

RADIOPHONIC WORKSHOP

The Next Ten Years

The Radiophonic Workshop is a valuable and cost effective BBC Resource. Its contribution to over 200 programmes each year ranges from complete scores for major international co-productions to signature tunes for Local Radio minority programmes. The hours worked on programmes have increased from 9,321 in 1977/8 to 11,983 in 1981/2 and Televisions share of those hours has increased from 51% to 70%, indeed figures at week 35 1982 indicate a further rise to 75%.

In 1983, the Workshop will be 25 years old. It has expanded from the original single studio and in October 1982 will be opening its sixth working area. The demand increased and the department expanded but from the beginning no proper line had ever been arranged in the Radio and Television budgets to allow for this and the expansion was usually at the expense of providing proper basic facilities. This lack of secured finance meant that the department was dependent on "lollipops" and "fag ends" the lollipops usually for specific prestige items and the fag ends insufficient in quantity and regularity to allow a coherent plan to be developed. By 1977, the facilities were so overstretched that even the simplest job became a struggle with obsolete and inadequate equipment. Then things changed somewhat, the success of the department in the 1977 Radio Awards had brought the attention of senior management and with the active encouragement of the new MDR and his team we were able to start the long and expensive task of re-equipping the studios with up to date basic facilities i.e. mixing desks, tape machines and loudspeakers and providing at least one synthesizer in each area. However we still had no official budget so the lollipops and fag ends were heavily supplemented by frequent shakings of the begging bowl and the continual requests for relatively small sums have obscured the fact that we have refurbished five studios and virtually equipped a sixth for less than the cost of a modern computer controlled mixing desk.

This paper is intended to highlight the tasks which we will face over the next ten years. It is by no means a black and white plan but should give some idea of the amount of assistance that will be required. It will be divided into several sections:

1. Basic Facilities
2. Electronic Music Facilities
3. Staffing
4. Accommodation
5. Summary
6. Projection of annual costs over 10 years.

Appendix 1: Map of Radiophonic Studios. Appendix 2: R.W. Commitments 1981/2.

1. BASIC FACILITIES

Introduction

A composer of conventional music is responsible for writing the music and deciding on which instruments it is to be performed. The score is then handed to a conductor who with a group of musicians will perform the piece. A "Radiophonic" composer has to single handedly duplicate not only all the above functions but to design new sound qualities and act as recording engineer as well. So a style of working has evolved which differs from that normally found within the BBC.

In the conventional studio the outputs of different microphones on individual musicians are fed to a mixing desk where the balancer will either produce an acceptable mix for broadcasting or route the separate microphones simultaneously to a multitrack machine from which he will mix down later.

In the Radiophonic Studio, the composer will perform each strand of the music on a synthesizer, the electrical output of which is directly injected into the mixing desk and routed to a single track of the multitrack machine; the process being repeated until the entire piece has been compiled on the different tracks. The composer will then mix down the piece adding echo and various sound treatments to give the music a semblance of acoustic and add life and sparkle. This operation is often done using a guide track on the multitrack machine to ensure that music and programme fit exactly thus saving time in dubbing theatres and symphony suites later on.

(a) Mixing Desks

The Radiophonic Workshop style of working is more akin to that of a recording studio than a broadcasting studio so we are fortunate in not needing to be provided with many of the features necessary on broadcast desks. Similarly, a change of attitude in Radio Engineering has made it possible for us to use desks by manufacturers who five years ago would not have been on the "approved list". This has meant that we have been able to equip our studios with desks that combine the sort of facilities we require with a relatively low price. To keep the mixing facilities up to standard we must shortly start replacing desks as they reach the end of their service lives, at a rate of one every other year, at a cost of approximately £20,000 per desk.

