonic pioneer.[2]

It seems unlikely that Briscoe, once the conductor of the Harry Desmond Band, would abandon ambitions to create music by electronic means. A pragmatist, he accepted the unwanted and minimal equipment provided for the Workshop and bided his time. Daphne Oram, hoping that the department would develop as an electronic music research facility, must have been sorely disappointed and soon left to explore her 'Oramics' technology.

The output of the Workshop over the succeeding decades is difficult to measure, since much of the music and special sound was created as an integral part of the programmes into which they were fused. The shows themselves would be lacking without the Workshop's contribution, whilst the material created by the Workshop was not designed as 'stand alone' work.

The following pieces illustrate the Workshop's musical progress.

Time Beat (1962) - Maddalena Fagandini

In the 1970s, a yellowing wall chart of a decade earlier remained, showing the relationship between musical notes and their frequencies in cycles per second, revealing that, unlike the pioneers of *music concrète*, the Radiophonic Workshop often used the old twelve-note form of musical composition.

Time Beat, a Workshop realisation of this tradition in a modern style, was a collaboration between Maddalena Fagandini, who originally created a simple but melodic rhythmic pattern to act as a time signal during countdowns to the start of broadcasting, and George Martin. Under the pseudonym *Cathode Ray*, they embellished the simple original with a 'jolly' tune and released it as a record, so creating the Workshop's first commercial release.

The creation of rhythm by means of tape loops was relatively simple, but this work was an unabashed commercial enterprise, entirely based on *do-re-mi*, and undoubtedly encouraged by Briscoe to elevate the Workshop in the world of music, despite the inevitable objections from the BBC's Music Department. The artistic realms of *music concrète* were also no doubt equally horrified.

One contemporary comment reads:

> *A strange new single went on sale in Britain's record shops in April 1962. Credited to Ray Cathode, 'Time Beat' combined a metronomic rhythm with peculiar, otherworldly sounds. It was not a standard pop record. The flipside, 'Waltz In Orbit', was also about its tempo and was just as weird. Not many copies were sold.*[3]

At Maddalena's funeral in 2012, Giles Oakley said:

> *In 1959, Maddalena joined the BBC Radiophonic Workshop, a hotbed of experimentation where again she was in her element, remaining there until 1966. As part of a highly creative group, she worked on creating sound effects, theme music, jingles and music concrète, where natural sounds were combined and electronically distorted in all sorts of technically ingenious ways. She said how she particularly loved devising live 'spot effects' (as opposed to playing in a disc). Mad was always justly proud of her time at the Radiophonic Workshop, but never boastful. Few people knew that she actually helped create a recording with the legendary producer George Martin, soon after famous for his work with the Beatles. A single was released on the Parlophone label in 1962 under the pseudonym 'Ray Cathode'. Based on themes created by Maddalena, the 45 disc had 'Time Beat' as the top side, with 'Waltz in Orbit' (clearly inspired by the early space rockets put up by the Soviets and the Americans) on the reverse.*

> *When synthesisers came in the mid-1960s, Maddalena began to lose interest in the Workshop and she started looking elsewhere…*[4]

Doctor Who (1963) - Delia Derbyshire

Much has been said about this work and Delia Derbyshire, the brilliant musical artist who brought this science fiction theme tune to realisation, ably assisted by Dick Mills. The original melody was written by the composer Ron Grainer, famous for his television and film themes, who won several awards, including for *Maigret* (1961) and *Steptoe and Son* (1962), as well as other nominations, including *Shelley* (1979) and *Tales of the Unexpected* (1979).

According to Wikipedia:

> *Doctor Who was originally intended to appeal to a family audience as an educational programme, using time travel as a means to explore scientific ideas and famous moments in history.*

so a relatively simple tune seems to have been the original choice.

> *The compositional basis for the Doctor Who theme music was delivered to the Radiophonic Workshop in mid-1963 by composer Ron Grainer on a single sheet of A4 manuscript paper containing the basic melody and bassline parts of the theme. Additionally, basic yet evocative annotations such as 'wind bubble' and 'cloud', based on the concept visuals already produced for the show's title sequence, were added to highlight specific sonic points of interest and loosely suggest timbre and orchestration.*[5]

The source material for each note consisted of separate recordings of a plucked string, white noise or the sound from a test-tone oscillator, whilst the bass line was most probably produced using a plucked steel guitar string attached to a piece of metal. It can be safely said that no construction of *music concrète* was ever more complex than this, with Dick Mills recalling how the edited tape had to be stretched along the ground floor corridor of the Maida Vale studios in order to check all the edits.

