

# **User Manual** **xRes 2.0 S.E .**

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**Apple® Macintosh® and**  
**Microsoft® Windows™**

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First Edition

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xRes and Microsoft Windows

xRes operates in a graphics environment called Microsoft Windows, created by Microsoft Corporation. An extension of the MS-DOS operating system, Microsoft Windows gives a standard look and feel to xRes and all other Windows applications. To run xRes under Microsoft Windows, you need to license and install Microsoft Windows.

xRes and the Apple Macintosh

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Doug Wyrick, and our Beta Test Sites

# 1

## Chapter One xRes S.E. Basics

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### Overview

This chapter covers the basic concepts you need to use xRes S.E. effectively. Topics include:

- Essential Terms
- Creating a Swap Disk
- Resolution
- Resizing Documents
- Work Modes
- Working with Multiple Undos
- Local vs. Global Operations



## Essential Terms

### Document

A document is simply an open file. The relation between the terms “document” and “file” in xRes S.E. is similar to that found in word processing; you can open, create, or close a document which in turn is saved to a file.

A document in xRes S.E. consists of one or more objects (see “Object” below).

### Image

An image is a graphic or illustration that you view using xRes S.E.. An image is viewed within a document, which can consist of a single object or multiple objects.

### Object

An object is an individual item in a document and can be moved, altered, and even saved separately from the document.

Editing an object might consist of applying a filter to it, painting over it, or any other operation that changes the object’s pixel data.

In xRes S.E., objects in the document are displayed in the Objects Window. When an object is selected, it is called an active object. More than one object can be active at a time.

A document can contain multiple objects. Documents with multiple objects are often reduced to having only one (background) object when they are exported to other file formats.

For more information about manipulating objects, see Chapter Three: Objects.

## Creating a Swap Disk

A swap disk is simply the amount of hard disk space xRes S.E. can use to edit your document.

The amount of swap disk space needed depends on the size of your image, the number of objects in your image, and the number of undo levels you plan to use.

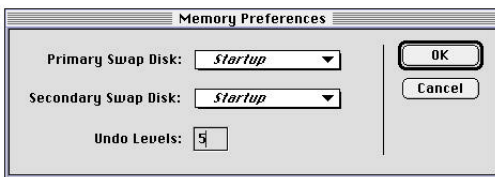
The chart below represents the approximate amount of swap disk needed for a one-object document. For example, if you are using five levels of undo, you should have swap disk space equaling approximately twelve times the image size. xRes S.E. supports up to twenty levels of undo.

Number of Undo Levels	Times Image Size
1	6
3	9
5	12
7	15
9	18
11	21
15	27
20	34

Reducing the undo levels is the simplest way to free up swap disk space. This is discussed in “To Free Swap Disk Space” in this chapter. xRes S.E. can utilize space up to two swap disks.

### To Create a Swap Disk

- 1 Launch xRes S.E..
- 2 Use the menu command File > Preferences > Memory.
- 3 Choose a primary swap disk from the Primary Swap Disk drop down menu. The default setting is Startup. Startup uses available disk space on the disk where the xRes S.E. application is stored.



- 4 Choose a secondary swap disk from the Secondary Swap Disk drop down menu. Startup can be both the primary and secondary swap disk.
- 5 Click OK.
- 6 Quit and relaunch xRes S.E. for the change to take effect.

### To Keep Track of Swap Disk Space

The size of the image and the amount of disk space reserved for that image on the swap disk(s) are always displayed at the bottom left corner of the image. In the example below, the image is 1.5 MB and the reserved swap disk space is 5.6 MB.



### To View the Amount of Swap Disk Available

Use the menu command Window > Inspectors > Info to display the Info Inspector. The number next to “Free Disk” is the currently available swap disk space.

### To Free Swap Disk Space

If the “Free Disk” amount becomes low, access the menu command File > Preferences > Memory and reduce the number of undo levels. You must always have at least one undo level.

To free swap disk space without reducing undo levels, try saving the current file, closing it, then re-opening the saved file.

## Resolution

### Bitmap Images v s. Vector Images

xRes S.E. creates bitmap images (also called raster images) composed of pixels on a prearranged grid. xRes S.E. can edit at the pixel level, either one pixel or multiple pixels at a time.

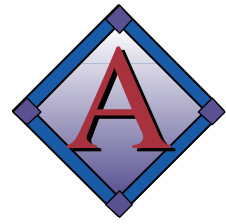
xRes S.E. is ideal for working with continuous-tone images that is, images that have several different tones, or shades of color. xRes S.E. is also ideal for creating an image from scratch using naturally textured brushes. When you edit a picture in xRes S.E., you alter one or more pixels to change the appearance of the image. By editing several pixels at a time, you are changing the appearance of that section of the image.

xRes S.E. does not create vector images. A vector image is different from a bitmap image. A vector image is an image composed of shapes which are saved as mathematical relations to each other. An example of a vector-based image editing program is Macromedia FreeHand, which can create and edit straight lines, curves and text. When these shapes are changed, their relationship to one another is changed; the image is not saved as a set number of pixels on a prearranged grid, but as a series of mathematical relationships, or formulae.

Vector editing programs are ideal for logos, technical illustrations, or images composed primarily of distinct lines and shapes.



*Bitmap Image*



*Vector Image*

### What is Resolution ?

When an image is scanned, the image is broken into thousands of pixels. Each pixel is typically encoded as three numbers, corresponding to the red, green, and blue components of its color in the RGB color space. Resolution is typically described as the pixels per square inch (ppi) of the image, as it is displayed on the monitor.

If two images are the same height and width and are stored in the same Color Mode (RGB, CMYK, or Grayscale), the image with the higher resolution will have the larger file size.

The following chart shows the size (in megabytes) of letter, legal, and poster-sized images of 150 ppi and 300 ppi. Notice that as the pixels per inch doubles, the file size quadruples.

Image Size	Resolution	File Size
8.5 x 11" (letter)	150 pixels/inch	8MB
8.5 x 11" (letter)	300 pixels/inch	32MB
11 x 17" (tabloid)	150 pixels/inch	16MB
11 x 17" (tabloid)	300 pixels/inch	64MB
24 x 36" (oversized)	150 pixels/inch	74MB
24 x 36" (oversized)	300 pixels/inch	296MB



150 ppi



300 ppi

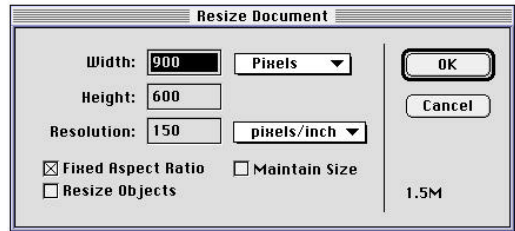
## How xRes S.E. Handles Resolution

In xRes S.E., each image document stores its own resolution. For example, you cannot open a 300 ppi (pixels per inch) document at 150 ppi: it can only be opened at 300 ppi and then changed to 150 ppi by the menu command **Resize document**. This resolution is set when you create a new document with the menu command **File > New**. The resolution can be confirmed and changed in an existing document by the menu command **Modify > Resize > Document**. If you copy and paste an image into an existing xRes S.E. document, the ppi of the pasted image is converted to the ppi of the document.

Document resolution does not affect how the image is displayed on screen. For example, a 600 ppi image is indistinguishable from a 72 ppi image on screen. It is only when the images are printed that you can see the difference in resolution.

## Resizing Documents

In xRes S.E. you can resize the entire document or just the image area. You can also choose either to resize the file proportionately or nonproportionately.



- 1 Use the menu command **Modify > Resize > Document**.
- 2 In the upper drop down menu, choose **Pixels**, **Inches**, **Centimeters**, **Picas**, **Points**, or **Percent** as the unit of measurement. **Percent** allows resizing based on a percentage of the original document. For example, a value of 50% produces a document that is half as big as the original; a value of 200% produces a document that is twice as big as the original.

As you enter the measurement, the file size (indicated in the bottom right corner of the dialog) is adjusted to match the new dimensions of the document.

To keep the image dimensions proportional, check the “Fixed Aspect Ratio” preference. The width will adjust automatically as you resize the height, and vice versa.

To resize the entire document, check the “Resize Objects” preference. If this preference is unchecked, the image is resized but the individual objects are not. You may want to leave “Resize Objects” unchecked to access the maximum amount of image space without resizing the objects.

If you do not check “Resize Objects,” you may want to create a new background object that covers the entire image area. See “Creating New Objects” in Chapter Three: Objects for more information. If you do not create a new background object, the new image space will not be editable.

- 4 Enter the new resolution of the document in pixels per inch or pixels per centimeter, as per your selection in the lower drop-down menu.

Checking the “Maintain Size” preference will maintain the current file size of the document as you enter a new resolution. For example, if you check this preference and change the resolution, the document size (in pixels) will be adjusted to maintain the same file size (in megabytes).

- 5 Click OK. The new file size of the document is listed in the bottom left corner of the document window.

## Work Modes

xRes S.E. supports two document-specific work modes: Direct Mode and xRes Mode. Direct Mode is designed for images that are less than 10 to 20 MB in size and contain less than ten objects. xRes Mode is designed for images that are greater than 10 to 20 MB in size or contain ten or more objects.

The top of the image window indicates the work mode. If you are in xRes Mode, the word “xRes” appears at the top of the image window. If you are in Direct Mode, the word “xRes” does not appear.

Most of the xRes S.E. *User Guide* is written for work in Direct Mode. See Chapter Nine: Working in xRes Mode to learn how to convert images from one mode to another, how to work in xRes Mode, how operations are different in xRes Mode, and how to optimize productivity in xRes Mode.

<b>Direct Mode</b>	<b>xRes Mode</b>
Use for images under 10-20MB	Use for images over 10-20 MB or 10+ objects
Acts on pixel data	Acts on tiles of data
Does not require post-processing	Requires post-processing
Supports multiple undos	Supports multiple undos

Supports plug-in filters	Supports plug-in filters
Magic Wand functional	Magic Wand non-functional
Bucket functional	Bucket non-functional
Dropping Objects functional	Dropping Objects non-functional
Dropping selections functional	Dropping selections non-functional
Indexed 256 Color functional	Indexed 256 Color non-functional

## Working with Multiple Undos

xRes S.E. offers multiple levels of undo on a per-object basis. Applying the menu command Edit > Undo undoes the last operation performed on the active object.

As previously noted, an object is a separate component of a document and may be moved, resized, rotated, duplicated, deleted, and edited independent of the document. See Chapter Three: Objects to learn more about objects.

The number of undo levels can be set from 1 to 20 with the menu command File > Preferences > Memory. The number of undo levels supported depends on the size of the image and the available swap disk space. In general, a large swap disk and a small file will allow more undo levels than a small swap disk and a large file. See

“Creating a Swap Disk” in this chapter for more information.

The menu command Edit > Undo reverses the last operation. An operation is any command or tool that is applied to pixel data. For example, applying a filter, creating a selection, deleting an object, and applying a gradient are all operations because they affect to the pixel data.

Changing the name of a brush within the Brushes Palette is not an operation because it does not affect the pixel data. Deleting a texture within the Textures Palette is not an operation because it does not affect the pixel data. These steps can be undone, but not with the Edit > Undo command. To change the name of a brush, re-enter the brush name: to undo a change to a texture, you must quit xRes S.E. and relaunch the application so that the last saved textures are reloaded.

### To Undo an Operation

The menu command Edit > Undo reverses the last operation. To undo the undo, use the menu command Edit > Redo.

In Direct Mode, applying an object transformation command (such as skewing an object) prohibits undos before that object transformation was performed. Object transformation operations involve changing the size or shape of an object. Resizing an object, rotating an object, skewing an object, and flipping an object are all object transformation commands.

For example, if you apply three filters to an object and resize it, you will be able to undo the resizing, but you will not be able to undo the filters.

## Local vs. Global Operations

Local operations support multiple levels of undo. Global operations support only one level of undo.

### Local Operations

Local operations are performed at the object level and do not change the position, size, or shape of the object. Local operations support multiple levels of undo.

Global Operations One Undo	Local Operations Multiple Undos
Resize	Paint
Rotate	Filters
Delete	Create a Selection
Move	Color Correction Commands
Flip	Cloning
Crop	Fills
Paths	

### Global Operations

Global operations are operations performed at the document level that change the position, size, or shape of an object. Global operations support only one level of undo.

Understanding the differences between local and global operations is key to understanding the undo sequence of xRes S.E.. For example:

- If you apply the following operations: paint (local), move an object (global), apply a filter (local), and apply Edit > Undo two times, you will undo the commands in this order: filter, paint. Moving the object cannot be undone because it is a global operation.
- If you move a path point (global) and apply a filter (local) you can undo the filter but not the path point because moving a path point is a global operation, which supports only one level of undo.
- If you paint (local), apply a filter (local), create a selection (local), and apply Undo three times, all three operations are undone because they are all local operations which support multiple levels of undo.





## **Chapter Two**

# 2

## Chapter Two Opening, Saving, and Exporting Images

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### Overview

This chapter addresses how to open, save, export and import both documents and individual objects. Topics include:

- Essential Terms
- Opening Images
- Saving Images
- Exporting Images
- Importing Images
- Acquiring Images
- File Formats

## Essential Terms

### Channel

A channel stores the color information for an image; for instance, the R, G, and B channels store the red, green, and blue information for an image.

### Primary Channels

The primary channels of a color mode store the color information of the image. The primary channels of the RGB color space are red, green, and blue.

### Alpha Channels

Alpha channels are non-primary channels used to store intermediate channel operations and special effects. Certain file formats retain alpha channels; others delete the alpha channels.

To learn more about alpha channels, see Chapter Seven: Masks and Channels.

### Color Mode

This is the means by which color is represented in the document: RGB, Grayscale, or Indexed 256.

To learn more about Color Modes, see Chapter Five: Colors.

## Selections

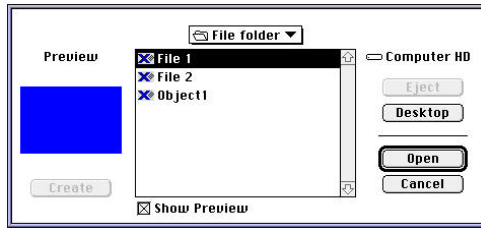
Selections mask out an area of an object and are displayed on screen as a flashing black and white line or “marquee.”

To learn more about selections, see Chapter Seven: Masks and Channels..

## Opening Images

xRes S.E. can read the following file formats:

- BMP
- GIF
- JPEG
- LRG
- MMI
- PhotoCD
- Photoshop 3.0
- PICT
- PNG
- TGA
- TIFF



## Open

To open a document use the menu command File > Open. A dialog prompts you to select the document you wish to open.

## Open as LRG

The menu command File > Open as LRG is used in xRes Mode to open a file while concurrently saving it to the LRG file format.



See Chapter Nine: Working in xRes Mode for more information.

## Saving Images

To save an image use the menu command File > Save or the menu command File > Save As.

## Save

The menu command File > Save saves changes to the file that have been made since it was last saved. The Save Command does not change the name or format of the document.

## Save As

Use the menu command File > Save As to save an open document under a different name and/or a different file format if the document has only one object.

To learn how to merge all document objects into a single object, see Chapter Three: Objects.

If the document has only one object, its file format can be changed to BMP, EPS, GIF, JPEG, MMI, LRG, Photoshop 3.0, PICT, PNG, Scitex CT, TGA, or TIFF with the Save As command.



The Save As command will save the alpha channels of the document if the file format you are saving to supports alpha channels.

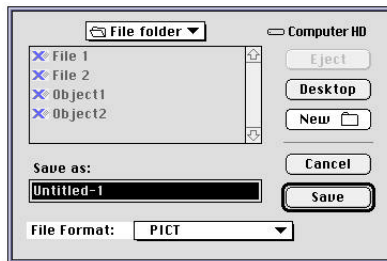
If the document has more than one object, the Save As command can only be used to save the

document to the MMI file format. To save a multi-object document in a file format besides MMI, you must use the Export command.

## Exporting Images

The menu command File > Export saves a copy of a file to a different file format including file formats of third-party vendors. When you use the menu command File > Export you are prompted with a dialog for specifying the document format, name, and location. Remember that using the File > Export command does not affect the original document.

An exported document will have all objects merged and all alpha channels deleted. See Chapter Nine: Working in xRes Mode to learn about using the Export command in xRes Mode.



When using the Export command, you can export the file at a zoom level from 1:1 to 1:64. For example, exporting a file at a zoom level of 1:2 creates an image that is half the width and half the height of the original document.

The Export command is typically used to export multiple-object MMI files to different file for-

ats. You must use the “Export a multiple-object document” command to output to any file format except MMI. The Export command deletes all alpha channels; to save the alpha channels for a particular object, activate that object and use the “Save Object” command located in the Objects Window submenu. See “Save Object” in Chapter Three: Objects for more information.



## Importing Images

The menu command File > Import imports an image into the active document as an object. xRes S.E. can import an image of any file format that it can open except MMI.

## Acquiring Images

The Acquire command is used to open documents that have been acquired using a scanner device. The Acquire command can also use third-party acquire modules (also called Import modules) as described below.

## To Use an Import Module

Use the menu command File > Acquire and select the import module from the submenu. A dialog prompts you to select options based on the chosen import module. To use these modules, follow the instructions that shipped with the third-party software.

## Scanning Images

When scanning images, you will be prompted to enter a resolution for scanning the image. If you plan to output the image at a service bureau, ask the service bureau for the best scanning resolution.

Scanning can produce documents that have distinct color casts or are too heavy in the highlight or shadow areas. Use the Levels or Curves color correction commands to adjust color casts. You can save Levels or Curves settings for each scanner.

See Chapter Ten: Color Correction to obtain more information on the Levels and Curves commands.

## File Formats

### BMP

BMP has an advantage over all other file formats: it is the official file format for Microsoft Windows® images.

BMP is an RGB-only format. It supports Indexed 256 color documents, as well as Grayscale and 24-bit RGB documents.

### EPS

EPS stands for Encapsulated PostScript. PostScript is a page layout language that Adobe Systems developed about fifteen years ago.

PostScript output devices, including all Apple printers and other desktop laser printers (as well as document setters), read PostScript files.

EPS documents can contain a preview that is used by applications such as Quark XPress® to give a sample representation of the document in the page layout. For example, if the EPS file has a preview, Quark XPress does not have to read the entire document to give you a preview. This saves considerable processing time.

When you save to EPS in xRes S.E., you can choose from two preview types, “None” or “TIFF.” None means there will be no preview of the document available; TIFF means a TIFF format preview of the document will be available.

In the above example, Quark XPress first generates its own EPS description of the page then inserts the EPS document that you saved in xRes S.E. as part of the complete EPS document.

xRes S.E. cannot import or open an EPS file; it can only export to EPS.

### GIF

The GIF format is an 8-bit color format frequently used in on-line services. GIF files are typically very small, which makes them convenient for uploading and downloading via modem.

Unisys Corporation (which holds the patent on the LZW compression used in GIFs) and CompuServe enforce a licensing fee for GIF files that are uploaded or downloaded to on-line

services. Macromedia advises that you check the status of this licensing fee before uploading or downloading GIF files.

xRes S.E. can open and save GIF files. When saving a GIF file, you may have to convert to the Indexed 256 color mode (menu command `Modify > Color Mode > Indexed 256`).

xRes S.E. also supports the GIF 89 format, which supports the matte color and void color used in the Color Index Table. See “Color Index Table” in Chapter Five: Colors for more information.

## JPEG

JPEG stands for Joint Photographic Experts Group; it is one of the most efficient compression file formats. JPEG compression can vary from high quality (saving a document at low compression, such as 2:1) to low quality (saving a document at high compression, such as 100:1). With high levels of compression, image quality can suffer. xRes S.E.’s JPEG reader is based on code provided by the JPEG consortium. xRes S.E. can read in JPEG documents in all color modes.

When you Save As a JPEG document, the dialog prompts you to specify the quality of the compression on a scale of 1 to 100.

A value of 100 maintains the current image quality. A value of 1 compresses the document as much as possible and has the greatest loss of image quality. In-between values have proportional degrees of compression and image quality.

If you are compressing a document for serious production work, Macromedia recommends that you set the JPEG quality between 50 and 100. If the file will be displayed only on a monitor and not used in print, you can use higher compression and still get satisfactory results.

## LRG

The LRG document format was designed by Fauve Software (now part of Macromedia) to specifically address the issue of saving a large document (10 to 20 MB or larger). An LRG document is stored in a series of tiles, making it easy to rapidly access the image data. LRG documents are automatically opened in xRes Mode by xRes S.E.. For more information on the LRG file forms, see Chapter Nine: Working in xRes Mode.

LRG documents can be saved as RGB (with 29 channels) or Grayscale (with 32 channels).

You might want to export a document to the LRG format if you plan on opening it later in xRes Mode. When you export the document to an LRG format all objects will be merged.

## MMI

This MMI file format is used to save documents with multiple objects which you want to keep independent. An MMI file describes a document by keeping a command set for all objects in the document. Generally, you will not want to export the MMI file to another file format until you have finished editing the image.

If you save to any format other than MMI, all objects will be merged into the background.

To change a document from MMI format to another format, you must export it to the appropriate format; you cannot use the Save As command. See Exporting Images in this chapter for more information.

In xRes Mode, the MMI file serves as a pointer to all objects in the document. See Chapter Nine: Working in xRes Mode for more information.

## PhotoCD

Kodak's PhotoCD® file format is designed for reading files from specially encoded CD's. PhotoCD uses a multiple resolution document representation. This is similar in concept to the LRG file format used in xRes S.E.. However, xRes S.E.'s LRG file format is more efficient than PhotoCD.

PhotoCD documents are stored in a special YCC color space developed by Kodak, the details of which have not been made public. The YCC color space is optimal for storing a wide gamut of colors. xRes S.E. uses the tool kit provided by Kodak to translate YCC data into RGB as it reads the document.

PhotoCD works with documents at seven fixed sizes, which range from 64 x 96 pixels to 4096 x 6144 pixels. When you scan a PhotoCD file, you can pick the size that fits your needs.

## Photoshop 3.0

The Photoshop 3.0 format was designed by Adobe Systems to store and edit multiple-object documents.

When opening or importing a Photoshop 3.0 document in xRes S.E., all the Photoshop objects are merged into one object. If you want to retain separate Adobe Photoshop objects, save each object as a TIFF file from within Adobe Photoshop and then import the TIFF files into xRes S.E.. See "Importing Objects" in Chapter Three: Objects for more information.

When opening a Photoshop 3.0 document in xRes S.E., the alpha channels of the document are maintained in the Channels Window (Window > Channels).

You can export any document to the Photoshop 3.0 format. This command merges all of the objects into one object and saves this image as a Photoshop 3.0 file.

To maintain separate objects use the "Save Object" command located in the Objects Window submenu on each object, open these objects in Adobe Photoshop and click and drag them into a single document. See the Adobe Photoshop User Guide for more information.

## PICT

PICT is the standard image format for Macintosh. It was designed as both a vector and raster image format. PICT raster format is not efficient for storing large documents (10 to 20 MB and larger)



and cannot store documents with alpha channels or store documents in CMYK Color Mode.

xRes S.E. can read PICT documents in the RGB Color Mode but it will not maintain alpha channels. PICT is essentially a useful format for transferring small files from one Macintosh to another.