(b) Multitrack Tape Recorders

Proper multitrack facilities are vital to the manufacture of electronic music so it is important that our problems are sorted out as quickly as possible. When Studio E was refurbished in 1978 it was decided that a larger capacity multitrack machine should be provided. At that time Radio had decided to install 16 track at Maida Vale and Television looked set to follow that example in the Music Studio. Because we occasionally have to work with multitrack tapes from other areas, usually on the more complex productions, we decided to purchase a 16 track machine only to find that within 12 months Radio had decided to jump straight to 24 track and Television now seems set to follow suit. We are now neither compatible with the other multitrack studios in the Corporation nor with the other studios within the department where we have two studios with 16 track, three studios with 8 track and one studio without a multitrack machine at all, as the redeployed 8 track promised by Radio in 1980 has failed to materialise. Ideally all areas should be provided with 24 track machines, however, 24 tracks are not necessary for most of our output and there would be a further requirement to replace most of the mixing desks. A solution involving the installation in each area of 2 inch tape transports with 24 track head blocks and 16 channels of amplifiers is proposed. This would ensure compatibility within the department and with other studios in Radio and Television. It would also allow us to take advantage of new developments in the synchronization of synthesizers with multitrack machines and video recorders by means of time coded tracks. We estimate that this scheme would cost £100,000.

(c) $\frac{1}{4}$ " Tape Machines

The Studer A80 RC machines are perfectly satisfactory for our purposes and the replacement of the B62's by A80 RC's as requested by Radio Projects can only improve our situation. The Revox machines are beginning to give troubles but the already agreed replacement of these machines by B67's will solve the problem and provided no expansion takes place we should have enough machines to provide 2 grade one machines and 1 grade 2 machine in each of the 6 areas and 1 grade 1 machine in the film transfer area.

(d) Loudspeakers

The workshop is now equipped with BBC L/S5/8 speakers. These are satisfactory and we have enough for the 6 areas.

(e) Echo

Electronic music has no natural acoustic so it is by the use of echo and delay machines that an acoustic is applied. The department has 2 EMT Stereo plates, 1 goldfoil plate and various cheap and vaguely cheerful spring devices. This whole area is highly volatile and the development of digital echo equipment by most major manufacturers indicates that a satisfactory digital device will emerge in the near future. When it does, it is imperative that the Radiophonic Workshop is equipped with it as a matter of priority as echo is a vital ingredient in the realisation of electronic music. The only acceptable device at the moment is the Quantec at about £5,300 but technology and prices change all the time so we propose that we complete one installation a year at a cost of about £5,000.

(f) General Audio Treatment Devices

These are the items which add life to electronic sound. Three areas now contain pitch and time shifting devices and the other three should be provided with these facilities as soon as possible. To a certain extent the new echo devices mentioned in the previous paragraph are likely to contain some of the time shifting features necessary in any expansion of this field and the eventual completion of the refurbished Delaware as a portable treatment trolley will help with complex filtering and gating. The priority is to provide pitch and time shifting facilities in the other three areas as quickly as possible at a cost of about £6,000, thereafter £5,000p.a. should keep this facility up to date.

(g) Film Facilities

The Department is equipped with:-

- 1 6 Plate Steenbeck with Sharland Counter-Timer
- 1 4 Plate Steenbeck
- 1 Sondor MO3 16mm Film Transfer Recorder

Apart from the provision of a counter timer for the 4 plate machine there are no immediate plans to expand or update this facility although eventually these devices will require to be replaced.

(h) Video

The department was originally equipped with two VHS Cassette machines to replace the Shibaden and the Phillips VCR. A third machine was provided for the duration of "Blakes Seven" and this machine was retained because of the increasing number of shows being sent to us on cassette. However even with 3 machines we are under equipped and need video machines in each area. The Radiophonic Workshop is usually the last stage of the production chain before dubbing. Hold-ups in production schedules before the shows reach us often mean working day and night to meet the sypher deadline so any delays waiting for colleagues to finish with relatively inexpensive video machines could cause costly delays later on. The use of Video is still increasing and the techniques of synchronising synthesizers to time coded tracks on video and multitrack machines are being actively explored both by synthesizer manufacturers and our own engineers. To allow us to take advantage of these time saving techniques and to relieve the pressures on the present facilities and the long suffering composers, we should equip each area with a U-matic machine as soon as possible.

