

## 5. The Time Editor

The Time Editor is used to define, view and modify values and animation of clip parameters over time. Most effect clips, and additionally group and sound clips, have a set of animatable parameters to control their behavior at any given frame.

Parameter animation is accomplished using the notion of control or key points and interpolation. That is, you can specify values for any parameter at any point in time. Such a point in time is conventionally called a keyframe, as it normally is a frame of key interest for the story or the actual shot. As an average shot usually only has a small number of such points of key interest, one would like the system to provide meaningful parameter values in between automatically - this is called interpolation.

Typically, in keyframe animation systems interpolation is done by creating a smooth curve through the keypoints, but of course smoothness and shape of the interpolation can be manipulated interactively. This curve is called a “timecurve” because one of its dimensions represents time.

The whole notion stems from traditional cel animation, where top cartoonists only draw the most important expressive character phases (the keyframes) while the in-betweens necessary for smooth movement are interpolated by other cartoonists. For simple numeric parameters, timecurves provide a convenient and intuitive means of parameter representation.

More complex parameters, like color values or 3D motion in space, need multiple timecurves to be expressed. A color, for example, uses three timecurves, one for each color component. As these “composite parameter representations” are sometimes quite unintuitive, the time editor provides additional edit views specialized on these complex data types, specifically for color, movement and deformation in 3D.

In the time editor, one can control parameters of all clip types that actually have parameters to be adjusted:

- Effect clips. Most effects of Jaleo provide a set of parameters, providing a wide range of possibilities. There are, however, also some simple predefined effects without any further control (simple linear mix, for example).
- Group clips. Group clips have a single parameter to specify timestretching of playback. The timestretching curve by default is linear, giving a normal “next frame at next timestep” behavior.
- Sound clips. Sound clips have timecurves to control their volume and their panorama position.

## 5.1 General Description

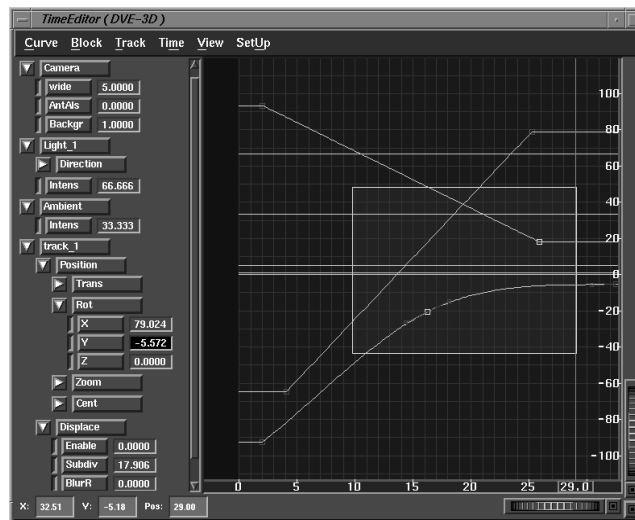


FIGURE 27. Time Editor Window

There are four areas in the time editor window:

- The parameter list (at the left side of the window)
- The curve editor (the large black workspace)
- The numeric input area (three text boxes at the lower border of the window)
- A menu bar

### 5.1.1 The Parameter List

Each effect typically has a number of parameters, and each parameter has a name. In the parameter list all the parameters of an effect are listed together with a text field displaying the current value of the parameter. You can not change values by keyboard here - use the numeric input area instead. When an effect is first opened, the value displayed typically is the parameters default value.

As many effects can have more than one input layer, it is often necessary to have a separate set of parameters for each input layer. As an example, consider a multichannel 3D-DVE: Here, separate motion tracks and parameters will be required for each input layer. The time editor calls a parameter set associated with an input layer a track. By default, all effects are displayed with a single track when first opened. To edit parameters of other input layers, one has to add new tracks to the current effect using a menu command (see below).

Returning to the example of the multichannel DVE effect, there are also some parameters that are global for all input layers. These are, among others, camera values and some lighting controls.

