TECH NEWS

Editing Alternatives
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5. EDITING ALTERNATIVES

When a film program is being put together (assembled) on videotape, the work can be organized in several different ways. The easiest and most direct method for filmmakers is to prepare a workprint in the usual way, cut and splice (conform) the original film footage to match the workprint, and then transfer the complete edited film to videotape. In some situations it may be necessary to add or insert some extra program segments such as titles and credits after the transfer to tape has been made. This can be done easily by electronically editing picture or sound, or both, to finish the program assembly.

With this method all — or almost all — the work of program preparation can be done in the film editing stage, utilizing simple, inexpensive film equipment. The workprint can be screened in a film projector as often as necessary, and revised in any desired manner before the original film footage is cut and spliced and transferred to tape. The final program assembly operations usually require only a minimum amount of time on costly and complicated electronic equipment.

Program Assembly by Electronic Editing

Program producers with television background and experience may prefer to use an entirely different assembly method — they may want to transfer all — or selected portions — of the unedited original film footage to videotape as the first step; electronic editing facilities can then be utilized to put the program together. This procedure is comparable with television program

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production on videotape from one or more electronic cameras making the original recordings scene by scene.

A great deal of highly sophisticated electronic equipment has been developed to enable programs to be produced in this manner. The simplest and most direct method for assembling a program is to make use of two videotape recorders, one in the record and the other in the playback mode, dubbing the pre-recorded program segments scene by scene onto a master program tape.
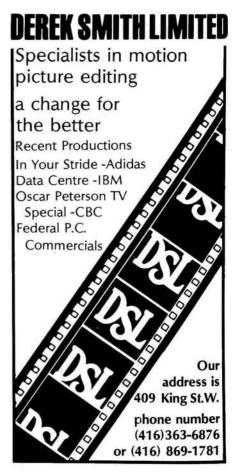
At the start of an assembly operation the first scene is located in the roll of pre-recorded material, and the desired portion of this scene is dubbed onto the master. Then, after the second scene has been located on the playback machine, the start of that scene is electronically edited onto the end of the first scene. This procedure has to be repeated many times to make up a complete program, tying up a great deal of costly electronic equipment for many hours.

Usually, professional quadraplex videotape recorders using 2" wide magnetic tape are used to make the original recordings and the master program tape.

A much more flexible variation of the above assembly method is to make up the electronic equivalent of a film blueprint by making dubs of the original 2" quadruplex recordings on lower cost, portable helical scan equipment, in a procedure known as "off-line" editing. After all of the editing decisions have been made, the original 2" quadruplex recordings are assembled on a master program tape to match scene by scene the edited video "workprint." This is usually done automatically with computerized facilities, utilizing the SMPTE time and control code recorded in the cue track of the videotape to identify individual scenes and video frames.

Practical Program Assembly Considerations

Anyone working with modern electronic post-production equipment will encounter a great variety of different kinds of editing and assembly facilities, from elementary to highly sophisticated professional. In many situations only semi-professional helical scan recorders may be available for making the original recordings and the final program assemblies. While it is quite possible to produce excellent results with these much less costly facilities, picture quality is not likely to compare favorably with work done on professional 2" tape, especially if the pictures on the edited program tape are several generations removed from the original recordings. Besides, editing capabilities with less costly helical scan equipment are inevitably more limited.

There is a parallel here with film production on 16 or 8mm film. It is well known that excellent results can be achieved with these smaller formats; in fact, 16mm film is now considered a professional format, and is used successfully in many commercial and industrial applications. But for large screen theatrical projection 35mm comes out away ahead.

So, in producing programs on videotape, one should consider carefully, first of all, the end use, as well as the degree of complexity likely to be encountered before undertaking a program assembly operation. As a rule, videotape facilities are in great demand, and heavily booked, with the result that pressure to complete an assembly operation within the scheduled time period can become quite severe, especially when unexpected complications develop.

