

APE19

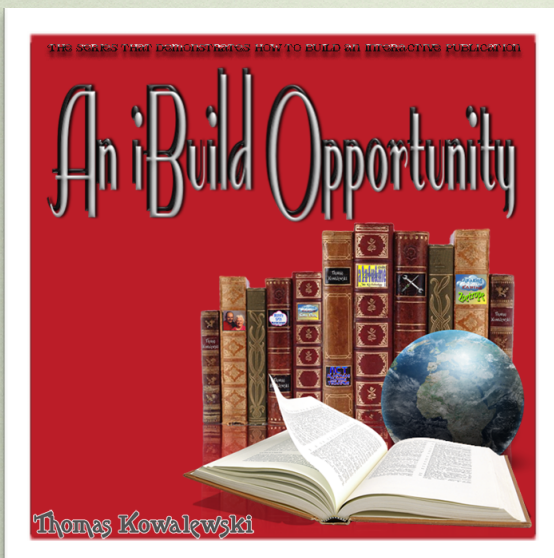
AMAZING PHOTO EDITING



THOMAS KOWALEWSKI

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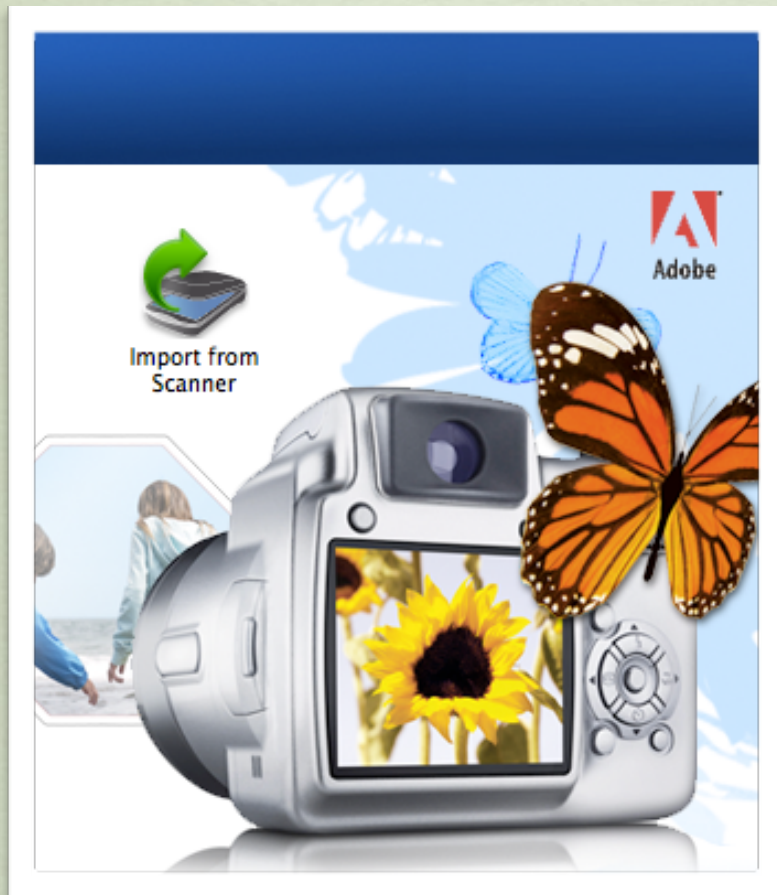
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AMAZING PHOTO EDITING



We are using Adobe
Photoshop Elements 6.

Throughout this series, students will learn:

- To Make photos look their best
- To Do more with photos as we learn



Full Edit Workspace

Menu bar Contains menus for performing tasks. The menus are organized by topic. For example, the Enhance menu contains commands for applying adjustments to an image.

Workspace buttons Moves you between the Guided Edit, Quick Fix, and Full Edit workspaces. These buttons change according to the current workspace.

Toolbox Holds tools for editing images.

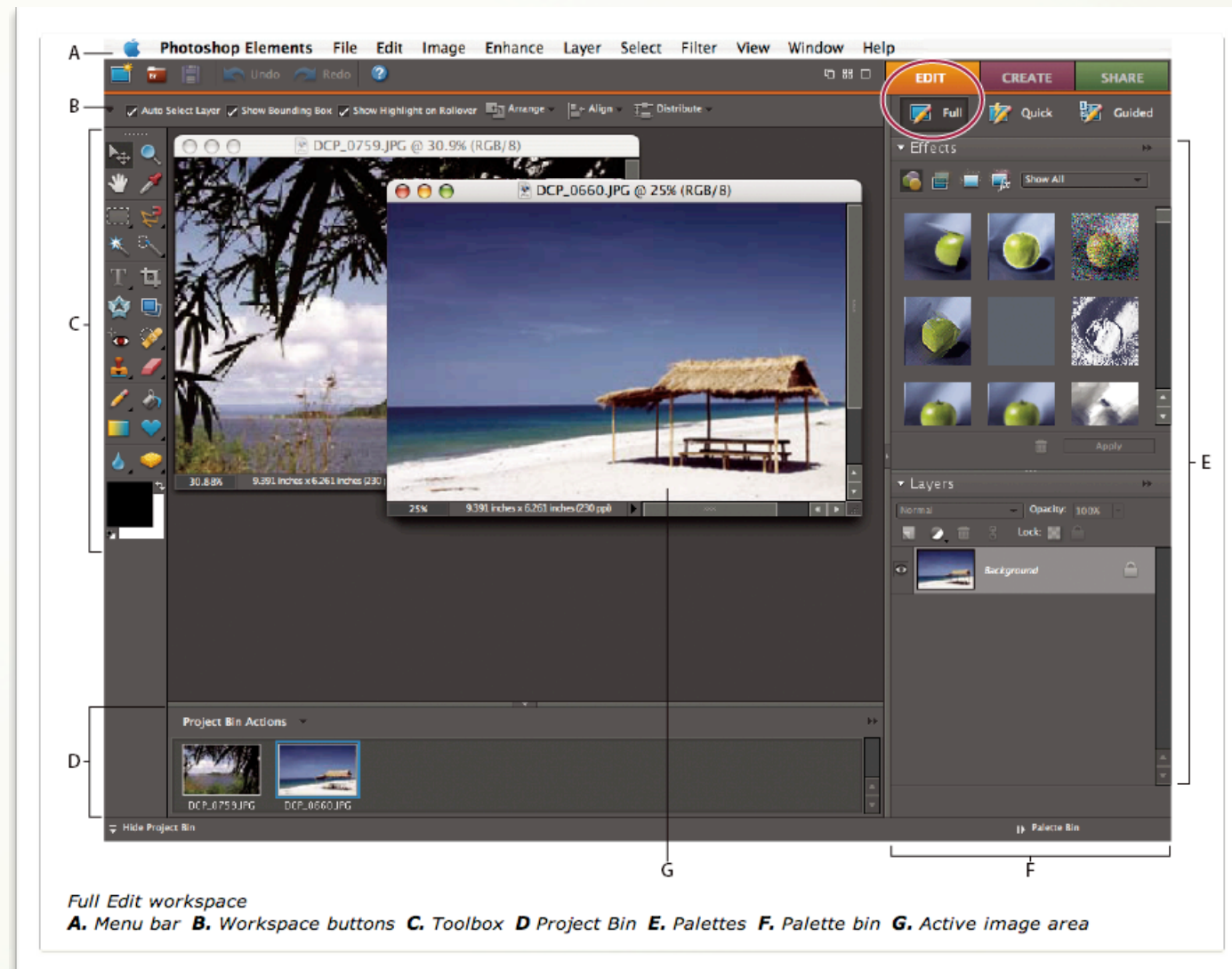
Options bar Provides options for the tool you select.

Project Bin Displays thumbnails of opened images, and lets you easily manage them.

Palettes Help you monitor and modify images.

Palette Bin Helps you organize the palettes in your work area.

• Section 1-The Work Area •



About the toolbox

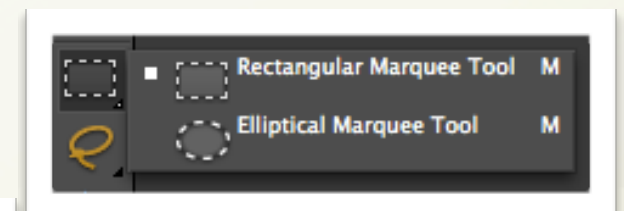
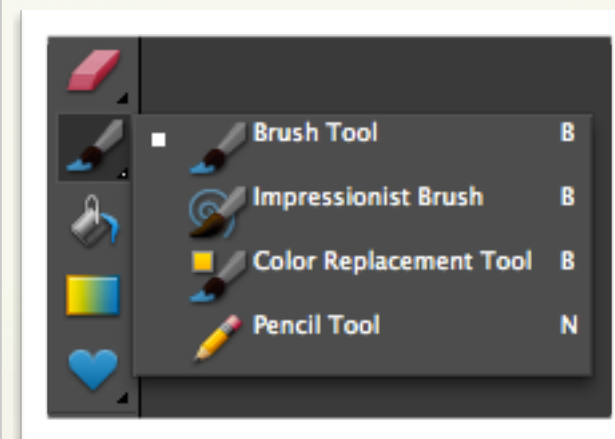
Use tools in the toolbox to select, edit, and view images; some tools let you paint, draw, and type. The toolbox appears on the left side of the Full Edit and Quick Fix

workspaces. In the Full Edit workspace, you can move the toolbox by dragging the gripper bar at the top of the box. You must select a tool in the toolbox before you can use it. Once selected, the tool is highlighted in the toolbox,

and optional settings for the tool appear in the options bar, which is located below the shortcuts bar at the top of the workspace. Some tools in the toolbox have additional tools beneath them. These are called **nested tools**. A small triangle at the lower right of the tool icon signals that there are nested tools. When you select a tool, any additional nested tools appear in the options bar.

Note: *You cannot deselect a tool once you select a tool, it remains selected until you select a different tool. For example, if you've selected the Lasso tool, and you want to click your image without selecting anything, select the Hand tool.*

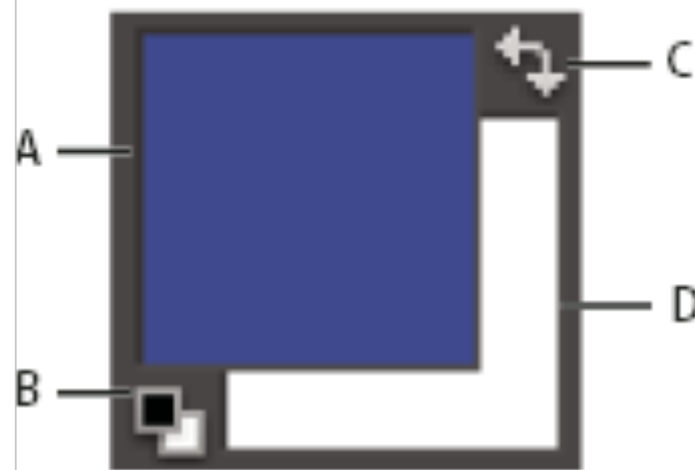
You can view information about any tool in the toolbox by positioning the pointer over it. The name of the tool appears below the pointer, this is called the **tool tip**. You can click a link in some tool tips to see additional information about the tool.