## PNG

Despite being less than a year old, the PNG (pronounced “ping”) file format is gaining popularity due to its lossless compression ability, true color support, free reference implementation, and full alpha blending. Unlike the GIF format, PNG is royalty-free.

xRes S.E. can save and load PNG files. The PNG file format supports alpha channels.

## TGA

Targa (TGA) is the file format of True Vision Corporation which is best known for its video boards for IBM PCs. Since the early 1980’s, applications such as AT&T’s Rio® have made TGA the standard for video applications on IBM-compatible PCs. Applications such as Caligari True Space®, In-Sync Razor®, and Adobe Premiere® have the ability to export individual frames of animation to TGA files.

TGA is an RGB-only format, and can contain only one alpha channel. This format is referred to as 32-bit color; 3 x 8 bits for the document, plus 8 bits for the alpha channel. xRes S.E. will display the alpha channel as it exists in the document.

TGA is a simple file format. It does not support compression, and it can only be saved to either RGB or Grayscale Color Modes.

## TIFF

The TIFF format was developed over ten years ago by Aldus Corporation (now part of Adobe) as a general purpose format for raster documents. TIFF stands for Tagged Image File Format; the format consists of tagged fields which are general enough to handle any type of document.

The latest version of TIFF is called TIFF 6.0; it includes full support for RGB, CMYK, Indexed 256, Grayscale, and Lab Color documents. A TIFF document can also save the monitor white point, gamma settings, and other settings. TIFF is widely used on both Windows and Macintosh platforms.

When you export or save a document in xRes S.E. as a TIFF, you will be prompted with these options:

- **Byte Order:** Choose IBM PC or Macintosh depending on the platform you intend to work in.
- **Alpha Channels:** xRes S.E. supports alpha channels in TIFFs. If you want to retain the alpha channels for a particular object, use the “Save Object” command located on the Objects Window submenu.



## Chapter Three

# 3

## Chapter Three Objects

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### Overview

This chapter discusses how to manipulate the objects in a document. Topics include:

- Essential Terms
- Activating and Moving Objects
- Creating Objects
- Saving and Importing Objects
- Dragging Objects between Documents
- Cutting and Pasting Objects
- Dropping Objects
- Changing the Order of Objects
- Aligning Objects
- Using Object Channels
- Setting Object Options
- Objects Window
- Blending Modes
- Using the Objects Window Submenu
- Object Transformations
- Using Text Objects

## Essential Terms

### Document

As noted in Chapter One, a document is simply an open file. The relation between the terms “document” and “file” in xRes S.E. is similar to that found in word processing; you can open, create, or close a document which in turn is saved to a file.

A document in xRes S.E. is made of one or more objects.

### Object

As noted in Chapter One, an object is an individual item in a document and can be moved, altered, and even saved separately from the document.

## Activating and Moving Objects

Selected objects are called *active objects*. Many operations, including painting, cloning, erasing, filling, masking, and applying filters affect only the active objects in a document. One or more objects may be active at a time; one object is always active.

There are two means of activating an object: the Arrow Tool and the Objects Window. See “Using the Arrow Tool” and “Objects Window” in this chapter for more information.

There are two ways to move objects:

- 1 Active objects may be moved within the document using the Arrow Tool on the Tools

Palette. See “Using the Arrow Tool” below for more information.

- 2 Active objects may be moved with the arrow keys on the keyboard. Pressing an arrow key once moves the active object(s) up, down, or sideways one pixel. Pressing Shift while using the arrow key moves the active object(s) up, down, or sideways ten pixels. Arrow key control is useful for precise object positioning.

### Using the Arrow Tool

The Arrow Tool is used to activate and move objects. The Arrow Tool is located in the top left corner of the Tools Palette.

To activate an object with the Arrow Tool, use one of these methods:

- Click the object’s name in the Objects Window.
- Click the object in the document.



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*Note: The second method only works if “Activates Objects” is checked in the Arrow Tool Options. The default setting has “Activates Objects” checked.*

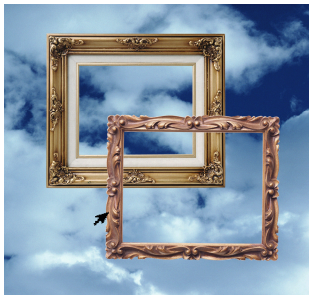
To move an object, click and drag it. The rectangular boundary of the object will move with the cursor to indicate that you are moving the object. When you release the cursor the object is moved to its new location in the document.

If “Real Time Dragging” is checked in the Arrow Tool Options, then the entire object, not just the boundary of the object, will move when you initially reposition the object.

## Grouping Objects

There are two ways to group objects. One method involves using the Objects Window. The other method involves using the Arrow Tool and assumes that “Activates Objects” is checked in the Arrow Tool Options.

To activate more than one object, click an object in the document, hold down the Shift key, and click additional objects; this process groups the objects.



Grouped objects are edited and moved as one object. For example, if you apply a filter (such as Invert) the filter is applied to all objects in the group. If you move one object in a group all objects in the group are moved.

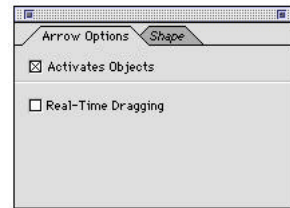
Groups are temporary associations. To ungroup objects, simply click an object that is not in the group with the Arrow Tool or deactivate the objects on the Objects Window.

## Setting Arrow Tool Options

The Arrow Tool Options allow you to set preferences for how the Arrow Tool functions. There are two ways to access the Arrow Tool Options:

- Double-click the Arrow Tool.
- Click the Arrow Tool on the Tools Palette and use the menu command Window > Inspectors > Tool Options.

The first Arrow Tool Option is “Activates Objects.” If this option is checked, the Arrow Tool can be used to activate and move objects. If this option is unchecked, the Arrow Tool moves objects but does not activate them. You may want the “Activates Objects” option unchecked if objects are packed very closely together and you are trying to move only one object. You may also want this option unchecked if the object you are trying to move is behind several other objects.



When “Activates Objects” is unchecked objects may only be activated with the Objects Window. By default “Activates Objects” is checked.

The second Arrow Tool Option is “Real-Time Dragging.” Normally, when you click an object and drag it, you move only the rectangular border of the object until you let go of the mouse, at which time the entire object moves to the specified location. However, if “Real-Time

Dragging” is checked, clicking and dragging with the Arrow Tool moves the entire object, not just the border of the object. Although slower, this method allows more immediate feedback on screen.

By default “Real-Time Dragging” is unchecked and the Arrow Tool moves only the border of the object.

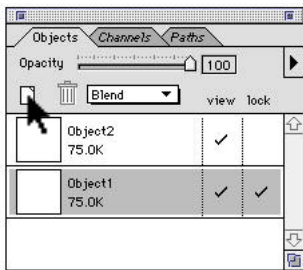
## Creating Objects

There are four ways to add objects to a document in xRes S.E.:

- Creating an empty rectangular object.
- Floating a selection.
- Importing an object.
- Option-cropping an object.

## Creating an Empty Object

You can create a new, empty rectangular object by clicking the New Object Icon in the Objects Window.



## Floating a Selection

You can create an object by floating a selection within the document. A selection may be created with any of the masking tools (such as the Ellipse Tool or Rectangle Tool) or the Mask Window.

Once your selection is made, use the menu command **Select > Float**. The pixel data within the selection is now a freely floating object. This new object may be resized, rotated, positioned, and edited as any other object.

## Importing an Object

See “Importing an Image” in this chapter.

## Option-Cropping an Object

The Crop Tool normally deletes the image data outside the crop marks. However, pressing the Option (Alt in Windows) key while using the Crop Tool creates a new object based on the image data within the crop marks.

The difference between creating an object by floating a selection and creating an object by option-cropping is that floating a selection creates an object based on *one* (active) object, while Option- (Alt in Windows) cropping creates an object based on *all* objects within the crop marks, whether they are active or not.



## To Create an Object by Option-Cropping

- 1 Click the Crop Tool on the Tools Palette.
- 2 Select the area on the document you wish to Option (Alt in Windows)-crop by dragging the Crop Tool. You can release the crop marks and readjust them by moving the corners. Dragging while holding down the Shift key changes the size of the rectangle while keeping the proportions of the original crop marks.
- 3 To accept the image within your crop marks as a new object, hold down only the Option key (Alt in Windows), and click inside of the crop marks. The cursor changes to a pair of scissors when the Option key (Alt in Windows) is selected. After you click within the crop marks, a new object is created based on the selected image data.
- 4 To decline the rectangular area as an object, click outside of the rectangular area. This deletes the rectangle created with the Crop Tool and allows you to start the process again.

## Saving and Importing Objects

Objects are components of a document, and can be saved and imported as separate documents.

## Saving Objects

When you save an object in xRes S.E., you create a separate document consisting of that object. Saving an object as a new document does not affect the current document or object.

### To Save an Object

- 1 Use the menu command Window > Objects to display the Objects Window.
- 2 Click the object that you wish to save in the Objects Window to make it active. Active objects are displayed in gray in the Objects Window, while inactive objects are displayed in white. The object that you wish to save should be the topmost active (gray) object in the window. To deactivate an object, click it.
- 3 From the Objects Window submenu, choose "Save Object."

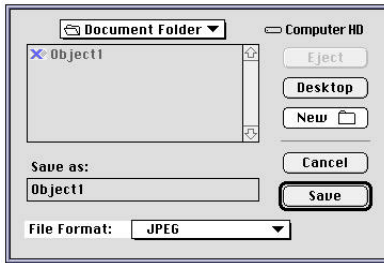
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*Note: If more than one object is active, xRes S.E. will save the topmost active object.*

- 4 Specify a location for the object to be saved.
- 5 Enter a name for the object. This name does not have to match the original name of the object.



- 6 Choose a file format for the object. You can choose any document format except MMI, which is for multiple-object documents.
- 7 Click Save in the Save Object dialog. You have now saved your object as a separate document.



## Importing Objects

Any image on disk can be added to the document as an object. The process of bringing one image into the document by loading it from disk is called *importing the image*. xRes S.E. can import any file format it can open except MMI.

To import an image into an open document, use the menu command File > Import and select the image that you wish to open. Click Open. The image will be opened as an object within the current document.

An alternative to the File > Import command is to open the image as an additional document and click and drag the image from the source document to the target document. The Import command is simply a convenient shortcut.

## Importing Images in to Documents of Different Resolution

When you are importing an image into a document the image retains its original pixel size but changes to match the resolution of the target document. This can change the displayed size of the image.

For example, imagine that the image cat.tif is 200 pixels high by 200 pixels wide and has a resolution of 100 ppi. Cat.tif is therefore 2" x 2" wide ( $200/100 = 2$ ).

Imagine that cat.tif is imported into a document called sky.tif, which has a resolution of 200 ppi. The cat.tif image will be only 1" x 1" in the sky.tif document ( $200/200 = 1$ ).

## Importing Images in to Documents of Different Size

You may import an image of any size into a document. If the image is larger than the target document you can resize it using the menu command Modify > Resize > Active Object.

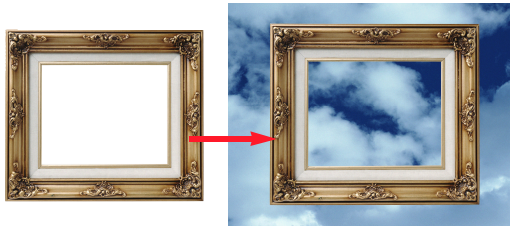
## Importing Images in to Documents with Different Color Modes

When you import an image into a document, the Color Mode of the image will convert to the Color Mode of the target document. For example, if you import a RGB object into a Grayscale document, the Color Mode of the object will change to Grayscale to match the target document.

## Importing Images in to Documents with Different Work Modes

If you are importing an image of one workmode into a document of another work mode, the work mode of the image converts to the work mode of the document. See Chapter Nine: Working in xRes Mode for more information.

## Dragging Objects between Documents



Objects can be dragged across documents. Dragging an object from one document to another copies that object from the source document to the target document. Holding the Option key (Alt in Windows) while dragging an object from one document to another moves that object from the source document to the target document.

## Dragging Objects in to Documents with Different Color Modes

If you drag an object from a source document in one color mode to a target document in another color mode, the color mode of the object converts to the color mode of the target document.

For example, if you drag an RGB object into a Grayscale document, that object is converted to the Grayscale mode. See Chapter Five: Colors for more information on color modes.

## Dragging Objects in to Documents with Different Resolution

When you drag an object across documents, the resolution of the object changes to reflect the target document. For example, if you drag an object of 300 ppi into a target document of 75 ppi, the resolution of that object is converted to 75 ppi. However, the number of pixels in the object does not change; the size of the object changes to reflect the new resolution. In this example, the object changes from a resolution of 300 ppi to 75 ppi, making it four times as wide and four times as high. ( $300/75 = 4$ ).

## Dragging Objects in to Documents with Different Work Modes

When you drag an object into a document of a different work mode, the work mode of that object changes to reflect the work mode of the document (xRes or Direct).

See Chapter Nine: Working in xRes Mode for more information on using different work modes.

## Dragging Objects in to Smaller Documents

You can move an object into a target document even if the object is larger than the document. After dragging an object across documents, you may want to resize the object using the menu command **Modify > Resize > Active Object**.

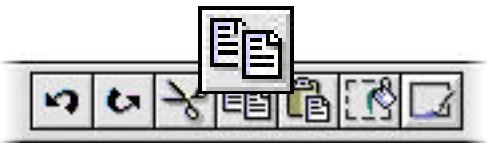
## Cutting and Pasting Objects

xRes S.E. can cut, copy, paste, and duplicate objects. These commands affect the entire object, even if a selection is present inside the object.



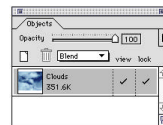
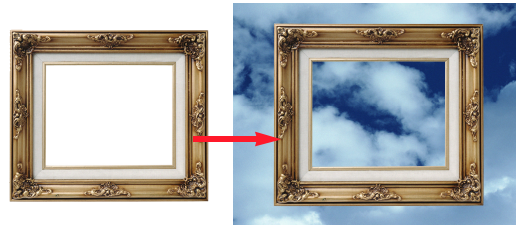
### To Cut an Object

If an object is active, use the menu command **Edit > Cut** (or click the Cut Icon) to remove the object from the document window and place it in the clipboard.

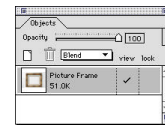


### To Copy an Object

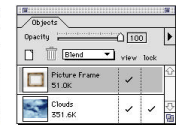
If an object is active, use the menu command **Edit > Copy** (or click on the Copy Icon) to copy the object to the clipboard. The original object will remain in the document window.



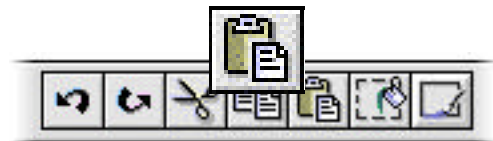
*Destination before copy.*



*Source to be copied from.*



*Destination after copy is made.*



### To Paste an Object

When you apply the menu command **Edit > Paste** to a document, the object in the clipboard is pasted into the current document. Alternatively, you may click the Paste Icon on

the Toolbar. The pasted object appears in the top left corner of the document, and it may be dragged to the appropriate location with the Arrow Tool.



### To Duplicate an Object

A shortcut to using the menu commands Edit > Copy and Edit > Paste is the menu command Edit > Duplicate. This command duplicates the active object and places it in the top left corner of the current document.

## Dropping Objects

An object can be “dropped” onto the object below it. Dropping an object means to merge an object onto the object below it while clipping to the borders of the underlying object.

### Source Object

When dropping (or copying and pasting) an object, the source object is the object that is being dropped. The target object is the object the source object is being dropped onto. View the Objects Window to determine the target object. The target object is the topmost overlapping object below the source object.

### To Drop an Object

- 1 Activate the source object by clicking it in the Objects Window.
- 2 Move the source object on top of the target object in the Objects Window with the Arrow Tool. See “Objects Window” in this chapter for more information about manipulating objects with the Objects Window.
- 3 If the source object is on top of more than one object, it will drop onto the first object below it. You may have to deactivate other objects to make the correct object the target object.



- 4 Use the menu command Select > Drop Objects. The source object merges into the target object, and the source object is deleted. The source object is clipped to the boundaries of the target object.

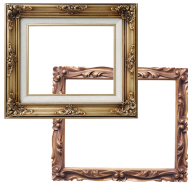
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*Note: Instead of using the menu command Select > Drop Object, you can click the Drop Object Icon on the Toolbar.*

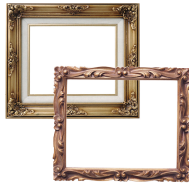
## Changing the Order of Objects

Objects have a distinct order, which is shown in the Objects Window. The order of the objects is used to determine which object is in front if the objects overlap.

To determine the object order, examine the Objects Window. Objects at the top of the Objects Window are at the front of the document.



*Object #1 is in front.*



*Object #2 is in front.*

You can change the order of an object at any time with the menu commands under **Modify > Arrange**. The “Bring to Front” command brings the active object to the front of the document. The “Move Forward” command moves the active object up one level. The “Move Backward” command moves the active object down one level. The “Send to Back” command sends the active object to the back of the document..

## Aligning Objects

Objects may be aligned to existing objects or to the center of the document. The menu commands used to align objects are located under the menu command **Modify > Align**. To use the Left, Right, Top, Bottom, and Center

commands, you must first make two or more objects active.

Applying one of these commands will align the objects to each other in the method indicated. The **Align Left** command aligns active objects to the object with the leftmost edge. The **Align Right** command aligns the objects to the object with the rightmost edge. The **Align Top** and **Align Bottom** commands align objects to the object with the top-most or bottom-most edge, respectively. The **Align Center** command places the objects on top of each other in such a manner that all their centers line up.

The **Modify > Align > Center to Page** command aligns all active objects to the center of the document.

## Using Object Channels

Each object can contain up to 32 channels. To view the channels of an object, use the menu command **Window > Channels**. The channels for one object will be different from the channels of another object unless the objects are duplicates. See **Chapter Seven: Masks and Channels** for more information.

The Channels Window displays all the channels in the object, including primary channels, alpha channels, and mask channels.

## Using the Mask Channel

The Mask column in the Channels Window is used to mask out certain areas of the object.

Clicking the Mask checkbox for a channel makes that channel the transparency mask for the object. The white areas of the channel represent opaque sections of the object, black areas of the channel represent transparent areas of the object, and gray areas of the channel represent translucent sections of the object.

### Painting in the Transparency Mask of an Object

Using the mask channel you can easily paint in or paint out the transparency of an object; that is, you can make an object transparent in one area and opaque in another.

- 1 Create a mask channel for an object. Use the Channels Window (Window > Channels), click the New Channel Icon, and check the Mask checkbox for that channel. See Chapter Seven: Masks and Channels for more information on creating mask channels.  
(Checking the Mask checkbox for more than one channel creates a mask for the object based on the intersection of the channels; that is, only areas that are opaque in *both* channels are opaque in the object.)
- 2 In the Channels Window, click the mask channel to make it uniquely editable (that is, the only channel displayed in gray), and click the view checkbox of the composite channel to make all primary channels visible.
- 3 Click the default swatches on the Tools Palette. Clicking the default swatches

makes the foreground color black and the background color white.

- 4 Double-click the Brushes Tool on the Tools Palette to access the Brush Tool Options. Select Hard or Soft.
- 5 Paint on the object to remove the opacity of the object. Because you are painting in black, you are removing the opacity of the object. To restore the opacity, click the Eraser Tool on the Tools Palette and erase the object. As you erase (paint in white), you will restore the opacity.

Painting in shades of gray will make the object semi-transparent. If you paint with a 50% gray, the object will be 50% opaque. If you paint with a gray value of 192, the object will be 75% opaque in the area you paint in. If you paint with a gray value of 64, the object will be 25% opaque in the area you paint in.

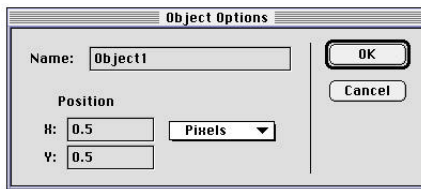
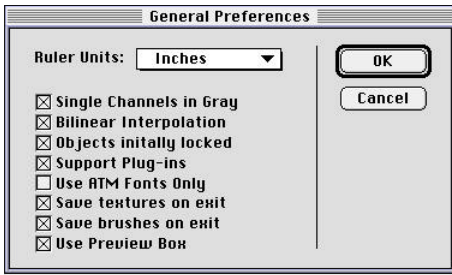
See Chapter Seven: Masks and Channels to learn more about using mask channels.

## Setting Object Options

The Object Options dialog contains text entry boxes for the name of the object, as well as the precise position of the object in pixels, inches, centimeters, picas, or points (as determined by the setting under the menu command File > Preferences > General > Ruler Units).

To access the Object Options for a particular object, double-click the object. (You can also

double-click the object's name in the Objects Window.) The Object Options dialog appears.



### To Change the Name of an Object

To change the name of an object, enter a new name in the Object Options dialog and click OK. The new name may be up to 128 characters; however, only 22 characters will show up in the Objects Window.

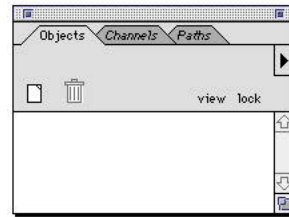
### To Change the Position of an Object

To change the position of an object, enter a new position in the Object Options dialog. A drop down menu allows you to choose from Pixels, Inches, Centimeters, Picas, or Points. Text entry dialogs allow you to enter positive or negative x and y coordinates for the object. This position refers to the position of the top left corner of the

object with  $x=0$ ,  $y=0$  being the origin (center) of the document window.

## Objects Window

The Objects Window, accessed by the menu command **Window > Objects**, serves as a shortcut for many common object operations. It is used to change the opacity and the Blending Mode of an object, to change the visibility of an object, to lock objects in place, and to delete objects.



The Objects Window displays a thumbnail of each object in the document with information about that object, such as its:

- Visibility
- Opacity
- Blending Mode
- File Size
- Status (active = gray, inactive = white)
- Rank (in object order)

When working with multiple objects in a document, it is recommended that you keep the Objects Window open to keep track of the objects within that document.

*Note: The remaining directions in this chapter assume you are working in the Objects Window. Clicking an object's name means to click the object's name within the Objects Window.*

### **To Make an Object Active**

Clicking an object's name makes it active. Active objects are indicated in gray. Inactive objects are indicated in white.

### **To Make Multiple Objects Active**

To activate multiple objects, hold the Shift key and click two or more objects. Objects between these two objects will also be activated.

### **To Activate/Deactivate a Particular Object**

To activate or deactivate a particular object, Option-click (Alt-click in Windows) that object in the Objects Window. Option-clicking an inactive object makes it active. One object is active at all times. Using the Option-click method you can activate non-consecutive objects in the Objects Window.

