1 Introduction

XPOST allows you to put the finishing touches on animations which use the ANIMATE script file format. You can change the lighting conditions, zoom the camera, and move the camera and/or center of view using several movement options. In addition, animation files can be merged or spliced together.

2 Mouse Control

Most functions can be performed using the mouse, with keyboard input only needed to input filenames. Generally, two types of mouse actions are required for XPOST: pushbutton selection and scrollbar dragging.

To select a pushbutton with the mouse, position the mouse pointer within the desired pushbutton and press the left mouse button. An exception to this is when selecting an item on a menu. To do this, position the mouse pointer within the appropriate menu icon and press and hold down the left mouse button. The menu will appear, and while holding down the left mouse button move the mouse pointer to the desired menu item. If the item is accessible, it will become highlighted. To select an item, release the left mouse button.

To drag a scrollbar, position the mouse pointer within the scrollbar. The mouse cursor will become a pointing hand. Press and hold down the left mouse button. The scrollbar thumb will move to the mouse cursor position. When the mouse pointer is moved, the scrollbar thumb will move with it. Release the left mouse button when the scrollbar thumb is in the desired position.

3 The main window

The XPOST main window consists of three main sections: the camera control section, the camera view window, and the control section (see Figure 1).

Figure 1: The XPOST main window
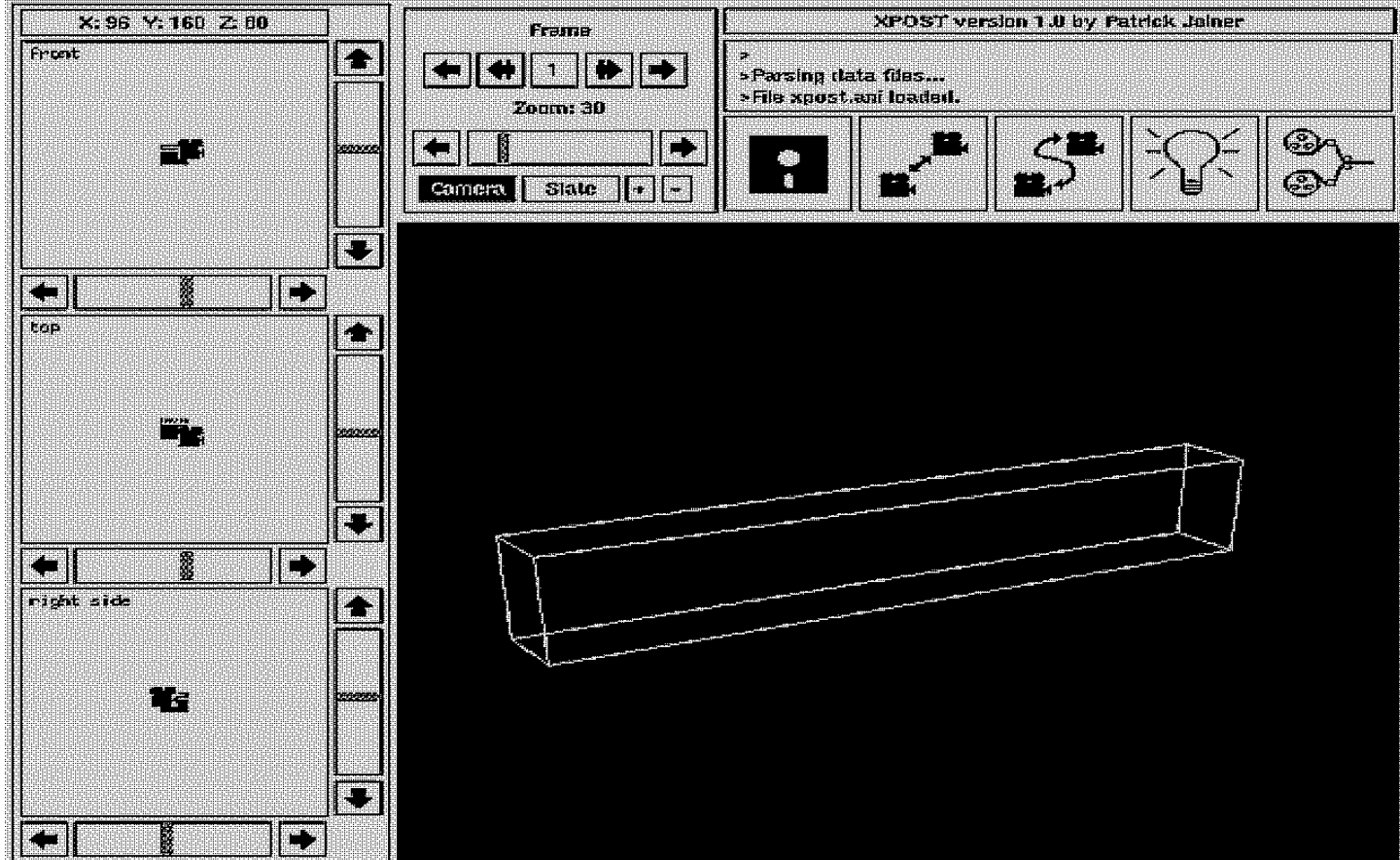
4 The Camera View Window