Color review

1. Choose a color with the Eyedropper tool
2. The Eyedropper tool makes it easy to copy a color without having to select a swatch. It copies, or samples, the color of an area in your photo to set a new foreground or background color. You can sample from the active image, from another open image, or from your computer's desktop.
3. Click the Lock Transparency icon at the top of the Layers palette to lock the transparent areas of the layer, so that no painting occurs in them. Click the icon again to unlock.
4. Note: For type and shape layers, transparency is locked by default and cannot be unlocked without first simplifying the layer.

Section 2 • More More New & Review 4 You



Foreground and background color boxes in toolbox

A. Foreground color box **B.** Click to use default colors (black and white)
C. Click to switch the foreground and background colors **D.** Background color box

About foreground and background colors

You apply the foreground color when you paint with the Brush or Pencil tools, and when you fill selections with the Paint Bucket tool. The color you apply to the Background layer with the Eraser tool is called the **background color**. You can see and change the foreground and background colors in the two overlapping boxes

at the bottom of the toolbox. The top box is the foreground color, and the bottom box is the background color. The foreground and background colors are also used together by the Gradient tool and some special effects filters.

You can change the foreground or background color in the toolbox by using the Eyedropper tool, the Color Swatches palette, or the Color Picker. About patterns

About Patterns

You can paint a pattern with the Pattern stamp tool or fill a selection or layer with a pattern that you choose from the pattern libraries. Photoshop Elements has several patterns you can choose from.

To customize your images, or to make one-of-a-kind scrapbook pages, you can create your own patterns. You can save patterns that you create in a library, and then load libraries of patterns using the Preset Manager or the Pattern pop-up palette, which appears in the options bar of the Pattern Stamp tool and the Paint Bucket tool. Saving patterns allows you to easily use a pattern in multiple images.

Find Edges

The Find Edges filter identifies areas of the image with significant transitions and emphasizes edges. Like the Trace Contour filter, Find Edges outlines the edges of an image with dark lines against a white background and is useful for creating a border around an image.

Note: *After using filters like Find Edges and Trace Contour that highlight edges, you can apply the Invert filter to outline the edges of a color image with colored lines or a grayscale image with white lines.*

Adjustment Layer

A layer that lets you apply color and tonal adjustments to your image without permanently changing pixel values. Use adjustment layers to experiment with color and color tones. You can think of an adjustment layer as a veil through which the underlying layers are seen.

Blending Mode

A feature that controls how pixels in an image are affected by a painting or editing tool. The blend color is applied to the base (original) color to produce a new color, the result color. When applied to layers, a blending mode determines how the pixels in a layer blend with pixels in layers beneath it.

More About Blending Modes

Blending modes control how pixels in an image are affected by a painting or editing tool. It's helpful to think in terms of the following colors when visualizing a blending mode's effect:

- The base color is the original color in the image.
- The blend color is the color applied by the painting or editing tool.
- The result color is the color resulting from the blend.

You can choose any of the following blending modes from the Mode menu in the options bar:

Normal Edits or paints each pixel to make it the result color. This is the default mode. (Normal mode is called **Threshold** when you're working with an image in bitmap or indexed-color mode.)

Dissolve Edits or paints each pixel to make it the result color. However, the result color is a random replacement of the pixels with the base color or the blend color, depending on the opacity at any pixel location. This mode works best with the brush tool and a large brush.

Darken Looks at the color information in each channel and selects the base or blend color—whichever is darker—as the result color. Pixels lighter than the blend color are replaced, and pixels darker than the blend color do not change.

Multiply Looks at the color information in each channel and multiplies the base color by the blend color. The result color is always a darker color. Multiplying any color by black produces black. Multiplying any color by white leaves the color unchanged. When you're painting with a color other than black or white, successive strokes with a painting tool produce progressively darker colors. The effect is similar to drawing on the image with multiple felt-tipped pens.

Color Burn Looks at the color information in each channel and darkens the base color to reflect the blend color. Blending with white produces no change.

Linear Burn Looks at the color information in each channel and darkens the base color to reflect the blend color by decreasing the brightness. Blending with white produces no change.

Lighten Looks at the color information in each channel and selects the base or blend color—whichever is lighter—as the result color. Pixels darker than the blend color are replaced, and pixels lighter than the blend color do not change.

Screen Looks at each channel's color information and multiplies the inverse of the blend and base colors. The result color is always a lighter color. Screening with black leaves the color unchanged. Screening with white produces white. The effect is similar to projecting multiple photographic slides on top of each other.

Color Dodge Looks at the color information in each channel and brightens the base color to reflect the blend color. Blending with black produces no change.

Soft Light Darkens or lightens the colors, depending on the blend color. The effect is similar to shining a diffused spotlight on the image. If the blend color is lighter than 50% gray, the

image is lightened. If the blend color is darker than 50% gray, the image is darkened. Painting with pure black or white produces a distinctly darker or lighter area but does not result in pure black or white.

Hard Light Multiplies or screens the colors, depending on the blend color. The effect is similar to shining a harsh spotlight on the image. If the blend color is lighter than 50% gray, the image is lightened. This is useful for adding highlights to an image. If the blend color is darker than 50% gray, the image is darkened. This is useful for adding shadows to an image. Painting with pure black or white results in pure black or white.

Vivid Light Burns or dodges the colors by increasing or decreasing the contrast, depending on the blend color. If the blend color (light source) is lighter than 50% gray, the image is lightened by decreasing the contrast. If the blend color is darker than 50% gray, the image is darkened by increasing the contrast.

Linear Light Burns or dodges the colors by decreasing or increasing the brightness, depending on the blend color. If the blend color (light source) is lighter than 50% gray, the image is lightened by increasing the brightness. If the blend color is darker than 50% gray, the image is darkened by decreasing the brightness.

Pin Light Replaces the colors, depending on the underblend color. If the blend color (light source) is lighter than 50% gray, pixels darker than the blend color are replaced, and pixels lighter than the blend color do not change. If the blend color is darker than 50% gray, pixels lighter than the blend color are replaced, and pixels darker than the blend color do not change. This mode is useful for adding special effects to an image.

Hard Mix Reduces colors to white, black, red, green, blue, yellow, cyan, and magenta—depending on the base color and the blend color.

Difference Looks at the color information in each channel and subtracts either the blend color from the base color or the base color from the blend color, depending on which has the greater brightness value. Blending with white inverts the base color values; blending with black produces no change.

Exclusion Creates an effect similar to, but lower in contrast, than the Difference mode. Blending with white inverts the base color values. Blending with black produces no change.

Hue Creates a result color with the luminance and saturation of the base color and the hue of the blend color.

Saturation Creates a result color with the luminance and hue of the base color and the saturation of the blend color. Painting

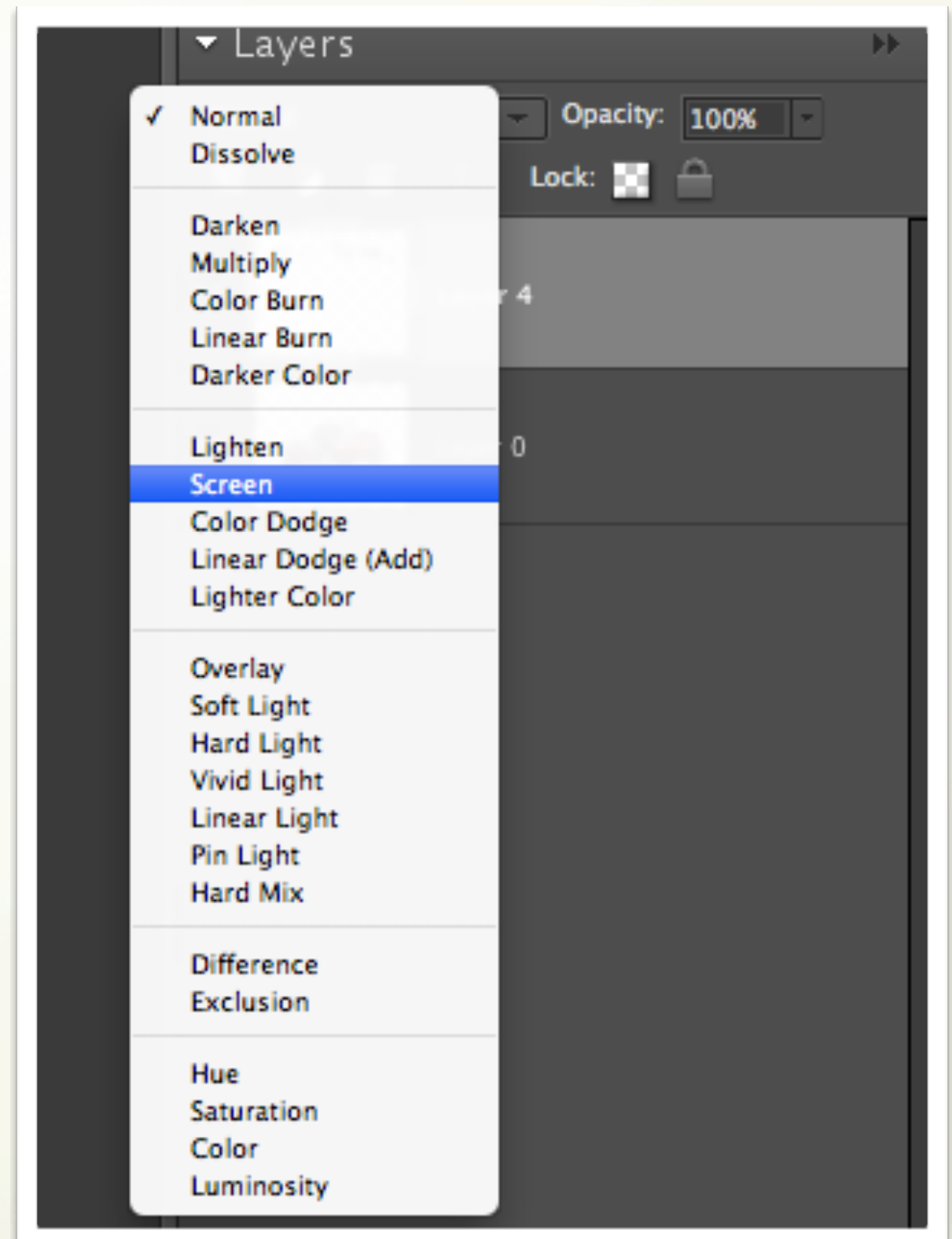
with this mode in an area with zero saturation (a neutral gray area) causes no change.

Color Creates a result color with the luminance of the base color and the hue and saturation of the blend color. This preserves the gray levels in the image and is useful for coloring monochrome images and for tinting color images.

Linear Dodge (Add) Looks at the color information in each channel and brightens the base color to reflect the blend color by increasing the brightness. Blending with black produces no change.

Lighter Color Compares the total of all channel values for the blend and base color and displays the higher value color. Does not produce a third color, which can result from the Lighten blend, because it chooses the highest channel values from both the base and blend color to create the result color.