### **To Change the Order of an Object**

To move an object forward (up) or backward (down), click the object in the Objects Window and drag it either up or down. Dragging an object up in the Objects Window moves it forward in the document. Moving an object down in the Objects Window moves the object backward in the document.

### **To Use the Scroll Bars**

If there are more objects in the document than can be displayed in the Objects Window, a scroll bar appears on the right side of the Objects Window. This scroll bar allows you to scroll down to the different objects.

### **To Access Object Options**

To access the Object Options dialog for any given object, double-click the object in the Objects Window. See “Setting Object Options” for more information.

### **To Rename an Object**

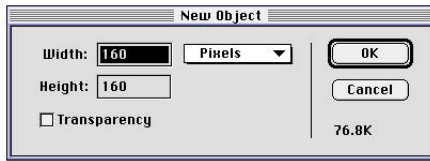
To rename an object, double-click the object in the Objects Window. In the Object Options dialog, enter a new name and click OK.

### **To Change the Position of an Object**

To change the position of an object, move it with the Arrow Tool (if it is the topmost active object) or double-click the object in the Objects Window, enter a new position in the Object Options dialog, and click OK.



## Using Objects Window Icons



### To Create a New Object t

To create a new object, click the New Object Icon in the Objects Window. A dialog will appear, allowing you to enter the new size of the object in Pixels, Inches, Centimeters, Picas, or Points. Objects may be larger than the current document; the default object size is the same as the document size. In addition, you can specify whether the object is transparent or opaque by checking or unchecking the object's Transparency checkbox.

A transparent object will be clear, while a non-transparent object is filled with the background color. Transparent objects act like sheets of acetate. You may want to use a transparent object to have a layer of paint that floats above the rest of the document.

When you create a transparency, xRes S.E. allocates an extra channel to that object, in addition to the primary channels of the color space (either RGB, Grayscale, or Indexed 256). This extra channel acts as the transparency mask.

When you fill or apply a gradient to a transparent object, the fill or gradient also edits the mask channel which controls the opacity of the object.

For this reason, filling or applying a gradient to a transparent object usually produces a translucent effect.

For example, if you fill a transparent object with blue, the brightness value of the blue determines the opacity at which the blue is displayed. A brightness value of 50% produces a blue color that is a half opaque/half transparent. (To display the object at full opacity, uncheck the Mask checkbox in the Channels Window.)

### To Duplicate an Existing Object t

To duplicate an existing object, click an object and drag it to the New Object Icon. A duplicate of the object will be placed at the top of the document. To change the name of the new object, double-click the new object's name, enter a new name, and click OK.

### To Delete an Object t

To delete an object, click that object and drag it to the trash in the Objects Window. If you accidentally delete an object, access the menu command Edit > Undo to retrieve it.

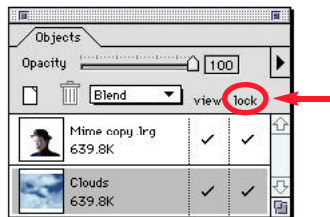
## Using the Objects Window Check boxes

### To Change the Visibility of an Object t

To change the visibility of an object, select/deselect the "View" checkbox located under the View column in the Objects Window. An object is either visible or invisible. You may want to

make an object invisible to experiment with different compositing effects. The visibility of an object is reflected both on screen and when the document is printed or exported.

Any object can be made invisible except active object(s), which are always visible.



### To Lock an Object in Place

To lock an object in place, check the “Lock” checkbox for the object located in the Lock column of the Objects Window. Locked objects cannot be moved. To unlock a locked object, uncheck the Lock checkbox for the object. You may want to lock an object in place to prevent accidentally moving it.

The General Preferences (menu command File > Preferences > General) control whether or not the background (bottommost) object is initially locked. Check or uncheck the “Objects Initially Locked” preference to set it as desired.

## Changing the Opacity and Blending Mode of an Object

The top of the Objects Window contains an Opacity Slider and Blending Mode menu.

### To Change the Opacity of an Object

To change the opacity of an object, activate the object and adjust the Opacity Slider at the top of the Objects Window. Adjusting the opacity after grouping objects changes the opacity for the entire group.

### To Change the Blending Mode of an Object

To change the Blending Mode of an object, activate the object and select a Blending Mode in the Blending Mode menu at the top of the Objects Window. Adjusting the Blending Mode of grouped objects changes the Blending Mode of the entire group.

See “Blending Modes” (next) to learn more about how Blending Modes affect objects.



*Original*

## Blending Modes

The Blending Mode of an object can be used to create a multitude of special effects. It is easy to change the Blending Mode of the object several times and experiment with different settings.



*Normal — 75% Blend*

### Blend

The Normal Blend Mode combines objects using an opacity blend. This mode takes the opacity of the objects into account when combining them. For example, if Object A with 75% opacity is composited onto Object B, the result will be an image that takes 75% of the pixel values from A and 25% of the pixel values from B.



*Additive — 50% Blend*

### Additive

In the Additive Blending Mode, the composite is built up by adding the pixel values on a per-channel basis. In RGB, Additive blending lightens the image. For example, if an RGB object has an opacity of 50% and an Additive Blending Mode, it will be composited by first changing the opacity to 50%, then adding this value to the object underneath it.



*Subtractive*

### Subtractive

The Subtractive Blending Mode is the opposite of the Additive Blending Mode. The gray levels of the top object are subtracted from those beneath it on a per-channel basis. This mode has the impact of darkening RGB images. Subtractive blending is used to remove light from RGB images.



*Multiply*

## Multiply

The Multiply Blending Mode works by multiplying each channel's gray level with the corresponding channel value of the underlying object and dividing the result by 255. The multiply filter tends to darken as it composites, particularly if the image and its composite are very different.



*Difference*

## Difference

The Difference Blending Mode mode computes the value of each pixel by taking the absolute value of the difference in pixel values on a per-channel basis. In difference blending, two identical objects that are composited will produce a pure black result. If the two objects are negatives

of each other, the result will be pure white. Generally speaking, blending two objects with the Difference Blending Mode will create a wildly colored image that can be used as a special effect.



*Maximum*

## Maximum

The Maximum Blending Mode computes the maximum value (on a scale from 0 to 255 for RGB) for every pixel on a per channel basis. In other words, if pixel "A" (128, 75, 200) were composited in RGB mode onto pixel "B" (65, 90, 150), the result will be pixel "C" (128, 90, 200), representing the maximum values for each individual channel of red, green, and blue.

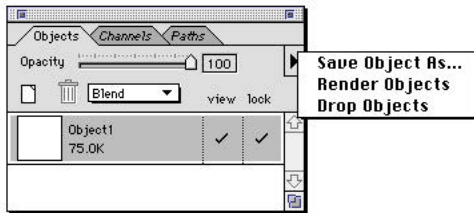


*Minimum*

## Minimum

The Minimum Blending Mode is similar to Maximum Blending Mode, but instead of computing the maximum values for each color channel, it computes the minimum values.

In RGB, Minimum generally darkens the picture and Maximum generally lightens it.



## Using the Objects Window Submenu

There are three commands located in the Objects Window submenu: Save Object As, Render Objects, and Drop Objects.

### To Save an Object

To save an object, choose “Save Object As” from the Objects Window submenu. The Save Object As command affects the topmost active object. A dialog prompts you to enter a name, file format, and disk location for the object. You can save the object in any file format that xRes S.E. supports for saving files except MMI.

Using the Save Object As command does not affect the name, file format, or disk location of the object. Instead, it saves a copy of the object. You may want to save a particular object to make the current version of the object accessible to a different application. For example, saving an object as a TIFF file makes it accessible to most page layout programs. See “Saving and Importing Objects” in this chapter for more information.

### To Render an Object

To render an object, choose “Render Objects” from the Objects Window submenu. The Render Object command renders active objects in the document.

See Chapter Nine: Working in xRes Mode for more information about rendering objects.

### To Drop an Object

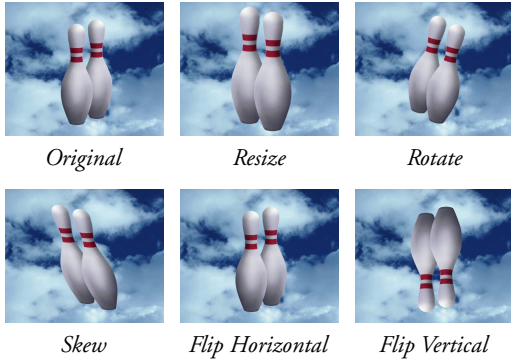
To Drop an Object, choose “Drop Objects” from the Objects Window submenu. See “Dropping Objects” in this chapter for more information.

## Object Transformations

Object transformations refer to all operations that involve changing the size or shape of an object.

Object transformation commands in xRes S.E. include Resize Object, Rotate Object, Skew

Object, and Flip Object. Activate the object before applying an object transformation command. If more than one object is active, the transformation will be applied to the topmost active object.

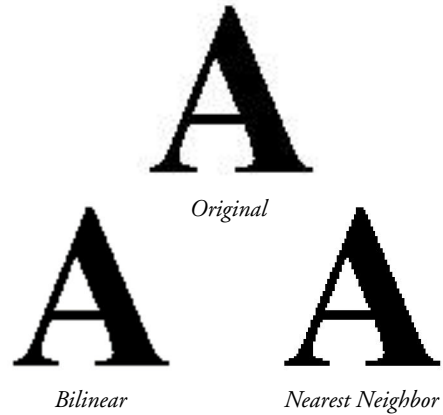


## Interpolation Modes

The Interpolation Mode refers to the method xRes S.E. uses to ensure that object transformation commands do not cause image degradation. The Interpolation Mode is set in the General Preferences accessed by the menu command File > Preferences > General and is represented by a checkbox called “Bilinear Interpolation.”

If the Bilinear Interpolation preference is checked, then the Bilinear Interpolation Mode is used. If the Bilinear Interpolation preference is unchecked, then “Nearest Neighbor Interpolation” is used. The default setting is Bilinear Interpolation.

Nearest Neighbor Interpolation examines the pixels immediately surrounding a pixel when resizing or reshaping an object. This mode is faster, but it may not generate the same quality as the Bilinear Mode, which uses more surrounding pixels when resizing or reshaping an object.



## To Resize an Object

In xRes S.E., you can resize an object in two ways:

### (1) Freehand resizing

When you click the Resize Tool on the Tools Palette, four handles appear at the corners of the topmost active object. Drag any one of these corners to resize the object.

### (2) Numerical resizing

The most precise way to resize an object is to use the resize dialog to enter a new size in inches, centimeters, pixels, picas, points or percent-



age of object size. To access this dialog, double-click the object with the Resize Tool, or use the menu command **Modify > Resize > Active Object**.

If the “Fixed Aspect Ratio” preference is checked, resizing will be proportional. For example, if you check this preference and enter a new height in the Resize Object dialog, xRes S.E. will automatically compute the new width according to the original object’s proportions.

### To Rotate an Object

You can rotate an object in three ways:

#### (1) Freehand Rotation

The first way to rotate an object is to use the Rotate Tool on the Tools Palette.

When you click the Rotate Tool four handles appear at the corners of the active object. Any of these handles can be used to rotate the object.

To see the percentage that you are rotating, access the Info Inspector with the menu command **Window > Inspector > Info**. The bottom-most section of the Info Inspector displays the rotation in degrees, from 1 to 360.

#### (2) Numerical Rotation

The Rotate Object dialog allows you to enter an angle in degrees between  $-359.99$  and  $359.99$ .



You may also specify whether you want to rotate clockwise (CW) or counter-clockwise (CCW). To access this dialog, use the menu command **Modify > Rotate > Arbitrary**, or double-click the object with the Rotate Tool.

#### (3) Rotation by 90 Degrees

Often it is necessary to rotate an object exactly 90 degrees. For example, you might scan an image horizontally but wish to see it vertically. The menu commands **Modify > Rotate > CCW 90** and **Modify > Rotate > CW 90** are used for this purpose.

### To Skew an Object

When you use the Skew Tool, four handles will appear at the corners of the topmost active object. You can drag these handles to create a horizontal skew of the object. An object can be skewed back and forth and still retain the original pixel information.



### To Flip an Object

The menu commands **Modify > Flip > Horizontal** and **Modify > Flip > Vertical** can be used to flip the topmost active object either horizontally or vertically.

These commands might be useful, for example, if the original scan is upside down or backwards.

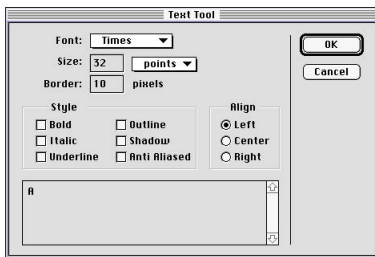


## Using Text Objects

Because text is an object in xRes S.E. it can be easily resized, reshaped, or repositioned at any time. This allows you to move text objects around the document to achieve the best position.

### To Create a Text Object

- 1 Click the Text Tool on the Tools Palette.
- 2 Click in the current document. A text dialog appears.
- 3 Choose the desired font. You may choose any TrueType or



ATM font that is on your system.

- 4 Select a unit of measure in the Size drop-down menu, then enter the size of the font.
- 5 Enter the border width of the text object (in pixels) in the Border entry box. The border indicates the amount of transparent space around the text in the text object. You may want to use a large border if you plan to use

a drop shadow with the object. See “Creating Text Dropshadows” in this chapter for more information.

- 6 Select a style for the text by checking the checkboxes next to the styles you wish to use. You may choose any of the following styles: Bold, Italic, Underline, Outline, Shadow, and Anti-aliased. Anti-aliased smooths out the text and prevents jagged lines around the edges, especially with large font sizes.
- 7 Select an alignment for the text by clicking in the Left, Center, or Right radio buttons.
- 8 Enter the text in the text entry box at the bottom of the Text Tool dialog.
- 9 Click OK. A new text object appears in the document based on the font, size, border, style(s), and alignment chosen in the Text Tool dialog.

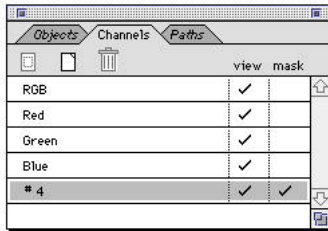


### Mask Channel

A text object contains the primary channels plus one additional channel used to mask out the text.



See Chapter Seven: Masks and Channels to learn more about using masks in objects. You can view this mask channel by accessing the menu command **Window > Channels** and clicking the mask channel (in RGB Color Mode this channel is “#4”).



## Resizing Text

When you resize a text object the text automatically resizes proportionately to the nearest point size. This ensures that there is no degradation in the text quality as it is resized. To resize text disproportionately use the **Modify > Resize > Active Object**.

## Creating Text Dropshadows

A common procedure in the digital arts community is to create text with dropshadows. With xRes S.E. you can easily create text dropshadows, reposition or reorder the dropshadow in relation to the original text, and group the text dropshadow objects.

### To Create a Text Dropshadow

- 1 Create a text object in an RGB document.
- 2 Duplicate the text object (menu command **Edit > Duplicate**).

- 3 Click the duplicate object. Click the default color swatches on the Tools Palette. Use the menu command **Edit > Fill**, set the foreground color to 100% opacity, and click **OK**.
- 4 Open the Channels Window (menu command **Windows > Channels**) and click #4.
- 5 Apply the Gaussian Blur filter (menu command **Effects > Blur > Gaussian**). Aim for soft edges while keeping the text distinguishable.
- 6 Click the RGB composite channel. You now have a text dropshadow.
- 7 Use the menu command **Modify > Arrange > Move Backward** to move the text dropshadow object behind the text object.
- 8 Reposition the dropshadow text object so that it is almost directly beneath the text object.



To group the objects, **Shift-click** the text object. The text and dropshadow will move together in the document, allowing you to experiment freely with different locations.



## **Chapter Four**

# 4

## Chapter Four Painting, Erasing, and Cloning

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### Overview

This chapter discusses the concepts and the practical applications of painting, erasing, and cloning operations. Topics include:

- Essential Terms
- Brushes Palette
- Editing the Brush Set
- Shape Inspector
- Brush Tool Options
- Brush Tool Options Submenu
- Textures Palette
- Erasing
- Creating Straight Lines
- Cloning

## Essential Terms

### Digital Painting

Painting on the computer is a fairly new concept. The program that started the painting craze was MacPaint by Bill Atkinson. It was a strictly black and white program. Believe it or not, that was the state of the art in 1984. Digital painting has come a long way since then.

The second step in the evolution of digital painting came when natural, textured brushes were available on the computer. Charcoals, inks, pencils, and even air brushes could be reproduced on the computer screen. One program which emerged as a leading contender in the digital painting category was Matisse™ by Fauve.

xRes S.E. marks the third step in the evolution of digital painting by allowing natural, textured brushes to be used on images of any size. xRes S.E. fully integrates the brush technology of Matisse, providing artists a customizable digital art studio. You can control the size, shape, and soft edge of the brush. You can even control the behavior of the brush, such as how much the ink or paint bleeds into the canvas and how much texture it picks up. xRes S.E. also allows you to create your own textures by scanning them or creating them from scratch.

### Brush Model

There are four floating panels that are used when painting in xRes S.E.:

### Brushes Palett e

(Window > Palettes > Brushes): The Brushes Palette selects which brush is used. Brushes include traditional photographic retouch brushes as well as artistic brushes such as charcoal and watercolor.

### Shape Inspe ctor

(Window > Inspectors > Shape): The Shape Inspector controls the size, shape, and soft edge of the brush. It also controls whether or not the brush is anti-aliased.

### Brush Tool Options Inspe ctor

(Window > Inspectors > Tool Options): The Brush Inspector controls the characteristics and behavior of the brush including its opacity and pressure-sensitivity.

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*Note: You must have the Brush Tool selected on the Tools Palette to access this Inspector.*

### Textures Palett e

(Window > Palettes > Textures): The Textures Palette selects which texture is used with the brush.

## Painting

Painting in xRes S.E. involves selecting a brush in the Brushes Palette and then clicking and dragging on the document.

- To learn more about the Brushes Palette, see “Brushes Palette” in this chapter.
- To learn about changing the size and shape of your brush as you paint, see “Shape Inspector” in this chapter.
- To learn about changing the characteristics or behavior of the brush, see “Changing Brush Properties” in this chapter.
- To learn about making a brush pressure-sensitive, see “Pressure and Speed Relationships” in this chapter.
- To learn about selecting a texture, see “Textures Palette” in this chapter.

### To Paint in xRes S.E .

- 1 Click the Brush Tool on the Tools Palette.
- 2 Access the Brushes Palette by one of these two methods:
  - Double-click the Brush Tool on the Tools Palette.
  - Use the menu command Window > Palettes > Brushes.

- 3 Click a brush on the Brushes Palette to select it. Choices include Hard, Soft, Air Brush, Charcoal, Crayon, Quill, Calligraphy, Japanese, and Tint.
- 4 Select a brush variant from the Variant menu at the top of the Brushes Palette.
- 5 Click the document and drag on the document to paint. Painting only affects active objects. Release the mouse to terminate the stroke.
- 6 Continue clicking and dragging the mouse to place more strokes on the document. Shift-clicking will constrain the strokes to straight lines.

## Brushes Palett e

The available brushes are displayed in the Brushes Palette. A drop-down menu lists the available brush variants.

By clicking on a brush and selecting a variant, you can create dozens of brushes. In addition, the Brushes Palette allows you to save new brushes and edited brushes, to delete brushes, and to duplicate existing brushes.

The Brushes Palette contains:

- **Brush Icons:** These are the icons that allow you to choose a brush. Brushes range from photographic retouching tools to artistic styles, such as oil and watercolor.

- **Variant Menu:** Clicking on a brush loads the variants available for that brush in the Variant Menu. For example, variants for the Crayon brush include “Wax” and “Wet.”
- **New/Duplicate Icon:** With this icon you can create new brush Variants and duplicate existing brushes.
- **Trash:** You can delete brushes or variants by dragging them to the trash.
- **Scroll Bars:** With the scroll bars you can scroll horizontally or vertically through the brush set.

## Editing the Brush Set

You can edit the appearance of the Brushes Palette as well as the brush properties associated with each brush. You can also change the name of brushes or brush variants; add or delete brushes in the Brushes Palette; and load and save brush sets.

## Changing the Appearance of the Brushes Palette

You can change the location of brushes and the corresponding Brush Icons used in the Brushes Palette. The following section explains how to change the location of brushes within the Palette and how to personalize the Brush Icons.

### To Change the Location of Brushes

To change the location of a brush, click that brush’s icon, move the brush to a new location within the Brushes Palette, and release the mouse button. The brush is placed in its new location and all other brushes are moved over one position.

A brush cannot be moved to the top left corner of the Brushes Palette. However, you can move the top left brush to a different location in the Brushes Palette.

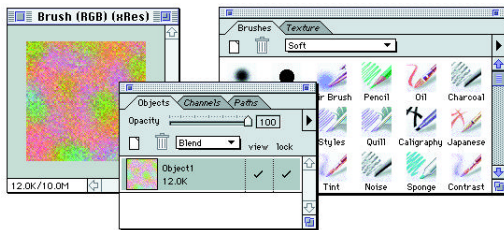
### To Change a Brush Icon

You can create your own Brush Icons to personalize your brush set.

- 1 Create a new document that is 64 x 64 pixels. Other sizes can be used, but the dimensions should be even, symmetrical, and no smaller than 32 x 32 pixels.
- 2 Use the painting and drawing tools to create an image that you wish to use on the new Brush Icon. You can use any of the brushes or any of the filters of xRes S.E.. Do not create any new objects.
- 3 Access the Objects Window (Window > Objects) and the Brushes Palette (Window > Palettes > Brushes).
- 4 Make sure that the object displayed in the Objects Window matches the document. If the Objects Window has not been updated,

click in the top right corner to compact the window, then click the top right corner again to re-open the Objects Window. The Objects Window should display an updated view of the document.

- 5 Click the Brush Icon that you wish to change in the Brushes Palette.
- 6 Click the object in the Objects Window and drag it on top of the Brushes Palette. The Brush Icon is replaced by the object you dragged on top of the Palette. If the object is not square or the dimensions are not proportional, it is scaled accordingly to the size of the Brush Icon.



## Creating, Duplicating, Deleting, and Changing Names

The following explains how to create new variants for a brush, how to duplicate an existing brush as a starting point for creating a new brush, and how to delete brushes or brush variants to better organize the brush set. This section also explains how to change the name of the brushes and brush variants.

### To Duplicate a Brush

Drag the brush to the New Brush Icon. A dialog prompts you for a name for the new brush. The default name is the current brush with the word “copy,” as in “Oil copy.” The brush is copied, including its variants.

### To Duplicate a Brush Variant

You can duplicate a brush variant in order to edit it or to create a new brush variant.

- 1 Click the brush that contains the variant you wish to duplicate.
- 2 Select the variant.
- 3 Click the New Brush Icon. A dialog prompts you for a name for the new variant. The default name is the current variant with the word “copy” such as “Wax copy.”

### To Delete a Brush

To delete a brush, press Option (Alt in Windows) and drag the brush to the trash.

If you accidentally delete a brush, choose “Default Brush Set” from the Brushes submenu to restore the default brush set. Alternatively, uncheck “Save Brushes on Exit” from the General Preferences dialog, and relaunch the application.



