

The jit.qt.effect Spotter

Jit.qt.effect is a wrapper for the video effects built into Quicktime. These are the things you can do in iMovie, and the real time effects available in Final Cut. Since the effects are quite varied, stuffing all of them into a single object has made their use seem complex, but that is only if you want to swap effects around. Once you have decided what you want, setting up a single effect is pretty straightforward.

Effect List

You can get a list of the effects available by sending the `geteffectlist` message. This is necessary because hundreds of programmers in Cupertino are working every day to add more. Every time you update Quicktime, new effects may appear. Here's what's available in version 6:

- 0, none
- 1, alpha_compositor
- 2, alpha_gain
- 3, blur
- 4, brightness_and_contrast
- 5, channel_compositor
- 6, chroma_key
- 7, cloud
- 8, color_style
- 9, color_tint
- 10, colorsync
- 11, cross_fade
- 12, edge_detection
- 13, emboss
- 14, explode
- 15, film_noise
- 16, fire
- 17, general_convolution
- 18, gradient_wipe
- 19, hsl_balance
- 20, implode
- 21, iris
- 22, lens_flare
- 23, matrix_wipe
- 24, push
- 25, radial
- 26, rgb_balance
- 27, ripple
- 28, sharpen
- 29, slide
- 30, traveling_matte
- 31, wipe
- 32, zoom

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You load one of these into `jit.qt.effect` with a `loadeffect` message and the number of the effect. The effects list includes an effect code (four letter word) that can be used with the `@fx` attribute as an argument to `jit.qt.effect` to load the effect as the patch opens.

Parameters

Once you have loaded an effect, you can get the parameter descriptions with the `getparamlist` message. For instance, effect 1 is Alpha Compositor, which is more or less the same as `jit.alphablend`. It returns this param list which shows number, effect name, effect code, “tween flag”, data type and other information, such as the range of useful values.

```
0, blend_mode bMod 1 enum 1 straight_alpha 2 pre-multiply_alpha 3 reverse_alpha  
1, pre-multiply_color pMul 1 rgb "rgb range"
```

To translate, parameter 0 is blend mode, which enumerates 3 options:

1. straight alpha
1. pre multiply alpha
1. reverse alpha

Parameter 1 is the RGB color to calculate with if param 0 is set to 2.

Data types are mostly taken care of by `jit.qt.effect`. You need to pay attention to the enum numbers, because they often skip around.

RGB types respond to a list of three numbers from 0 to 255. Other numbers will be effective in the range given.

Figure 1 shows a patcher that is useful for playing with `jit.qt.effects`. Some effects may require other operations—you need to provide an alpha channel for alpha compositor, and a `sukah` over the `pwindow` is useful for the chromakey effect.

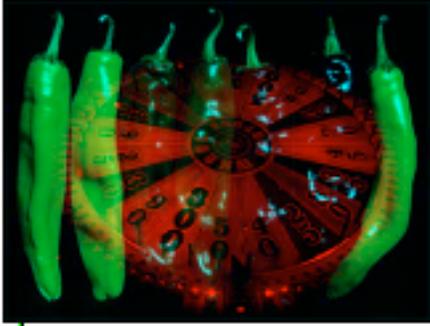
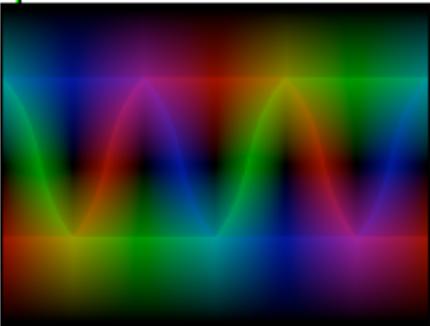
The `pak param` object is used to set parameters. When you actually build a patch, you’ll use a message like `[param 0 $1]` attached to suitable controls.

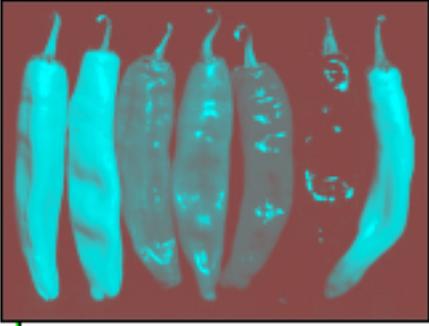
The `dialog` message opens a standard apple dialog that lets you look at effects quickly. The settings don’t take effect in your patch until you click an OK button. You can save these settings to a `.qfx` file and load them into the object with `qfx_read`.