Overlay Multiplies or screens the colors, depending on the base color. Patterns or colors overlay the existing pixels while preserving the highlights and shadows of the base color. The base color is mixed with the blend color to reflect the lightness or darkness of the original color.



Keys for painting and brushes: Result	Shortcut
Switch to Eyedropper tool	Any painting tool or shape tool + Option (except Impressionist Brush)
Select background color	Eyedropper tool + Option-click
Set opacity, tolerance, or exposure for painting	Any painting or editing tool + number keys (for example, 0 = 100%, 1 = 10%, 4 and 5 in quick succession = 45%).
Cycle through blending modes	Shift + + (plus) or - (minus)
Fill selection/layer with foreground or background color	Option + Delete (Backspace), or Command + Delete (Backspace)
Display Fill dialog box	Shift + Delete (Backspace)
Lock transparent pixels on/off	/ (forward slash)
Connect points with a straight line (draw a straight line)	Any painting tool + Shift-click
Delete brush	Option-click brush
Decrease/increase brush size	[or]
Decrease/increase brush softness/hardness in 25% increments	Shift + [or]
Select previous/next brush size	, (comma) or . (period)
Select first/last brush	Shift + , (comma) or . (period)
Display precise cross hair for brushes	Caps Lock

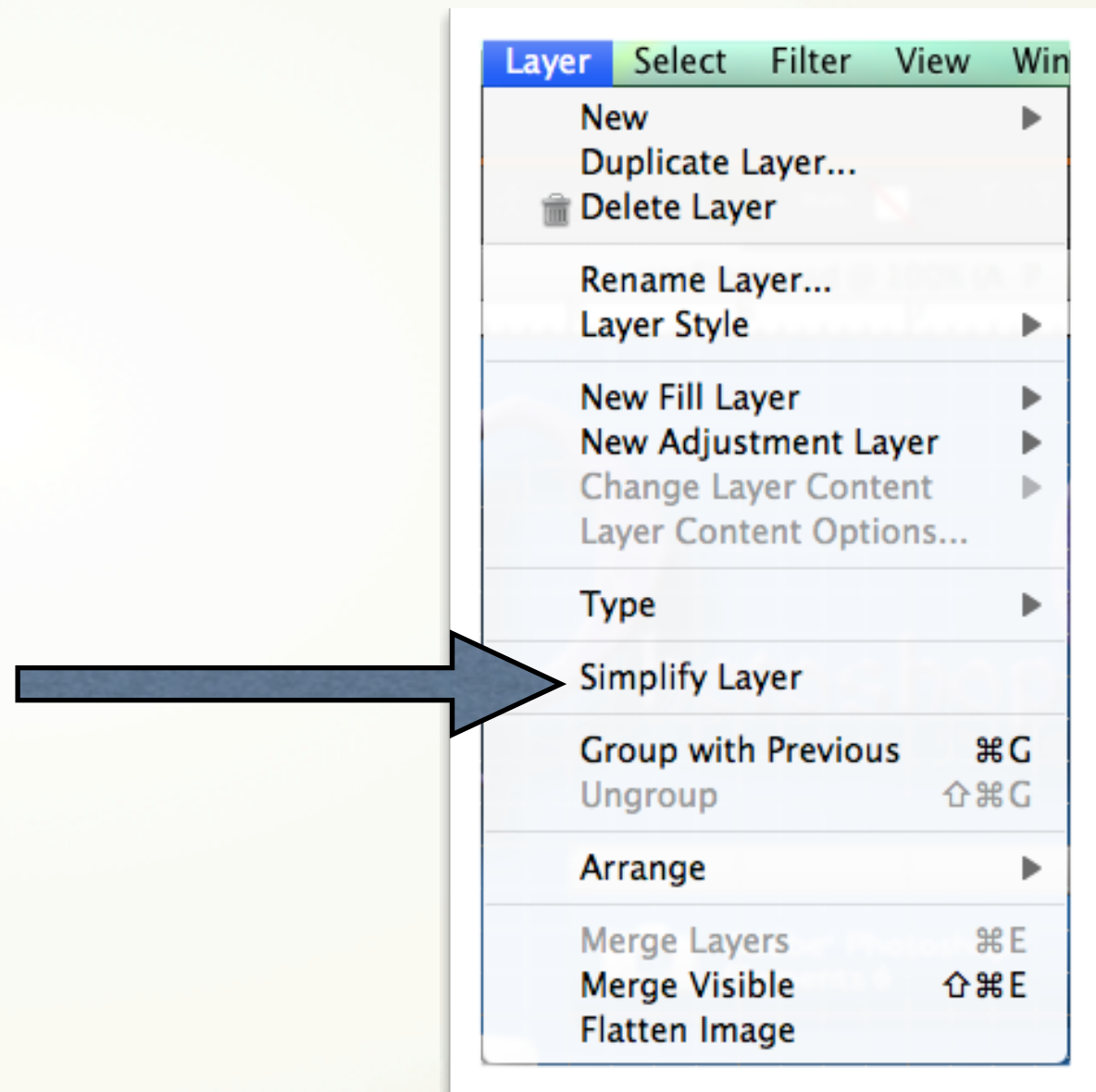
Simplify a layer

You simplify a smart object, frame layer, type layer, shape layer, solid color layer, gradient layer, or pattern fill layer (or a layer group imported from Photoshop) by converting it into an image layer. You need to simplify these layers before you can apply filters to them or edit them with the painting tools. However, you can no longer use the type- and shape-editing options on simplified layers.

Select a type layer, shape layer, fill layer, or a Photoshop layer group in the Layers palette.

Simplify the layer or imported layer group:

- If you selected a shape layer, click Simplify in the options bar.
- If you selected a type, shape, or fill layer, or a Photoshop layer group, choose Simplify Layer from either the Layer menu or the Layers palette More menu.



Apply a filter

Choose the area you want to apply the filter to:

To apply a filter to an entire layer, deselect any selected areas, and then select the layer in the Layers palette.

To apply a filter to a portion of a layer, use any selection tool to select an area.

Choose how to apply the filter:

To use the Filter gallery, choose Filter > Filter Gallery, select a category, and click the filter you want to apply.

To use the Effects palette, choose Window > Effects, select a category, and double-click the filter you want to apply.

To use the Filter menu, choose Filter, then choose a submenu followed by the filter you want to apply. If a filter name is followed by ellipses (...), a Filter Options dialog box appears.

If a dialog box appears, enter values or select options.

If available, select the Preview option to preview the filter in the document window. Depending on the filter and how you are applying it, use one of the following methods to preview the filter:

Use the + button or - button under the preview window to zoom in or zoom out.

Click the zoom bar (where the zoom percentage appears) to choose a zoom percentage.

Click-drag within the preview window to center a specific area of the image in the window.

Click the Show/Hide button at the top of the dialog box to hide the filter thumbnails. Hiding the thumbnails expands the preview area.

Click the eye icon next to a filter to hide the effect in the preview image.

If the dialog box contains sliders, hold down Option while dragging a slider to see a real-time preview (real-time rendering).

Click in the image window to center a specific area of the image in the preview

window. (This may not work with all preview windows.) **Note:** A *blinking line beneath the preview size indicates that the preview is being rendered.*

If you are using the Filter Gallery, or the filter opens in the Filter Gallery, do any of the following and click OK:

Click the New Effect Layer button at the bottom of the dialog box and choose an additional filter to apply. You can add multiple effect layers to apply multiple filters.

Rearrange applied filters by dragging a filter name to another position in the list of applied filters at the bottom of the dialog box. Rearranging the order of filters can dramatically change the way your image looks.

Remove applied filters by selecting the filter and clicking the Delete Effect Layer button .

If you are using a Filter command or the Effects palette, do one of the following and click OK:

Double-click the filter.

Drag the filter onto the image.

Use The Eraser

1. The Eraser tool changes pixels in the image as you drag through them. If you're working in the Background layer or in a layer with locked transparency, erased pixels change to the background color; otherwise, erased pixels become transparent. Transparent pixels are indicated by the transparency grid.
2. Select the Eraser tool from the toolbox.
3. Set options in the options bar as desired, and then drag through the area you want to erase. You can specify any of the following Eraser tool options:
Brushes Sets the brush tip. Click the arrow next to the brush sample, choose a brush category from the Brushes pop-up menu, and then select a brush thumbnail.
Size Sets the size of the brush in pixels. Drag the Size pop-up slider or enter a size in the text box.
Mode Brush mode erases by using characteristics of the brush tool, so you can make soft-edged erasures. Pencil mode makes hard-edge erasures like a pencil. Block mode uses a hard-edged 16-pixel square as an eraser.
Opacity Defines the strength of the erasure. An opacity of 100% erases pixels to complete transparency on a layer and to the background color on the Background layer. A lower opacity erases pixels to partial transparency on a layer and paints partially with the background color on the Background layer. (If Block mode is selected in the options bar, the Opacity option isn't available.)

• Section 3 •

Get Rid of Unwanted Pixels & Painting



SOME WAYS TO GET RID OF UNWANTED PIXELS

Use the Background Eraser tool

The Background Eraser tool turns color pixels to transparent pixels so that you can easily remove an object from its background. With careful use, you can maintain the edges of the foreground object while eliminating background fringe pixels.

The tool pointer is a circle with a cross hair indicating the tool's hotspot. As you drag the pointer, pixels within the circle and of a similar color value as the pixel under the hotspot are erased. If the circle overlaps your foreground object, and it doesn't contain pixels similar to the hotspot pixel, the foreground object won't be erased.

Use the Magic Eraser tool

The Magic Eraser tool changes all similar pixels when you drag within a photo. If you're working in a layer with locked transparency, the pixels change to the background color; otherwise, the pixels are erased to transparency. You can choose to erase contiguous pixels only, or all similar pixels on the current layer.

Use the Magic Extractor

Use the Magic Extractor to make accurate selections based on the appearance of foreground and background areas that you specify. You can specify these areas by placing colored marks in the areas you want to select. After you mark the areas and close the dialog box, only the foreground area appears in the photo.

The Magic Extractor makes it easy to select people or objects so that you can superimpose them on other backgrounds. For example, you can remove yourself from a photo of you on your bicycle at home, and superimpose it on a photo of cyclists in the Tour de France. You can save the extracted image as a file that you can use again and again.

Use the Eraser tool

The Eraser tool changes pixels in the image as you drag through them. If you're working in the Background layer or in a layer with locked transparency, erased pixels change to the background color; otherwise, erased pixels become transparent. Transparent pixels are indicated by the transparency grid.

Use the Quick Selection tool

The Quick Selection tool makes a selection based on color and texture similarity when you click or click-drag the area you want to select. The mark you make doesn't need to be precise, because the Quick Selection tool automatically and intuitively creates a border.

Use the Magic Wand tool

The Magic Wand tool selects pixels within a similar color range with one click. You specify the color range, or tolerance, for the Magic Wand tool's selection. Use the Magic Wand tool when you have an area of similar colors, like a blue sky.

Delete a selected area

If you delete a selection on a Background layer or a layer that uses the Lock Transparency option, the selected area is replaced with the background color or checkerboard background pattern.