## To Delete a B rush Variant

To delete a brush variant, click the brush containing that variant and select the variant in the Variant Menu. Then drag the brush to the trash. The variant selected in the Variant Menu is deleted.

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*Note: If you accidentally delete a brush variant, choose “Default Brush Set” from the Brushes submenu to restore the default brush set. Alternatively, uncheck “Save Brushes on Exit” from the General Preferences, and relaunch the application. Note that you cannot use the Edit > Undo command to undo the deletion of a brush variant.*

## To Change the Name of a B rush

To change the name of a brush, press Option (Alt in Windows) and double-click the Brush Icon. A dialog prompts you for a new name.

## To Change the Name of a B rush Variant

To change the name of a brush variant, select that variant in the Variant Menu and double-click the brush containing that variant. A dialog prompts you for a new name.

## Changing B rush Properties

The Brushes Palette stores all the brushes as well as the properties associated with each brush. The brush properties refer to the size, shape, and behavior of a brush. The properties of a brush are controlled by the Shape Inspector (Window

> Inspector > Shape) and Brush Tool Options (accessed by double-clicking the Brush Tool).

If you change the properties of a brush, those changes are automatically saved, but only for the current session. Any settings that are changed by the Shape Inspector or Brush Tool Options are properties of the brush.

For example, if you increase the size of the oil brush, that new size is saved automatically. If you select another brush and then reselect the oil brush, the new, larger size is still present.

To save brush properties permanently to disk, display the General Preferences dialog accessed by the menu command File > Preferences > General and check the “Save Brushes on Exit” preference. If this preference is checked, then any changes made to the brush properties are saved permanently to disk. If this preference is unchecked, changes made to the brush properties are saved for the current session only.

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*Note: If you change the properties of a brush and are dissatisfied with the results, use the menu command File > Preferences > General, uncheck the “Save Brushes on Exit” preference, quit xRes S.E. and relaunch xRes S.E.. This resets the brushes to the last saved version.*

## Saving Brushes

You can save changes made to the brushes within the Brushes Palette for the current session, or permanently. You can also load and save different brush sets to use in the Brushes Palette or load the default brush set that ships with xRes S.E..

## Saving Changes to the Brush Palette

Changes made to the Brushes Palette are saved automatically for the current session. These changes include changing the appearance of the Palette; saving, duplicating, and deleting brushes; and changing brush properties.

To save the changes permanently, display the General Preferences by accessing the menu command **File > Preferences > General**, and check the “Save Brushes on Exit” preference. When this preference is checked, all changes to the brush set are saved permanently to disk. When this preference is unchecked, brush changes are saved only for the current session.

## Saving and Loading Different Brush Sets

You can save and load brush sets if you have customized the brush set for a particular project. You can also create a specialized brush set—for example, a brush set that contains only inks (to customize the application).

When xRes S.E. is launched, it loads the brushes.brs file located in xRes S.E. Resources/Brushes.

If “Save Brushes on Exit” is checked in the General Preferences when you quit the application, the current brush set is automatically saved as brushes.brs and loaded the next time you launch xRes S.E..

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*Note: If the “Save Brushes on Exit” preference is unchecked in the General Preferences and you wish to load the current brush set the next time you use xRes S.E., use the Save Brush Set command, name the brush set brushes.brs, and store the brush set in xRes S.E. Resources/Brushes.*

## To Save a Brush Set

To save a brush set, select “Save Brush Set As” from the Brushes Palette submenu. A dialog prompts you to indicate a location of the brush set on disk. Enter a name for the brush set and click “Save.”

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*Note: When you choose “Default Brush Set” from the Brushes submenu, xRes S.E. searches for the default brush set located in the xRes S.E. Resources/Brushes folder.*

If you save a brush set as default.brs, that brush set will load when you access the Default Brush Set command instead of the default brush set that shipped with xRes S.E..

## To Load a Brush Set

To load a brush set, select “Load Brush Set” from the Brushes Palette submenu. A dialog prompts you to locate the brush set on disk. After locating the brush set, click “Open” to load it.

## Changing Back to the Default Brush Set

To change back to the brushes of the default brush set that shipped with xRes S.E., select “Default Brush Set” from the Brushes Palette submenu. “Default Brush Set” in the Brushes Palette submenu restores the default brush set to the Brushes Palette.

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*Note: If you have resaved a brush set as default.brs, and stored it in the xRes S.E. Resources/Brushes, then that brush set is loaded when you use the Default Brush Set command.*

## Appending B rushes

Appending Brushes refers to the process of adding brushes from one brush set to another brush set. To append (add to) a brush set, choose “Append Brush Set” from the Brushes Palette submenu. A dialog prompts you for the name and location of the brush set you wish to add to the current brush set; click Open in the dialog to append the brush set to the current brush set.

Macromedia will provide several additional brush sets through on-line services as they are developed. By using the “Append Brush Set” command, you can add these brush sets to your current brush set.

### xRes S.E. Default B rushes

xRes S.E. ships with dozens of brushes with uses from photographic retouching to artistic effects. These brushes include:



Hard **Hard**

Hard brushes are useful for retouching work. Variants for the Hard brushes include “Square” and “Anti-Aliased.”



Soft **Soft**

Soft brushes are useful for retouching work, particularly with the Eraser and Clone Tools because the edges of the brushes are not as distinct as the Hard brushes.



Tint

### Tint

The Tint brushes are used to tint images with the current foreground color. Applying the Tint brush at a low strength applies a special, subtle effect.



Air Brush

### Airbrush

Airbrushes apply paint in a fine, smooth mist. They are ideal for hand-coloring old photographs or creating backgrounds for digital paintings. It is often useful to adjust the opacity of the airbrush to a low setting when painting over existing images in order to achieve a subtle effect. Flow value controls the amount of paint a mouse click places.

- Basic: A standard airbrush.
- Light: Useful for painting in areas where you need only a tinge of color.
- Textured or Grainy: Variants which apply a light mist that reflects the current texture.



Calligraphy

### Calligraphy

Calligraphy brushes create angled calligraphy strokes. For best results, move the mouse or stylus with a steady hand. Notice how smooth the calligraphy stroke is in xRes S.E.. This effect is achieved by the Smoothing value. You can even change the angle and size of the calligraphy brushes.

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*Note: The calligraphy brush is spelled “Caligraphy” in the xRes S.E. brush set due to size limitations.*



## Charcoal

Charcoal brushes are the penultimate example of natural textured brushes in xRes S.E.. Charcoal brushes use the texture in effect and have a noticeably fringed edge. Charcoal brushes also have a high degree of blackness to simulate the darkness of charcoals.



## Crayon

Crayon brushes look like crayons children might use. Experiment with the following:

- Wax: Simulates the look of a crayon straight out of the box.
- Wet: Looks like a crayon smeared with water.
- Monkey: A two-tipped crayon which is just for fun.



## Quill

Imagine dipping a feather quill in an ink well, and you have the basic idea of how the Quill brushes work. Flow value determines the amount of ink that runs from the quill at a time.

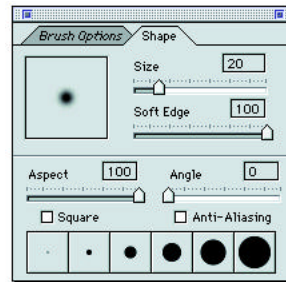


## Japanese

The Japanese brushes imitate the ancient art of painting with off-black inks to produce scenes of nature. For a really neat effect, try cloning with one of the Japanese brushes. See “Cloning” in this chapter.

Notice that the longer you hold down the mouse in one place, the more ink flows from the brush into that area. Using this method you can create images that realistically mimic an actual Japanese brush. Bamboo, Sumi, and Rising Sun are all variants of the Japanese brush that produce the look of Japanese washes. Experiment with the different variants to find out which one works best for you.

## Shape Inspector



xRes S.E. uses a Shape Inspector, to control the shape and size of the active brush. Any changes you make that affect the size or shape of the brush with the Shape Inspector are saved for the current session. To save the changes permanently, see “Saving Changes” in this chapter.

As you change the settings in the Shape Inspector, the Shape preview updates automatically to reflect any changes to the size, aspect, angle, soft edge, or squareness of the brush.

To view the Inspector use the menu command Window > Inspectors > Shape. The Inspector contains the following:

## Size

This slider controls the size of the brush in pixels.

## Aspect

This slider sets the ratio of brush height to brush width, as a percentage.

## Angle

This slider sets the brush angle in degrees.

## Soft Edge

This slider sets the degree of softness of the brush as a value from 0 to 100. In addition, there are two checkboxes at the bottom of the palette:

- **Square:** This checkbox makes the brush rectangular or square in shape.
- **Anti-aliasing:** This checkbox makes the stroke smooth by applying anti-aliasing.

## Preset Size Icons

These icons serve as a quick means of accessing the most commonly-used brush sizes.

## Preview Window

This window allows you to preview the size and shape of a brush. The Preview Window is located in the top left corner of the Shape Inspector.

The size slider in the Shape Inspector controls the size of the brush in pixels. Moving the size

slider automatically updates the Shape preview to the new size. If the size is too large to display in the preview box, it is displayed in a zoomed out view.

The bottom of the Shape Inspector contains six preset size icons. Clicking on one of these icons automatically updates the size slider. The preset size icons are good shortcuts for creating a brush of a certain size. For example, you can click on the leftmost preset to create a 1 pixel brush.

The preset size icons affect only the size of the brush; they do not affect the soft edge, angle, aspect, or any other brush property.

## To Change the P reset Sizes

You can change the preset size icons to reflect different sizes.

- 1 Move the Size Slider to set the size of the brush.
- 2 Option-click one of the presets. The preset size changes to reflect the newly set size.

## Aspect Ratio

The term “Aspect Ratio” refers to the ratio of brush height to brush width.

- An Aspect Ratio of 100 indicates a perfectly round (or perfectly square) brush.
- An Aspect Ratio of 50 indicates that the brush is twice as wide as it is high.

- An Aspect Ratio of 5 indicates that the brush is very thin.

As you move the Aspect Slider, the Preview Window in the Shape Inspector updates automatically. Using the Aspect Ratio in combination with the Brush Angle allows you to create Calligraphy or other angled brushes.

## Angle

The Brush Angle is used to create angled brushes. As you change the angle of the brush, the Preview Window in the Shape Inspector updates automatically. xRes S.E. allows you to vary the angle of the brush between 0 and 180 degrees. If the brush is perfectly round or square (for example, if the aspect ratio slider is set to 100) this will not change the preview in the Shape Inspector. If you are changing the angle of a brush with an aspect ratio less than 100, you will see a difference in the preview box.

Macromedia recommends that you set the angle to 45 degrees, or a multiple thereof, because the cleanest brushes have angles of exactly 45 degrees. This is because the rotation transformation tends to produce small artifacts at other angles. In addition, angled brushes look better when the underlying shape is rectangular, rather than elliptical.

## Soft Edge

Soft Edge is one of the most important settings in the Shape Inspector. The Soft Edge slider

determines the opacity of the Shape Inspector from the center of the brush to the edge of the brush.

- Setting of 100: This brush has maximum softness. It is totally transparent at the edges and totally opaque at the center. In-between there is a smooth transition in transparency values. Soft-edged brushes are useful for general photo-retouching and airbrushing.
- Setting of 50 (or any other intermediate value): This provides a semi-hard brush.
- Setting of 0: This brush is completely hard. There is no difference in opacity between the edge of the brush mask and the center of the brush mask.

As you move the Soft Edge slider, the preview box in the Shape Inspector updates automatically to reflect the new soft edge.

## Square

You can make the brush rectangular or square by checking the Square preferences on the bottom of the Shape Inspector. Rectangular and square brushes are mainly used for small single pixel brushes, calligraphy pens, and other angled brushes, as well as for custom special effects. When you check or uncheck this box, the preview box in the Shape Inspector updates to reflect the new shape.

## Anti-Aliasing

Anti-aliasing is often a misunderstood concept in computer graphics. It is often referred to as a smoothing technique or a blurring of the edges, but the effect is more complex.

Anti-aliasing gives the impression of a sharp, consistent edge on a screen with a limited number of pixels per inch. Without anti-aliasing, an opaque paint stroke will produce jaggies, or a pixilated staircase-like effect. Although this phenomenon is most noticeable on the screen at 72 ppi, it is even apparent on printed output at resolutions as high as 300 dpi.

Anti-aliasing subtly darkens the pixels around every edge of the brush stroke to make the edges appear more sharp. In other words, anti-aliasing is all about sharpening edges, not blurring or smoothing them.

To make a brush anti-aliased in xRes S.E., check the Anti-Alias Preferences at the bottom of the Shape Inspector.

## Brush Tool Options

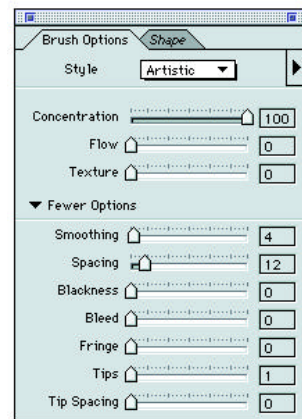
The Brush Tool Options control the behavior of the brush. This inspector includes frequently-used controls such as:

- Brush opacity.
- Brush texture.
- Amount of fringe.

- Ink Level.
- Bleed.
- Smoothness.
- Pressure-sensitivity.

The Brush Tool Options is the main control center for the brush model in xRes S.E.. You can specify a style for the brush and configure a brush exactly as you want it. Brushes from calligraphy pens to charcoals can be made by changing brush properties.

All of the brushes in xRes S.E. were designed by changing the brush properties in the Shape Inspector and Brush Tool Options.



### To Access the Brush Tool Options

- 1 Click the Brush Tool on the Tools Palette.
- 2 Use the menu command Window > Inspectors > Tool Options after choosing the

Brush Tool on the Tools Palette, or simply double-click the Brush Tool.

Clicking on the triangle at the bottom left corner of the Inspector lists more brush tool options. Clicking this triangle again compacts the Inspector.

## Brush Styles

The Brush Tool Options has a style menu, which contains a library of styles. When creating or editing a brush, the first step is to determine its new style. Different brush properties will be available depending on the chosen style. For example, Artistic brushes contain a texture property and Fast brushes do not.

Understanding the behavior of different styles and the different properties associated with each style is key to successful brush creation. Brush styles include Artistic, Fast, Tint, Contrast, Noise, Shading, and Sponge.

### Fast

Fast brushes are up to eight times faster than other brush styles. They are used for general photographic retouching and airbrushing effects. The Opacity value determines the opacity of each stroke, and the Flow value controls whether the paint is delivered in a smooth flow or with a build-up effect. Other brush properties include Concentration, Spacing, and Smoothing. You can also make fast brushes pressure- or speed-sensitive.

### Artistic

Artistic brushes are used to create natural, textured brushes, or other media that simulate real-life artistic tools. Artistic brushes are the only brushes that are affected by the paper texture.

Artistic brushes are useful if you are creating an image from scratch using only brushes. They can also be used on existing pictures to add interesting effects and realism.

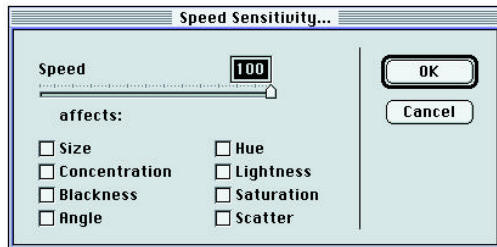
Artistic brushes contain a plethora of brush controls for creating brushes from rich felt tips to Japanese Sumi brushes to multi-strand oil brushes. Brush properties include:

- Concentration value: Controls the thickness of each dab of paint.
- Flow value: Controls the ink build-up that can occur in one location.
- Texture and Fringe values: Control the amount of texture the brush picks up.
- Blackness value: Determines whether the brush darkens as you go over it repeatedly, like felt tip or calligraphy pens.
- Bleed value: Determines how much the brush bleeds into the existing image; for example, watercolor brushes have a very high Bleed value.
- Tips and Tip Spacing values: Control the number of bristles in the brush and the space between these bristles; for example, one distinguishing feature of the Oil brush is that it has multiple tips.



Other brush properties include Spacing and Smoothing. Spacing controls how densely dabs of paint are packed together; denser paint strokes have lower spacing values. Smoothing controls how smooth the stroke is.

By altering the brush properties associated with artistic brushes, you can simulate almost any real-life brush on the computer screen.



## Shading

Shading brushes are used to apply a dodge or burn effect to an image. A Strength value determines the strength of the effect.

## Sponge

Sponge brushes are used to saturate or desaturate an image. A Strength value determines the amount of saturation or desaturation.

## Noise

Noise brushes are used to add noise to an image. A Strength value determines the amount of noise.

## Contrast

Contrast brushes are used to increase or decrease the contrast in an area of an image.

## Tint

Tint brushes are used to tint an area of the image with the current foreground color. See Chapter Ten: Color Correction for more information on Tint brushes.

## Brush Properties

Different brush properties are available in the Brush Tool Options, depending upon the brush style chosen.



### Opacity

Opacity refers to the possible opacity of an entire brush stroke.

- A setting of 100 indicates a perfectly opaque stroke.
- A setting of 50 indicates a translucent stroke.
- A setting of 10 indicates an almost transparent stroke.



### Strength

Strength is used in the Tint brush style to determine the amount of the brush effect. Strength value is measured between 1 and 100.

- A strength of 100 applies the full effect.
- A strength of 50 applies a medium effect.
- A strength of 10 applies a very subtle effect.



### Concentration

While Opacity refers to the opacity of the entire stroke, Concentration refers to the opacity of each individual dab of paint. Opacity and Concentration combine to yield the opacity of the stroke.

- At 100% concentration, the brush is totally opaque, meaning that it entirely covers any image or other paint strokes beneath it.
- At 50% concentration, each dab of paint is semi-opaque. However, since many dabs are packed closely together in an average stroke (how closely depends on the Tip Spacing factor), a concentration of 50 percent tends to be very opaque.
- At 15% concentration, the brush will produce a nice, semi-translucent paint stroke.
- At 5% the brush yields a fine, misty airbrush-type of effect.

Concentration and Spacing (discussed below) interact very closely. If you increase the Spacing, you decrease the Opacity.



### Flow

Flow refers to the amount of ink build-up that occurs during one mouse click (or pen click) on the document. The Flow amount takes effect when you click the mouse on the document and do not move the mouse. For brushes with high Flow values, clicking on the document without moving the mouse produces a build-up of paint, much like what would be seen immediately after placing a quill pen on paper. The Flow value is controlled as follows:

- A high Flow value shoots paint out of the brush (mouse) very rapidly until you release the mouse button. Keeping the mouse button pressed down is the equivalent of shooting an airbrush in one place for a few seconds. A high Flow value is useful for inks and airbrushes.
- A Flow value of 0 places only one dab of paint on the document regardless of how long you hold the mouse in one place.
- In-between values produce a medium amount of ink build-up.

### Spacing

Spacing controls the concentration of paint dabs. The closer the spacing, the more dabs per inch, and the more dense the paint stroke will be. At high Spacing, on the other hand, you can clearly see the individual dabs.

Spacing in xRes S.E. is measured as a proportion of brush size. For example, if the brush size is 10

pixels, a Spacing setting of 50% implies that there are  $50\% \times 10 = 5$  pixels between each dab. The advantage of this scaling system is that if you increase the size of the brush, you don't have to change the Spacing to get the same look.

Generally speaking, you don't want to see the impact of an individual dab on a brush stroke. The brush type and its opacity influence how small the Tip Spacing must be to disguise individual dabs of paint.

- For an airbrush, you can get away with Spacing of up to 25%. Because these brushes are so translucent, the dabs do not show up as easily.
- For a typical retouch brush with a soft edge, a Spacing of 15% is appropriate. The soft edge helps disguise the impact of individual dabs, but the high opacity of these brushes does require tight Spacing.
- At the extreme, a Calligraphy brush requires a Spacing of 1 or 2 percent to produce crisp results.
- A Spacing of 0 indicates no Spacing at all. In other words, the dabs apply without regard to how many dabs per inch. This absence of Spacing produces very blotchy results.

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*Note: Higher Spacing can slow down the real-time performance of the brush.*

## Smoothing

Have you ever painted on the computer and felt that your strokes looked like they were done on five cups of coffee? You are not alone. Most computer programs do not offer any form of mouse smoothing, and the result is jagged strokes. Even if you are using a pressure-sensitive tablet, it is very difficult to draw a smooth line with the pen unless you have some additional help from the computer. This is where the Smoothing slider on the Brush Tool Options is useful.

The Smoothing control applies a smoothing algorithm to the brush path, allowing you to paint with very smooth strokes, even with a standard mouse. The algorithm works by examining the path of the stroke and smoothing out that path as the cursor moves. The advantage of this technique is that you can achieve extremely smooth, ribbon-like effects even with the standard mouse. The disadvantage is that the paint can lag slightly behind the brush. Smoothing also makes the brush less responsive to minor variations in the tablet or the mouse.

Smoothing is set to parameters between 0 and 100. Some examples are:

- Smoothing of 0: This indicates no smoothing at all. Pencils and other tools which require the ability to black and fill should not have any smoothing.
- Smoothing of 7: This number represents an average value for many brushes. It introduces a small lead between the paint and the mouse, but it produces smoother strokes.

- Smoothing of 15 or more: High values of smoothing are used infrequently, mainly for calligraphy and other ornamental effects.

## Texture

xRes S.E. supports paper textures. After specifying the texture in the Textures Palette or creating your own you can configure your brush to react with that texture by altering the Texture and Fringe values of the brush.

The Texture value controls how textured the overall stroke appears: the higher the value, the more textured the brush.

## Fringe

The Fringe value controls the texture at the edge of the brush: the higher the fringe value, the more fringed, or shredded, the strokes appear. Brushes with high Fringe values include pencil and charcoal. The fringe is affected by the paper texture set in the Textures Palette.

## Bleed

The Bleed control affects how the colors of the brush bleed into the colors already on the canvas. If you set Bleed at a high level, it will dilute the brush strokes. A high bleed level is used in the watercolor brushes to achieve the watery effect.

With xRes S.E., you can tell the program exactly how much bleeding you want to occur for each

brush. This is useful for simulating watercolor effects.

## Blackness

Blackness adds tremendous realism to most paint strokes; this is important to brushes such as charcoal or felt-tip pens. The general idea of Blackness is that it affects how the colors burn into the background. When blackness is set to 0%, the blending is a strict (additive opacity) blend. This mimics the way oil paints tend to blend. Setting Blackness close to 100% results in a subtractive blending that is closer to the way liquid inks blend.

Ranges for Blackness are as follows:

- Blackness 0: In this case, each stroke covers up the last with no color build-up. Even if the stroke is semi-transparent, the effect can seem artificial.
- Blackness 100: The maximum Blackness setting corresponds to a pure Subtractive Mode. This setting mimics the way inks blend, with each stroke darkening the previous stroke, and the colors becoming more saturated.
- Intermediate Values: Values between 0 and 100 are used for most brushes. You can tweak the Blackness value of each brush.

