

# RADIOPHONICS

## A TRM REPORT ON THE WORK OF THE BBC RADIOPHONIC WORKSHOP



**Using a simple editing block and razor blade, Delia Derbyshire edits a musical note on tape while Desmond Briscoe consults the score. A typical working area at the Radiophonic Workshop**

Photograph by courtesy of the BBC

**T**HE art of sound radio is the art of recorded sound. The fact that radio programmes are transmitted by wireless wave is coincidental. Some sound programmes are broadcast live, others are pre-recorded on magnetic tape for subsequent transmission. Whatever the circumstances of the broadcast the end product is the same. The listener hears his programme seated in the comfort of his own home: the sound he hears is produced by the loudspeaker in his receiving equipment.

We play back our own recorded tapes under precisely the same conditions. The listener is seated at home and the sound is produced by the loudspeaker in the tape recorder. There is no difference at all from the listener's point of view. The programme producer in a sound studio, together with his engineer, faces precisely those problems as you and I when we work at home with our domestic equipment.

Of course the professional broadcasting organisation has many facilities at its disposal which are denied to amateurs; none is more interesting than the BBC Radiophonic Workshop. The function

of the workshop is modestly, but truthfully, described by its genial organiser, Desmond Briscoe, as, "a service department." By this he implies that the Radiophonic Workshop does not exist to produce original works in their own right. Its purpose in life is to provide other programmes with tailor-made, specialised "effects." Opened in 1958 it is the first of its kind in this country. Significantly it is the very existence of the tape recorder that makes radiophonics, as we know them today, possible.

The first aim of the workshop was to experiment in abstract sound in order to broaden the canvas of radio drama. There had been many attempts to use musique concrete and electronic music as incidental effects in dramatic productions. Their lack of success was frustrating, and it was realised that essentially this type of sound or music needs to be made specifically for a particular programme.

One of the first dramatic experiments was the production of "All that Falls," by Samuel Beckett, first broadcast in 1957. Most of the action comprises a monologue, which in effect is a script reading by a single voice. To give movement to the action the sounds of natural footsteps were recorded to indicate walking. From the rhythm of the footsteps an abstract sound rhythm was developed. By association of

ideas the feeling of walking and movement was immediately produced in the listener's mind as soon as this abstract rhythm was introduced in the programme. This is a very simple, but typical, example of the manner in which the workshop operates and how its ideas develop.

All the sounds made in the Radiophonic Workshop are produced by electronic manipulation on tape. Manipulation of natural sounds is usually described as musique concrete, whereas sounds derived from electronic generators are described as electronic music. As both classes of sounds are destined to be altered and manipulated to suit the effect required there is really no point in distinguishing between the two.

Once a sound has been recorded it can be subjected to various treatments. It can be filtered, removing some of the frequencies. This means nothing more than playing back and re-recording whilst adjusting the tone controls on the playback machine. The speed can be changed, either by reduction or increasing; sometimes the speed is continuously varied in either direction. As a continuously variable speed is the last thing in the world the amateur desires in his recording equipment this is of necessity a somewhat difficult effect to obtain. In the workshop the BBC use a specially modified Leevers-Rich equipment giving very accurate speed changes away from the standard. One of the early Reflectograph machines has a variable speed facility and these can sometimes be picked up second-hand for round about £25. The effect of changing speed is not only the obvious one of altering pitch, but it will also change the quality of the sound.

Other simple manipulations include reversing the sound, superimposing the sound on itself, or repeating it after a timed delay. Endless loops are made of rhythmic patterns and re-recorded. The rhythm may be changed by cutting and splicing, new loops formed and new recordings in length taken. Rhythmic patterns may be superimposed, one on top of the other at different speeds. Artificial reverberation and other technical tricks can be brought into play.

This may all sound to be a hopelessly confusing and random business. The contrary is in fact true. At the BBC techniques have reached the point where the technicians' control over the sound elements is so precise that they are now in danger of producing uninteresting results. Artistic merit is not achieved by producing perfect and precise sound patterns: the engineers have to deliberately introduce controlled imperfections "to humanise" the production.

All the sounds composed and created in the workshop have to do a specific job. They are designed to create an atmosphere or to illustrate a meaning. The sounds exist, not as a demonstration of technical wizardry, but as a secondary component to the spoken word which heightens and intensifies the dramatic situation.

The actual process of composition is one of intense and deliberate thought, the object being to interpret the action in the manner the producer has in mind and to conceive the abstract ingredients of emotion, atmosphere or movement in equally abstract

terms of sound. At this stage much freedom is given to the individual radiophonic worker who will write his composition on music manuscript paper. This is likely to be completely unintelligible to an outsider. Each worker has his own peculiar form of shorthand involving figures of frequencies, formulae, and duration diagrams. The method used depends upon the individual and on the type of commitment. The real work of translating these rough notes into actual sound then follows. If a new sound is to be used then this has to be explored before the composition can start.