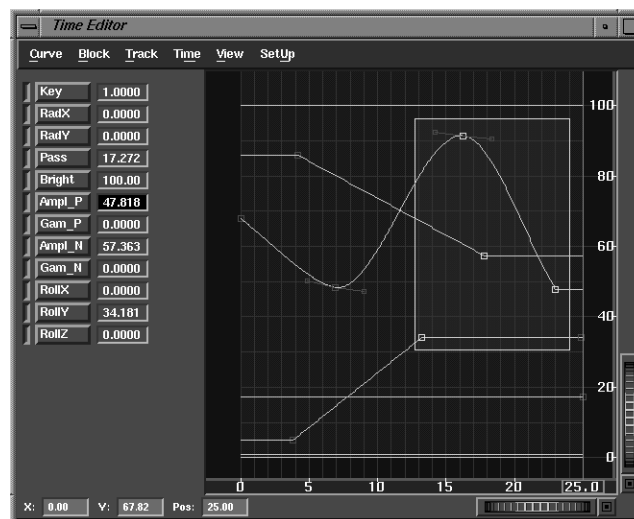
Finally, some effects can have multiple parameter sets that are not associated with an input layer. The 3D DVE can have a separate parameter track for each light source, and the pattern

generators (see “Wave Patterns” on page 248 and “Stripe Patterns” on page 250 for more information) can create patterns build from any number of independent “pattern sources”, each with a parameter track of its own.

To sum up, an effect may have:

- A single set of “global” parameters. Some effects that can only have one input layer (or can even operate without inputs) behave like that. Likewise, group and sound clips do only have a single parameter set, as they do not accept inputs. Multichannel effects may also have such a “global” parameter set additionally to the input layer parameters (tracks).
- Separate additional “local” parameter sets, or track parameters, controlling processing for each individual input (also called a track) of the effect. Wherever this is applicable, you find a note on the respective reference page for the effect.
- Separate effect parameter sets that are independent of a particular input channel. Wherever this is applicable, you find a note on the respective reference page for the effect.

Simple effects with a single set of parameters typically present their list in a very simple manner: names and values without any additional hierarchy



**FIGURE 28. Noise Effect in the Time Editor**

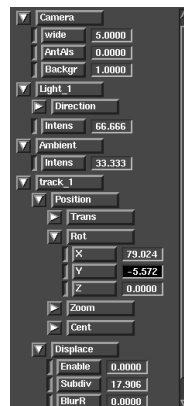
Complex effects with multiple parameter sets use a hierarchy that is quite similar to the directory list view in SGI desktop filemanager windows or to the “sorted by name” view in Macintosh finder windows. Each parameter subset, or track, behaves like a directory that can be opened to view its contents.

Opening and closing of directories is accomplished by pressing the arrow symbol in front of the name, that also denotes the state of the parameter set:

- If the arrow points to the right, it is closed,
- If it points downward it is opened.

The “content” of an open parameter set is listed below its name, being indented a bit to the right to show the proper subordination of content and header. Inside of a parameter set may be further “subdirectories”, collecting the timecurves of a complex parameter. In the 3D DVE for example, the three timecurves controlling rotation are grouped together in a subdirectory “Rotation”. For effects with many parameters, this hierarchic approach helps to maintain order and understandability. The tracks, or specific parameters for each input layer, are maintained in directories in exactly the same manner. The example set (3D DVE) in the following illustration has the following parameters:

- Global Parameters, here collected in a subdirectory Camera
- One parameter set for a light source, containing a subset labeled “Direction” and an intensity parameter
- One parameter set for each input layer, labeled “Track 1”, containing subsets for the position, rotation and scale of the input image, a subset for displacement mapping parameters, and finally (not visible in the image) a subset for highlight parameters.



**FIGURE 29. 3D DVE in the time editor parameter list**

Adding a track to an effect is very simple: For a new track with default values, you can simply choose AddTrack from the Track menu of the time editor’s menu bar. To copy an existing track, just select it by clicking on its directory and use the CopyTrack command from the menu bar. To add a new light source to the 3D DVE, choose AddLightTrack.

If an effect has a simple parameter set, all timecurves associated with the parameters are visible in the curve edit area all the time. For a effect with hierarchic parameter sets, parameter curves are only visible if the associated “subdirectory” is opened.

### 5.1.2 The Curve Edit Area

Here, the real work is done: not only are the timecurves for each parameter displayed, they can also be modified here.

The edit area has two thumb wheels located at the lower right corner of the editor window, used to zoom independently in x and y direction, giving access to any level of detail. The button in the very corner automatically resets the zoom in a way that the full range of values and the full time range of the selected effect fit into the display. If working in a zoom-in

view of the curves, the curve display can be scrolled by pressing and holding the right mouse button over the window background and dragging around. Also, there are scrollbars for the same purpose.

On the lower border of the edit area a timecode ruler is present, counting frames of the effect edited. On this ruler, a cursor is based that extends over the full window as a white line. This cursor is called the editing cursor. There is also a vertical ruler for parameter values at the right hand side of the edit area.