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*Note: High Bleed and Blackness values used in combinations produce dark, liquid ink effects.*

## Tips

Vincent Van Gogh and other impressionists tended to show the bristles in their brush strokes. On the computer, we can't simulate (yet) an actual brush with 1000 individual hairs, but we can approximate this result by using multiple tips for each stroke.

xRes S.E. has a maximum of 20 tips per brush. These tips move in unison to produce an approximation of the Van Gogh effect. The Tips slider directly specifies the number of tips or bristles.

- Most brushes use a single tip. This includes all of the retouch brushes.
- You can start getting the Van Gogh effect with as few as 5 tips.
- 15 tips is probably the maximum you will ever need.

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*Note: Multiple-tipped brushes can be slower than single-tipped brushes.*

## Tip Spacing

The Tip Spacing Slider controls the distance between brush tips for a multi-tipped brush. Small distances produce brush tips that overlap, creating a creamy oil effect. Large Tip Spacing produces bristles that are farther apart, creating the effect of random bristles.

Tip Spacing is measured as a percentage of the overall brush size. For example, a Tip Spacing value of 40 creates a distance between strokes that equals 40% of the brush size.

## Brush Tool Options Submenu

The Brush Tool Options submenu allows you to create many brush property relationships. The submenu accesses six different dialogs that allow you to create pressure or speed relationships, direction relationships, and randomness relationships.

The dialogs function by listing the behavior at the top of the dialog and properties at the bottom of the dialog. The brush properties listed at the bottom of the dialog vary depending on the brush style. The brush properties listed in these dialogs can include:

- **Size:** Changes the size of the brush based on the specified brush behavior.
- **Concentration:** Changes the concentration of the brush dabs based on a certain brush behavior.
- **Blackness:** Changes the Blackness value of the brush based on the specified brush behavior.
- **Angle:** Changes the angle of the brush dabs based on the specified brush behavior.
- **Hue:** Changes the hue of the paint dabs based on the specified brush behavior.

- **Lightness:** Changes the lightness of the paint dabs based on the specified brush behavior.
- **Saturation:** Changes the saturation of the brush dabs based on the specified brush behavior.
- **Scatter:** Affects the distance between paint dabs.

### Pressure and Speed Relationships

Pressure-sensitivity refers to differing brush behavior based on the pressure placed on a pressure-sensitive tablet. Placing more pressure on the tablet produces a larger brush, and placing less pressure on the tablet produces a smaller brush. Pressure-sensitivity behavior allows you to simulate natural brush behavior by giving the brush a gradual build-up in size, opacity, and blackness.

Speed-sensitivity refers to different brush behavior based on the speed of the mouse or stylus. Moving the mouse faster produces a thinner brush, and moving the mouse slower produces a thicker brush.

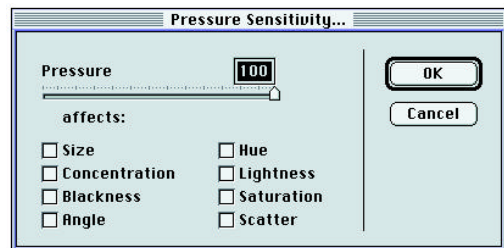
By accessing Pressure Sensitivity or Speed Sensitivity from the Brushes Palette, you can activate pressure-sensitivity and speed-sensitivity.

When you use a mouse, the Pressure Sensitivity and Speed Sensitivity dialogs have the same effect; they control brush behavior based on the speed of the mouse. If you use the Pressure Sensitivity dialog, then:

- Dragging the mouse slowly is the equivalent of placing more pressure on the tablet.
- Dragging the mouse rapidly is the equivalent of placing less pressure on the tablet.

Macromedia recommends that, if using a mouse, you use either the Speed Sensitivity dialog or the Pressure Sensitivity dialog. If you use both dialogs, then the values entered in the dialogs will be combined to determine brush behavior based on mouse speed.

If you use a tablet, the Pressure Sensitivity dialog controls the behavior of the brush based on the pressure placed on the tablet. The Speed Sensitivity dialog controls the behavior of the brush based on the speed of the pen or stylus.



### To Make a Brush Pressure-Sensitive or Speed-Sensitive

- 1 Access the Pressure Sensitivity or Speed Sensitivity dialogs from the Brush Tool Options submenu.
- 2 The bottom of the dialog lists the brush properties that can be affected by the pressure or speed of the brush. For example,

artistic style brushes include the following: Size, Concentration, Blackness, Angle, Hue, Lightness, Saturation, and Scatter.

Click the checkbox next to the brush properties that you wish to be affected by pressure or speed.

For example, clicking “Size” in the Pressure Sensitivity dialog makes the size of the brush vary depending on pressure.

- 3 A slider at the top of the dialog controls the degree of the relationship. The slider can be set between 1 and 100. A setting of 100 produces a stronger relationship than a setting of 1. Generally, it is recommended that you set the slider in the Pressure Sensitivity and Speed Sensitivity dialogs between 50 and 100.
- 4 Click OK to accept the settings.
- 5 If you have made the pressure or speed of the mouse or tablet affect the size of the brush, there is one more step to take. Access Size Sensitivity from the Brushes submenu. A dialog appears that has two sliders: MinSize and NumSizes.

The MinSize refers to the minimum size of the brush as a percentage of the total size. When a brush is pressure or speed sensitive, placing less pressure on the tablet or moving the mouse rapidly produces a brush that reflects the minimum size. Placing more pressure on the tablet or moving the mouse slowly reflects the maximum size. The maximum size of the brush is set in the Shape Inspector size-slider.

The NumSizes slider refers to the number of sizes between the minimum size brush and maximum size brush. The greater the number of sizes is, the smoother the transition between a smaller brush size and a larger brush size.

- 6 Adjust the MinSize and NumSizes sliders and click OK. You have made your brush pressure-sensitive or speed-sensitive.

## Direction Relationships

Direction relationships change brush properties based on the vertical or horizontal direction of the brush. Vertical Sensitivity creates brush relationships based on the vertical direction of the brush stroke. Horizontal Sensitivity creates brush relationships based on the horizontal direction of the brush stroke.

### To Create Direction Relationships

- 1 Access “Vertical Sensitivity” or “Horizontal Sensitivity” from the Brush Tool Options submenu.
- 2 Check the checkboxes of properties you want to be affected by the direction of the brush. For example, to make the direction of the brush affect the hue, check “Hue.” This would produce a brush that paints in different hues based on the direction you drag the mouse.
- 3 A slider at the top of the dialog controls the degree of the relationship. A value of 100

produces a stronger relationship than a value of 10. Move the slider to the desired value.

- 4 Click OK to accept the settings.

### Random Relationships

Random brush relationships introduce a degree of randomness into brush properties. Random relationships are used to create oil brushes with multi-colored tips. They are also used to create other special effects.

### To Create Random Relationships

- 1 Access “Random Sensitivity” from the Brush Tool Options submenu.
- 2 Check the checkboxes of properties you want to be random. For example, to make the hue value random, check “Hue.”

If a brush has one tip, the hue, lightness, and saturation properties affect each dab of paint. If a brush has many tips, these same properties affect each brush tip instead of each dab of paint.

- 3 The top of the dialog displays a slider controlling the amount of the random relationship. Lower settings produce less random relationships. Move the slider to the desired value.
- 4 Click OK to accept the settings.

## Textures Palette

The Textures Palette stores all of the available paper textures in effect. The brushes in xRes S.E. respond to the active texture. One texture is active at all times. To make a texture active, click it.

For example, you can select rice paper for use with the Japanese brush, heavy cotton paper for watercolor, or a glossy coated surface for a felt-tipped drawing. Textures add dimension, liveliness, and realism to images.

The Textures Palette contains the following:

- **Texture Icons:** There is one icon for each paper texture. Click any Texture icon to automatically make that texture active. Only one texture can be active at a time.
- **Scroll Bar:** This allows you to scroll through the available textures.
- **Invert Checkbox:** Inverts the current texture.
- **Duplicate Icon:** This icon duplicates existing textures.
- **Trash:** This icon deletes existing textures.

### To Rearrange the Texture Icons within the Palette

Click a Texture icon and drag it to its new location on the Palette. The other Texture icons shift accordingly.



### To Change the Name of a Texture

Double-click the desired Texture icon. A dialog appears allowing you to enter a new name for the texture.

### To Duplicate an Existing Texture

Click the Texture icon and drag it to the New Icon. A dialog allows you to enter a new name for the texture. The default name is the previous name with the word “Copy” after it, for example, “Sand Copy.”

### To Delete a Texture

Click the Texture icon and drag it to the trash on the Textures Palette.

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*Note: You cannot undo the deletion of a texture with the Edit > Undo command. To restore a deleted texture, uncheck “Save Textures” on Exit from the General Preferences and relaunch xRes S.E..*

### To Create a New Texture

You can create your own custom textures for the Textures Palette.

- 1 Create a new document that is 96 x 96 pixels. The size can also be multiples of 96, such as 960 x 960 pixels or 192 x 192 pixels. The size of the document will determine the size of the texture.
- 2 Create a design you want to use for a texture using any of the brushes or filters of xRes S.E..
- 3 Access the Objects Window (menu command Window > Objects). Check that the object displayed in the Objects Window matches the object on screen. If the Objects Window has not updated, compact and re-open the Object Window, and the object will be updated.
- 4 Drag the object from the Objects Window into the Textures Palette (menu command Window > Palettes > Textures). A dialog appears prompting you for a name for the texture.
- 5 Enter a name in the dialog and click OK. The texture is added as the last texture in the Textures Palette. You can click and drag your texture to a new location within the Palette.

## Saving Textures

Any changes made to the Textures Palette, including adding textures, are saved automatically for the current session. To save the changes permanently to disk, use the menu command File > Preferences > General. Make sure that the “Save Textures on Exit” preference is checked. When it is checked, all changes made to the Textures Palette are automatically saved to disk. If it is not checked, the changes are saved for the current session only.

## Erasing

To access the Eraser Tool, click the Eraser Icon on the Tools Palette.

### To Use the Eraser Tool

- 1 Click the Eraser Icon on the Tools Palette.
- 2 Access the Brushes Palette by double-clicking the Eraser Icon.
- 3 Select a brush that you want to use for erasing. In most cases you will want either the Hard brushes or Soft brushes.
- 4 Select a Brush variant from the Variant Menu (in the Brushes Palette).
- 5 Click the document and drag to erase. You are now erasing with the background color.

### Erasing to the Last Undo State

The eraser normally erases with the background color. However, if you press Option (Alt in Windows) while erasing, you erase to the last undo state. This feature is very useful. Some ideas for its use are:

- After applying a filter or color correction effect, Option- (Alt- in Windows) erase to undo only part of the effect.
- Option- (Alt- in Windows) erase with the airbrush or a semi-opaque brush to achieve a unique artistic effect.

- Option- (Alt- in Windows) erase to erase a paint stroke you just painted. You will also erase to the previous background of the image. This method is better than erasing with the background color because the background color can alter the background of the original image.

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*Note: You can also erase to the last undo by checking "Erase to Undo" in the Eraser Options. To access the Eraser Options, select the Eraser Tool and use the menu command Window > Inspectors > Tool Options, or simply double-click the Eraser Tool.*

## Creating Straight Lines

You can create straight lines in xRes S.E. by using the Shift key.

### To Create Straight Lines with the Shift Key

The first method used to create straight lines is to press the Shift key while using the Eraser or Brush Tools. You can use the Shift key to create straight lines and to constrain lines to be either horizontal or vertical.

- 1 Click the Paint Tool or the Eraser Tool on the Toolbar.
- 2 Click the document.
- 3 Hold down the Shift key and click another point. The two points will connect to form a straight line. If you hold the Shift key, you can create a series of straight lines.

- 4 If you start using a different tool or apply a filter, you can connect the line where it previously stopped. To do this, reselect the Brush Tool if it is not already selected, press the Shift key, and click the document. A straight line is created, connected to the previous brush stroke.

### To Create Horizontal or Vertical Lines

You can constrain a line to either the horizontal or vertical axis.

- 1 Select the Paint Tool or Eraser Tool on the Tools Palette.
- 2 Start to drag a paint stroke.
- 3 Hold down the Shift key. The stroke will be constrained to either the horizontal or vertical axis, depending on which direction you drag.

## Cloning

Cloning is the process of replicating one part of an image and pasting it to another part of the image. Cloning has several uses in the image creation process:

- Cloning is often the best way to touch up photographs and images. It is often more accurate and more controllable. For example, imagine that a photograph has some scratches on it. Using filters such as Noise and Sharpen would not eliminate the scratches;

they can even enhance the scratches. A better solution is to use the Clone Tool to clone a nearby, similar part of the image (that had no scratches on it) over the scratched part of the image.

- Cloning can be used to replicate one part of an image onto another. This method is simpler than dragging an object from one document to another. Cloning can also be used to replicate part of one object to part of another object.
- Artistic effects can be created using the Clone Tool that cannot be created any other way. For example, you can clone part of an image using any artistic effect, such as an airbrush. The result would be a soft, ghost-like reproduction. You can easily produce artistic effects by cloning with the Cubist or Pointillist brushes.

### To Clone an Image

- 1 Access the Brushes Palette (menu command Window > Palettes > Brushes), and click the brush you wish to use for cloning. For basic cloning, select the Hard or Soft brushes. The Hard brush clones with a hard-edged brush; the Soft brush clones with softer edges. To clone with an artistic effect, select another brush, such as Airbrush or Oils.
- 2 In the Brushes Palette, select a variant in the Variant Menu.

- 3 Click the Stamp Tool on the Tools Palette.
- 4 The Stamp Tool works by defining an anchor point around which to clone. To select an anchor point, Option- (Alt- in Windows) click an area of the image. Release the mouse button to place the anchor point.
- 5 Click the target area that is to be the destination for the clone, and drag to clone the image from the source area to the target area. This target area can be in a different object than the anchor point in the source area.

---

*Note: When cloning, you can clone from one object to another object as long as those two objects are in the same document. You cannot clone from one document to another document.*

In xRes Mode, you can only clone from one object to the same object; you cannot clone from one object to a different object. See Chapter Nine: Working in xRes Mode for more information.

### **Aligned/Non-Aligned Cloning**

Cloning is normally aligned. This means that each time you move the mouse, the anchor point will move proportionately.

Non-aligned cloning will clone from the original anchor point regardless of where you click the cursor. To clone in the Non-Aligned Mode, hold down the Shift key as you clone.

You can also clone in a Non-Aligned Mode by accessing the Stamp Tool Options dialog, and unchecking “Aligned.” To access the Stamp Options, select the Stamp Tool on the Tools Palette, and use the menu command Window > Inspectors > Tool Options, or simply double-click the Stamp Tool.





## **Chapter Five**

# 5

## Chapter Five Colors

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### Overview

This chapter discusses how colors are created, edited, and selected in an xRes S.E. document. It also discusses Color modes and Color theory. Topics include:

- Essential Terms
- Foreground and Background Colors
- Picking Colors
- Using the Swatches Palette
- Document Color Modes
- Using a Custom Indexed 256 Palette



## Essential Terms

### Active Object

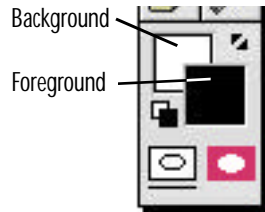
An active object is the same thing as a selected object, which is represented as gray in the Objects Window. (Inactive objects are white in the Objects Window.)

### Selected Area

The selected area is the area inside the dotted black line or flashing marquee created with the marquee tools, FastMask, or the Mask Window.

## Foreground and Background Colors

The current foreground and background colors are displayed in the Tools Palette.



The foreground and background colors have different uses.

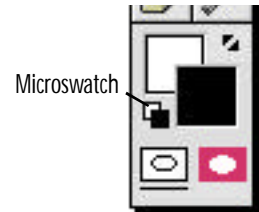
The foreground color is used for painting operations and for the Bucket Tool. The background color is used for erasing operations.

To switch the foreground and background colors, click the small double arrow in the Tools Palette.



## Default Colors

The black and white microswatches underneath the foreground and background colors are called the default colors. The default colors are useful for painting operations that involve strictly black and white. Clicking on the default colors changes the foreground color to black and the background color to white. Clicking on the default colors again returns the foreground color and background color to their previous states.



## Picking Colors

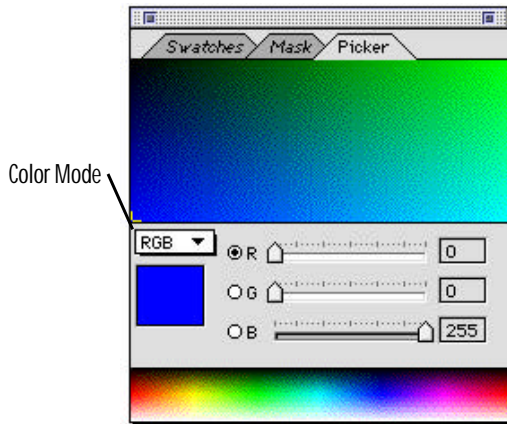
There are three ways to pick colors in xRes S.E.: the Color Picker, the Swatches Palette, and the Eyedropper Tool.

## Using the Color Picker

Of the three color sampling methods, using the Color Picker allows you to choose from the widest range of colors including Pantone colors.

There are two ways to access the Color Picker:

- Use the menu command Window > Palettes > Picker.
- Double-click the foreground swatch or the background swatch in the Tools Palette.



## Components of the Color Picker

### Color Mode Menu

This menu allows you to choose a mode for selecting colors while leaving the Color Mode of the document unaffected. Available Color Modes include RGB, CMYK, HSB, HLS, YIQ, Grayscale, and Custom Colors, which allows you to pick a custom Pantone color.

### Foreground Swatch

The swatch on the left-hand side of the Color

Picker represents the current foreground color. As you change the sliders in the Color Picker to change the color, this swatch will update automatically.

### Color Sliders

The color sliders are used to numerically enter a color in the Color Picker. As you move the sliders or enter a new number for the sliders, the foreground swatch updates automatically.

### Radio Buttons

The radio buttons are the three circles to the left of each channel slider. At all times, one and only one radio button is selected. The radio button is used to determine the fixed channel, which determines how the colors are organized within the Preview window.

### Preview Window

The Preview window represents the top of the Color Picker; it previews the range of available colors. Clicking on a color in the Preview window makes that color the foreground color.

### Hue Bar

The hue bar at the bottom of the Color Picker is used as a shortcut for quickly accessing colors. The hue bar displays color hues from 1 to 360° left to right, and lightness values from 0 to 100 top to bottom.

## To Pick a Color from the Color Picker

- 1 Select the Color Mode. Choices include RGB, HSB, HLS, YIQ and Grayscale. The Color Mode determines the range of colors available through the Color Picker.
- 2 Select a fixed channel by clicking a radio button next to one of the channels. The fixed channel determines the organization used in displaying colors in the Color Picker.
- 3 Move the slider of the fixed channel until the color you wish to use is displayed in the Preview window.
- 4 Select a color using one of these methods:
  - Click in the Preview window to select the color you want to use.
  - Move the color sliders to select a color. As you drag the sliders, the current color is reflected in the foreground swatch.
  - Use the entry fields to the right of the color sliders to numerically enter the color you wish to use.

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*Note: You may also select a color by clicking anywhere on the hue bar at the bottom of the Color Picker. See “Hue Bar” in this chapter for more information.*

## Setting the Color Mode

The Color Mode menu determines the range of colors available when using the Color Picker.

Macromedia recommends that you select the Color Mode in the Color Picker that corresponds to the Color Mode of the document.

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*Note: Changing the Color Mode in the Color Picker does not affect the Color Mode of the document; rather, it affects the range of colors available in the Color Picker.*

## Color Mode Menu

### RGB

RGB allows you to choose a color with red, green, and blue values ranging from 0 to 255.

### CMYK

CMYK allows you to choose a color with cyan, magenta, yellow, and black values ranging from 0 to 100%.

### Grayscale

Grayscale allows you to choose a color that is pure black, pure white, or varying shades of gray from 1 to 100 % black.

### HSB

HSB allows you to choose a color with a hue value from 0° to 360° and a saturation and brightness value from 1% to 100%. The hue

value is based on the color wheel, with 0 referring to the red value on the color wheel. For example, if the hue is set to 250, a blue value is displayed, because blue is 250 degrees clockwise from red on the color wheel.

## HLS

HLS allows you to choose color with a hue value from 0° to 360° on the color wheel and saturation and lightness values from 1% to 100%.

## YIQ

YIQ allows you to choose colors based on the luminosity, chroma, and intensity of the pixels. The advantage of this method is that it may offer a smoother transition of colors than the other methods.

## Selecting the Fixed Channel

The fixed channel determines the organization used when displaying colors in the Preview window of the Color Picker. Only one channel is the fixed channel at any given time.

The Preview window of the Color Picker displays color only as they are defined by the value of the fixed channel.

For example, suppose that you are working in the RGB color space, red is the fixed channel, and the red value is 55. The Preview window displays colors in which the red value is 55, and the green and blue values are between 0 and 255.

Moving the slider of the fixed channel changes the colors displayed in the Preview window; changing the sliders of other channels does not change the colors displayed in the Preview window.

## Using the Hue Bar

The hue bar at the bottom of the Color Picker is a quick way to select colors. Clicking anywhere on the hue bar selects that color as the current foreground color.

The hue bar displays colors of varying hues from left to right, and of varying brightness values from top to bottom.

## Accessing the Apple Color Picker ®

Macintosh users may access the Apple Color Picker by double-clicking on the current color swatch in the left of the Color Picker. The Apple Color Picker allows you to choose a color based on the Apple Color Wheel. See *The Macintosh User's Guide* for more information on using the Apple Color Picker.

Currently, there is no Windows equivalent to the Apple Color Picker.

## Using the Swatches Palette

In addition to the Color Picker, xRes S.E. allows you to select colors with the Swatches Palette. The Swatches Palette may be used to store frequently accessed colors. Accessing specific colors using the Swatches Palette is often quicker than locating those colors in the Color Picker.

The Swatches Palette is accessed by the menu command **Window > Palettes > Swatches**.

The Swatches Palette contains swatches of specific colors. You can load and save different palettes of swatches; you can also add, delete, and edit the swatches in a palette.



### To Select a Color from the Swatches Palette

To pick a color from any one of these swatches, simply click it. The foreground color is replaced by the color of the swatch.

### To Set a Color in the Swatches Palette

To set the color of any swatch, select a color by using the Color Picker or sampling a color from the image. Then Shift-click that swatch. The current foreground color replaces the color of the swatch.

### To Add a Color in the Swatches Palette

Click in the Swatches Palette in the empty white space between the last color swatch and the end

of the palette to add a new swatch. This operation adds a swatch of the current foreground color to the Swatches Palette.

### To Delete a Swatch

To delete a swatch, Command-click (Ctrl-click in Windows) the swatch you wish to delete.

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*Note: You cannot undo deleting a swatch with the Edit > Undo command. To restore the deleted swatch, reload the Swatches Palette. See “To Load a Swatches Palette” below.*

### To Save a Swatches Palette

You can save and load custom Swatches Windows.

Changes made to a palette are not saved unless you save them to disk. To save a palette, choose “Save Palette” from the Swatches Palette submenu. A dialog appears prompting you for a name and location for the palette.