Do any of the following:

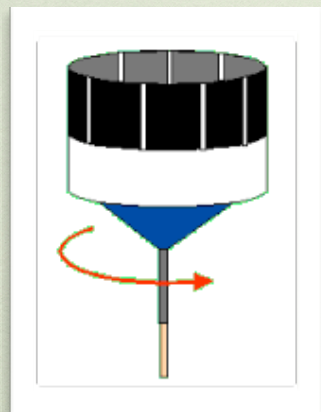
- Choose Edit > Delete to remove the selection. (If you delete a selection by mistake, you can choose Edit > Undo to get it back.)
- Press the Backspace or Delete key to remove the selection.
- Choose Edit > Cut to cut the selection to the Clipboard. You can then paste it elsewhere.



HISTORY OF ZOETROPE

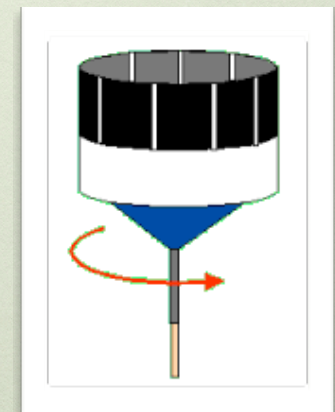
The zoetrope was invented in 1834 in England by William Horner. He called it the 'Daedalum' ('the wheel of the devil'). It didn't become popular until the 1860s, when it was patented by makers in both England and America. The American developer, William F. Lincoln, named his toy the 'zoetrope', which means 'wheel of life'. The zoetrope worked on the same principles as the phenakistiscope, but the pictures were drawn on a strip which could be set around the bottom third of a metal drum, with the slits now cut in the upper section of the drum. The drum was mounted on a spindle so that it could be spun, and viewers looking through the slits would see the cartoon strip form a moving image. The faster the drum is spun, the smoother the image that is produced.

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**THE BILL DOUGLAS CENTRE FOR THE
HISTORY OF CINEMA AND POPULAR CULTURE**

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APE 18

1. Persistence of vision, first noted in 1820 by Peter Mark Roget, refers to the length of time the retina (the "screen" at the back of our eyes which is sensitive to light) retains an image. If we see a light flash every tenth of a second or less, we perceive it as continuous. The impression of each flash of light remains, or persists, in the retina for at least one-tenth of a second. Because of this persistence, we can't tell where one flash ends and the next begins. Instead, we perceive a continuous light.

2. See our APE18 to build your own Thaumatrope

• Section 1 •



**THE BILL DOUGLAS CENTRE FOR THE
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In 1826, a man called Dr. John Ayrton Paris began selling the first animated toys in London. He called his toy a thaumatrope, which is Greek for 'wonder turner'. It consisted simply of a disc with two pieces of string attached to it. When

the disc was spun between the strings, the images on the back and front blended together to form a single picture. Popular images included birds in cages, circus performers and the encounters between dogs and cats.

The next step in the development of animation was the **phenakistiscope** (Greek for 'deceptive view'). It was invented in 1830 simultaneously by Joseph Plateau in Belgium and Simon Stampfer in Austria. This toy had a disc carrying a series of images set in a ring around the circumference, with small slits between the images. When a rod was placed through the Centre of the disc, and it was spun in front of a mirror, a person looking through the slits from the back of the disc would see a moving image reflected in the mirror. The images used could either be abstract patterns or performers such as jugglers or acrobats.

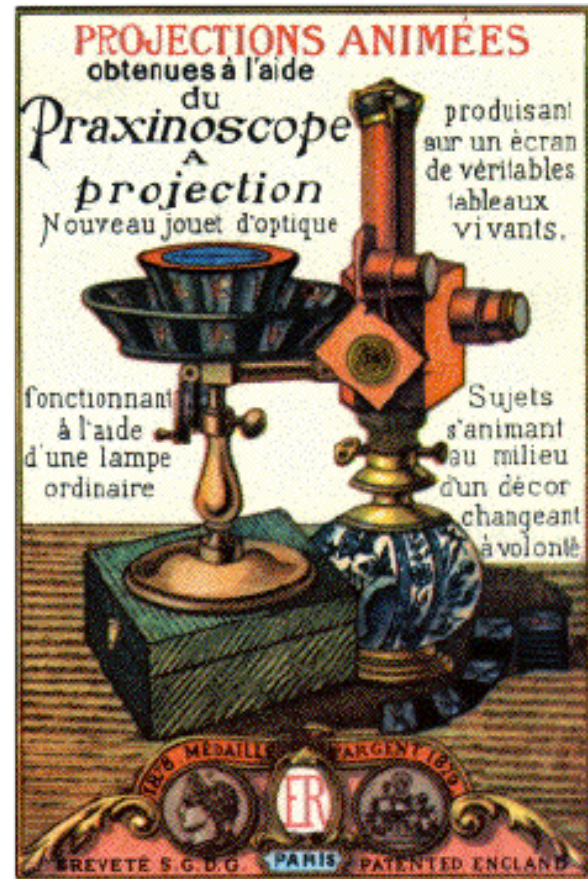
The **zoetrope** is one of several animation toys which were invented in the 19th century, as people experimented with ways to make moving pictures. The zoetrope appeared first in England in 1834, then France in 1860 and finally the United States in 1867. The "Daedatelum" was invented by William George Horner in 1834 and renamed "Zoetrope" by French inventor, Pierre Desvignes. In "zoetrope" you might recognize the root word "zoo" from a Greek word meaning animal or life. "Trobe" is also from Greek and refers to things that turn.



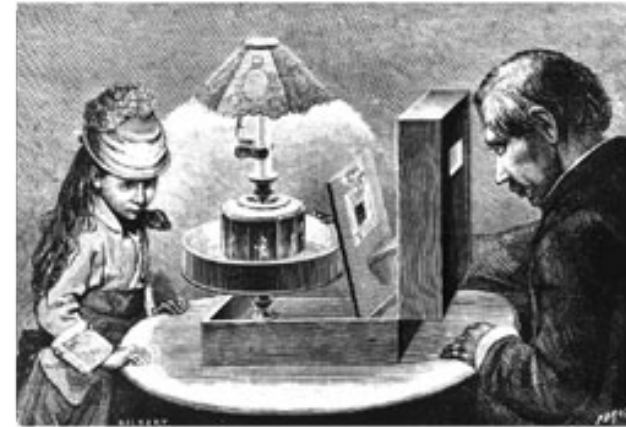
**THE BILL DOUGLAS CENTRE FOR THE
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Wheel of Life

1. The zoetrope is the wheel of life. When you place a strip of drawings inside the zoetrope's drum, spin it and look through the slots, you will see the images come to life. Of course, they are not really alive. This illusion of motion depends on two things; persistence of vision and the phi phenomenon.



• Section 2 •



THE BILL DOUGLAS CENTRE FOR THE HISTORY OF CINEMA AND POPULAR CULTURE

Zoetrope - *the Wheel of Life*

If, when you spin the zoetrope, you look over the top of the drum at the drawings instead of looking through the slots all you will see is a blur. The illusion of motion is gone. The slots of the zoetrope simulate flashes of light, creating a strobe. Persistence of vision is a stroboscopic effect. The images you see

must be interrupted by moments of darkness in order for the illusion to work.

The Phi phenomenon is a result of human instinct. Our brains strive to make meaning from what we perceive. When we see different images close together our brains quickly create a

relationship between them. The metamorphosis of an umbrella into a mushroom makes a certain kind of sense, even though this is not something you would ever see in the real world.

Movies are composed of shots of different characters and events taken from a variety of angles and distances edited together. A skilled editor can take advantage of the phi phenomenon to maximize the illusion of continuity so that you may not consciously notice the cuts. But you, as the viewer, are most responsible for continuity. You see the shots together, and your mind creates a world from them which seems to have its own space and time.

The zoetrope and other nineteenth century animation devices such as the flipbook, thaumatrope, praxinoscope and mutoscope were steps in the development of film and television. On the surface, modern media technologies look different from the optical toys of the 1800s, but they share common properties. The zoetrope has slots that create a stroboscopic effect. Movie projectors have a shutter that interrupts the light from the projector bulb as the film

advances through the gate. The strobe of the projector shutter keeps the film from blurring. Video images are scanned onto your television by a beam which zig-zags across the screen from top to bottom twice for each frame. In between each frame is a little black, which you may see as a roll-bar when your television's vertical hold needs adjustment.

The zoetrope's speed is variable. The faster it turns, the smoother the motion appears. When the zoetrope slows down so that each image is seen for a tenth of a second or more, the illusion of movement begins to break down and the strobe is more obvious. Film projectors usually run at a rate of 24 frames, or pictures, per second. VCR and DVD players play and/or record at a rate of 30 frames per second. But old silent movie projectors run at 16 or 18 frames per second. They are so slow they seem to flicker.

In 1867 an American, William Lincoln, patented 'The Zoetrope' - the first use of the word. It was manufactured in large quantities. Most 19th century zoetropes had thirteen slots. A strip with 12 images will produce a moving subject that appears to progress

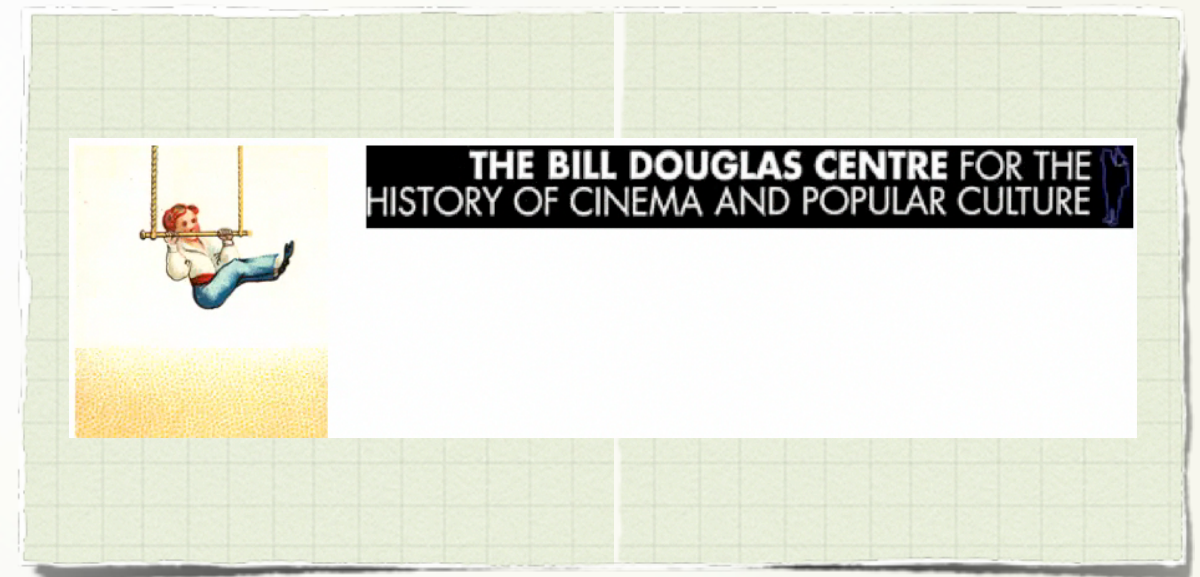
forwards. A strip of 13 images (the same number as slots) gives a moving image the impression that it is stationary. As the figures are always moving when viewed, they appear rather fuzzy.