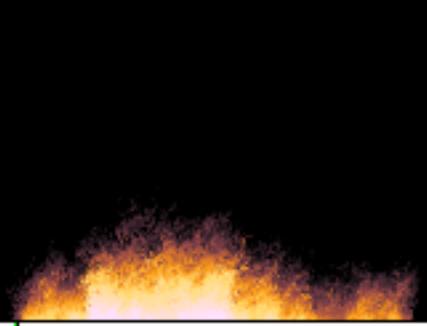
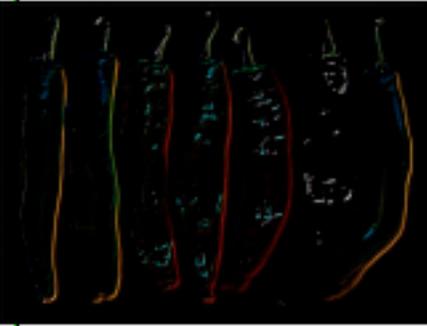
<http://developer.apple.com/documentation/QuickTime/REF/refEffects.1.htm>

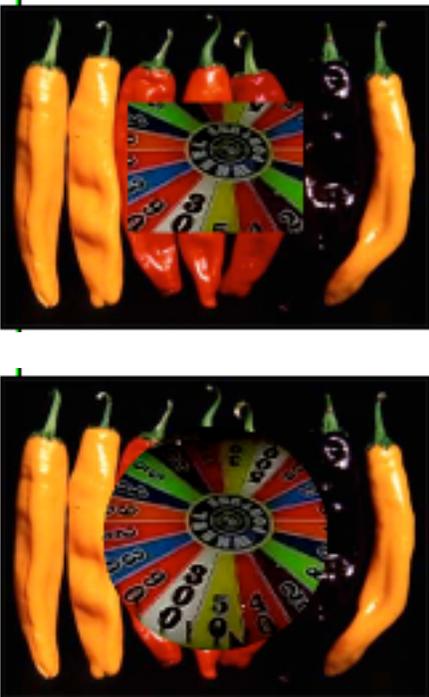
The links to the effects are listed way down the page under QuickTime Video Effects.
This is just a spotters guide.

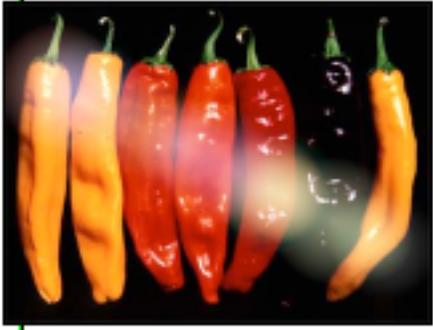
#	Effect		Parameters
1	alpha_compositor Blends images according to the alpha channel of the left source. See Note 1.		0, blend_mode 1 straight_alpha 2 pre-multiply_alpha 3 reverse_alpha 1, pre-multiply_color
2	alpha_gain Modifies the alpha channel—good with effect 1.		0, bottom_pin 0-255 1, top_pin 0-255 2, gain 0. 100. 3, offset -255 -255
3	blur Several types of convolution See Note 2.		0, amount_of_blurring 3 5 7 9 11 13 or 15 1, brightness 0.-1 (not in all versions)
4	brightness_and_contrast		0, brightness -100-100 1, contrast -100-100