### To Load a Swatches Palette

To load a palette, use the Load Palette command from the Swatches Palette submenu. A dialog box allows you to choose a name and location for the palettes you load. Select the palette you wish to open and click Open.

---

*Note: xRes S.E. ships with several predefined swatches palettes. These palettes are located in the Swatches folder/directory in the xRes S.E. Resources folder/directory.*

## Sampling Colors

The third method of picking colors in xRes S.E. is with the Eyedropper Tool located on the Tools Palette. This Tool selects a color from the image and sets the foreground color based on this color. The process of selecting colors from the image using the Eyedropper Tool is called sampling colors.

## Using the Eyedropper Tool

To use the Eyedropper Tool, select it from the Tools Palette, and then click the document to sample the color. The current foreground color changes to reflect the sampled color. Alternatively, pressing Option (Alt in Windows) while using the Brush Tool or Gradient Tool turns the tool into an Eyedropper Tool.



## To Set Eyedropper Tool Options

Normally, the Eyedropper Tool samples the color that is directly underneath the cursor. However, it is possible to have xRes S.E. average out all of the pixels over a certain radius, in order to produce an average color. To set this radius, double-click the Eyedropper Tool, accessing the Eyedropper Options. Enter a radius from 1 to 32. A value of 1 samples only 1 pixel. A value of 32 samples pixels within a 32-pixel radius and averages these colors.

## Using the Info Inspector

The Info Inspector is used to numerically examine a sampled area. A sampled area may be 1 pixel if the eyedropper radius is set to 1, or many pixels if the eyedropper radius is set greater than 1.

A small window titled 'Info' with a close button in the top right corner. It displays numerical data for a sampled area.

R	0
G	0
B	255
C	98
M	53
Y	0
K	0
X	67
Y	136
ΔX	0
ΔY	0
Angle	0
Free Disk	681 M

Use the menu command Window > Inspectors > Info to make the Info Inspector visible. The Info Inspector displays:

- The R, G, and B values for the sampled area.
- The C, M, Y, and K values for the sampled area.
- The X and Y coordinates of the sampled area in pixels.

Dragging the Eyedropper Tool over the image displays different values in the Info Inspector. As you move the Eyedropper over the image, the values in the Info Inspector update automatically.

## Document Color Modes

Each image in xRes S.E. is in a certain Color Mode. xRes S.E. supports three Color Modes: RGB, Grayscale, and Indexed 256.

When you create a new image in xRes S.E., you specify the Color Mode of the document

When you open an existing document, that document opens in the Color Mode it was previously saved in. To change the Color Mode of a document, use the menu command **Modify > Color Mode**.

## Color Theory

In 1931, a French academic institute called Centre International de l'Eclairage (CIE) made a comprehensive study of which light sources could be perceived by humans, and how these light sources could be derived from three spectral distributions. They found that three specific color distributions outside of the visible gamut, combined with the light sources, produced every possible visible color. Rather than using all three colors, the institute normalized the results to two colors: Red and Green. The third dimension of measurement was the luminance, Y.

For a given luminance the CIE found that all visible colors fell into a horse-shoe pattern. This familiar horse-shoe diagram is now found in most textbooks on color.

The CIE study broke down all visible colors into a color space that defined the red and green illuminants that were used, with a white point as a benchmark for the luminosity. This important landmark in scientific color theory gave scientists an objective or device-independent framework to discuss color. Given the illuminants and a white point, it is possible to collapse the entire spectral profile into three numbers: the CIE coordinates. Those three numbers explained exactly how a human perceived that color.

The CIE experiments continued, even after the original CIE organization was disbanded. There was a CIExyz Model, a CIEXYZ color space, and later the CIELUV and CIELAB Models. All these models were just different transformations of the original model, with different standard illuminants and white points and with different coordinate transformations.

While the CIE Color Model works with scientifically defined red and green illuminants, of greater concern to most graphic designers is the RGB Model, which corresponds directly to the way computer monitors display color.

## Using the RGB Model

Every color in RGB is defined by three values: a red value, a green value, and a blue value. The computer interprets these values, displays a dot of color on the screen.

By convention, the values in RGB space are scaled between 0 and 255. The RGB Color Model is often visualized as a cube with black at the origin ( $R=0, G=0, B=0$ ) and white at the diametrically opposed corner ( $R=255, G=255, B=255$ ). Every color that your monitor can display is within the RGB color gamut.

The advantage of the RGB Color Model is that it directly corresponds to the way computer monitors display color. The disadvantage is that it is completely monitor-specific; e.g., the color  $R=128, G=55, B=23$  may appear differently on different monitors.

When you are outputting film for a transparency or transferring a file to a video application, you should work in the RGB Color Mode.

## Using Grayscale

Use the Grayscale Color Mode for a document that will be printed in the newspaper or other output device which is limited to grayscale. You can also use the Grayscale Color Mode to manage the file size; Grayscale documents are four times smaller than CMYK documents of the same image size and resolution.

Grayscale documents display only shades of gray. They cannot display any color information.

## Using Indexed 256 Color

Indexed 256 Color Mode provides you with a quick and accurate way to view images in Indexed 256 Color Mode for multimedia applications such as Macromedia Director. This mode has limited editability compared to RGB and CMYK.

In addition, you must convert an image to Indexed 256 Color before saving the file in the GIF format. See Chapter Two: Opening, Saving, and Importing Images for more information about the GIF format.

When you convert to Indexed 256 Color Mode from another color mode, the Indexed Color dialog appears, allowing you to select one of the following:

- **Adaptive:** Develops an Indexed Palette for the image based on the colors in the image.
- **Uniform 8-8-4:** Develops an Indexed Palette for the image based on eight shades of red, eight shades of green, and four shades of blue.
- **Uniform 6-6-6:** Develops an Indexed Palette for the image based on six shades of red, six shades of green, and six shades of blue.
- **Custom:** Uses the current Swatches Palette to generate an Indexed Palette

Because Indexed 256 Color uses only 256 colors, the color commands, filters, and brushes work differently than the other color modes:

- The Invert, Brightness/Contrast, Hue/Saturation and Balance color commands affect the indexed palette, not the actual pixels. The result of these filters will be different than if you are working in the other color modes. In addition, these commands work on the entire document, even if only one object is active.
- Filters located under the Effects menu are not available in Indexed 256 Mode. The Curves, Levels, Equalize, and Selective Color commands are also not available in Indexed 256 Mode.
- The Blend Mode of an object can only be Normal. The object opacity acts as a threshold value for the object. Pixels above this Brightness value are visible; other pixels are invisible.



- Limited brushes are available in Indexed 256 Mode. The brushes may be hard-edged brushes of any shape. The brushes may have a Texture value; this texture will reflect the current texture chosen in the Textures Palette.

---

*Note: Macromedia recommends that you do not switch color modes between RGB and Indexed 256 frequently because the image will become dithered.*

## Using a Custom Indexed 256 Palette

xRes S.E. allows you to define your own palette to use in the Indexed 216 Mode, to load and save these palettes for different jobs, and to define a transparency color and a matte color.

To create a custom Indexed 256 Palette, access Modify > Color > Color Index Table while in the Indexed 256 Color Mode. This dialog also appears when you convert to Indexed 256 and choose Custom.

The Color Index dialog displays the 256 swatches used to define the palette. It also displays Red, Green, and Blue sliders that allow you to change the color of each swatch.

The Color Index dialog contains buttons that allow you to set the void and matte colors.

### To Set a Color in the Indexed 256 Color Table

To set a color, click on one of the swatches. Then set the color in one of these two ways:

- Adjust the Red, Green, and Blue sliders in the Indexed 256 Color Table.
- Drag the cursor over the image until the color you want to use is below the cursor. Click the mouse to drop the color into the selected swatch in the Color Index Table.

### To Load and Save Different Tables

The Load and Save buttons on the right side of the Color Index dialog are used to load and save custom tables. To load or save a dialog, click the Load or Save button.

### To Set the Void and Matte Colors

The Void Color refers to the compositing color used while using the Indexed 256 Color Table. To set the Void Color, select the desired color, and click the Set Void Color button.

For example, if you are creating an image to place on a web page, you set the Void color to a neutral gray. This allows you to see what the image would look like composited on a neutral gray color.

The Matte Color refers to a color that is transparent when the image is composited. Common matte colors are black and white. To set the Matte Color, select the color you wish to be transparent, and click on the Set Matte Color

button. To clear the Matte color, click the Clear Matte Color button.

For example, if you have a portrait image with a white background and choose white to be the transparency color, then areas in the image that were white will now be transparent.

### **Loading Indexed Tables as Swatches**

You may load the colors used in the Color Index Table as swatches to be stored in the Swatches Palette. To do this, convert to Indexed Color, and access the Swatches Palette (Window > Palettes > Swatches). Choose Load Color Index Table from the Swatches submenu.





## Chapter Six

# 6

## Chapter Six Fills

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### Overview

This chapter discusses the nature and uses of fills. Topics include:

- Essential Terms
- Solid Fills
- Gradient Fills

## Essential Terms

### Fill

To fill is to apply a color or colors to an entire document or selection. There are three ways to create a fill in xRes S.E.:

- The Fill command
- The Bucket Tool
- The Gradient Tool

Fills created with the Fill command or the Bucket Tool use only the selected (foreground or background) color to complete the fill.

### Gradients

Gradient fills differ from normal fills in that they can contain multiple colors, multiple shades of opacity, and textures. For example, a gradient fill could be rainbow-colored, of varying opacity, shaped like a cone, one of a metallic texture.

### Solid Fills

There are two ways to create solid fills in xRes S.E.:

- The Fill command
- The Bucket Tool

## Fill Command

The Fill command is used to fill a selected area or active object with one color (the foreground or background color). The Fill command also allows you to set the opacity for the fill.

### To Use the Fill Command

- 1 Activate all objects you wish to fill. The Fill command affects all active objects. If a selection is present within an object, the command affects only the selection.



- 2 Access the Fill command by one of two ways:
  - Use the menu command Edit > Fill.
  - Click the Fill Icon on the Toolbar.
- 3 Set the opacity from 1 to 100 in the Fill dialog. A value of 100 makes the fill fully opaque.
- 4 Select the foreground or background from the Colors menu.
- 5 Click OK. The area is filled with the specified color at the specified opacity.

---

*Note: You can use keyboard shortcuts to fill an area with the foreground or background color at full opacity. Press Delete to fill an area with the background color. Press Option-Delete (Alt-Delete in Windows) to fill an area with the foreground color. These keyboard shortcuts only work if no paths are present in the document.*

## To Use the Bucket Tool

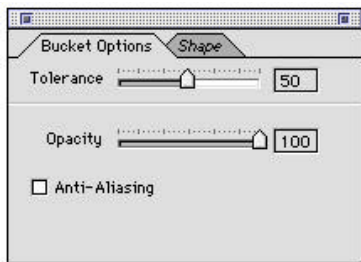
The Bucket Tool is used to fill contiguous areas of color that are similar in value. Instead of using the Bucket Tool you can use the Magic Wand Tool to select an area, then fill the area with the Fill command. The Bucket Tool is simply a convenient shortcut for the Fill command. The Bucket Tool Options (accessed by double-clicking the Bucket Tool) allow you to specify the tolerance and opacity for the fill, and whether or not the fill is anti-aliased.



- 1 Select the Bucket Tool on the Tools Palette.
- 2 Click a pixel in the area you wish to fill. The area filled depends on the tolerance of the Bucket Tool and the color value of the pixels adjacent to the pixel you clicked.

## Options for the Bucket Tool

Bucket Tool Options include Tolerance, Opacity, and Anti-aliasing.



- 1 Access the Bucket Tool Options by double-clicking the Bucket Tool on the Tools Palette.
- 2 Check the Anti-Aliasing preference if you want the fill to be anti-aliased. Anti-aliasing produces smooth fills. Unchecking this preference produces fills with hard edges.
- 3 Set the Tolerance for the Bucket Tool from 1 to 100. Lower tolerances will have the Bucket Tool fill areas very similar to the color value of the pixel you click; higher tolerances will have the Bucket Tool fill a broader color range based on the color value of the pixel you clicked.
- 4 Select an Opacity for the bucket from 1 to 100: 100 is fully opaque, 1 is almost transparent.

## Gradient Fills

The Gradient Tool is used to create fills with:

- Different colors.
- Different opacity values.
- Different blending modes.
- Different shapes, such as line or ellipse.
- Special effect gradients, such as a Satin pattern.

The Gradient Tool can also be used to save and load customized fills.



Advanced techniques can be applied with the Gradient Tool. For example, you can make one edge of an object opaque, the opposite edge transparent, and the area in between varying shades of opacity. The Gradient Tool Options (accessed by double-clicking the Gradient Tool) can also be used to add borders to documents or to colorize an image.

## Gradient Shapes

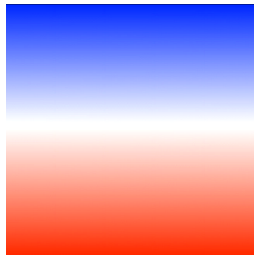
The shape menu (at the bottom left of the Gradient Tool Options) contains practical shapes such as Line and Rectangle, and special effect shapes such as Satin and Folds.

With all Gradient Fill shapes, the inside or left side of the shape is filled with the left end of the color ramp, the outside or right side of the shape is filled with the right end of the color ramp, and the opacity ramp (below the color ramp) controls the opacity of the colors.

The gradient shapes are:

### Line

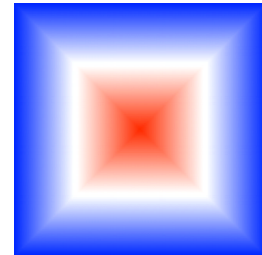
After selecting Line from the shape menu, drag out a line with the Gradient Tool to define the gradient placement. The beginning of the line displays the left side of the gradient color ramp; the end of the line displays the right side of the gradient color ramp.



If the dragged line does not cover the full image area, the ends of the gradient will overlap to cover the entire area.

### Rectangle

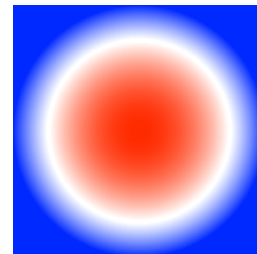
After choosing Rectangle from the shape menu, you can drag out a rectangle to define the gradient area. The gradient colors will translate into the rectangle as follows:



- The left side of the gradient color ramp will be displayed at the center of the rectangle.
- The right side of the gradient color ramp will be displayed at the edge of the rectangle.

### Ellipse

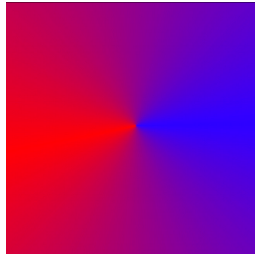
The Ellipse works in the same manner as the Rectangle. With the Gradient Tool selected, drag out an ellipse and release. xRes S.E. will fill the ellipse with the colors from the gradient ramp.



The Ellipse can be constrained to a circle by holding the Shift key as it is drawn, or the Ellipse can be drawn from its center by holding the Option key as it is drawn. If you hold both the Shift and Option keys, the Ellipse is constrained to a circle drawn from the center of the image.

## Cone

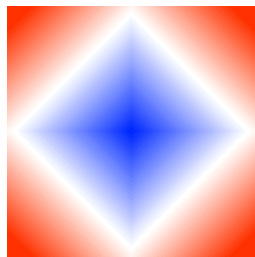
A Cone gradient is a gradient in which the colors change depending on the angle from a specified center. For a good Cone gradient, it is important that the starting (left) and ending (right) colors on the gradient color ramp are identical so there is no obvious break in the gradient.



To apply a Cone gradient with the Gradient Tool, click a pixel to specify a center for the Cone. The Cone will start to the immediate right of the selected pixel. To be precise, if you consider the top of your image to be 12 o'clock, the Cone gradient will start building the Cone at 3 o'clock, and continue clockwise. The gradient color ramp and gradient opacity ramp are always applied left to right.

## Diamond

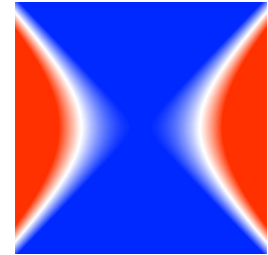
The Diamond shape produces a Diamond-shaped gradient with a diameter equal in length to the line drawn with the Gradient Tool. The inside of the Diamond contains the colors on the left side of the gradient color ramp, and the outside of the Diamond contains the colors on the right side



of the gradient color ramp. Likewise, the opacity of these colors is determined left to right on the gradient opacity ramp.

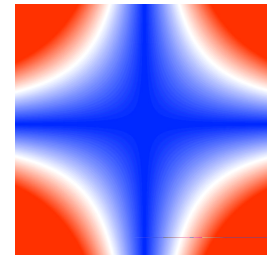
## Hyperbola

The Hyperbola shape produces an interesting curve effect. The size and direction of a line drawn with the Gradient Tool determines the shape of the Hyperbola.



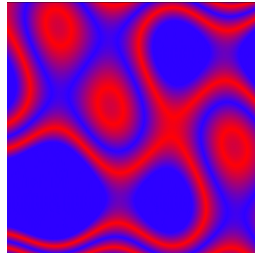
## Pinch

To understand how pinch works, think of a rectangle. Then, pinch all four corners into the center. The inside of this pinched shape is represented by the left most color in the gradient color ramp; the outside of the pinched shape contains the colors on the right side of the gradient color ramp. The line drawn with the Gradient Tool on the document determines the size of the pinched shape.



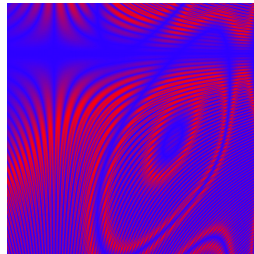
## Satin

Satin produces a soft, billowy effect, which is used primarily for special effects. Using Satin is a very interesting way to add texture to an existing picture. Apply the gradient at 50% opacity with the Blending Mode set to “Add” or “Blend” to add texture to an existing document.



## Folds

This produces geometric patterns. The length of the line drawn with the Gradient Tool determines the shape of the folds. Experiment with the tool to learn how to use it.



## Gradient Techniques

The Gradient Tool Options can be used to create custom gradient fills. It can also be used in combination with other operations for more advanced imaging techniques, such as:

- Colorizing images.
- Cross-fade effects.

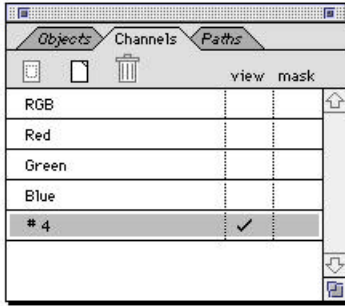
- Gradient borders.
- Special effect backgrounds.

## Creating Cross-fade Effects

By applying gradients to the mask channel of objects, you can create cross-fade effects.

### To Create a Cross-fade Effect

- 1 Double-click the Gradient Tool to access the Gradient Tool Options.
- 2 Select White > Black from the preset menu, located in the top left corner of the Gradient Tool Options.
- 3 Activate the desired object. To make an object active, click on it in the Objects Window.
- 4 Access the Channels window for the active object (Window > Channels). Click on the New Icon at the top of the Channels window to add a new channel; this channel will be the mask channel of the object, and will be used to create a transparency mask. Click the mask checkbox for the new channel, and click the view checkbox for the composite channel.



- 5 Select a shape for the cross-fade from the Shape Menu. For example, a Line creates the effect of the object fading from opaque to transparent, from one side to another; an Ellipse creates the effect of the object being opaque in the middle and transparent at the edges.
- 6 Apply the gradient by clicking, dragging, and releasing the gradient tool on the object (as per the selected gradient shape). The gradient is applied to the mask channel of the object, and it affects only the transparency, not the colors, of the object.

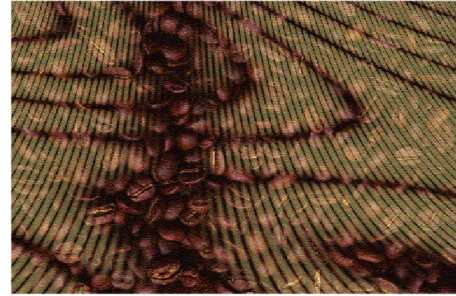
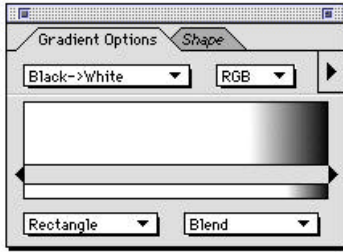
If the result is the exact reverse of what was desired—for example, the wrong edge of the object is opaque—access the menu command **Modify > Color > Invert** to reverse the effect.



## Creating Borders with the Gradient Tool Options

Using the gradient opacity ramp, it is easy to affect only the border of an image with the gradient fill. To create a border, select the Preset, Color Mode, and Blending Mode from the Gradient Tool Options submenu. Set the shape to “Rectangle” or “Ellipse.” Edit the gradient opacity ramp so that only a small portion on the right-hand side is white (opaque), and the rest is black (transparent).

To create a border with a gradual edge, create a gradual transition from black to white in the gradient opacity ramp. To create a border with a sharp edge, create an abrupt transition from black to white on the gradient opacity ramp. Only the areas in the gradient color ramp directly above the white areas of the gradient opacity ramp will be visible. These colors will form the border of the selected shape (Rectangle or Ellipse).



## Creating Special Effect Backgrounds with Gradients

To create special effect backgrounds, set Blending Mode to “Blend.” Set the Shape to “Satin” or “Folds.” Apply the gradient. An abstract gradient will appear on the image.

If you are not pleased with the results, use the menu command **Edit > Undo**, then apply the gradient again, dragging the line in a different direction or to a different length. Experiment until you are satisfied.

## Preset Gradients Menu

xRes S.E. comes with several preset gradients that can be accessed by the Preset Menu. The colors, transparency, Color Mode, Blending Mode, and shape of the gradients is already determined for preset gradients.

The preset gradients are located in the upper left corner of the Gradients Options (accessed by double-clicking on the Gradient Tool). The preset gradients are:

### Black > White

Use this gradient for converting color pictures to gray values with the **Colorize** command while still remaining in RGB Mode or CMYK Mode. You can also use this gradient in the mask channel of an object to create cross-fade effects.

### Cafe au Lait

This gradient is similar to sepia tone seen on old black and white photographs. Use it as a starting point for colorizing black and white pictures.

## Sunrise

A strictly opaque gradient from yellow to orange, this choice is very useful for creating sunrise effects.

## Rainbow

This gradient contains the colors red, orange, yellow, green, light blue, and dark blue. Each color proceeds from totally opaque to totally transparent.

## Red Light

This cone-shaped gradient produces a nice lighting effect, which looks like a sun ray. Because this gradient is mostly transparent, it will not affect most of the underlying picture.

## Applying a P reset Gradient

To apply a preset gradient, follow these steps:

- 1 Double-click the Gradient Tool on the Tools Palette to access the Gradient Tool Options.
- 2 Select a preset gradient from the preset menu in the upper left corner of the Palette.
- 3 Select the Color Mode for the gradient from the menu in the upper right corner of the Palette. To apply the gradient in the RGB color space, choose RGB. To apply the gradient in the CMYK color space, choose CMYK.
- 4 Select a shape for the gradient from the menu in the bottom left corner of the Gradient Tool Options.