If any curve is selected in the parameter list, a part of the curve edit area is drawn with a light grey instead of black. The light grey area denotes the valid value range for the given parameter. Dependent on the setup from the menu bar, the time editor may or may not limit control point positions to the valid value or time range. Sometimes, though, positioning control points outside make sense to achieve a particular curve shape. In this cases, curve values are clipped to the valid frame and value range. Finally, the curve area displays a grid to facilitate precise editing of curves.

### **5.1.3 Numeric Input Area**

The three text boxes at the lower side of the time curve editor can be used to modify control point values numerically. “X” is time value of the currently selected control point, “Y” is the value of the curve at the selected point. The position value is the position of the time cursor in the curve edit area.

## **5.2 Timecurves**

### **5.2.1 Curve Representation**

Parameter interpolations are handled as Bezier curves, displayed in the familiar representation with control points and tangents. Normally, only the control points of the bezier segments are displayed, with the tangents set automatically to produce a smooth curve. The Curve menu provides a set of functions to create sharp control points, or to make the tangents visible.

### **5.2.2 Selecting Points and Curves**

Control points of curves can simply be selected by clicking on them. Normally, all previously selected points are deselected, unless you hold the shift key while selecting a point. Alternatively, you can press and hold the left mouse button anywhere in the curve edit area and drag a selection rectangle. All points inside of the rectangle are selected. All points are deselected by clicking in the edit area background.

Note: You can select (and modify) multiple points of multiple curves at the same time. Selected points appear in yellow.

A complete curve can be selected by double clicking on a control point. A selected curve is drawn in yellow as a whole. Alternatively to a double click, you can also click on the

parameter name in the parameter list. Clicking on (selecting) a subdirectory selects all curves it contains.

### **5.2.3 Clip Selection: Interaction of Time Editor and Reel windows**

There is only one time editor window. The time editor displays the parameters of the currently selected clip. If no clip is selected, or if multiple clips are selected, the parameter list and curve area will simply be empty. This also applies if the effect selected does not have any parameters. Moving the editing cursor in the Time Editor does normally not drag the monitor cursor. To change the monitor frame, drag the monitor cursor manually. If you want a monitor to move with the time slider, activate Follow Editor in the associated monitor popup menu (see “Follow Editor” on page 81).

### **5.2.4 Default Curves**

When you open the time editor on a new effect, all parameters will typically be drawn as horizontal lines. This means the parameters are not animated, and their values are the default values. As the values are constant, there are no control points for these default curves. To modify them, you will have to add control points yourself. Some effects have predefined linear curves to insure reasonable behavior.

As an example, take the timestretch curve of the group clip that defines which frame of the groups contents will be rendered for each frame of the group clip rendered. By default, the curve is a simple straight linear curve, making sure that for each frame of the group the same frame of its content will be reproduced. This is exactly the behavior expected from a normal clip - in contrast, a horizontal line would produce a still frame, just rendering the same frame of the group content for each group frame. In the same way, a wipe effect has a predefined wipe grade curve.

### **5.2.5 Inserting and Deleting Control Points**

There are two ways to insert control points: with the insert function or with the mouse. Both ways require a time curve selected using any of the methods described above. To add points using insert, position the editing cursor at any desired frame. Now, select the Insert function from the Curve menu or press the insert key. A new control point is inserted at the intersection point between cursor line and the selected time curve.

To use the mouse, press the alternate key and hold it, then click with the mouse in the curve edit area. A new control point is created for the selected curve just at the spot clicked. You do not need to click on the curve; the curve will automatically be reshaped to pass through the new point. While you hold down the left mouse button, you can move the new control point. After insertion, the time curve remains selected, so you can proceed with adding additional points.

To delete control points, just select the objects, then select Delete from the Curve menu (or press delete.) You can also use Curve>Cut if you want the deleted points to remain on the clipboard, ready to be pasted in later.

### 5.2.6 Moving Control Points and Curves

You can move any control point by pressing and holding the left mouse button on it and dragging the mouse around. If you have multiple points selected, you can drag them around by pressing the left mouse button on any of the selected points.

If you have selected points from multiple curves, all these curves will be affected. You can also move around complete curves. To do so, select the curve and then drag it around by pressing and holding the left mouse button on any of its control points.

## 5.3 3D View

The 3D view window is used to program 3D transformation in conjunction with the 3D DVE effect. To understand its behavior, a close look at the 3D effect should be taken (see “DVE 3D” on page 191).