2. ELECTRONIC MUSIC FACILITIES

When the Radiophonic Workshop began, the method of working involved firstly the recording of a sound produced either via a microphone i.e. "concrete" or via an electronic generator i.e. "electronic". The sound was then manipulated by altering the speed of the tape, filtering, looping, editing, playing it backwards, adding feedback and a host of other "classical techniques". It took a long time to make even a simple piece of music. In the sixties the perfection of voltage control led to the development of the synthesizer and it became possible to create electronic sounds within one piece of equipment and play them in real time on a conventional keyboard, thus producing the music more quickly. However, the synthesizer only produced electronic sounds and the use of concrete sources diminished as using them involved all the old time consuming "classical" techniques. Consequently electronic music began to sound rather boring, even at the Radiophonic Workshop. Fortunately technology has now reached an adjacent point on the spiral of development and the computer promises not only to do for concrete sound what the synthesizer did for electronic sound but also to further improve the control of electronic sources.

The acquisition of the Fairlight Computer Musical Instrument has made a tremendous impact on the work of the department, speeding up conventional techniques and allowing development of new ideas previously out of the question because of the pressures of time. The Computer based digital synthesizer is perhaps the most exciting development in electronic music since the invention of the tape recorder. Although more expensive than an analogue system - £15,000 to £20,000 rather than £4,000 to £6,000 - a digital synthesizer, being software controlled, is capable of expansion and development, usually by the provision of a new systems disc and occasionally by relatively inexpensive hardware updates. The Fairlight company estimates that using this system there is a development potential of up to ten years in each instrument at an average cost for updates and maintenance of about £2,000 p.a. This is in sharp contrast with most analogue systems which become obsolescent the day the designer passes his plans to the manufacturer and in service should ideally be replaced every two years, a luxury we have been unable to afford.

Over the next five years we must expect to provide digital synthesis facilities in all six areas at the rate of one per year and maintain a proper level of software updates. In addition, we must not allow the analogue devices to rundown as they can often perform certain functions more efficiently than the digital systems. This is where "development" money will be most useful as our facilities need to be expanded rather than replaced.

The cost of this is difficult, if not impossible to forecast. The market is presently dominated by the "Fairlight" from Australia at about £18,000 and the "Synclavier" from America at £23,000 plus: However the German PPG System looks interesting and is expected to cost about £12,000 whilst the Japanese, who have been uncharacteristically caught up a conceptual back alley this time, are expected to announce systems at competitive prices in the next twelve months (probably at the Frankfurt show in March). If anything, price per facility will fall but systems will offer more facilities so prices will probably tend to stabilise in the £15,000 to £20,000 area which compared with development in the computer graphics field is astonishingly cheap.

5. STAFFING

The establishment staff of the Radiophonic Workshop is as follows:-

H.R.W.

O.R.W.

Engineer Radiophonic Workshop

6 Producers (Radiophonic Music)

1 Assistant Engineer

1 Secretary

(a) Producers

For some time we have been operating the composition service with the aid of our attachment scheme and indeed last year the attachees contributed over 2,000 hours to the total worked on programmes. Provided the flow of people continues we could survive this way but standards and efficiency would inevitably suffer so thought must be given to the establishment of a seventh composition post with its inevitable requirement for an additional studio.

(b) Engineers

On the Engineering side, urgent action is required. We are fortunate in having an excellent Engineer, Radiophonic Workshop and he is assisted by one engineer on attachment who is of an equally high standard. The Radiophonic Engineering team is unique in that it is responsible for all installation, development, modification and maintenance at the Radiophonic Workshop. It is, quite frankly, overwhelmed with work. In 1977 a consultancy study of the engineering staffing recommended that $3\frac{1}{2}$ engineers were required at that time. This recommendation was never implemented and we find ourselves with an extra studio, more advanced technology and still less than the recommended staffing. The result of all this had been the creation of a backlog of development items which are delayed through lack of manpower. The provision of an additional assistant engineer would solve this problem.

(c) Secretarial Support

The Secretary Radiophonic Workshop works for the Head of Department, the Organiser, the six Producers, the Engineer. She is telephonist, typist receptionist and production secretary when necessary so it is no accident that we have been operating with a supernumerary assistant for the past four years, often costing, from an outside agency, more than we pay the secretary. It would be helpful if this situation could be regularized.