- 5 Select a Blending Mode for the gradient from the menu in the bottom right corner of the Palette. The Blending Modes for gradients are the same as Blending Modes used for objects.
- 6 Click, drag and release to apply the gradient (as per its shape).

## Saving, Naming, and Deleting P reset Gradients

You can save gradients for the current session only, or you can save them permanently. You can also rename or delete existing gradients.

### Permanently Saving Changes to a P reset Gradient

To permanently save changes to a preset gradient, use the “Save To File” command on the Gradient Tool Options submenu.

### Saving a P reset Gradient

To save a preset gradient, access the Save command in the Gradient Tool Options submenu. Any changes you have made to the preset gradient are saved only for the current session.

### Saving Edited P reset Gradients

To save an edited preset gradient, access the “Save to File” command in the Gradient Tool Options submenu. A dialog confirms that you

wish to save your changes permanently to disk. Use this command to save new presets, name changes, or deletions permanently to disk.

## Renaming a P reset Gradient

To rename a preset gradient, access the Name command from the Gradient Tool Options submenu. A dialog allows you to enter a new name for the gradient; this name change applies only to the current session.

## Adding a P reset Gradient

To add a preset gradient, access the “Add” command from the Gradient Tool Options submenu. A dialog allows you to enter a name for the new gradient.

## Deleting a P reset Gradient

To delete a preset gradient, access the “Delete” command from the Gradient Tool Options submenu to delete the current gradient.

## Gradient Tool Options

The Gradient Tool Options (accessed by double-clicking the Gradient Tool) contains options for the Gradient Tool. They include:

- Shape.
- Color Mode.
- Blending Mode.
- Preset Color.
- Color Ramp and Opacity Ramp (with range sliders).
- Submenu commands.

### Shape Menu

This menu is located in the bottom left corner of the Gradient Tool Options. The shape of the gradient is selected with this menu.

### Color Mode

This menu is located in the upper right corner of the Gradient Tool Options. The Color Mode (RGB or CMYK) is selected with this menu.

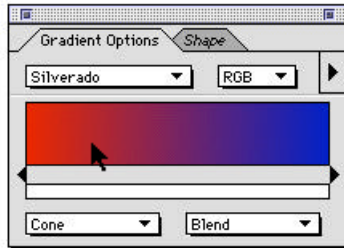
### Blending Mode

This menu is located in the bottom right corner of the Gradient Tool Options. The Blending Mode is selected with this menu. The Blending Mode determines how the color values of the gradient will react with the target object.



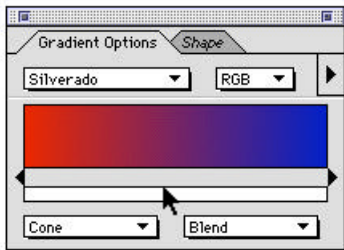
## Preset Gradients

This menu is located in the upper left corner of the Gradient Tool Options. The preset gradient (colors and opacities) is selected with this menu.



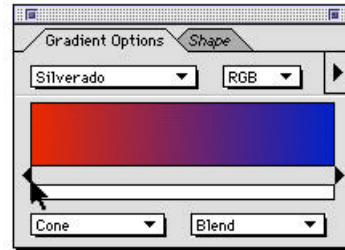
## Color Ramp

This ramp allows you to enter the colors to use in the gradient. The gradient color ramp can be controlled with the range sliders, described below under “Range Sliders.”



## Opacity Ramp

This ramp, located directly below the color ramp, allows you to enter the opacity level for different sections of the gradient. How opacities are dropped into the gradient opacity ramp is controlled by the range sliders, as described below under “Range Sliders.”



## Range Sliders

The two triangles below the gradient color ramp and above the gradient opacity ramp are called range sliders. They are used to limit the area that will be affected by colors dropped into the gradient color ramp and by levels of opacity (white to black in color) dropped into the gradient opacity ramp.

## Submenu Commands

To access the Gradient Tool Options submenu, click the arrow in the top right corner of the Gradient Tool Options. With this menu you can save your own gradients or change the name of existing gradients.

## Creating New Gradients

You are not limited to the preset gradient fills that come with xRes S.E.; you can create new, custom gradients to suit your needs.

### To Create a New Gradient

- 1 Access the Gradient Tool Options by double-clicking on the Gradient Tool.



- 2 Select “Add” from the Gradient Tool Options submenu. A dialog appears allowing you to enter a new name for the gradient. After entering the name, click OK.
- 3 Examine the gradient color ramp in the Gradient Tool Options. The gradient color ramp is used to enter colors for use in the gradient fill. Move the range sliders underneath the gradient color ramp to determine where you want to drop the color in the gradient fill. The range sliders limit the area of the gradient color ramp (or the gradient opacity ramp beneath it) affected when you drop colors.
- 4 Select the color you wish to drop into the gradient color ramp by one of these methods:
  - Selecting a color from the Color Picker.
  - Selecting a color from the Swatches Palette.
  - Sampling a color with the Eyedropper Tool.See Chapter Five: Colors for more information on selecting colors.
- 5 Drop the selected color into the gradient color ramp.

To drop a color, drag the mouse over the gradient color ramp. Click on the area where you wish to drop the color. If you do not release the mouse, you can experiment with dropping the color in different locations. Release the mouse button to confirm the drop, which is limited by the range sliders.
- 6 Reposition the range sliders to a new location, select a new color, and drop the new color into the gradient color ramp. Continue

repositioning the range sliders and dropping colors until you have completed the gradient.

- 7 Examine the small ramp below the gradient color ramp; this is called the gradient opacity ramp. The gradient opacity ramp controls the opacity of the gradient.

If desired, drop white, black, or gray colors into the gradient opacity ramp. Dropping white into the gradient opacity ramp produces a fully opaque gradient. Dropping black in the gradient opacity ramp produces a transparent gradient. Dropping shades of gray in the gradient opacity ramp produces translucent gradients.

The range sliders limit the area of the gradient opacity ramp affected by the drop.

- 9 Select a Color Mode, Blending Mode, and shape for the gradient fill.
- 10 Select “Save to File” from the Gradient Tool Options submenu. A dialog appears, confirming that you wish to save the new gradient fill to disk. Click OK.



## **Chapter Seven**

# 7

## Chapter Seven Masks and Channels

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### Overview

This chapter addresses how to use masks and channels to edit an image. Topics include:

- Essential Terms
- Masks
- Channels

## Essential Terms

### Mask

The term “mask” is an old one. In the eighteenth century, painters used masks to protect selections of their paintings from unwanted paint. The mask might have been a paper cutout, a layer of wax, or other material which could protect a section of the painting from paint and could be easily repositioned or removed.

In traditional photography a mask is used to protect sections of the photographic paper from burning, dodging, and other photographic effects.

In xRes S.E., a mask is created with selection tools and is displayed on the monitor with a flashing dotted line called a marquee. The area within the marquee can be affected by paint brushes and special effects. The area outside the marquee is protected from such effects.

An important difference between a mask in traditional painting or photography and a mask in xRes S.E. is that the mask in xRes S.E. allows you to mask and apply various effects to just one object of a multi-object image.

### Channel

Channels are used to store the color information in a document. For example, the channels in an RGB document are the Red, Green, and Blue channels.

Channels that are not primary channels (Red, Green, or Blue in RGB) are called alpha channels. Alpha channels are used to store selections and to mask out parts of objects. In most cases, alpha channels are not viewable. Alpha channels can be specified as mask channels. Mask channels mask out areas of the object.

For example, you can select an airplane from an image of an airplane in a cloudy sky and store this airplane selection in an alpha channel. By specifying that channel as a mask channel, only the plane, and not the sky behind it, would be visible. You could then drag the airplane object onto a clear sky (for example) and reposition it as desired in the compositing process.

The ability to store selections in channels and specify these channels as mask channels is one of the unique features of xRes S.E..

## Masks

### Using Masks in xRes S.E .

In xRes S.E., masks are created using any of the selection tools or techniques, including the marquee tools (Rectangle and Ellipse), the Lasso Tool, the Wand Tool, and the Mask Palette.

The boundary of a selection is called a marquee; the marquee is shown on the screen as a flashing dotted outline.

Only the area inside the marquee will be affected by image-editing operations, such as applying filters, filling, or painting. The area outside of the selection is protected, or masked, from these operations.

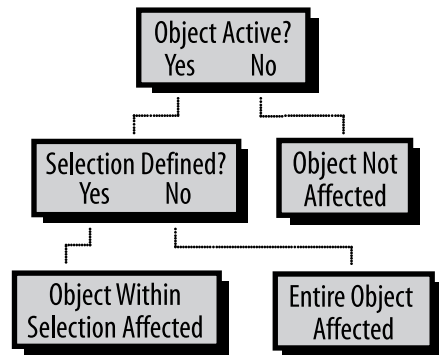
## Using Selections in xRes S.E.

In xRes S.E., selections are applied to objects, not to entire documents. Only one object can be affected by a selection. If objects are overlapping, only one of them is affected by a given selection.

When a filter, paint, clone, eraser, fill, or gradient operation is performed in xRes S.E., it is performed to all active objects. If there is no selection inside of the object, the operation affects the entire object. If a selection is available, the operation affects only the area within the selection.



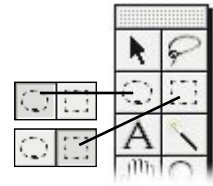
*Middle head is selected.*



When a filter, paint, clone, eraser, fill, or gradient operation is performed in xRes S.E., follow the above flow chart to determine which areas of the image will be affected.

## Marquee Tools (Rectangle and Ellipse)

The two basic selection tools in xRes S.E. are the Rectangle Tool and the Ellipse Tool. These tools simply create rectangular or elliptical selections, which are designated by a flashing marquee.



## To Use the Marquee Tools

To use either of the marquee tools:

- 1 Select the Rectangle Tool or Ellipse Tool from the Toolbar.
- 2 Click on the document to anchor the Rectangle or Ellipse marquee.
- 3 Drag the mouse diagonally to create the rectangle or ellipse-shaped selection.

When you drag the mouse, you can view the Delta X and Delta Y numbers in the Info Inspector (accessed by the menu command Window > Inspectors > Info).

The Delta X value refers to the difference on the X axis between where the cursor was first clicked and where the cursor is now. The Delta Y value refers to the difference on the Y axis between where the cursor was first clicked and where the cursor is now. When the Delta X and Delta Y values are equal, you have drawn a square with the Rectangle Tool, or a circle with the Ellipse Tool. By reading the Info Inspector as you drag, you can view the exact size, in pixels, of the marquee.



If you make a mistake with either of these tools, simply redraw the selection; the new selection will replace the old selection. When you redraw the selection, start outside the previous selection; otherwise, you will float the prior selection.

## To Constrain the Marquee Tools

To constrain the Rectangle Tool to a square, or the Ellipse Tool to a circle, hold down the Shift key as you drag out the shape.

## To Draw from the Center

By default, the Rectangle and Ellipse Tools are drawn out from a corner, or side, of the shape. To draw the shapes out from the center, hold down the Option (Alt in Windows) key as you drag out the shape.

## To Set Rectangle Tool Options and Ellipse Tool Options

- 1 Double-click the Rectangle Tool or Ellipse Tool to access the appropriate Tool Options.
- 2 Select a method for dragging out the marquee from the method menu. Choices include Freehand, Constrained Aspect Ratio, and Fixed Size. Freehand allows you to drag out a marquee of any size.

The Constrained Aspect Ratio option constrains the marquee to a certain width and height ratio. For example, by setting width to 1 and height to 1, you constrain the marquee to a perfect circle or square. By setting width to 3 and height to 1, you drag out a rectangle or ellipse three times as wide as it is high.

The Fixed Size option allows you to specify a size for the marquee, measured in pixels.

- 3 Enter the variables for your selection:
  - If you choose the Freehand option, all

other choices are disabled; there are no variables to set.

- If you choose the Constrained Aspect Ratio option, enter positive integers for the height and width variables.
- If you choose Fixed Size option, enter positive integers for the height and width variables. The Fixed Size is always entered in pixels.

Any marquee that you drag out on the document will be constrained to the proportion, or fixed size, that you specify.

### To Convert Fixed Size from Pixels to Inches or Centimeters

The marquee tool options (accessed by double-clicking on the appropriate marquee tool) allow you to enter a size for the marquee in pixels. However, there may be times when you want to measure a selection in inches or centimeters. To do so, follow these steps:

- 1 Determine the resolution of the image by examining the Resize Document dialog (accessed by the menu command **Modify > Resize > Document**). Examine the resolution, and click **Cancel**.
- 2 Multiply the resolution (either pixels per inch or pixels per centimeter) by the number of inches or centimeters desired. For example, imagine that you are trying to create a selection that is 1" high by 2" wide, and the resolution of the document is 100 ppi. Enter 100 pixels for the height, because  $100 \text{ ppi} \times 1" = 100 \text{ pixels}$ , and enter 200 pixels for the width, because  $200 \text{ ppi} \times 2" = 200 \text{ pixels}$ .

## Using the Lasso Tool

The Lasso Tool is used to create a freeform outline.

### To Use the Lasso Tool

- 1 Click on the Lasso Tool in the Tools Palette.
- 2 Click and drag the cursor around the desired selection.
- 3 When you release the cursor, xRes S.E. closes the loop and creates a selection around the traced area.



### To Create a Polygonal Selection with the Lasso Tool

The Lasso Tool can also be used to draw straight line segments. To create straight line segments, hold down the Option (Alt in Windows) key and click down on a point. Release the mouse and click a new point. xRes S.E. will connect the two points with a line segment.

You can create a mixed straight line and freehand selection by holding down the Option (Alt in Windows) key at any time to create straight



lines. This method is appropriate for lassoing selections without straight lines or easily defined borders.

## Using the Magic Wand Tool

The Magic Wand Tool is used to create selections based on pixels similar in color value such as those for a blue sky.

### To Use the Magic Wand Tool

- 1 Click the Magic Wand Tool on the Tools Palette.
- 2 Click a pixel on the document where you want to create the selection. A selection is created based on the color values of the neighboring pixels.
- 3 Enter an opacity for the Magic Wand Tool from 1 to 100. The opacity of the Magic Wand Tool determines the strength of any effects that are applied to the selection. If the opacity is 100%, the effects apply at full strength. If the opacity is 50%, the effects apply at half strength.
- 4 If the selection is too small, increase the Magic Wand's tolerance and create a new selection. The tolerance can be set in the Magic Wand Tool Options, described below. If the selection is too large, decrease the Magic Wand tolerance and create a new selection.



## To Set Magic Wand Tool Options

Magic Wand Tool Options allow you to control the tolerance of the Magic Wand Tool and control whether or not the selection is anti-aliased.

- 1 Double-click the Magic Wand Tool on the Tools Palette.
- 2 Enter a tolerance for the Magic Wand between 0 and 255. Low tolerances create selections based on a narrow range of colors. High tolerances create selections based on a broad range of colors.
- 3 Check the Anti-Aliasing preference if you want the selection to be anti-aliased. Anti-aliasing produces smooth selections, while non anti-aliasing produces more jagged selections.

## Common Selection Commands

A few common selection commands can simplify the selection process. These are discussed below.

### To Select the Entire Image



Use the menu command **Select > All** to select the entire image, including portions that extend beyond the visible window. An alternative is to click the **Select All Icon** on the Toolbar.

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*Note: The Magic Wand Tool does not work in xRes Mode.*

### To Discard a Selection



Use the menu command **Select > None** to discard the current selection. An alternative is to click the **Select None** Icon on the Toolbar.

### To Invert a Selection



Use the menu command **Select > Inverse** to invert the current selection. Alternatively, click the **Select Invert** Icon on the Toolbar. Inverting the selection switches the mask and the previously selected area.

### To Add to a Selection

To add to a selection, hold down the **Shift** key while using any of the marquee tools.

### To Subtract from a Selection

To subtract from the current selection, hold down the **Command** (**Ctrl** in Windows) key while using any of the marquee tools.

### To Toggle the Visibility of a Selection Outline

To toggle the visibility of a selection, use the menu command **View > Selection**. If “**Marquee**” is checked in the menu, the selection outline is visible. If “**Marquee**” is unchecked in the menu, the selection outline is invisible; however, it still acts as a mask for the image.

## Storing and Loading Selections

Storing and Loading selections allows you to keep multiple selections in the document while displaying them one at a time on the screen.

### To Store a Selection

Use the menu command **Select > Store** to save a selection to a channel. A pull-down menu will allow you to select a channel or to create a new channel.

Storing a selection in a channel ensures that it can be used after it is discarded on the screen.

### To Load a Channel as a Selection

Any channel can be loaded back into the selection mask using the menu command **Select > Load**.

To load a selection, use the menu command **Select > Load** and select the channel you wish to load from the drop-down menu. The loaded selection replaces the current selection. Use the **Shift** key to add the loaded selection to the selection on screen. Use the **Command** (**Ctrl** in Windows) key to subtract the loaded selection from the selection on screen.

When you save a selection to a channel, **xRes S.E.** does not discard the selection, so you will still see that selection on the screen. If you want to delete the selection, use the menu command **Select > None**.

## Creating a Soft-Edged Selection

One of the most useful techniques in photo-retouching is creating selections that have soft edges. Soft edge selections can be used to apply a gradual effect to a document. For example, applying a filter to a soft-edged selection applies that filter 100% to some areas, 50% to others, and 0% to other areas. If an affected area is near the edge of the selection, the effect is applied anywhere between 1% and 100%.

Another use of soft-edged selections is to create an object that is opaque in the center but then fades to transparent at the edges. This effect is created by first making a soft-edged selection and then floating this selection. See Chapter Three: Objects, for more information on floating and object.

The process of creating a soft-edged selection is called feathering. To feather a selection in xRes S.E., use the menu command Select > Feather. A feathering value can be entered from 1 to 128. A value of 128 provides the most soft-edged selection; a value 1 provides the most hard-edged selection.

## Floating a Selection

Selections can be floated with the menu command Select > Float. In addition, clicking inside a selection immediately after creating it with the Rectangle, Ellipse, or Lasso Tools floats the selection.

When you float a selection, the selection is discarded and a distinct floating object is created

above the document based on the area inside of the selection. A feathered selection produces an object with edges that fade from opaque to transparent. A non-feathered selection produces an object with crisp edges.

An object that is created with the menu command Select > Float can be manipulated like any other object.

When you create an object by floating a selection, the selection outline is stored in the first available alpha channel of the object and acts as a mask for the object.

## Dropping a Selection

It is often useful to copy a selection from one object to another. You can copy selections to transfer the same selection to several objects. To copy a selection from one object to another, you must drop that selection from the source object to the target object.

### To Drop a Selection

- 1 The selection that you wish to drop is said to be *on* the source object. Move the selection on top of the object you want to drop the selection onto; this object is called the *target object*. Note that if more than one object is below the source object, the topmost of these objects will be the target object.
- 2 Use the menu command Select > Drop Selection. The selection from the source object is copied onto the target object.

In this example, the selection from the Friends text object was dropped onto the underlying object of the boys. The text object was then deleted. A filter effect applied to the boys object was constrained to the resulting selection.



*Selection from object*



*Dropped selection*



*Levels applied to selected area*

## Using FastMask Mode

One of the most useful features of high-end image editors is the ability to paint in a mask to create a selection. In xRes S.E., this is accomplished by the FastMask Mode. Painting in a mask with the paint tools allows more flexibility than using the other selection tools, such as the Magic Wand Tool.

### To Enter FastMask Mode

You can toggle between Normal Mode (where the selection appears as a flashing marquee) and FastMask Mode by clicking the two icons at the bottom of the Tools Palette:



*Normal Mode*



*FastMask Mode*

While in Normal Mode, masks are represented by selections. The area that is not in the selection is the area of the mask.

While in FastMask Mode, the mask is represented by a 50% red area. You can change the color and opacity of this mask to suit your image and personal preferences.

### To Create a Mask in FastMask Mode

When painting in FastMask Mode, use the colors black and white to paint in the mask. White paints in the mask, black erases the mask, and shades of gray paint in the mask with varying opacities.

Follow these steps to create a mask in FastMask Mode:

- 1 Click the FastMask Mode Icon at the bottom of the Tools Palette.
- 2 Use the Brushes Palette with the menu command Window > Palettes > Brushes, and select a “Hard” or “Soft” brush. Select a variant from the Variant menu.
- 3 Click the microswatches on the Toolbar to reset the foreground and background colors to black and white.
- 4 Use the Mask Palette with the menu command Window > Masks. Seven swatches are lined in a row across the palette. Below these seven swatches are seven smaller checkboxes. Make sure all checkboxes are unchecked (blank).
- 5 Paint with black to paint in the mask, displayed as a red overlay. Paint with white to paint out the mask, which removes the red

overlay. You can also paint with shades of gray; the darker the gray, the closer it is to painting in the mask.

- 6 To return to Normal Mode, click the Normal Mode Icon at the bottom of the Tools Palette. The selection is now defined as the area outside the mask.

### To Change the Mask Color

By default, FastMask Mode displays the mask as a 50% opaque red mask. The mask color can be changed by dropping a new color into the Mask Palette.

- 1 Choose a color from the Color Picker by using the menu command `Window > Palettes > Picker`. An alternative is to choose a color from the Swatches Palette, which is used by the menu command `Window > Palettes > Swatches`.

For information on picking colors from the Color Picker or Swatches Palette, see Chapter Five: Colors.

- 2 Use the Mask Window with the menu command `Window > Mask`.
- 3 Drop this color into the color swatch in the bottom left corner of the Mask Palette.

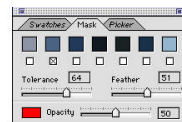
### To Change the Mask Opacity

The opacity of the mask can be set between 0 and 100. An opacity of 0 is transparent. An opacity of 100 is opaque. An opacity between

1 and 100 is translucent. To change the opacity of the mask, change the opacity slider in the Mask Palette.

## Mask Window

The Mask Window is used for advanced masking options. It is used to mask out areas based on the color values of the pixels. For example, you could choose to mask out both the blue and yellow in a sky. The advantage of the Mask Window over a tool like the Magic Wand is that up to seven colors can be used in the Mask Window to determine the area mask. In addition, you can specify that the mask affects the entire document and not just an area of similarly-colored pixels.





## Using the Mask Window

The Mask Window is accessed by the menu command **Window > Mask**. It contains the following elements:

- **Seven Swatches:** These determine the colors that will be used to create the mask.
- **Seven Microswatches:** These microswatches are located below the main swatches and are used to toggle the swatches on and off.
- **Tolerance Slider:** This is used to control the tolerance range for the mask colors.
- **Feather Slider:** This is used to control the feather range for the mask.
- **Color Swatch:** This is located in the bottom left corner of the Mask Window and is used to set the color of the mask.
- **Opacity Slider:** This determines the opacity of the mask.

## To Use the Mask Palette

- 1 Use the Mask Window with the menu command **Window > Mask**.
- 2 Enter FastMask Mode by clicking on the FastMask Icon on the Tools Palette.
- 3 Drop the colors you wish to use for the mask in the swatches. To drop a color, click the swatch. As you enter a color, an “X” appears in the microswatch below the swatch. The “X” turns the swatch on and indicates that it will be used in the masking process.