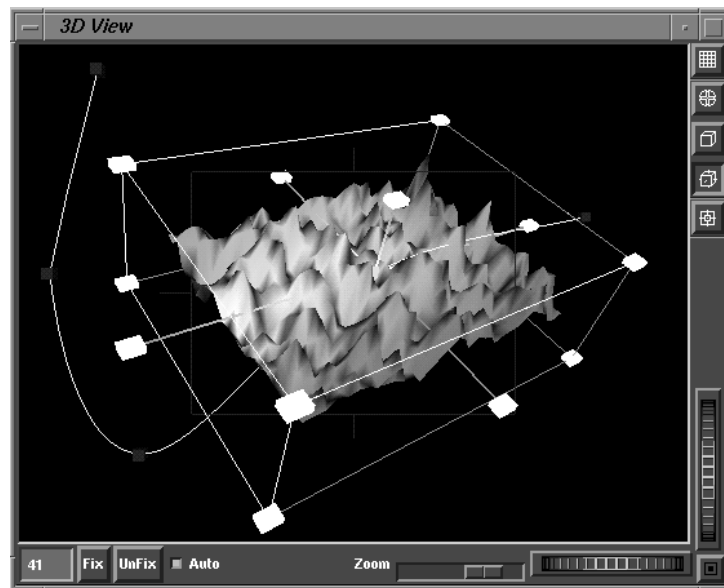


FIGURE 30. 3D View

The 3D effect operates on any number of input tracks. There is the additional option of assigning input tracks to displacement mapping, but this does not modify behavior of the 3D view and is thus ignored here.

Each input track will be visible as an image in the 3D view, where it can be interactively manipulated in 3D space. (If no input is available, a simple colored rectangle will be shown.) If you animate an image’s position, its motion track will be visible as a spline curve in 3D. Each keyframe set on the motion curve is visible as a small blue cube.

Interactive manipulators are used to transform the images in space. For movement and scaling, handle boxes are displayed on the images, allowing you to grab corners and drag them to any desired size or position. For rotation, a virtual trackball is displayed around the image, that you can grab and rotate with the mouse. After you have transformed the image as desired, you can transfer the current position to the Time Editor using the Fix button.

Alternatively, you can activate an “Auto-Fix” mode, automatically saving each modification as you apply it.

The 3D View window consists of a large working area and a bottom and right hand border with controls. The work area is a “camera view” on images moving in 3D space. A blue rectangle is drawn to denote video screen space. By default, without applying any transformations, all image tracks are of course fitted within this rectangle. What is within the rectangle, is visible in the Jaleo monitors. The working camera can be rotated, as it is sometimes useful to view the images “from the side” to position them appropriately in 3D space.

### **5.3.1 Selecting Tracks**

To manipulate an object in the 3D view it must be selected first. To select an image track or light for manipulation, click on its “subdirectory” in the time editor track list window. You can also select an image by directly clicking on it in the 3D view window. The 3D DVE effect always has at least one light track and one image track, so either can be selected even in the default setup.

Lights are not visible in the 3D view window if they are not selected; picking a light tracks subdirectory will cause an appropriate icon (a 3D arrow indicating light direction plus a trackball manipulator) to appear in the 3D view window.

Image tracks are always displayed in the 3D view; upon selection, the currently selected manipulator will be displayed. There are currently three types of manipulators available:

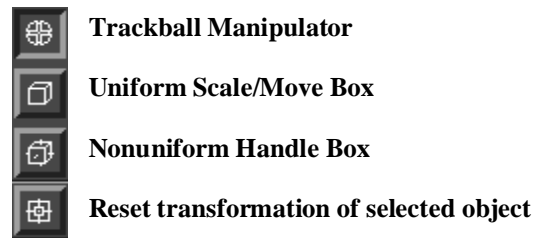
- A “uniform scale, rotate and move” box, displayed as a wireframe cube with solid manipulation handles at its corners
- A “non-uniform scale and move” handle box, displayed as a wireframe cube with solid box handles at the corners and in the centers of each face
- A trackball for rotations and uniform scalings, displayed as three intersecting rings, one around each of the main axes.

### **5.3.2 Manipulators**

The current manipulator can be selected using three icons at the right border of the 3D view window. The fourth icon in the group is used to reset the current transformation to the



default values, in effect putting the image back into the full monitor view without any 3D transformation.