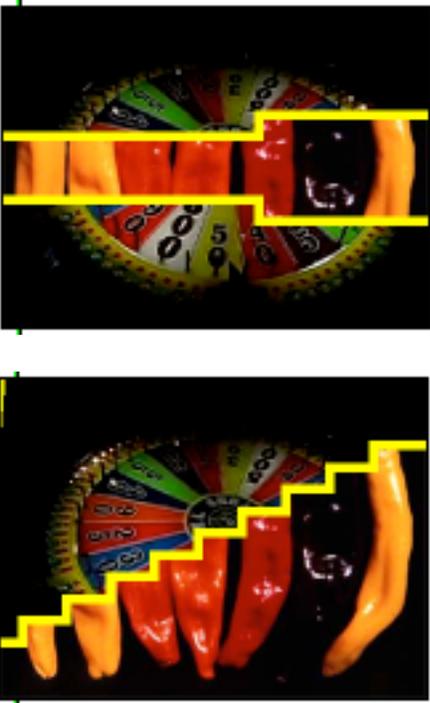
5	<p>channel_compositor Mix & Match channels (I wasn't able to get the param message to work with this, but the dialog works.)</p>		<p>0, alpha chan 1, red chan 2, green chan 3, blue chan 0 1 2 3 left A R G B 16 17 18 19 right A R G B 32 33 34 35 left ARGB inverted 48 49 50 51 left ARGB inverted</p>
6	<p>chroma_key Replaces pixels of a given color with pixels from the right input.</p>		<p>0, color key rgb</p>
7	<p>cloud Generates this pretty image.</p>		<p>0, cloud_color rgb tweenable 1, background_color rgb tweenable 2, rotation 0. 360 tweenable</p>
8	<p>color_style Solarization and Posterization: See note 3. (Test with colorswatch.pict)</p>		<p>0, solarize_amount 0-8 tweenable 1, solarize_point 0-255 tweenable 2, posterize_amount 0 32 tweenable</p>

9	<p>color_tint Convert to grayscale, then tint. Use type 100 for custom setups. Params 3 and 4 affect grayscale image before tinting. Param 5 fades from colored (0.0) to tint (1.0)</p>		<p>0, tint_type 1 black_and_white 2 x-ray 3 sepia 4 cobalt 100 use params 1-5 1, light_color f rgb tweenable 2, dark_color rgb tweenable 3, brightness -255 -255 tweenable 4, contrast -128 128 tweenable 5, tint_amount 0. 1. tweened</p>
10	<p>colrorsync Matches displayed images to published profiles.</p>	<p>Not available in jitter</p>	<p>0, source_profile 1, destination_profile 2, matching_option</p>
11	<p>cross_fade</p>		<p>0, percentage 0. 1.0 tweened</p>
12	<p>edge_detection Uses a convolution to emphasize the edges of the image. See Note 2.</p>		<p>0, edge_thickness 3 5 7 9 11 13 or 15 1, colorize_result 0 color 1 gray</p>
13	<p>emboss See Note 2.</p>		<p>0, emboss amount 3 5 7 9 11 13 or 15</p>

14	<p>explode A through the hole transition form left input to right input.</p>		<p>0, percentage 0. 1. 1, x center -2. 2. 2, y center -2. 2.</p>
15	<p>film_noise See Note 4.</p>		<p>0, hair_density 0 -50 1, hair_length 0-50 2, scratch_density 0-25 3, scratch_duration 1-50 4, scratch_width 1-20 5, dust_density 0-50 6, dust_size 0-25 7, film_fading 1 none 2 sepia_tone 3 black_and_white 4 faded_color_film 5 1930's_color_film</p>
16	<p>fire Another pretty image generator. See note 5.</p>		<p>0, spread_rate 0-25 1, sputter_rate 1-64 2, water_rate 1-256 3, restart_rate 0-32</p>
17	<p>general_convolution Write your own convolution matrix. Cells are: 1 2 3 4 5 6 7 8 9 See Note 2.</p>		<p>0, cell_1 -10. 10. 1, cell_2 -10. 10. 2, cell_3 -10. 10. 3, cell_4 -10. 10. 4, cell_5 -10. 10. 5, cell_6 -10. 10. 6, cell_7 -10. 10. 7, cell_8 -10. 10. 8, cell_9 -10. 10.</p>