The camera view window contains a three-dimensional wireframe view of the objects in the scene. Each object is displayed as its bounding box, which is a rectangular box that encloses the entire object. As the camera icon, slate icon, or the zoom scrollbar are manipulated, the view in this window changes accordingly. Objects may sometimes appear distorted in this window, such as when the camera is very close to an object or when the zoom factor is very high. This is due to the fact that the objects are not clipped to fit within the window.

5 The Control Section

The control section contains all of the menus and buttons necessary to control XPOST. There are five menu icons, a set of frame control buttons, a zoom control, two camera mode selection buttons, two camera control resize buttons, and a status window.

5.1 The Frame Control Buttons
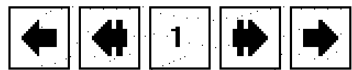
The frame control buttons allow you to move among frames within an animation. There are four frame control buttons. The leftmost and rightmost buttons move one frame backward or forward in the animation respectively. The inner buttons move ten frames backward or forward respectively. The current frame number is displayed between the innermost buttons. When no animation is loaded, a ''0'' is displayed.

5.2 The Camera Mode Selection Buttons

These buttons allow you to choose whether you would like to move the camera or the center of view. The object which is currently being moved is highlighted. To choose which object to move, select the appropriate button.
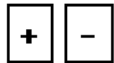
5.3 The Camera Control Resize Buttons

Some animations may extend beyond the default boundaries of the XPOST ''world.'' To change the size of the boundaries, use the camera control resize buttons. The ''+'' button doubles the size of the boundaries, while the ''-'' button reduces the size of the boundaries by one-half. When these buttons are selected, the increment sizes for the camera control buttons are also changed accordingly.

5.4 The Zoom Control

The zoom control allows you to zoom the camera in or out on a scene. The zoom control consists of two zoom buttons and a zoom scrollbar. The current zoom factor, which is a number from 0 to 180, is displayed above the zoom scrollbar. To choose a new zoom factor, either drag the scrollbar select the left or right zoom buttons to increment or decrement the zoom factor by 1.

5.5 The Menus

The five menu buttons control the main functions of XPOST. When one of these buttons is selected by holding down the left mouse button, a pop-down menu appears. To select a particular menu item, move the mouse pointer to the desired menu item and release the left mouse button. If a particular menu item can be selected, it will be black; otherwise it will be gray.
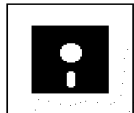
5.5.1 The Disk Menu

With this menu, you can load an animation, save an animation, or quit the program. When you select load animation or save animation, a popup box will appear. Enter the name of the file to load or save using the keyboard and either press return or select the Done button. To cancel at any time, press the Cancel button.
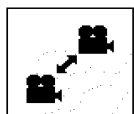
5.5.2 The Camera Move Menu

With this menu, you can perform a cut, a linear camera move, or a camera zoom. To perform a linear camera move, first select Start Move. Then select a different frame using the frame control buttons, move the camera or center of view position, and select End Move. To perform a zoom, select Start Zoom, select a different frame using the frame control buttons, change the zoom settings using the zoom controls, and then select End Zoom.

5.5.3 The Dolly Menu

With this menu, you can perform a camera dolly. Select Start Dolly to start a camera dolly. Move to a new frame, move the camera or center of view as desired, and select Add Dolly Point for each point which you would like the camera or center of view to pass through. To remove a dolly point while defining a dolly, select Remove Dolly Point. To complete the dolly, move to a new frame, move the camera or center of view, and select End Dolly.

5.5.4 The Lighting Menu

With this menu, you can adjust lights, add lights, or delete existing lights.

To adjust or delete a light, select the adjust light menu item or delete light menu item respectively. A box will pop up on top of the camera view window, prompting you to select the type and number of the light you would like to adjust or delete. There are three types of lights: diffuse, spot, and Warn lights. A diffuse light is a point light source which radiates light in all directions. A spot light is a directional light which is pointed toward a certain point in space. A Warn light is a spot light with soft edges. The light number is an arbitrarily assigned number which helps to distinguish between lights of the same type. The light number can change as a result of adjusting a light. The light you select will become highlighted. Press the Done button to complete the selection. You may press the Cancel button at any time to cancel this operation. If you are deleting a light, after pressing the Done button the light will be deleted.