**FIGURE 31. Manipulator Icons**

The 3D object manipulators work like this:

#### **Uniform Scale/Move Box (Image tracks only)**

The uniform handle box manipulator provides three operations:

- You can scale the image about its center, preserving its aspect ratio. To do so, drag the cubic handles at the corners of the cube while holding the left mouse button down.
- You can move the image in 3D space. To do so, drag while holding the left mouse button on any side of the cube (do *not* click on an edge). You can move in the two dimensions of the cube side selected. Two violet arrows will appear to visualize the possible movements.
- You can rotate the image about the three major axes (x, y, z). To do so, drag while holding the left mouse button on any *edge* of the cube. You can now rotate the image around the axis parallel to the selected edge. The axis will be displayed as a violet line to visualize the possible movement.

#### **Non-Uniform Handle Box (Image tracks only)**

The uniform handle box manipulator provides two operations:

- You can scale the image about the center of the box. To do so, drag the cubic handles at the corners of the cube or at the center of the faces while holding the left mouse button down. Dragging the corner handles gives a uniform scaling, preserving the aspect ratio, while dragging the side handles allows non-uniform scaling.

If you hold down the ALT key while dragging, scaling will occur about the opposite corner/side instead about the center.

If you hold down the CTRL key while dragging, the handle box will be rescaled without affecting the image. Using the rescaled handle box together with the ALT key, as described above, you can effectively position the scale center wherever you need it.

- You can move the image in 3D space. To do so, drag while holding the left mouse button on any side of the cube (do *not* click on the handle boxes). You can move in the two dimensions of the cube side selected. Two violet arrows will appear to visualize the possible movements.

If you hold down the ALT key while dragging, one dimensional movement perpendicular to the selected face will occur.

### **Trackball Manipulator (Image and Light tracks)**

The Trackball Manipulator offers scaling and three rotation modes:

- To rotate around one of the main axes, drag on any of the three rings.
- To rotate unconstrained, drag on the trackball itself (the imaginary sphere defined by the three rings - do *not* click on the rings) and drag it around. This will behave as if rolling a ball on a table with your flat hand.
- To rotate around an arbitrary constraint axis, press SHIFT before dragging. A new ring will appear. Once you have this ring, you can rotate the image using it just like any of the main axis rings. To remove the ring, press SHIFT and drag it close to the intersection of two other rings.
- To scale the object and the manipulator, press ALT while dragging on the trackball. This does not apply for light tracks.

### **5.3.3 Camera Controls**

The Camera controls are located in the lower right corner of the 3D window. The controls available are:

- A slider to control camera zoom
- Two thumb wheels to pan (horizontal thumb wheel) and tilt (vertical thumb wheel) the camera
- A home button, to reset the camera to its default position, in the lower right corner
- A display control icon, showing a grid image, located above the vertical thumb wheel, to switch between solid and “textured wireframe” display of images in the 3D view. On slower machines, textured wireframe display will be faster.



**FIGURE 32. Shaded/Wireframe Display Mode Icon**

### **5.3.4 Keyframe Controls**

In the lower left corner of the 3D view window are a set of keyframe control commands. In particular, you can see:

- A frame display. Here, the current frame is displayed. The number displayed here changes when you move the time slider in the time editor. You can also enter a number by typing. Note that moving the time slider will not only change the frame value in this field, but it will also “playback” the animation in the 3D window.
- Fix keyframe button. This button can only be used when an image or light source is selected. It will store the current transformation of the object to the time editor by creating a keyframe at the time displayed in the frame display. To create a new keyframe, you can either:
  - Move the time slider to the desired frame, change the transformation and press Fix, or
  - Change the transformation at the current frame, enter a new frame number in the frame display and press Fix. If you changed the current transformation, but want this new positions/rotations at a different keyframe, you should not move the time slider, because that updates the 3D view with data from the time editor, causing it to “forget” your move. As stated above, enter the desired target frame number in the frame display instead and press Fix to store your new data at any frame position desired.
- Unfix Keyframe button. This removes all control points at the current frame position from the transformation timecurves of the track or light. To use this button, first select an image in the 3D view.
- Autofix. This toggle activates or deactivates automatic keyframe setting. If Autofix is activated, any movement or other transformation of the selected object or light is immediately taken as a keyframe, without having to press the fix button.

### 5.3.5 Working With Motion Tracks

A motion track of an image is displayed as a 3D spline curve on screen. Keyframes fixed during an animation are shown as small blue boxes. To create a motion the image around using any of the movement manipulators, fixing keyframes at various time slider positions. If Autofix mode is deactivated, you will only see the new shape of the curve after you press the Fix button. With Autofix, the curve will follow the movement of the image just like a “rubberband”. Sometimes, it is easier to see the curve if you switch the object display in the 3D view to grid mode.