Milton Bradley was granted a British patent in 1867. A popular model was produced in Britain by the London Stereoscopic Company. In addition to strips, some zoetropes had paper discs that fitted into the base, usually giving moving geometric figures. In many shapes and forms the zoetrope has survived as a toy to this day.

Both the zoetrope and phenakistiscope provided the break in the images by the black space between adjacent slits in the disc or drum. However, this design was adapted by Emile Reynaud in Paris in 1877 to form the praxinoscope. It used a drum, just as the zoetrope had, with the images drawn on a band placed around the inside of the cylinder. However, rather than having slits through which the images were viewed, the cartoon strip was reflected in a series of mirrors, mounted in a ring set halfway between the outer edge of the drum and the central axle (see the picture below). When the drum was spun, the viewer watched the progression of images

in the mirrors. A candle set above the axle allowed the images to be seen more clearly.

Two years later, Reynaud developed the design to create



the praxinoscope theatre. With the drum now set into a wooden box, the lid of the box carried a hole through which the viewer saw a background scene that set the images on the cartoon strip in context.

Thomas Alva Edison invented the phonograph in 1877, and it had quickly become the most popular home entertainment device of the century. It was to provide a visual accompaniment to the phonograph that Edison commissioned William Kennedy-Laurie Dickson, a young laboratory assistant, to invent a motion-picture

system in 1888. Dickson built upon the work of Muybridge and Marey, a fact that he readily acknowledged, but he was the first to combine the two final essentials of motion-picture camera and projection

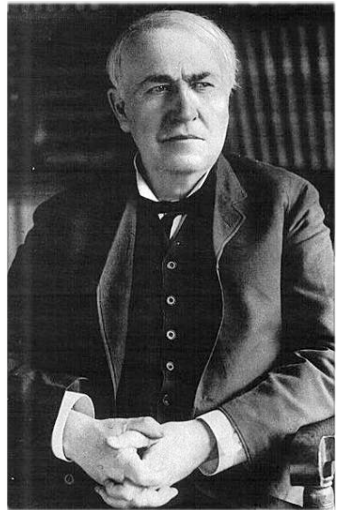
technology. These were a device to ensure the intermittent but regular motion of the film strip through the camera, and a regularly perforated celluloid film strip to ensure regular transport of the film. Dickson's Kinetograph camera of 1893 photographed up to 50 feet of celluloid film, usually at the rate of about 40 frames per second. This

fast speed was needed for technical reasons.

The test subject shown here is Fred Ott's Sneeze, copyrighted but not used commercially. Because Edison had originally conceived of motion pictures as an adjunct to his phonograph, he did not commission the invention of a projector to accompany the Kinetograph. Rather, he had Dickson design a peep-show viewing device called the Kinetoscope in which a continuous 47-foot film loop ran on rollers between an electric lamp

and a shutter for individual viewing. Starting in 1894, Kinetoscopes were marketed commercially through the firm of Raff and Gammon for \$250 to \$300 apiece, and the Edison Company established its own Kinetograph studio (a single-room building called the "Black Maria" that rotated on tracks to follow the sun) in West Orange, New Jersey.

from *ENCYCLOPEDIA BRITANNICA*



**Edison Kinetoscopic
Record of a Sneeze,
January 7, 1894**

**©January 9, 1894
W.K.L. Dickson**

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MAKE OUR OWN ZOETROPE

Interactive Our own Zoetrope. 1 The speed of the spin makes animation



*Touch to
activate*

We used a jar top to hold our APE creation and a CD rack up-side-down to support it

BUILDING A ZOETROPE



Make sure you have access to a printer that can handle U.S. legal size paper or larger. You will need scissors.

We have our cafeteria staff keep large jar tops for use as our spinners and do this project once a year when we have enough tops to go around.

If you use CD's, you will need to use 11" X 17" paper.



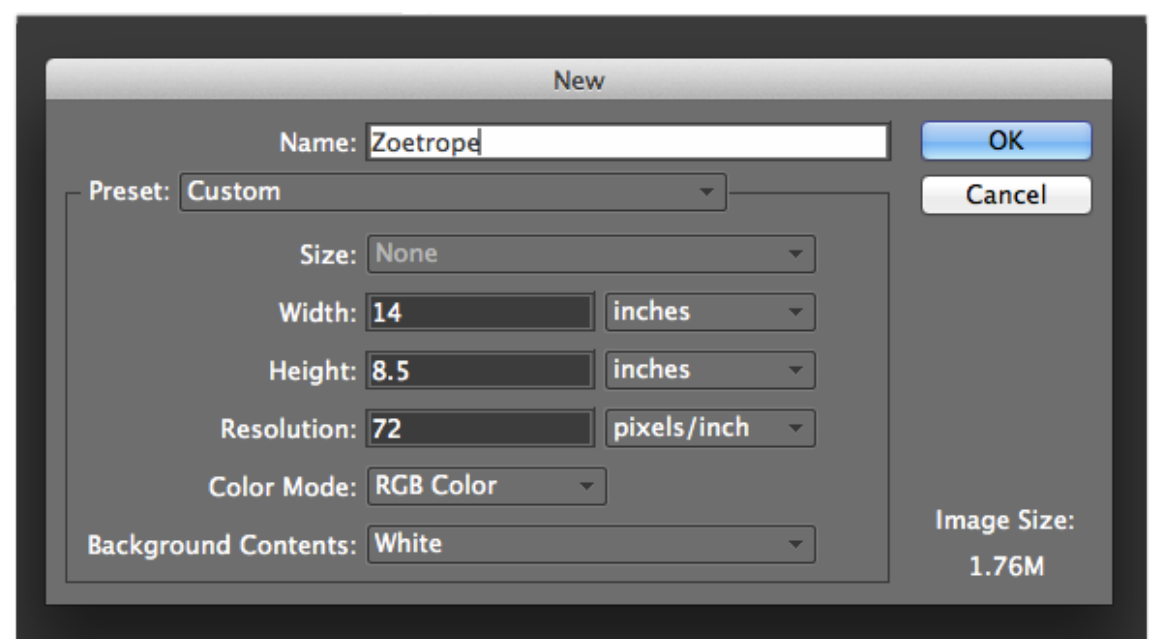
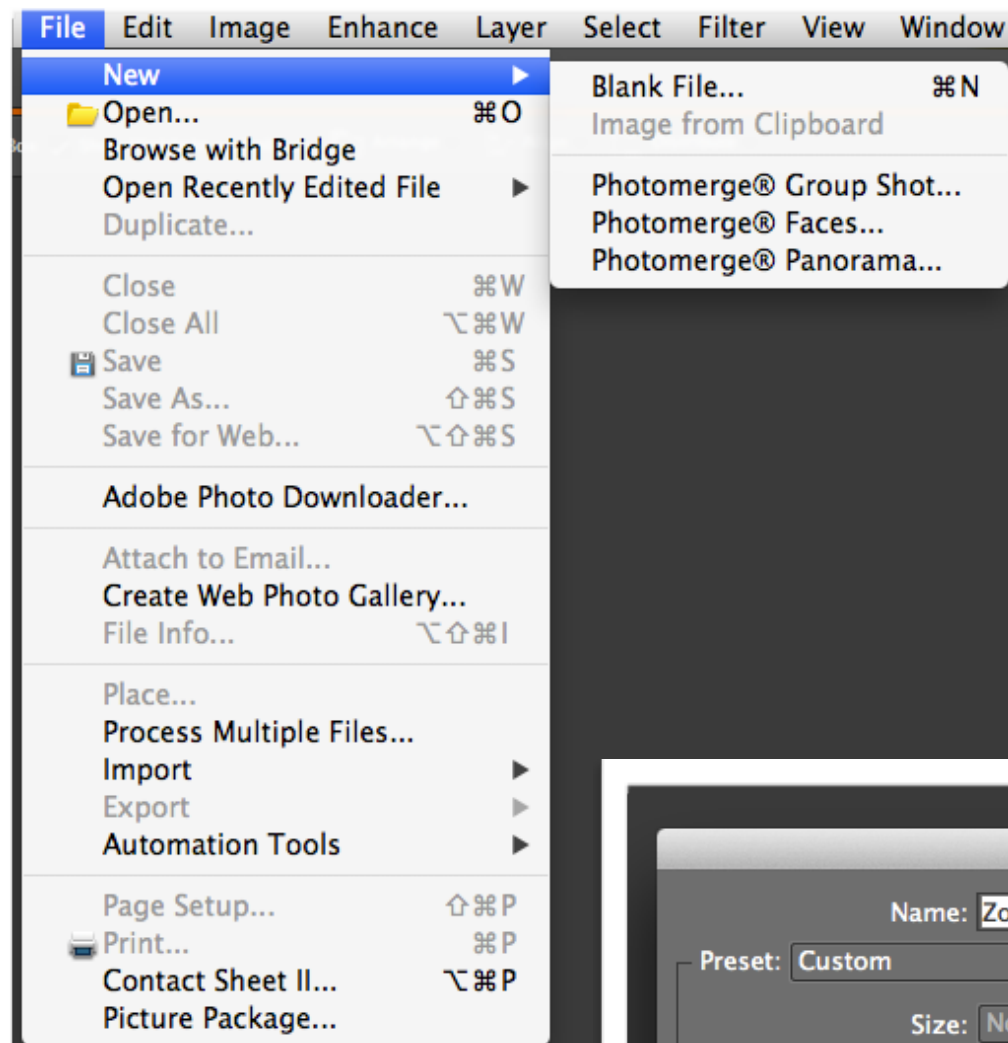
Preparation

1. There is a simple mathematical formula for figuring the size of paper you will need.
2. Take the diameter of your spinner and divide it by 2 (this is the radius).
3. Now take the square of this number.
4. Next, multiply the number squared by π (3.14).
5. Round off to the nearest larger inch and that is your paper size.
6. So, our large jar top is 4.22 inches, divided by 2 equals 2.11.
7. We multiply 2.11 by 2.11 and get 4.4521.
8. We then multiply 4.4521 by π and get 13.979594, so we use 14" paper.