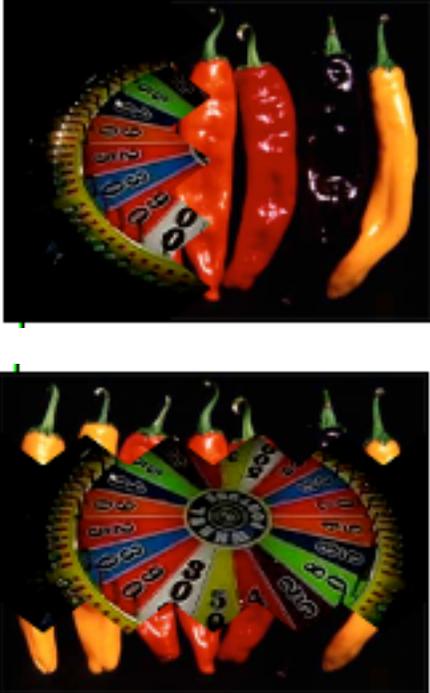
18	<p>gradient_wipe Transition from one image to another by a vertical wipe. You can get a matte shape (any pict) via the dialog.</p>		<p>0, percentage 0-1. 1, matte (not available) 2, edge_blur 0-255</p>
19	<p>hsl_balance Adjust Hue, saturation and level.</p>		<p>0, hue -60 60 tweenable 1, saturation 0 200 tweenable 2, lightness 0 200 tweenable</p>
20	<p>implode Transition by sucking left image into right.</p>		<p>0, percentage 0. 1. tweened 1, x xcnt -2. 2. tweened 2, y ycnt -2. 2. tweened</p>
21	<p>iris Assorted iris type transitions To get random choice of type, reload the effect and set 409 or 501 for type.</p>		<p>0, percentage 0. 1. tweened 1, wipe_type 101 rectangle 102 diamond 103 triangle 104 triangle_right 105 triangleupside_down 106 triangle_left 107 arrowhead 108 arrowhead_right 109 arrowhead_upside_down 110 arrowhead_left 111 pentagon 112 pentagon_upside_down 113 hexagon 114 hexagon_side 119 circle 120 oval 121 oval_side 122 cat_eye 123 cat_eye_side</p>

			<p>124 round_rect 125 round_rect_side 127 4_point_star 128 5_point_star 129 6_point_star 130 heart 131 keyhole 409 random_effect 502 random_iris 2, horizontal_repeat 1-9 3, vertical_repeat 1-9 4, border_width 0.-20. 5, border_color rgb 6, soft_edges 0 or 1</p>
<p>22</p>	<p>lens_flare You need to set this up in the dialog, save the setting as a .qfx file, then bring it in with a qfx_read. This gets around the lack of image type support (param 4) in jitter 1.2</p>		<p>0, size 1.-20. tweenable 1, brightness 0.-1. tweenable 2, x xcnt -2.-2. tweened 3, y ycnt -2.- 2. tweened 4, flare_image(na) 5, type ftyp 1 spot 2 round_spot 3 reverse_spot 4 reverse_ round_spot 5 star_burst 6 polygon 6, color rgb 7, brightness 0.-2. 8, size 0.-1. 9, position -2.-2. 10, offset 0.-2. 11, solid (portion that won't fade) 0. 2. 12, anamorphic 0 or 1 13, number 1-20 14, count 1-50 15, seed 0-1000</p>
<p>23</p>	<p>matrix_wipe More transitions Percentage is always tweened, other single number params are tweenable.</p>		<p>0, percentage 0.- 1. 1, wipe_type 301 horizontal_matrix 302 vertical_matrix 303 top_left_diagonal_matrix 304 top_right_diagonal_matrix 305 bottom_right_diagonal_matrix 306 bottom_left_diagonal_matrix 310 clockwise_top_left_matrix 311 clockwise_top_right_matrix</p>

			<p>312 clockwise_bottom_right_matrix 313 clockwise_bottom_left_matrix 314 cnter_clockwise_top_left_matrix 315 cnter_clockwise_top_right_matrix 316 cnter_clockwise_bot_right_matrix 317 cnter_clockwise_bot_left_matrix 320 vertical_start_top_matrix 321 vertical_start_bottom_matrix 322 vertical_start_top_opposite_matrix 323 vert_start_bottom_opposite_matrix 324 hor_start_left_matrix 325 hor_start_right_matrix 326 hor_start_left_opposite_matrix 327 hor_start_right_opposite_matrix 328 double_diagonal_top_right_matrix 329 double_diagonal_bot_right_matrix 340 double_spiral_top_matrix 341 double_spiral_bottom_matrix 342 double_spiral_left_matrix 343 double_spiral_right_matrix 344 quad_spiral_vertical_matrix 345 quad_spiral_horizontal_matrix 350 vertical_waterfall_left_matrix 351 vertical_waterfall_right_matrix 352 horizontal_waterfall_left_matrix 353 horizontal_waterfall_right_matrix 409 random_effect 504 random_matrix 2, horizontal_repeat 1- 9 3, vertical_repeat 1- 9 4, border_width 0.-20. 5, border_color rgb 6, soft_edges 0 or 1</p>
24	push		<p>0, percentage 0. 1. tweened 1, push_from from 1 top 2 right 3 bottom 4 left</p>
25	<p>radial More transitions Percentage is always tweened, other single number params are tweenable. To get random choice of type, reload the effect and set 409 or 501 for</p>		<p>0, percentage 0.-1. 1, wipe_type 201 rotating_top 202 rotating_right 203 rotating_bottom 204 rotating_left 205 rotating_top_bottom 206 rotating_left_right 207 rotating_quadrant 211 top_to_bottom_180° 212 right_to_left_180°</p>