The form of some of the sounds are revealed in the BBC documentary *Delia Derbyshire: The Myths and the Legendary Tapes* (2021), where Delia says:

It's come to me, but just relevantly recently, that my love for abstract sounds were the sounds of the air raid sirens. Because that is a sound you hear and you don't know the source of it as a child. And then the sound of the all-clear…

… that was electronic music.

* * *

During the 1970s *music concrète* was largely overtaken by voltage-controlled synthesisers. This technology may have been difficult for some composers, including Delia Derbyshire, who created a rather poor version of the *Doctor Who* theme on the Workshop's EMS *Synthi 100*, and departed soon after.

The new technology required an entirely different approach. Instead of taking existing sounds, they had to be created on the machine from scratch, every tone, every rise and fall, every bit of filtering of white noise. The author recalls standing in front of the *Synthi 100*, despairing at how anyone could use it.

Despite the challenges, synthesisers such as those from EMS and Moog were widely used by those of a compatible mindset, and, oddly perhaps, often applied to alternative versions of classical music, most typically Bach, despite the keyboards typically being only monophonic. The earliest example was *Switched on Bach* (1968), by Wendy Carlos. Later on, whilst away from the Workshop, Brian Hodgson joined up with the composer Dudley Simpson under the name *Electrophon* to create the album *In A Covent Garden* (1973), followed by *Further Thoughts On the Classics* (1974).

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The Body in Question (1979) - Peter Howell

The *Body in Question*, a landmark medical documentary series, investigating the workings, problems and healing of the human body, was nominated for two BAFTAs in 1979 and features *The Greenwich Chorus*, a notable theme tune created by Peter Howell. Once again we see a classical form, the ticking clock relating to the time reference of Greenwich, remorselessly measuring out the life of

a human being. As with other pieces described here, Peter's theme involves the effects and consequences of time.

Peter was always at the forefront of technology and could have easily used a standard voltage-controlled synthesiser. Instead, he employed two devices to give a more immediate access in the process of musical creation:

- The Yamaha *CS-80* analog synthesiser had eight-note polyphony, a velocity and pressure sensitive keyboard, plus a ribbon controller. Unlike earlier synthesisers that involved the horrors of patch cords or matrix panels, it was entirely digitally controlled; truly a musician's instrument. This was a transitional device, the first of its kind, using a microprocessor to control analogue sound generators. Later synthesisers would be entirely digital.
- EMS *5000 Vocoder*: This was able to analyse Peter's voice so as to then synthesise the choral elements within the work.

The public reaction to the music jammed the BBC switchboard. Peter wrote:

> *So many viewers of The Body in Question were fascinated by the mysterious 'singing' in The Greenwich Chorus that their calls caused a massive telephonic log jam… The message hidden in this music was unintelligible, it was never intended to be anything else, but they didn't know that. This goes to the heart of what interested people in our output in the first place. The fascination with the unknown and the original. Delia's Doctor Who title music had awakened a thirst in the audience to hear really new things and to try to make sense of them, and although this piece had started its life as a nod towards Purcell, it had finished somewhere else entirely….*[6]

In 1980, Peter again used the *CS-80*, along with an *ARP Odyssey* and a Roland *Jupiter-4*, to update the *Doctor Who* theme.

The Lost Gardens of Heligan (1996) - Elizabeth Parker

Following her departure from the Workshop, Elizabeth created the music for this six-part *Channel 4* documentary, which later received the *Garden Programme of the Year* award. Her work elevates an already interesting programme about the restoration of an old

garden into something more profound, even romantic. Far from being ‘radiophonic’, it is highly expressive, melancholic and yet hopeful, and has a deep English feeling about it.

A short track appears on the 2008 album *The BBC Radiophonic Workshop - A Retrospective* (2008). The full recording begins in a loose bluesy form, played on piano, with a wandering ambient atmosphere behind, but then solidifies into a very moving work, backed by a growing orchestral sound towards the end. Variations of the theme, using different instrumentations, are used throughout the programme, but the feelings of decay and rebirth over time are always very evident, perhaps reflecting her own sentiments at that moment, the end of her stay at the Workshop.

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And so the music goes full circle. Did Pierre Schaeffer and his contemporaries waste their lives? Did the composers waste theirs at the Workshop? Not at all. Those who create new forms in art or in music serve to make us reassess our falsely preconceived notions of what we believe such things to be. In the end, what is new eventually becomes old and is fused into the progress of art.

The Radiophonic Workshop is part of our musical heritage and its influence will undoubtedly remain imbedded in our culture for many years to come.

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For detailed information on the establishment and history of the Radiophonic Workshop you should refer to:

Special Sound: The Creation and Legacy of the Radiophonic Workshop by Louis Niebur, © 2010 by Oxford University Press
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