To edit any key point of the motion curve, simply click on any of the blue keyframe marker boxes. The image will position itself automatically on the respective keyframe’s position and the time slider is also moved to the appropriate time position. You can now click on the image and edit its transformation as desired. If you are in Autofix mode, your changes will be accepted automatically, while otherwise you have to press Fix to make them permanent.

You can also delete key points easily. Click on the desired blue box, select the image and click on UnFix.

Finally, if you move the time slider in the time editor, the image will move along the path. The “anchor point” of the image, in its center, is shown as a red box. Whenever the red box is coincident with a key frame on the track, its color changes to yellow. You can use this to

position the image precisely on a key frame if you do not want to use pick selection of the key frame.

## 5.4 Color View

The color view window displays a standard color picker that allows you to select a color from a color circle, or using familiar sliders for RGB or HSV. The color view can be used to adjust colors for all effects that require color input.



FIGURE 33. Color View

The color window by default displays the color circle, two color store fields, a menu bar and a value slider. While the color circle always shows colors with full value, the value slider can be used to change the color luminance of a selected color. Using the menu, other sliders (for RGB etc.) can be activated, and some behavior options can be set.

The left color store field always shows the currently selected color; using the arrow buttons below the fields, you can copy to and from the second store field, or swap their values. This is useful for color comparisons.

When operating on effects containing multiple color values (for example, the Grade effect in FX>Utilities), you must click on the desired color's "subdirectory" to select it for the color view.

### 5.4.1 Color View Menu Bar

#### Apply Mode: Continuous versus Manual

In continuous mode (the default), all changes to the selected color are immediately transferred to the time editor and saved as a keyframe at the current time (i.e. the position of the time slider). In Manual mode, an additional "Accept" button appears, and values are only passed to the TimeEditor when this button is pressed.

#### WYSIWYG

If the WYSIWYG mode is activated, the background of the color sliders does not display a gradation of the color component controlled by this slider, but the color you will get if you move the slider. As an example, the red slider normally shows a gradation from black to red. In WYSIWYG mode the gradation depends on the other sliders, giving you a very clear idea

what will happen to the color when you are moving the slider. The easiest way to get a hold of this is to simply try it out.

### **Copy And Paste**

These buttons allow you to put the selected color in the X Windows cut buffer, or to read a color stored there by another application. Well behaving X applications will thus allow you to quickly share colors.

### **Help**

The color picker help function requires that you have SGIs and Inventor help card subsets installed.

### **Slider Menu**

With the slider menu, you can activate display of additional color sliders, for example for RGB and HSV values. You can even disable all sliders.

## **5.5 Time Editor Menu Bar**

### **5.5.1 Edit**

Contains utility functions to edit time curves and to undo/redo changes

#### **Edit > Undo**

Unlimited step undo. The undo command in the time editor is actually identical with the undo command of the reel. That is, you can use either command to undo events either in the reel or the time editor.

#### **Edit > Redo**

Unlimited step redo. The redo command in the time editor is actually identical with the redo command of the reel. That is, you can use either command to redo events either in the reel or the time editor.

#### **Edit > Cut**

Deletes the selected control points and places them on the clipboard. They can be pasted later on.

#### **Edit > Copy**

Copies a selection of control points to the clipboard, ready to be pasted.

#### **Edit > Paste**

Inserts a set of control points from the clipboard into the curve area. The insert point is determined by the position of the editing cursor (white line).

**Edit > Insert**

Inserts a control point into the selected curve. The insert point is determined by the position of the editing cursor (white line).

**Edit > Delete**

Deletes all selected control points.

**5.5.2 Curve****Curve > Smooth CP**

Resets curve continuity for selected control points to provide a smooth interpolation.

**Curve > Sharp CP**

Sets curve discontinuity for all selected control points to produce a sharp corner.

**Curve > Connected Tangents**

Activates tangent modification for selected control points. In this mode, tangent direction can be modified, but in- and outgoing tangent direction are coupled, in effect keeping the curve smooth.

**Curve > Independent Tangents**

Activates tangent modification for selected control points. In this mode, tangent direction can be modified independently for in- and outgoing tangents.

**Curve > Neutral Point**

A neutral point is a control point with its value set to the default values of the selected curve. If you have one or more control points selected, you can reset them to default values selecting this option.