When the work is completed the producer is invited to visit the workshop again to hear the result. There then follows discussion on interpretive meaning, and the sounds may well be modified to suit programme requirements. If the production is complex the radiophonic worker may attend as an adviser in the sound studio when he will work in the closest co-operation with the producer and the cast.

Originally developed for use in conjunction with sound radio, the radiophonic workshop now does even more work for the BBC television services than for sound. Again the aim is always to help in communication. Although abstract sounds may in themselves be pleasant or decorative they are of no value if they do not support the programme material. As soon as we think of sound to be used in conjunction with a visual image, such as in television or cine applications, we are really dealing with a medium which differs considerably from the "pure" sound of radio or ordinary tape recording. Although television today forms a large part of the radiophonic workshop output we will leave more detailed discussion of this part of their activities to a later date. Within the organisation of sound radio the workshop has undertaken tasks for every department of the BBC from religious broadcasting to light entertainment. It is surprising to note that of the 200 commitments during 1965, the largest proportion were for educational programmes at all levels.

When live sound is recorded for subsequent manipulation by the workshop a specially equipped studio is used. In normal recording practice a completely "dead" acoustic is one of the worst possible conditions, but in radiophonics this is ideal. So the radiophonics studio is a small room with its walls completely lined with sheets of upholsterers' plastic foam. This material has been found to be very successful as a sound absorbing agent. As the colour is a rather vile green, the foam is discreetly hidden behind full-length orange curtains.

By recording under these conditions the engineers can obtain on tape the true sound required without any reverberant effects. If such are needed then they are deliberately added, precisely as required, as part of the electronic manipulation.

There are three separate working areas, each of which contain a number of fixed speed recorders together with the specialised variable machine referred to earlier. More cutting and splicing of tape is carried out in these rooms than anywhere else in the country, but this is all done on simple editing blocks fixed to the deck of each recorder. The tape is cut with an ordinary razor blade and conventional splicing tape used.

Besides the standard recording equipment each of these three areas contains an array of complex equipment such as ring modulators, electronic generators, and specially designed "key" mixers. Finally each area is equipped with its own mixing desk which

includes full remote control facilities for all the equipment so that one operator can work unaided.

This array of expensive professional equipment is impressive. But I talked at some length with Mr. Briscoe about the practicability of amateurs attempting this work in their own homes. What he had to say was more than encouraging from the amateurs' point of view.

The workshop itself was first brought into existence by a small band of enthusiasts. Much of the work they did was carried out in their own spare time and their equipment was limited to domestic type machines such as Brenell and Ferrograph—several of these can still be seen in the workshop. Mr. Briscoe explained why their present equipment must be as sophisticated and expensive as it now is.

The workshop is a department of a professional organisation; time is money. Every task undertaken has to be fitted into a rigid work timetable and it must be completed with the minimum expenditure of staff time. The extreme specialisation of equipment has been primarily designed for no other reason than to save time. Almost without exception the work done could be attempted with a large measure of success by amateurs using normal domestic machines. Working in this way, however, the one essential ingredient is patience. Some of the jobs undertaken by a single operator in the workshop, and perhaps accomplished within a very short space of time, might take the amateur many hours to perform. Nevertheless, if carefully done the end product might well be indistinguishable from the professional version.

The world of sound is so full of possibilities that to the inexperienced—and indeed to the experienced as well—the prospect can be frightening. If we are to undertake our own radiophonics we have to cultivate the wild jungle of random sound and harvest a logical pattern of selected ingredients. My own personal opinion is that this is one of the most difficult parts of the job.

If we create some interesting or dramatic radiophonic effects, and then write a script around them, we are putting the cart before the horse. Although this is certainly the easiest way to do it, it is not likely to be successful. By their very nature our radiophonics would be random and our production would be artificially designed to suit.

The correct sequence of operation is to work as the professionals do starting with a script and developing the radiophonic ideas from it.

Just because radiophonics can be dramatic there is a great danger of allowing them to run away with the entire programme. Great discipline is needed to keep them firmly in their place as nothing more than an aid to the interpretation of the action. Any effect, however brilliant, that attracts the listener's mind away from the dramatic incident must be ruthlessly discarded.

By working in this way there is not the slightest reason why the amateur should not make use of all the exciting potentials of radiophonics. And please do remember there are no copyright complications whatsoever—your own radiophonics will be your own original composition, and you are free to do with them whatever you wish.