U.S. legal
size paper

• Section 1 •

Getting Everything ready

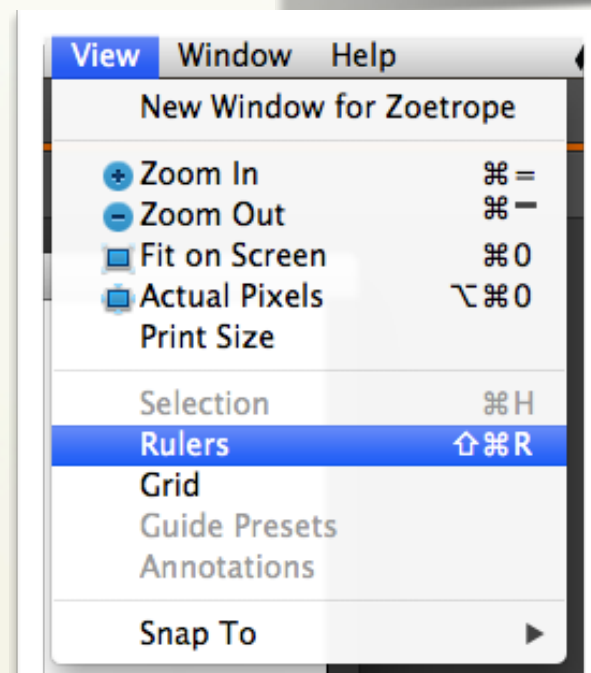
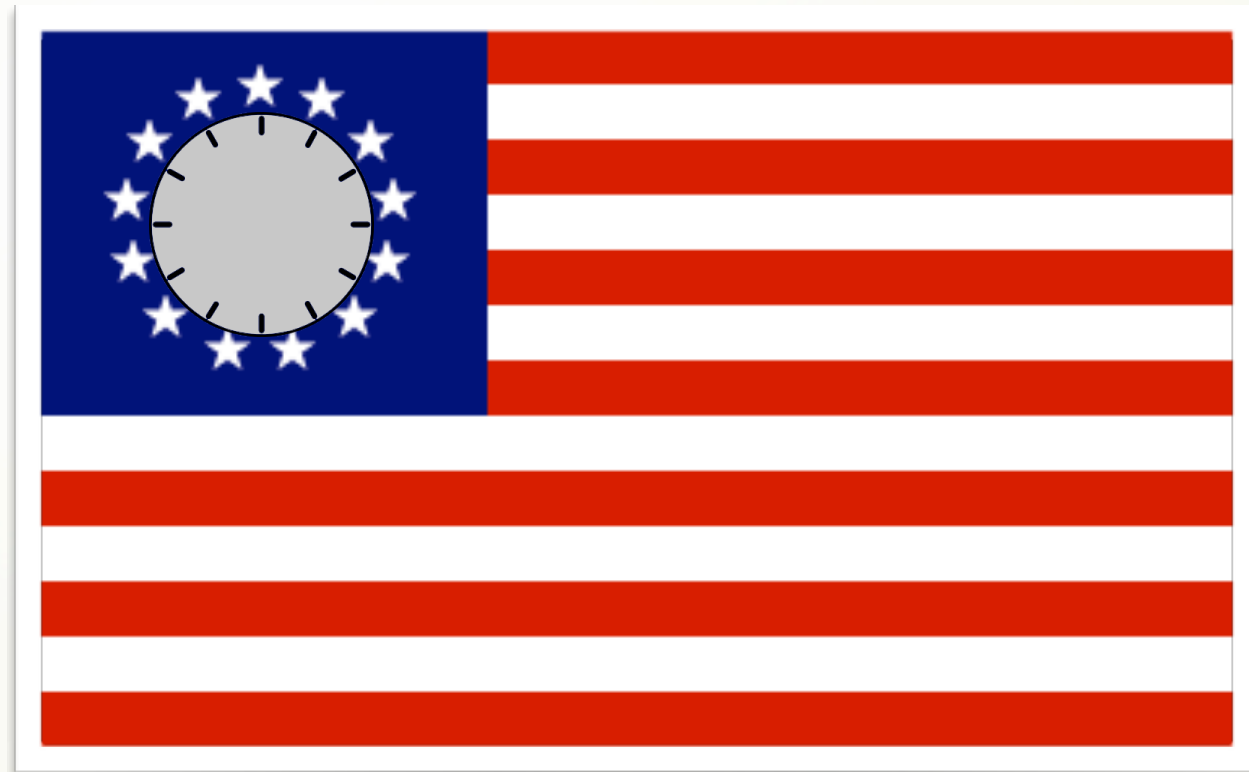


Set-Up

1. You will need a series of still images that are either already digital or you will have to digitize them. The less in each image, the better the Zoetrope will work later.
2. If you can picture the Betsy Ross American Flag and the circle of 13 stars and a clock face with the hours marked inside the Flag stars, that is basically the process a Zoetrope works when spinning.
3. The stars represent the viewing slats and the clock represents where the images will be placed.
4. Turn on your Rulers and Grid from the View Menu

• Section 2 •

The Set-Up



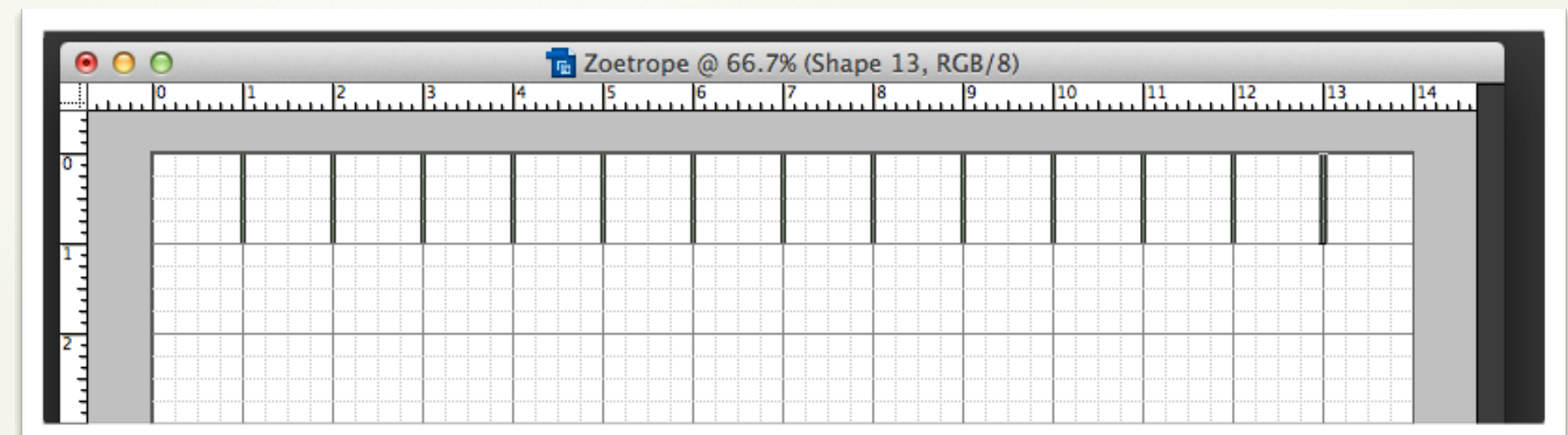
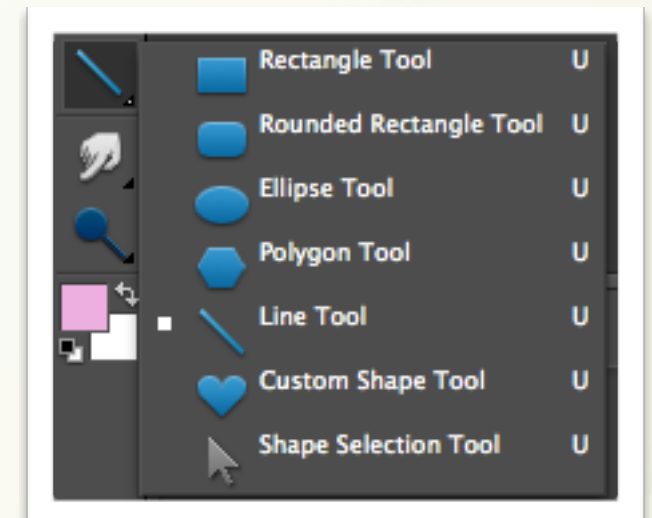
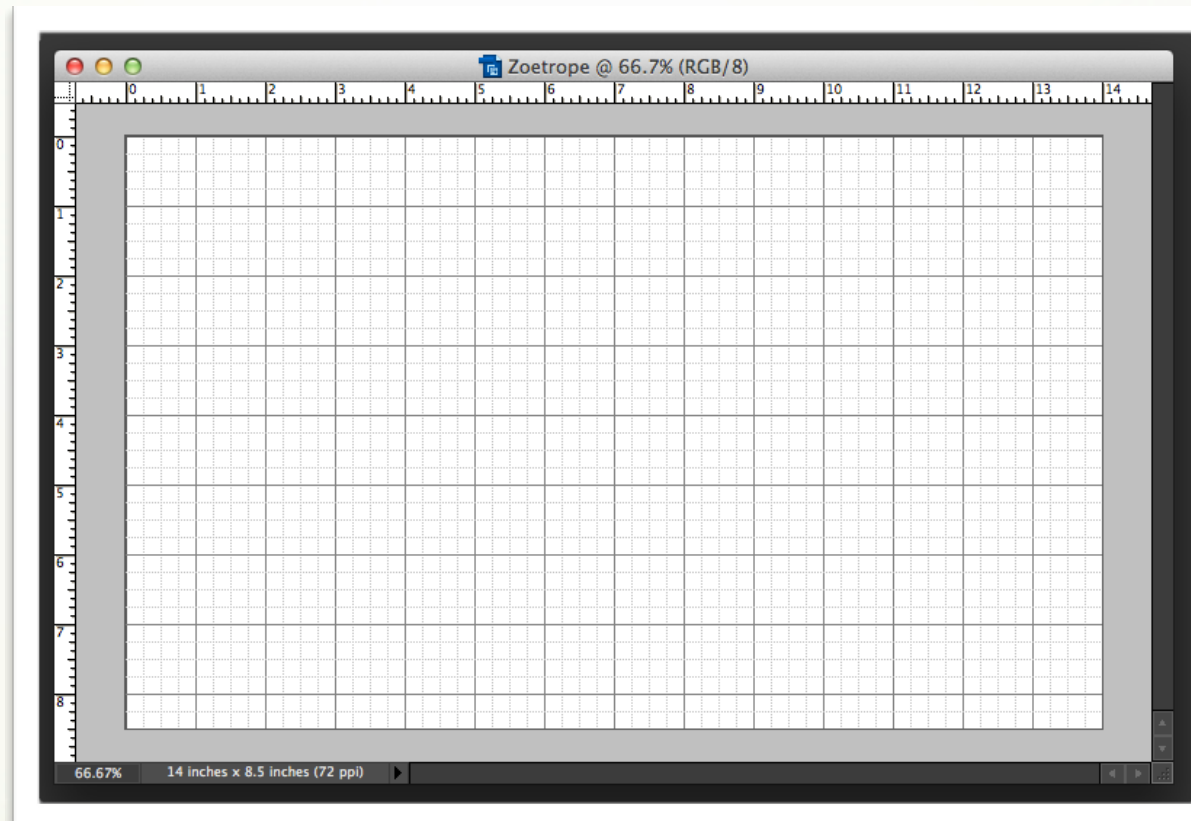
• Section 3 •

Ready, Set, Zoe



Small Steps

1. So far, our project looks like the image on the right.
2. Next, we need to draw lines on each inch marking from the ruler and grid.
3. Use the Line Tool and hold the shift key to draw a straight line. This will be where we cut our viewing slats a little later.
4. Remember, our paper is 8.5 inches tall, so we have to divide it because we only will need one piece of paper for the whole project if we plan correctly.