**Curve > Zoom Selection**

The zoom selection function can be used to zoom the curve edit window in a way that the selected curves fit into the display space properly. This is useful when changing from editing a curve with a large value range to one with a very small one. You get the same effect by double clicking the “fit all” button in the lower right corner of the curve edit area, or by shift clicking the “fit all” button.

**5.5.3 Block**

The Block menu allows you to copy or move control point selections around.

**Block > Copy**

Copies all selected control points and pastes them at the position of the editing cursor.

**Block > Move**

Copies all selected control points and pastes them at the position of the editing cursor.

### **5.5.4 Track**

Allows you to add or delete Tracks to/from an effect. Remember that for most multichannel effects, each input layer can have its own independent set of parameters, called tracks. The tracks will not be created automatically.

#### **Track > Add Track**

Adds a new track parameter set to the parameter list.

#### **Track > Copy Track**

To copy an existing parameter track, you have to select an existing one first. All effects that support multichannel operations will by default have at least one track, so there is always something to be selected. Choosing this option then will then add a copy of the selected track to the effects parameter list.

Note: Only some effects support track parameters. See the respective reference pages for more information.

#### **Track > Delete Track**

Deletes a selected track from the Time Editor parameter list.

#### **Track > Add Light**

Adds a new light track to the parameter list. This command is only valid for the DVE 3D effect, as it is the only effect capable of handling multiple light sources.

### **5.5.5 Time**

Allows you to adjust curve timing.

#### **Time > Fit**

Readjusts the curve's length so that it fits to the clip's length, maintaining the relationship of all of the curve points. Note that any length modification to the clip will automatically scale the curve in time, making it possible to define effects in a length-independent manner.

#### **Time > Flip**

Inverts the selected curve(s) in the time dimension. If no curve is selected, all curves will be inverted.

### **5.5.6 Set Up**

#### **Set Up > X Constraint**

Prevents control point movement along the X axis.

#### **Set Up > Y Constraint**

Prevents control point movement along the Y axis.

**Set Up > X Limit**

Prevents curve points from being moved off the clip length in the time dimension.

**Set Up > Y Limit**

Prevents curve points from being moved outside of the valid value range vertically.

**Set Up > X Snap**

Snap the editing cursor positions to full frame locations.



## 6. The Pick Editor

With the Pick Editor you can pick color or luminance subsets in an image. The resulting color sets are used for keying effects, most notably the chroma key functions.

The pick editor is also used to pick an image pattern for motion tracking effects.

The Pick Editor can only be invoked on some effects (most notably, the key effects with a “pick” in their name and all motion tracking and stabilize effects); it can not be opened with an image clip selected. The image frame loaded for the given effect depends on the small draggable instance cursor displayed in the reel bar of the effect.

Depending on the effect being edited, the pick editor automatically selects if it is in color or pattern pick mode. *The Pick Editor menu bar is different in color or pattern mode.*

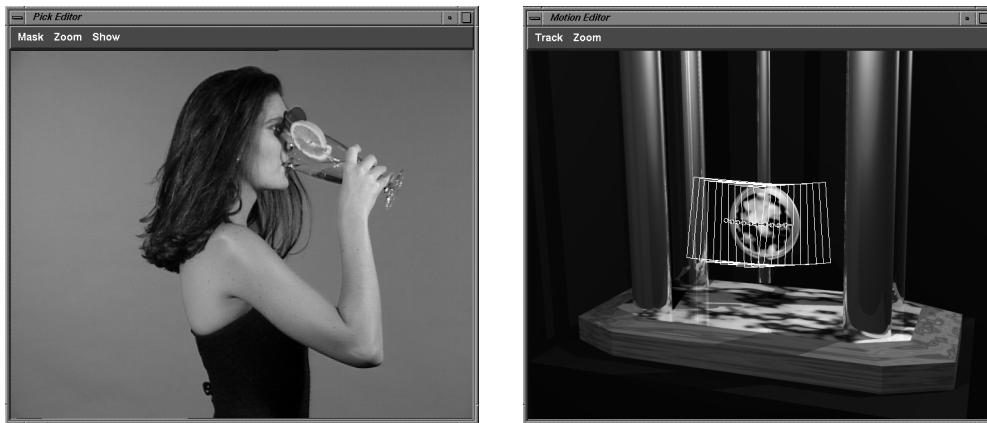


FIGURE 34. Pick Editor for Keying and Motion Tracking

### 6.1 Pick Editor for Keying Effects

The luminance and/or chroma range can be defined by picking points or dragging rectangles in the image. You can repeat selection as often as necessary, with all selections adding to the selection list of colors picked. The key effects will use the picked color set together with the other effects parameters to create a key channel.