After selecting a light to adjust, a new box will appear. This box contains either one or two scrollbars, each with a left and right button. For all lights, there will be an intensity scrollbar and buttons. The intensity of the light can be adjusted by either dragging the scrollbar or by pressing one of the intensity buttons. For spot lights and Warn lights, a second scrollbar and set of buttons will be present for adjusting either the opening angle of the spotlight or the coefficient of the Warn light.
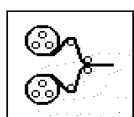
5.5.5 The Merge/Splice Menu

With this menu, you can merge or splice two animations together. A merge is a frame-by-frame combination of two animations, while a splice is an insertion of one animation into another. Select either a merge or a splice, and a popup box will appear. Enter the names of the two source files to merge and the name of the destination file. In the case of a merge, enter the number of the frame to start merging. In the case of a splice, enter the number of the frame of the first animation after which to insert the second animation. The lighting conditions of the first animation will be used for the new animation, and for a merge the camera positions of the first animation will be used for the new animation. This is to resolve any conflicts which may exist between the two source animations.

```
>
>Parsing data files...
>File xpost.ani loaded.
```

```
X: 96  Y: 160  Z: 80

front


top


right side
```

5.6 The Status Window

The status window displays messages about the status of file operations.
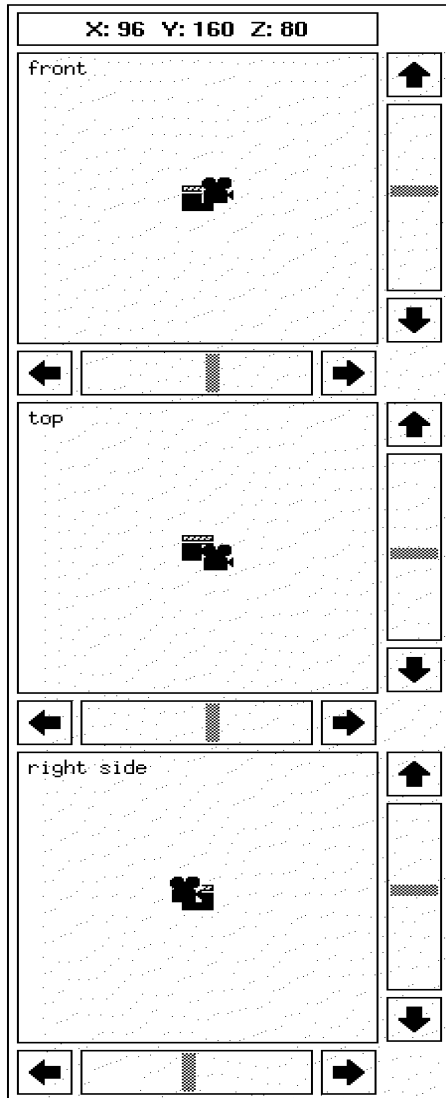
6 The Camera Control Section

The camera control section consists of three subwindows. These subwindows represent the front, top, and side views of the XPOST animation ''world''. Each subwindow contains a camera icon and a slate icon. The camera icon represents the camera's position is space, while the slate icon represents the position in space at which the camera is pointing, known as the center of view. The X, Y, and Z coordinates of the camera or slate are displayed at the top of the camera control section.

Each subwindow has two scrollbars and four directional buttons associated with it. One scrollbar controls the camera/slate movement vertically within the subwindow, and the other scrollbar controls camera/slate movement horizontally. There are two camera control increment buttons associated with each scrollbar, which move the camera or center of view incrementally in the direction pointed to by the button. The increment depends on the size of the boundaries of the XPOST ''world.'' The default size of the boundaries is -80 to 80 with an increment of 1. This size can be changed with the camera control resize buttons.

To move the camera or center of view, first choose which of the two you would like to move by selecting the appropriate camera mode selection button. Then you can move the camera or slate by either dragging one of the scrollbars associated with a subwindow or by selecting one of the camera control increment buttons associated with a particular scrollbar.

When you adjust a light position or add a new light, the

camera control section contains lighting icons instead of the normal camera

and slate icons. A diffuse light is represented by a light bulb icon, a spotlight is represented by a spotlight icon, and a warn light is represented

by a spotlight icon. Spotlights and warn lights also have a point where the light beam is pointed, known as the focus. This is represented by a circle icon for the spotlight and a ''fuzzy'' circle for the warn light. The lighting icons are moved in the same way that the camera icons are moved, except that the camera mode selection buttons change to lighting mode buttons. To move the light or the focus, simply select the appropriate button.

7 Conclusion

XPOST was designed to complement XKEY and ANIMATE in making animating easy. However, some limitations exist. For example, XPOST does not represent hierarchical objects accurately with a bounding box. In addition, results with moving objects may not as expected since XPOST uses the first frame of the animation as the basis for the object positions. However, these problems will be addressed in the future.