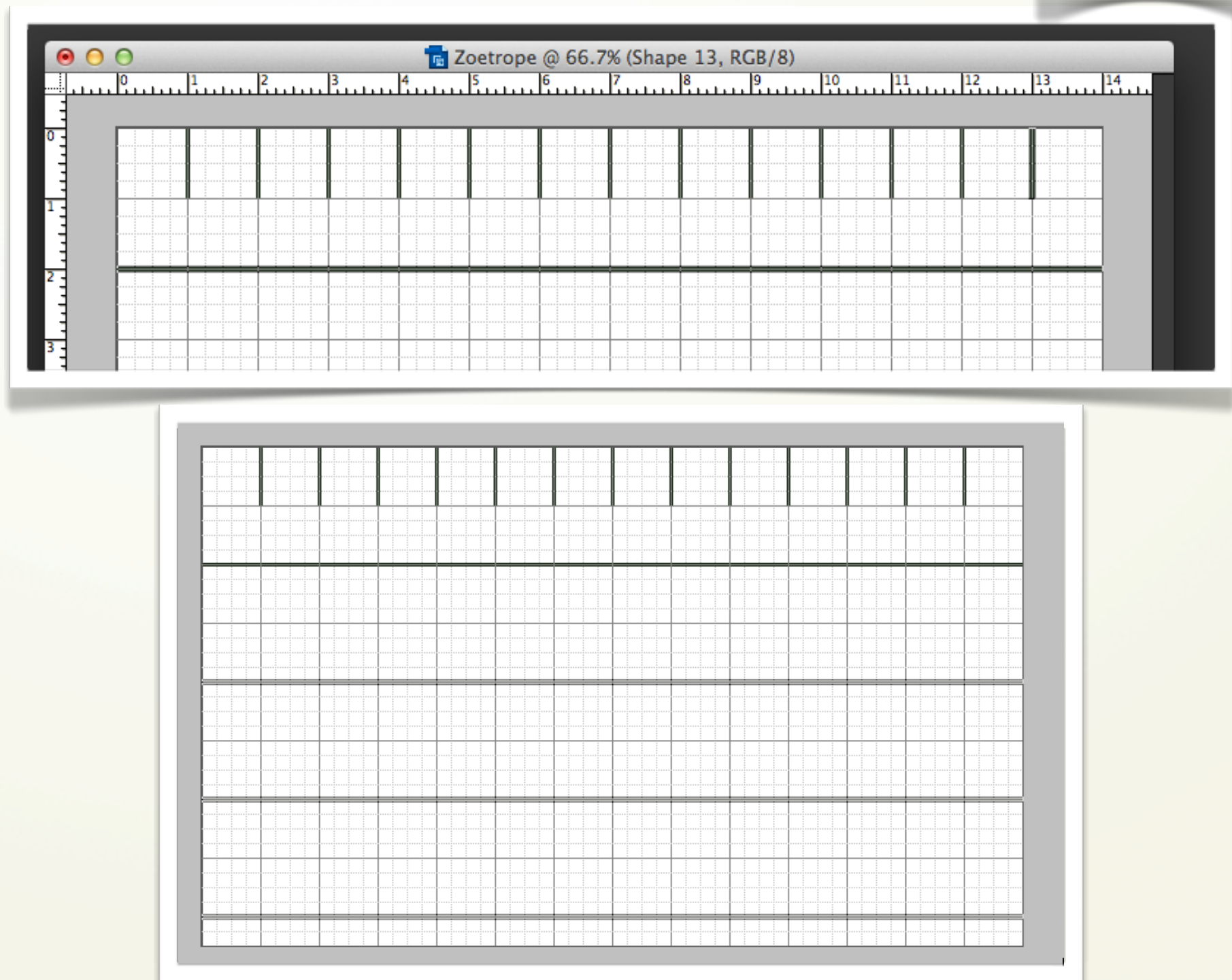


• Section 4 •

Zoe 2

More Steps

1. Still using the Line Tool, we will draw across at the two inch mark just so we do not use any area above the line at this point.
2. Next, every two inch mark, make a horizontal line so we separate areas for our animation images we will add soon.
3. By the time we have drawn our horizontal lines, we should have four work areas and an extra half-inch at the bottom.
4. The top work area is where our viewing slats are located.

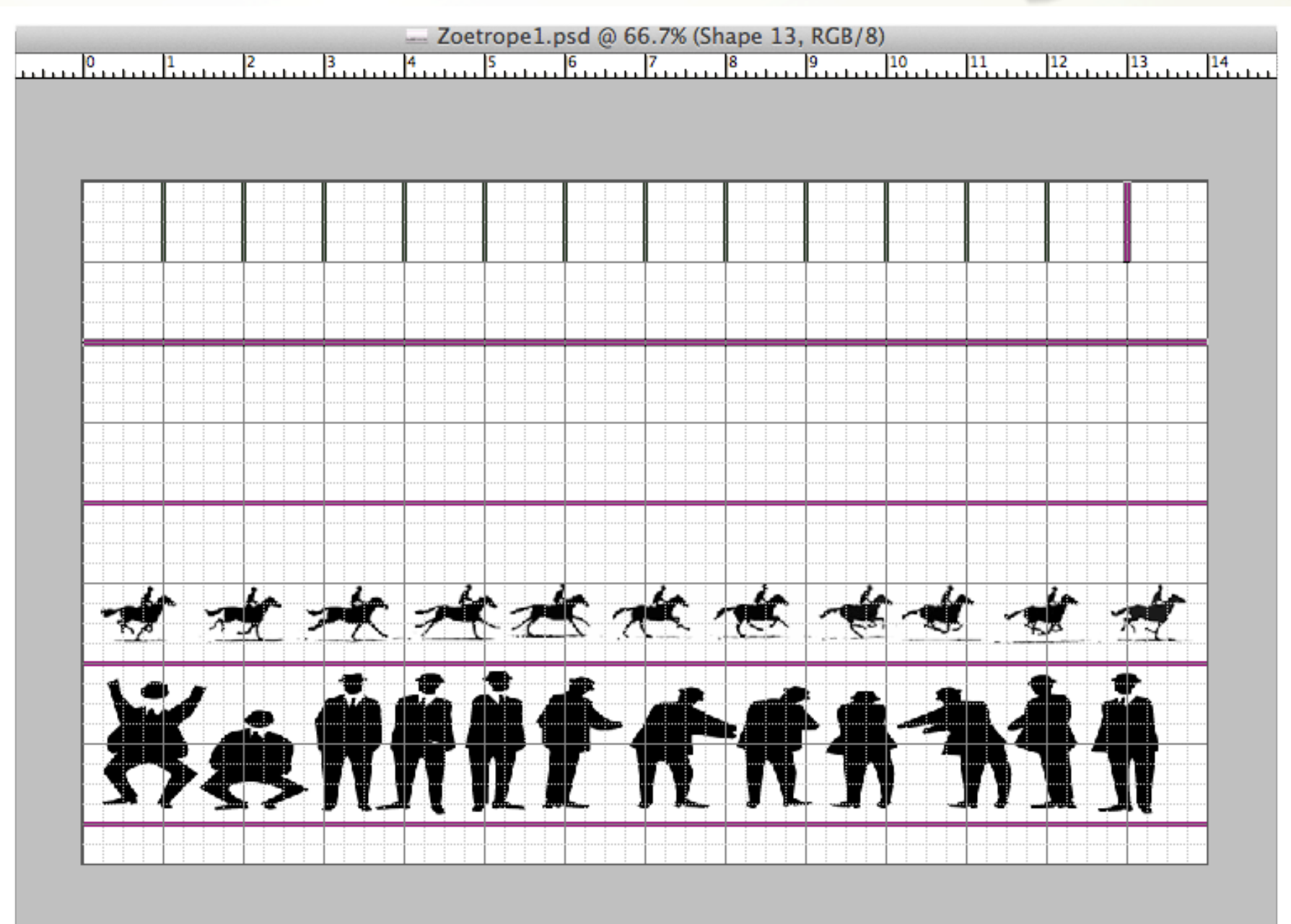




Animating Stills

1. Each work area of 2 inches by 14 inches can have a series of images.
2. Generally, a Zoetrope has 12 images and 13 slats for viewing.
3. Add each series of images to each work area so you use as much of your paper as possible before printing.
4. Once you complete this process, make sure your printer is set for larger paper.
5. Our printer needs a different paper tray for the 8.5" X 14" paper we are using.

Adding Your Image Series



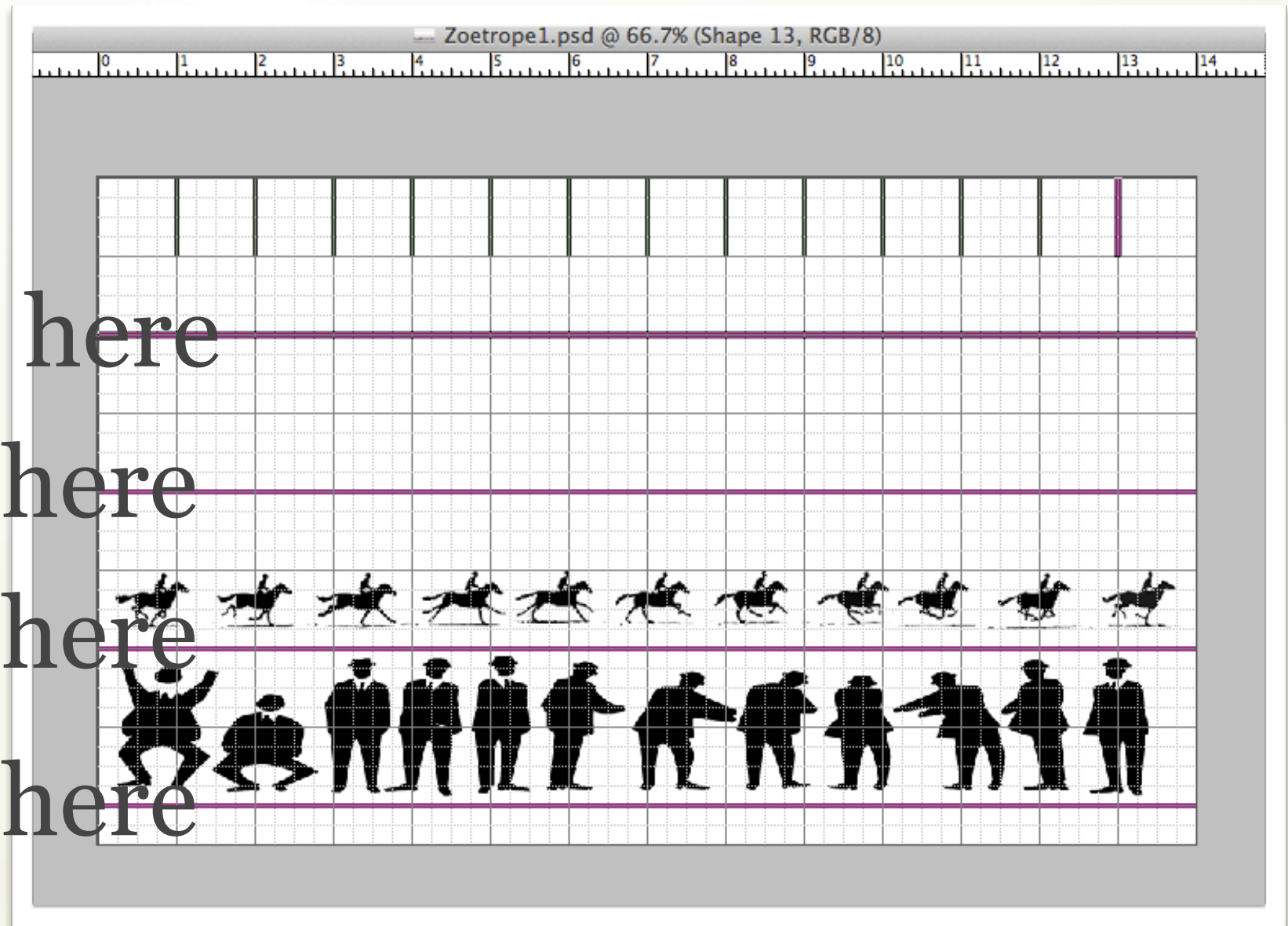


Cut on the lines

1. Each work area becomes it's own project piece as you cut along the horizontal lines we drew earlier.
2. Each set of images becomes an animation, so each work area with images is a separate project. This means more than one student can contribute a series of images to one printing of the Zoetrope.
3. Use your scissors to cut out each series.
4. Fold the viewing slit piece before cutting so it is re-enforced by doubling up the paper.