Fades, Dissolves and Superimpositions

Whatever method is employed in the preparation of the original film materials and in the assembly of a program on videotape, some provision must be made for adding effects such as fades, dissolves and supers (titles, credits, etc.). In the production of programs on videotape with electronic cameras, a common practice is to separate the various scenes and program segments on two or more reels of tape, either by cutting and splicing the original recordings, or by a re-recording (dubbing) operation. This gives the approximate equivalent of the familiar A&B rolls for film printing. These separate videotape reels are then played back through a video switcher-mixer to add the effects electronically, while the combined output of the switcher-mixer is recorded on the program master tape. The ease with which a wide range of effects can be produced in this manner is one of the greatest advantages of program assembly on videotape.

The method employed to add effects electronically can be illustrated by a simple A&B reel operation. Let us say that the finished program must have several fades and dissolves between some of the scenes. The A&B reels are made up with the A reel containing outgoing scenes and the B reel the incoming scenes. Three videotape machines are needed, two in the playback mode, feeding video from the A and B reels into two inputs at the switcher-mixer, and the third machine in the record mode, to make a recording of the switcher-mixer output.

The pictures from the A and B reels appear on two side-by-side picture monitors in front of the switcher-mixer console. To produce a fade, the mixer lever for the A reel input is moved slowly from the full-on to the full-off position as the end of the first scene approaches, reducing the video level to a minimum. Then, at the start of the next scene in the B reel the lever for the B reel input is moved from the off to the full-on position. For a dissolve the two fader levers are tied together, and as they are moved slowly from one end of their travel to the other the video level from the A reel scene is reduced, while at the same time the video from the B reel scene is increased to normal level. These program segments containing the effects can then be electronically edited into the master program tape.

Automatic videotape editing and assembly systems are now available capable of controlling up to eight playback machines, plus three external sources, such as switchers and faders, and one record machine, by means of keyboard data entry.

Lettering or numbers can be superimposed over a picture by an electronic technique known as keyed insertion, by dropping the characters into "holes" in the picture video. Another widely used technique for titling employs an electronic character generator.

Assembling a Film Program in A&B Rolls

These program assembly methods can be used successfully also when the original videotape recordings consist of transfers from film. However, a great deal of time taken up in making editing decisions on scarce, costly and complicated electronic equipment can be saved and put to much better use by performing as much as possible of the editing on the film before the transfers to tape are made. Making up a film workprint can save hours — even days in some complicated situations — that would otherwise be needed to complete the program assembly by videotape editing. This method has, of course, the additional advantage that film editing provides infinitely more scope for creative decision making. Instead of being tied to a complex machine system, the film editor and program producer can work at a much more leisurely pace, on simple film equipment, to achieve the desired production values.

The most obvious course to take is to cut and splice the original film footage into A&B rolls in the same way as 16mm originals are so often prepared

for printing. Then the A&B rolls could be placed on projectors on two telecine chains to give two separate video inputs at the video switcher-mixer, in the same way as A and B videotape reels are handled.

But in attempting to use this method of film program assembly it will be found that telecine film projectors have not been designed for synchronous starting and running, so that it would be next to impossible to cut back and forth between scenes in the A&B rolls with frame accuracy. In any event the video operator at the switcher-mixer console cannot take the kind of instantaneous action that frame accuracy demands. These problems can be avoided by leaving as much picture footage as possible ahead of and at the end of each scene in the A and B rolls.

However, when transfers to videotape are being made from original film camera footage, adjustments of telecine camera controls — sometimes quite large — are always needed to correct for density and color variations in the pictures. The video operator at the telecine control console needs some time at the start of each scene to decide what corrections are needed and then to make the adjustments of the appropriate controls. With the intermittent film advance in projectors normally utilized in camera-type telecines it is quite difficult to stop, rewind and start the film when the video operator misjudges the corrections needed for a scene.

Equipment is now becoming available that will make this method of film program assembly much easier and more precise. RCA's new FR35 and 16 projectors can be locked to television sync for synchronized starting and running, and projector speed can be varied from 48 fps down to still frame. A system for storing picture corrections in a memory is also available, enabling the video operator and client or program producer to obtain just the right colors and picture balance.

The Rank Cintel flying spot scanner now in use in a number of Canadian post-production houses offers many advantages for this kind of work also, not the least of which is a continuous film transport. Scene by scene corrections can be made with accessory equipment known as "Topsy" and stored in a memory for subsequent automatic transfer to videotape. With the rapid advances now taking place in television technology, film is becoming much more attractive as the original recording medium for programs on videotape. □