	<p>set 409 or 501 for type.</p>		<p>213 top_to_bottom_90° 214 right_to_left_90° 221 top_180° 222 right_180° 223 bottom_180° 224 left_180° 225 counter_rotating_top_bottom 226 counter_rotating_left_right 227 double_rotating_top_bottom 228 double_rotating_left_right 231 v_open_top 232 v_open_right 233 v_open_bottom 234 v_open_left 235 v_open_top_bottom 236 v_open_left_right 241 rotating_top_left 242 rotating_bottom_left 243 rotating_bottom_right 244 rotating_top_right 245 rotating_top_left_bottom_right 246 rotating_bottom_left_top_right 251 rotating_top_left_right 252 rotating_left_top_bottom 253 rotating_bottom_left_right 254 rotating_right_top_bottom 261 rotating_double_center_right 262 rotating_double_center_top 263 rotating_dble_center_top_bottom 264 rotating_double_center_left_right 409 random_effect 503 random_radial 2, horizontal_repeat 1-9 3, vertical_repeat long 1-9 4, border_width 0.-20. 5, border_color rgb 6, soft_edges 0 or 1</p>
<p>26</p>	<p>rgb_balance</p>		<p>0, red 0-200 tweenable 1, green 0-200 tweenable 2, blue 0-200 tweenable</p>

27	<p>ripple</p> <p>Use the dialog to choose a mask (any pict) and save as .qfx</p>		0, ripple_mask (NA)
28	<p>sharpen</p> <p>Fix those fuzzy photos – another use for the convolution set. See Note 2.</p>		0, amount_of_sharpening 3 5 7 9 11 13 15
29	<p>slide</p> <p>A simpler transition. The angle is in degrees. Try tweening it with a value of 360!</p>		0, percentage 0. 1. tweened 1, angle 0. 2880. tweenable
30	traveling_matte	This one crashes jitter 1.2!	0, matte type 1 normal 2 inverted 3 gradient 1, percentage pcnt 0 fixed 0. 1. 2, edge_blur fuzz 2 long 0 255
31	<p>wipe</p> <p>All parameters except 1 are tweenable. To get random choice of type, reload the effect and set 409 or 501 for type.</p>		0, percentage 0. 1. tweened 1, wipe_type 1 slide_horizontal 2 slide_vertical 3 top_left 4 top_right 5 bottom_right 6 bottom_left 7 four_corner 8 four_box 21 barn_vertical 22 barn_horizontal 23 top_center 24 right_center 25 bottom_center

			<p>26 left_center 41 diagonal_left_down 42 diagonal_right_down 43 vertical_bow_tie 44 horizontal_bow_tie 45 diagonal_left_out 46 diagonal_right_out 47 diagonal_cross 48 diagonal_box 61 filled_v 62 filled_v_right 63 filled_v_bottom 64 filled_v_left 65 hollow_v 66 hollow_v_right 67 hollow_v_bottom 68 hollow_v_left 71 vertical_zig_zag 72 horizontal_zig_zag 73 vertical_barn_zig_zag 74 horizontal_barn_zig_zag 409 random_effect 501 random_wipe 2, horizontal_repeat 1 9 3, vertical_repeat 1 9 4, border_width 0. 20. 5, border_color rgb 6, soft_edges 0 or 1</p>
32	<p>Zoom One last transition. All params except 1 are tweenable.</p>		<p>0, percentage 0.-1. 1, zoom_type 1 zooming_b_over_a 3 zooming_b_over_zooming_a 5 zooming_a 2, x xcnt -1. to 1. 3, y ycnt -1. to 1. 4, distance 1. to 9.</p>