Cutting and More

Fold here
Cut here
Cut here
Cut here



Together

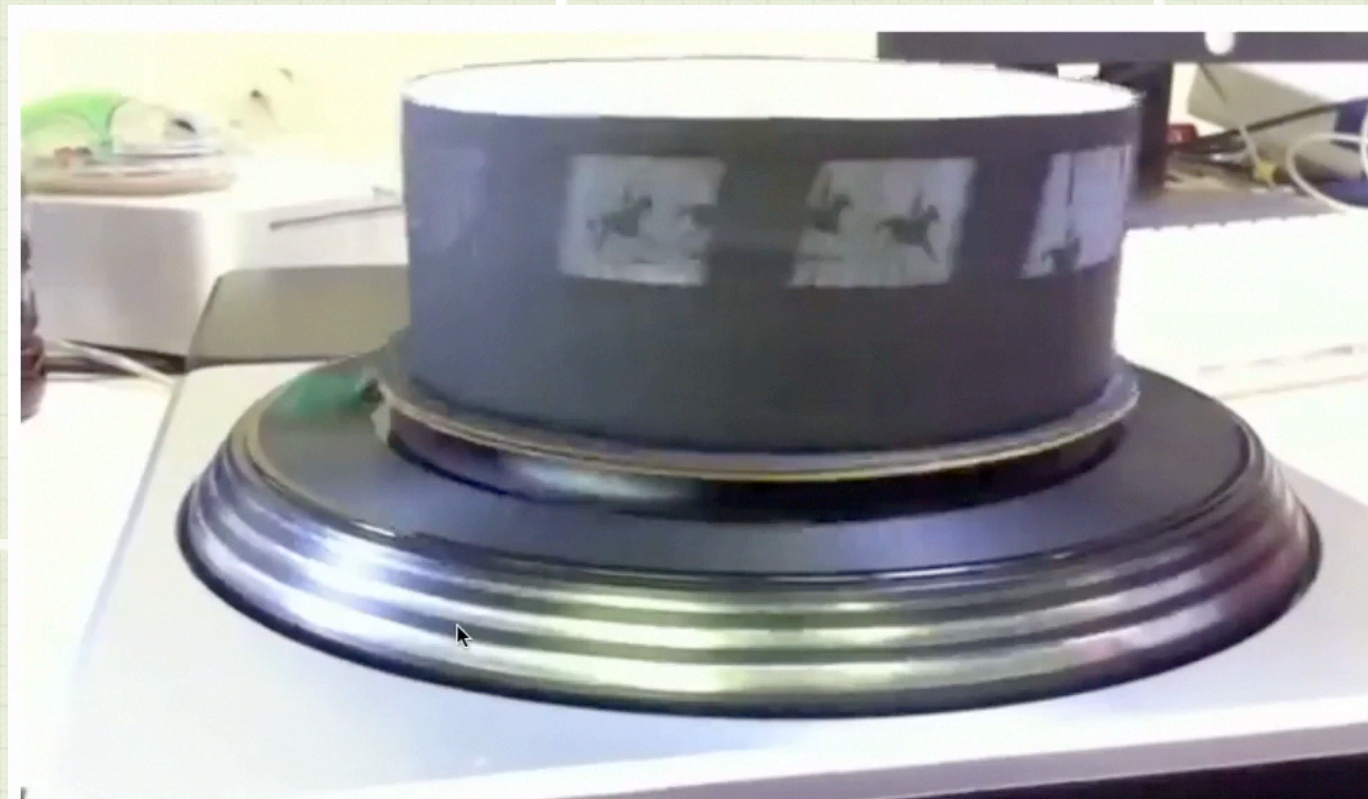
1. Since we are using the jar top, we place the viewing slats into the jar top.
2. Inside the viewer, we place one of our image series and spin.
3. Some images need faster spins than others. The beauty of the Zoetrope, is you control the speed and the images.
4. This is animation as it was in the 19th century, so enjoy.
5. Some Zoetropes work well on a turntable so the spinning is more consistent. Be creative and experiment with different methods.

• Section 7 •

Putting it Together

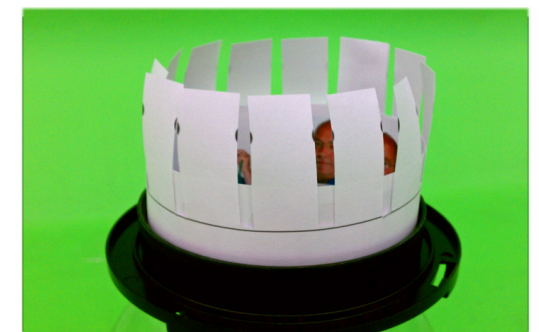


Movie 3.1 Working Zoetrope



Zoetrope

Yusuf Hasan, Graham Jack, Niall Kelly



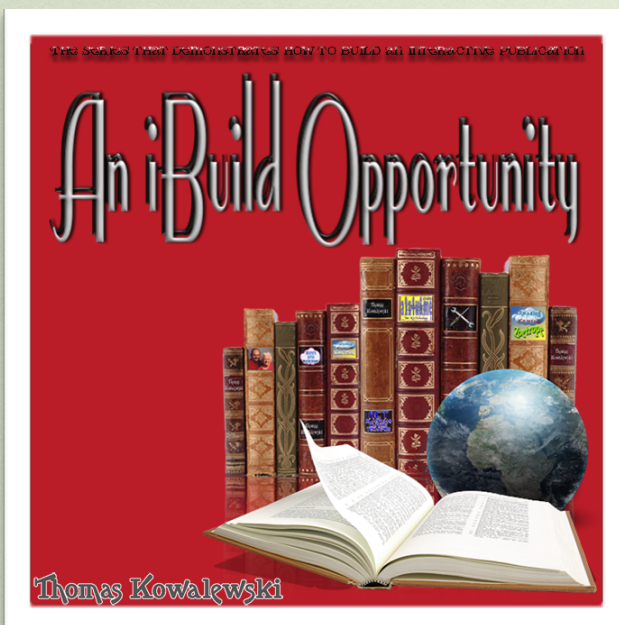
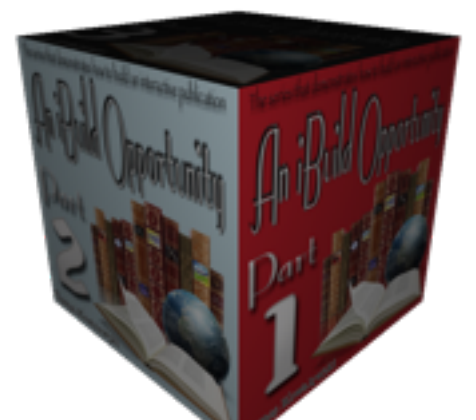
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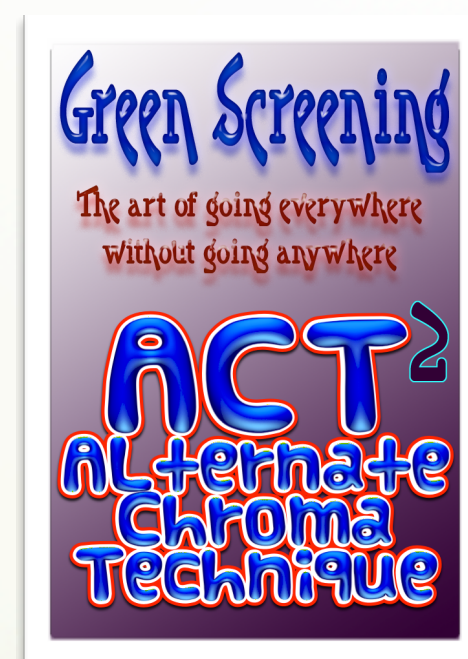
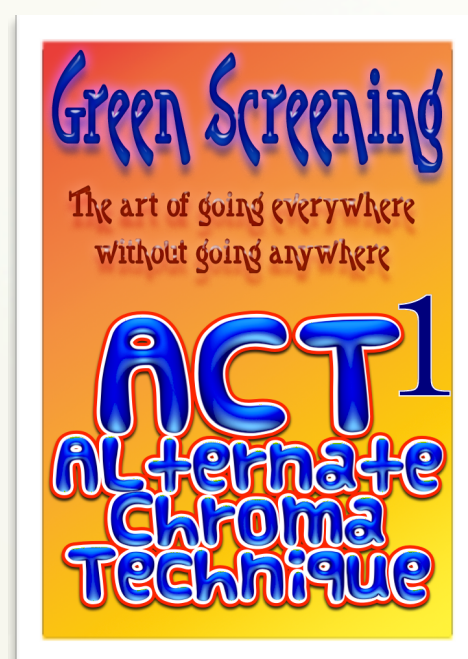


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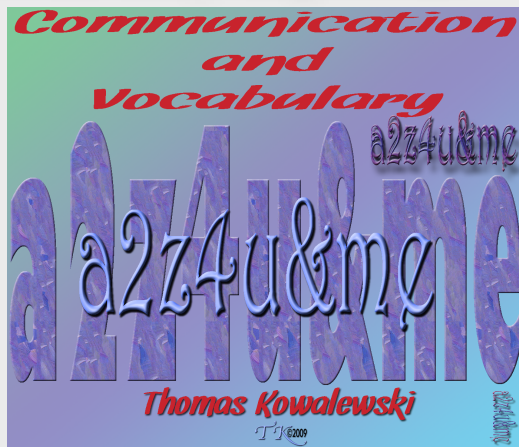


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