Administration

The Radiophonic Workshop was originally part of Programme Operations Radio, its staff mostly being recruited from that department and most of its work being done for Radio. In 1979 the reorganisation of Programme Operations led to separation from that department and we are now responsible to General Manager Planning and Resources Radio though working 75% for the Television Service. This system works perfectly well and indeed it would be hard to find an administrative home in the Television Service. We are certainly not part of Television Sound any more than we are part of Graphics so in the absence of a "Shared Service" directorate we are perfectly happy to remain where we are. However the link with Radio means that salaries relate to those of Radio Producers and our relativity to Designers, Sound Supervisors and Graphics has been adversely affected over the last few years. It must surely be possible for our Television responsibilities to be taken into account when discussing grading even though we are administered by Radio.

4. ACCOMMODATION

Maida Vale has certain advantages not the least of which is its physical situation half way between TC and BH. Unfortunately, it was not designed as a studio centre. The rooms are cramped and oddly shaped with neither a natural nor a conditioned air supply. By the internal reallocation of certain areas we have managed to create three studios which are above the minimum size - i.e. 20 x 13 - but are left with three others which are really too small for comfortable use. In addition, we need a room for the engineers' office and space for our library which is at the moment spread around the building with tapes in a basement corridor and the paperwork on the ground floor in someone else's area. We also are likely to need some room for expansion. The building of Studio Seven at Maida Vale has created many problems but as this nears completion I hope a comprehensive plan will be devised for the building, reallocating the accommodation and reconciling the demands of Film Unit, Programme Operations, The Radio Orchestra, The Symphony Orchestra, Central Services and ourselves. If we can get enough space at Maida Vale then we must be prepared to provide proper air conditioning for the working areas and have a certain amount of building work done over the next five years. This will probably cost about £300,000. However, if we are unable to get a satisfactory allocation of space then thought must be given to re-housing the Radiophonic Workshop in another building, this would cost in the region of £1,000,000.

5 Summary and Recommendations

We recommend that in the next ten years we:-

- (i) Establish a replacement programme for mixing desks at the rate of one every other year starting next year.
- (ii) Resolve as quickly as possible the compatibility of multitrack facilities.
- (iii) Complete the already agreed replacements of B62 tape recorders by A80 RC's and A700 tape recorders by B67's.
- (iv) Provide, immediately, time and pitch shifting equipment in the areas which do not already possess them and equip each area with a digital echo device at the rate of one per year.
- (v) Provide immediately, video facilities in each area.
- (vi) Provide Digital Synthesizer facilities in each area at the rate of one per year.
- (vii) Resolve as a matter of urgency, the Engineering and Secretarial staffing problems and consider appointing an extra composer/producer
- (viii) Resolve the space problems at Maida Vale and if they can be solved, reorganise the space to provide replacement studios for C, E and H; an office for the Engineer Radiophonic Workshop, a library area and an area for possible expansion. Also provide proper air conditioning for the operational areas.
- (ix) If the previous item proves impossible, find alternative accommodation for the Radiophonic Workshop.

In order to achieve these objectives, we request that an official Radiophonic budget be established to be shared by Radio and Television in the proportion of usage and reviewed as necessary.

6. PROJECTION OF ANNUAL COSTS over ten years assuming that the Radiophonic Workshop remains at Maida Vale and no expansion takes place.

	1	2	3	4	5	6	7	8	9	10
	83	84	85	86	87	88	89	90	91	92
Mixing Desks	-	20	-	20	-	20	-	20	-	20
Multitrack	100	-	-	-	-	20	20	20	20	20
Echo and Treatments	15	10	10	10	10	10	10	10	10	10
Video	15	-	-	-	-	5	5	5	5	5
½" Tape Machines	30	-	-	10	10	10	10	10	10	10
Synthesizers	25	25	25	25	25	25	25	25	25	25
Accommodation	-	150	150	-	-	-	-	-	-	-
Minor Items	5	5	5	5	5	5	5	5	5	5
£000's	190	210	190	70	50	95	75	95	75	95

1 additional studio would cost £100,000 and add £12,000 to subsequent budgets.