Notes:

Note 1 Alpha Compositor

Premultiply changes the output color in a complex way:

$$R = R_param1 * (1 - Ac) + temp1 * Ac$$
$$G = G_param1 * (1 - Ac) + temp2 * Ac$$
$$B = B_param1 * (1 - Ac) + temp3 * Ac$$

Where

$$Ac = Alpha_right + (1 - Alpha_right) * Alpha_left$$
$$Temp1 = (Alpha_left * R_left + Alpha_right * R_right) / Ac$$
$$Temp2 = (Alpha_left * G_left + Alpha_right * G_right) / Ac$$
$$Temp3 = (Alpha_left * B_left + Alpha_right * B_right) / Ac$$

Note 2. Convolution

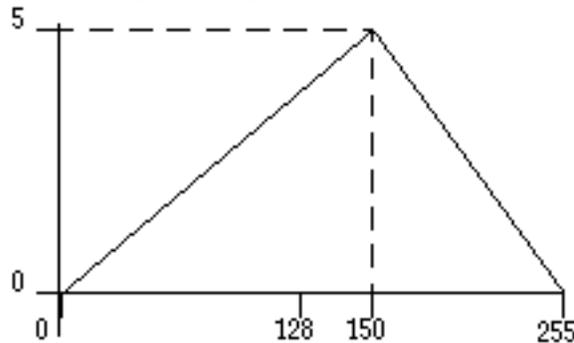
Blur, sharpen and other effects use convolution. This process uses a matrix like

1.0	0.0	0.0
0.0	0.0	0.0
0.0	0.0	1.0

The value for a pixel is replaced by multiplying it and its neighbors by the numbers in the corresponding matrix cells and adding them together. Most of the convolution matrices in quicktime are prebuilt and referred to by a number 3 5 7 9 11 13 or 15.

Note 3 Color Style

Solarization - adjusts the color balance of the source by constructing a table of replacement color values from two parameters. These parameters are the maximum color intensity and the peak point of the color spread. The table starts at zero intensity and increases to the maximum intensity at the peak point. After that it falls back to zero. For example, if the color values range from 0 to 255, the maximum intensity is 5 and the peak point is at 150, the resulting table's profile will look like:



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Posterization - reduces the number of colors in an image by replacing all pixels whose color is in a consecutive range with the middle color from that range. This produces a "color banding" effect.

[Ripped from

developer.apple.com/documentation/QuickTime/REF/refEffects.49.htm#pgfId=29673]

Note 4. Film Noise

Film Noise adds these artifacts:

Hairs. These are a simulation of hairs lying on the surface of the film. Each hair is randomly generated, and is colored in a randomly chosen shade of light grey.

Scratches. These are vertical or near-vertical one-pixel lines drawn onto the destination image that simulate scratches in the film. Each scratch lasts for a pre-calculated length of time. During its lifespan the scratch's position is randomly perturbed. Shortly before the scratch is removed, it will begin to shorten. The color of the scratches is a randomly chosen shade of light grey.

Dust. These simulate dust particles on the surface of the film. Dust particles are drawn using the same algorithm that generates the hairs, but the particles are more tightly curled, and drawn in a darker shade of grey.

Film fade. This simulates an overall change in the color of the film stock. Every pixel of the source image is passed through the film fade algorithm, so this can be processor-intensive.

[developer.apple.com/documentation/QuickTime/REF/refEffects.50.htm#pgfId=23636]

Note 5. Fire

These are the Fire parameters:

Spread rate--How quickly the fire expands to its highest level from its starting point. The higher the value, the more quickly the fire starts up and reaches its maximum burn rate.

Sputter--How quickly the flames die down as they move up the screen. Low numbers result in very tall flames, high numbers in very low flames.

Water rate--How often "water" is tossed on the base of the fire, instantly putting out the fire at that point. High numbers result in a fire that's very broken up (i.e. many areas of burning and non-burning) while lower numbers result in a wider, smoother fire.

Restart rate--How often entire fire is put out, then allowed to restart.

[developer.apple.com/documentation/QuickTime/REF/refEffects.51.htm#pgfId=42148]