There is also a histogram tool, supporting finetuning of key postprocessing parameters.

### 6.2 Pick Editor for Keying Menu Bar

#### Mask > Undo Pick

Removes the last color picked from the list of selected colors for key generation. This function can be invoked repeatedly, until the pick list is empty.

### **Zoom > Zoom Box**

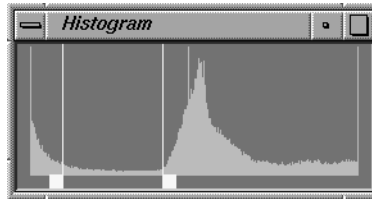
Allows you to zoom in on an image for better control over details. A dialogue window opens, equipped with a slider to select zoom factor and a draggable rectangle to position the zoom display on the source image.

### **Show > Show Key**

Toggles between display of image and mask channel of the image clip currently being processed.

### **Show > Show Histogram**

Displays the histogram window. Using the histogram, you can adjust the clip and gain values of the selected key effect in a very visual manner. For more information on histogram usage and interpretation, see “Introduction To Key Functions” on page 159 and, more specifically, “The Histogram Tool” on page 161. The keying parameters handled by the Histogram tool can also be animated.



**FIGURE 35. Histogram**

## **6.3 Pick Editor for Motion Tracking**

Tracking works by identifying a pattern of interest in the source image. The motion tracking algorithm then tries to find the selected pattern in subsequent frames, i.e. it tries to track the motion of the selected pattern in an image sequence. The resulting 2D motion path can then be used to animate another or the same image. Motion tracking is used by a number of effects, like centrate or stabilizing.

Motion tracking requires careful selection of the pattern - if the pattern is not sufficiently recognizable over a number of frames, the resulting quality will be unsatisfactory. Unfortunately, selection of a suitable pattern depends largely on the image material. Motion tracking requires an image area that can be clearly recognized over all the frames of the animation, and it must offer sufficient contrast. *Do not select patterns too small. You may need a few iterations to get the desired results.*

The result of the motion tracking process is a 2D motion path that can be edited in the time editor. After you have selected a pattern, you can initiate tracking using either the high resolution or the preview images. It depends on the image material and the desired effect which tracking mode gives the best results. While the system computes tracking, it will plot a keypoint on the image for every frame. This enables you to get feedback about the progress of the calculations, as the sequence of plotted points represents the movement of the pattern,

as found by the tracking algorithm. You can interrupt the calculation if you feel the result is not as desired and select another pattern or the other tracking resolution.

## **6.4 Pick Editor For Motion Tracking Menu Bar**

### **6.4.1 Track**

#### **Track > Rotation**

If activated, this item tells the system to produce a motion path including rotations. If deactivated, only translations in x and y are the result of the motion tracking (and optionally scalings, if the Zoom option is activated). If activated, rotations in the 2D plane are also recorded in the result.

#### **Track > Zoom**

If activated, this item tells the system to produce a motion path including scaling. If deactivated, only translations in x and y are the result of the motion tracking (and optionally rotations, if the Rotation option is activated). If activated, scaling in x and y will also be recorded in the results.

#### **Track > High (Resolution)**

If this option is activated, the motion tracking effect is calculated using high resolution images. If not, preview images will be used.

#### **Track > History**

Using the history parameter you can adapt the tracking process to your image material. There are two extreme cases to take into account:

- A moving object that maintains its shape accurately over the whole sequence. An example would be a moving logo that, as a maximum, only rotates about the z axis.
- The face of a dancer that does not only move over the screen, but that also changes its shape dramatically when the dancer turns around in a pirouette.

The history parameter determines if only the original selected pattern is used to find a match in the current frame, or if the pattern selected originally is to be mixed with results for previous frames when looking for a match.

A value of 0 indicates that only the original pattern is used, while a value of 100 forces the system to use an exponentially degrading mix of all frames evaluated before the current frame. Values in between are just percentage values, i.e. what percentage of the frames evaluated previously are to be used.

The default value is 75 percent, which is generally useful for most cases.

In a popup dialogue, you must specify a filename for a temporary file used to store intermediate results.

**Track > Go**

Initiates the tracking process. A “percent done” indicator will appear, with the opportunity to stop the tracking at any time.

**6.4.2 Zoom****Zoom > Zoom Box**

Allows you to zoom in on an image for higher precision. The zoom window will appear whenever this option is turned on. You can define the scaling factor in this window, and you can select the image area that you wish to zoom in on by means of a zoom in rectangle.