Before entering a color in the Mask Window, you might want to sample that color from the document in the area that you wish to mask. To sample a color, press **Option (Alt in Windows)** which turns the cursor into an Eyedropper Tool and click the document. The current foreground color now indicates the sampled color.

Sample as many colors as needed to drop colors in the Mask Window. You can enter up to seven colors in the Mask Window.

- 4 Adjust the tolerance and feather values in the Mask Window.

The tolerance value controls how close the masked colors are to the colors in the Mask Window. A smaller tolerance indicates a narrower range of colors; a larger tolerance indicates a broader range of colors.

The feather determines how anti-aliased the mask is. A more feathered mask has less abrupt edges. See “Creating a Soft-Edged Selection” in this chapter to learn more about feathering.

- 5 Now there are two options: masking the image globally or masking the image locally. A global mask masks out all active objects based on the colors in the Mask Window. A local mask masks out selected parts of an image by brushing over them.

To create a global mask, use the menu command **Select > Auto**. A mask is created based on the colors, tolerance, and feather value set in the Mask Window.

To create a local mask, select a brush from the Brushes Palette (double-click on the Brush Tool to open the Brushes Palette). Masking works best with either the Hard brush or the Soft brush. To change the variant, use the drop-down menu at the top of the palette. Paint over the image in the areas you wish to mask. A mask is created in these areas only based on the colors, tolerance, and feather value in the Mask Window.

The advantage of creating a local mask is that you can change the values of the Mask Window as you create different local masks. Masking in different areas using variable colors, sensitivity, and feathering allows tremendous freedom for mask creation.

## To Turn Swatches On and Off

Under each swatch in the Mask Window is a small square, called a microswatch. If this small square has an X in it, the swatch above it is on. If this small square does not have an X in it, then the swatch above it is off. Swatches that are on affect the mask; swatches that are off do not affect the mask.

For fastest mask performance, turn on only as many swatches as needed. Using one or two swatches to create a mask yields the fastest results; using six or seven yields the slowest results.

## To Change Mask Values

Mask values can be changed at any time. For example, you can locally mask one area and then locally mask another area with different mask values. You may also want to change mask values, for example, if you have created a global mask that encompasses too much of the image.

To change the mask values, adjust the sliders, drop new colors in the swatches, and/or turn the swatches on or off.

## Channels

Channels are used to store the color information in a document. For example, channels in an RGB document store the Red, Green, and Blue information for the document.

Channels that are not primary channels are called alpha channels. Alpha channels are used to store selections and mask out parts of objects.

xRes S.E. offers channels on a per object basis, up to 32 channels per object. These channels can be viewed by the Channels Window (menu command Window > Channels). Channels are used for the following purposes:

- Channels allow you to correct scanning errors.

All desktop scanners scan the image in three passes, one for each of the red, green and blue planes of the image. Often the blue channel emphasizes scratches on the picture. By blending the blue channel with another channel using the Calculation commands, you can improve the quality of the image.

- Channels allow you to work with spot colors.

While it is true that most images are printed in CMYK, there are times when you want to use a fifth or a sixth (spot) color to bring out some text effect or to use as a solid background. By creating the effect in a new channel and saving the file in the DCS format, you can create a spot color.

- Channels are useful for storing selections.

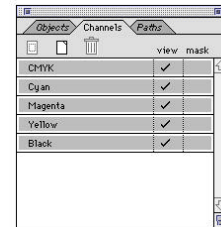
Often when you are working with selections you need to turn off the selection but still save your work. To accomplish this, you can save the selection to a channel which can be loaded at a later time.

- Channels allow you to create interesting effects.

You can easily create dropshadows, beveled glass effects, satin embossing, or 3-D effects with channel operations. There are several books on the market that discuss using channel operations to create interesting effects. If you move the object after having created the special effect, the special effect will move with the object.

## Channels Window

Channels are controlled by the Channels Window, which is accessed by the menu command Window > Channels, or by clicking on the Channels Icon on the Toolbar.



The Channels Window lists all of the channels on the left-hand side. Beside each channel is a colored swatch indicating the color of that channel.

There are two categories organized vertically with the titles “view” and “mask.” There are also three icons at the top of the Channels Window, and these icons Load Selection, New Channel, and Delete Channel are used to add, duplicate, or delete channels.



## To Change the Visibility of a Channel

By toggling the view box in the Channels Window you can make any channel visible or invisible. Only those channels with the view box checked affect the appearance of the document. Generally speaking, you will want to view all primary channels.

If you are using a channel to store a mask or selection, you generally do not want the view box of that channel checked.

At the top of the channels box is the composite channel, which is RGB, Grayscale, or Indexed Color. Clicking on the view box of the composite channel has the same effect as clicking on the view boxes of each of the primary channels.

By default, xRes S.E. displays individual channels in Grayscale, but a combination of two or more channels in color. For example, if you just make the red channel visible, the red channel will appear in Grayscale, but if you make both the red channel and the green channel visible, the result will appear yellowish (red + green = yellow in the RGB color space).

To make individual color channels appear in color instead of Grayscale, toggle the “Single Channels in Gray” preference in the General Preferences (File > Preferences > General). If this box is checked, individual channels appear in Grayscale. If this preference is not selected, then individual channels appear in color (for example, a red channel appears red).

Individual channels are shown in Grayscale by default because it is much easier to inspect and modify a Grayscale image than it is to modify an image that is entirely tinted red (or cyan). The human eye can identify many more shades of gray than it can shades of red. For this reason, Macromedia recommends that you display channels in Grayscale.

## To Change the Editability of a Channel

To change the editability of a channel, click the channel’s name with the Arrow Tool. Editable channels are indicated in Grayscale. Non-editable channels are indicated in white. For example, if you apply a filter on an image and the red channel is not editable, then the filter will only apply to the green and blue channels.

Clicking on the composite channel’s name has the same effect as making every channel editable.

## Mask Channels

Mask channels are used in xRes S.E. to mask out areas of an object. Mask channels are used for the following:

- In text objects, mask channels are used to make only the text visible.
- Mask channels are used to create cross-fade effects, that is, to create the effect of an object fading from opaque to transparent.
- Mask channels are used whenever you float a selection.

The opacity of the resulting object is constrained to the selection area with a mask channel. The resulting object is actually rectangular, but because the opacity is limited to the prior selection, the object can appear as a different shape on screen.

- By transferring the selections in mask channels from one object to another, you can create two objects of the exact same shape. For example, you could have two objects containing different patterns that are both egg shaped.

### To Create a Mask Channel

A mask channel works by taking gray information of the channel and using it to determine the opacity of the object. Areas of white in the mask channel result in opaque areas of the object. Areas of black in the mask channel result in transparent areas of the object. Areas of gray in the object result in translucent areas of the object. The shade of gray determines the exact opacity of the object; darker shades of gray in a mask channel produce a more transparent object than lighter shades of gray.

If more than one channel is specified to be the mask channel, xRes S.E. applies the intersection of these channels. In other words, only areas of the image that are opaque in both mask channels remain opaque if both mask channels are selected.

### To Create a New Channel

To create a new channel, check the New Channel Icon in the Channels Palette. A new channel will be created below the current channels.

### To Duplicate a Channel

To duplicate an existing channel, click the channel and drag it to the New Channel Icon. A duplicate of the channel will be made below the current channels.

### To Delete a Channel

To delete a channel, drag that channel to the trash can in the Channels Palette. Primary channels cannot be deleted. If you accidentally delete a channel, use Command-Z (Ctrl-Z in Windows) to undo the deletion.

## Channel Options

The Channel Options dialog is accessed by double-clicking on an individual channel's name. This dialog allows you to change the color of a channel, to alter the opacity, and to choose whether the color indicates the mask.

### To Change the Opacity of a Channel

Every channel has its own opacity. This opacity number determines how the channel will be composited onto the overall image. For example, if the color of a channel is pure red, then at an opacity of 100% (or 255), a value of pure white in the channel will translate into pure red on the image. However, if the channel only has an opacity of 50% (128), then the color pure white will translate into pink (red, 128).

To change the opacity of a channel, double-click the name of the channel to open the Channels Options dialog. Enter the opacity of the channel

from 1% to 100%. 100% represents a totally opaque channel.

### To Change the Color of the Channel

To change the color of a channel, double-click the channel to use Channel Options. Select a new color using the Color Picker (menu command Window > Palettes > Picker), and click the appropriate color swatch. The color of the channel will change to the selected color.

You can only change the colors of non-primary colors. If you are working in RGB, you cannot change the colors of red, green, and blue. Likewise, if you are working in CMYK, you cannot change the colors of cyan, magenta, yellow, and black.

### To Use the Color Indicates Mask

The “Color Indicates Mask” preference is used if alpha channels are a color other than white and the alpha channels are viewed in combination with other channels.

If the Color Indicates Mask preference is checked, the color indicates the mask of the channel. If Color Indicates Mask is unchecked, the color indicates the selection in the channel.

## Alpha Channels

Channels that are not primary channels are called alpha channels. Alpha channels are used:

- To store selections.
- To create dropshadow and 3-D effects.
- To create textured effects.
- For intermediate channel operations.
- For mask channels.

Alpha channels are displayed in Grayscale. Alpha channels are initially displayed in white in RGB Mode and black in CMYK Mode. Storing a selection in a channel changes the Grayscale information for that channel.

## Painting and Filling Alpha Channels

You can apply several operations directly to alpha channels. One frequently used operation is painting directly in the alpha channel. For example, by airbrushing around sharp edges in an alpha channel you could produce a softer selection. Alternately, you could apply Calligraphy directly to an alpha channel, and load it as a selection at a later time.

## Storing and Loading Selections

One use for channels is to store different selections. By storing and loading selections, one file can contain several different selections that are stored in different channels. Here are some situations that would involve storing and loading selections:

- You mask out different parts of an image and save these masks as Grayscale channels so that you can go back and use the masks later.
- You outline an object with the Pen Tool, and then save that outline as a selection.
- You achieve complex calculation command effects (see below) that require you to load selections in and out of channels.

Storing selections in channels gives you a way to view those selections. For example, after storing a selection to a channel and viewing it, you might decide that the edges of the selection are too crisp, and so you use a Gaussian Blur filter on the alpha channel to soften it. When you view a channel, the areas inside the selection are indicated in white. Areas outside of the selection are indicated in black. Areas that are partway in or out of the selection are indicated in shades of gray.

### **To Store Selections**

To save a selection to a channel, use the menu command **Select > Store**. This command leads to a submenu which allows you to save the current selection as a new channel or to one of the existing channels.

### **To Load Selections**

Any channel can be loaded as a selection with the menu command **Select > Load**. You can also load the selection within the channel by

dragging that channel to the Load Selection Icon located at the top of the Channels Window and releasing it.

When you load a selection, the current selection is replaced. If you hold down the Shift key while doing the load, the new channel will be added to the current selection. If you hold down the Command (Ctrl in Windows) key while doing the load, the new channel will be subtracted from the current selection.





## **Chapter Eight**

# 8

## Chapter Eight Filters

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### Overview

This chapter describes practical filters used in traditional image-editing and filters used to achieve special effects such as Blur, Sharpen, Noise, Distort, and Stylize. All these filters are found under the Effects menu.

Filters that are used specifically for color correction are described in Chapter Ten: Color Correction.

This chapter also describes how to use third-party plug-in filters in xRes S.E.. Topics include:

- Essential terms
- Blurring an Image
- Sharpening an Image
- Adding Noise to an Image
- Distortion Effects
- Stylize Filters
- Plug-in Filters



## Essential Terms

### Filter

A filter is an effect applied to the image by a menu command that effects the pixel data in the image. After an image has been scanned in and color-corrected, the real fun begins—applying filters. Gaussian Blur, Add Noise, and Unsharp Masking are essential to photo-retouching. Other filters are useful for special effects, such as Ripple and Solarize.

xRes S.E. contains practical filters as well as filters that are simply fun to use. Third-party plug-in filters, such as Kai's Power tools, can be used in xRes S.E.. With all these filter possibilities, xRes S.E. can alter the image in almost any way imaginable.

All of the filters in xRes S.E. can be applied to documents in RGB or Grayscale Mode. Filters only apply to active objects in the document. If there are selections inside of the objects, the filter applies only to areas inside of the selection. Note that filters only apply to editable channels.

### Filter Previews

All filters with dialogs are previewed in one of two ways:

- The entire image is previewed as you drag the slider in the filter dialog.

The advantage of this method is that you can

preview the entire image at one time. The disadvantage of this method is that it can be slower than the second method, using a preview box.

- A box in the center of the image provides a preview of the filter.

By dragging the preview box around the image, you can see how the filter will affect that area of the image. This method of previewing is faster than previewing the entire screen.

Set the preferred preview method in the General Preferences (accessed by the menu command File > Preferences > General) by checking or unchecking “Use Preview.” If this preference is checked, then xRes S.E. previews filter effects with a movable preview box. If this preference is unchecked, then xRes S.E. previews the entire image at once.



## Blurring an Image

One of the things that photo-retouching programs do best is to soften an image. xRes S.E. provides four filters for softening images:

- Gaussian Blur: This is a smooth blur within a defined radius of 1 to 128 pixels.
- Basic Blur: This is a straight-forward 3 x 3 pixel averaging of pixels.
- Motion Blur: This is a kind of blur that you get when photographing moving objects.

### Gaussian Blur Command

Of these four blurs, the Gaussian Blur is the most important. The Basic Blur is provided for very slight blurs, and generally produces insufficient blur for a large image. The other blurs are used as special effects and so are used less frequently.

When you use Effects > Blur > Gaussian Blur, you are prompted to enter a radius in pixels. You can enter any integer from 0 to 31.

If the blurring effect is still not sufficient, you can run the filter several times to achieve the desired effect.

Some areas where Gaussian Blur might be useful:

- Softening Selection Outlines: Apply Gaussian Blur to a channel that holds a selection to soften that selection outline. This is equiva-

lent to loading that selection and using the menu command Select > Feather.

- Softening Photographs: Use Gaussian Blur at a low setting on photographs to soften the image.

### Motion Blur Command

The Effects > Blur > Motion Blur command creates a type of blur that would occur if you were taking a picture of a moving object with a slow shutter speed.

There are three parameters to the Motion Blur command:

- Angle: The angle can be set from -180 to 180.
- Number of Copies: This is the number of copies that xRes S.E. makes of the image to create the blur effect.
- Distance: This is the distance, in pixels, between the separate copies of the image.

xRes S.E. will overlay the number of copies using the specified distance to create the impression of a moving object.

### Simple Blur Filter

With the Simple Blur Filter, the computer replaces every pixel with the average of the

neighboring pixel values. This averaging of pixels is a special type of convolution filter.

To achieve this averaging effect, apply the menu command **Effects > Blur > Simple**. A slider with a value from 1 to 10 allows you to set the intensity of the blur.

### Examples:

- 10 corresponds to a straight 3 x 3 pixel average.
- 1 gives an almost imperceptible blur with more weight given to the center pixel.

The main use of the Blur Filter is to achieve extremely slight blurs. There are times when the minimum radius of 1 on the Gaussian Blur produces too strong an effect. In such cases, the Basic Blur filter (with a strength of around 5) is the right tool for the job.

## Sharpening an Image

Sharpening often refers to improving image contrast. While this is partially true, one should distinguish between increasing the contrast in the colors of an image (as done with the **Brightness/Contrast** command) and increasing the spatial contrast between neighboring pixels (which is what the **Sharpen** commands actually do).

Generally speaking, it is easier to blur an image than to sharpen it. If an image is completely out of focus no amount of computer-generated sharpening will make that image come into focus.

xRes S.E. offers two types of sharpening commands: **Sharpen** and **Unsharp Masking**. In most cases, the **Unsharp Masking** effect is the most useful.

## Sharpen Command

The **Effects > Sharpen > Basic** command applies a straight 3 x 3 sharpening convolution to each editable object in the image. The effect of this filter is to accentuate lines and edges in the image, but because it operates on a very small (3 pixel wide) radius, it can also highlight unwanted noise.

You can tone down the effect of the **Sharpen** filter by moving the amount slider from its default value of 10 to a lower value.

## Unsharp Masking Command

The term “Unsharp Masking” refers to a photographic process of blurring a negative, collating it with the original positive and then exposing the combined pieces of film. This technique allows photographers to increase the overall sharpness of an image in post-processing.

With the **Effects > Sharpen > Unsharp mask** command, xRes S.E. performs the same process digitally. After a copy of the original image is made, that image is inverted, blurred, and then added back to another copy of the original image. Since you are subtracting a blurred image from the original, the result retains only the accentuating features of the original image. This result is thresholded and added back to the original image to increase the overall sharpness.

Like the Sharpen > Luminosity command, the Unsharp Mask command works on the luminosity channel. The difference is that with Unsharp Mask, you can specify a blur radius and use the Gaussian Blur filter to do the blur, as opposed to the Luminosity command's simple 3 x 3 pixel convolution.

You also can specify a threshold level under which no enhancement is made. This is useful for screening out noise artifacts. Macromedia recommends that you primarily use the Unsharp Mask filter instead of the Sharpen filter.

Experiment with the different settings, and try using the filter more than once. It's often better to apply a filter with moderate settings three or four times than applying a filter with a high radius and a high amount. Both the Sharpen filter and Unsharp Mask filter can cause stray bits of noise to creep into your picture. To minimize the noise, it is best to run these filters last.

## Adding Noise to an Image

There are commands used to add noise to an image: Add Noise and HLS Noise. Add Noise adds noise to all channels, while HLS Noise adds noise only to user-specified channels in the HLS color space.

Note: You can also add noise to an image using the Noise brush. See Chapter Four: Painting, Erasing, and Cloning and Chapter Ten: Color Correction for more information on using noise.

The Effects > Noise > Add command adds a specific amount of random noise to each editable

channel. You can specify the amount of noise to a number from 0 to 100.

Use the Noise Filter:

- To distress type, creating a worn, weathered look.
- To add realism to gradients that are too smooth and to images that were originally created as line art.
- As a first step in creating a texture or a background.

## HLS Noise Command

The menu command Effects > Noise > Add HLS is a variant of the simple Add Noise Filter command in which the image is temporarily converted to HLS Color Mode. Noise is added in each of the Hue, Lightness and Saturation channels, and the image is re-converted back to its original mode. If you are working on a CMYK image, the black plate is not affected.

The advantage of using HLS Noise is that you can control the amount of color added to the image. For example, if you set the hue slider to zero and raise only the lightness slider, there will be no unwanted color added into the image.

Some other programs on the market have a "Protected Noise" filter. When xRes S.E. acts only in the luminosity channel (as described in the above example), it is effectively reproducing this filter.

## Distortion Effects

Five filters (described below) are used to distort the image and are useful for creating special effects. Distortion filters can introduce a black value to the edge of the image; this effect is intentional.

### Ripple

The Effects > Distort > Ripple filter is a variant of the Wave filter. It produces a ripple in both the horizontal and vertical dimensions simultaneously, creating a warped effect.

The ripple is controlled by amplitude and wavelength parameters in the Ripple dialog which are best learned by experimentation.

### Cylinder

The Effects > Distort > Cylinder filter creates a warped cylindrical effect. Enter the level of distortion as a number from 1 to 100.

### Whirlpool

The Effects > Distort > Whirlpool filter creates a whirlpool effect by displacing the colors of the image. The angle is entered as a number from -1000 to 1000.

For a neat effect, create a new document. Use the Whirlpool filter to create a black whirlpool around the edges. The degree of the angle determines the strength of the effect.

### FishEye

The Effects > Distort > FishEye filter creates a bulge in the center of the image. The level of distortion is entered as a number from -100 to 100.

## Stylize Filters

The Stylize filters are great for creating special effects.

### Emboss

The Effects > Stylize > Emboss command can be used to create a raised, embossed look. The filter has three parameters, the Angle of the embossing (from -180 to +180), the Emboss Depth (from 1 to 5 pixels), and the Contrast Factor. Best results are generally obtained with an Angle of 45 and an Emboss Depth of 1. The Contrast slider can be used to adjust the depth of embossing.

The Emboss filter will emboss the image onto a gray background. If you wish to choose a different color, you should apply the Effects > Stylize > Colorize command afterwards to re-map the image to a Indexed 256 Palette (stored as a gradient in the Gradient Tool Options).

### Find Edge

The Find Edges filter is a 3 x 3 pixel convolution, which corresponds to the Find Edge and Invert commands used in other programs. The Find Edges filter has no dialog.

## Diffuse

The Effects > Stylize > Diffuse filter diffuses the location of each pixel randomly, without affecting the pixel's color. The result is similar to looking through a thick glass plate.

By adjusting the slider, you can affect the level of diffusion that occurs.

## Maximum and Minimum Filters

The Effects > Stylize > Maximum filter takes the maximum value for each channel in a specified pixel radius. This creates a somewhat posterized effect, as neighboring pixels are reduced to a single value. It also has the effect of lightening RGB images and darkening CMYK images. Conversely, Effects > Stylize > Minimum darkens RGB images and lightens CMYK images.

### To Produce Borders

Minimum and Maximum filters also have uses when working with channel operations on Grayscale images. For example, if you have a solid white shape on a black background, and you wish to increase its size by two pixels, you can apply the Effects > Maximum command with a radius of 2. By subtracting that image from the original shape, you are left with a 2-pixel wide border.

### Increasing or Decreasing a Selection by 1 Pixel

Often after making a selection with the marquee tools, one pixel needs to be added or subtracted

to fine tune the selection. This can be accomplished by saving the selection to a channel and then either applying the Minimum filter to decrease the selection or applying the Maximum filter to increase the selection.

## Median Filter

The Effects > Stylize > Median filter takes the median of all pixels in a specific area. Two uses of this filter are:

- Softening Images: By taking the median of all pixels in a specific area, the filter acts as an averaging or blurring filter, so it can be used to soften images.
- Removing Unwanted Noise: By specifying a threshold value, you can use the filter to remove unwanted noise from an image. xRes S.E. will compare each pixel with the median value and only replace the pixel if the difference is greater than the threshold. The lower the threshold, the more powerful the filter as a noise detector, but the more likely the image will appear blurred as a result.

## Mosaic

On tabloid news shows, some interviewees have “pixilated” faces to protect their identity. This same pixilated effect can be achieved with xRes S.E. using the Mosaic filter.

The filter is under Effects > Stylize > Mosaic. It creates a pixilated “police suspect” look by aver-

aging all pixel values within small rectangles. The height and width of these rectangles can be set in the Mosaic dialog.

## Threshold

The Threshold filter “squashes” the picture into black and white values. The way this filter works is by computing a brightness value for every pixel in the image from 0 to 255 and then comparing these numbers to a specified pixel value. If a pixel’s brightness value is lower than the specified pixel value, it turns black; if it is higher, it turns white. The specified pixel value is entered by a slider bar in the Threshold dialog.

Threshold works best when you turn the same number of pixels black as pixels you turn white. In order to enter an appropriate threshold value, we suggest examining a histogram of the image by the Levels dialog before applying the filter.

## Tint

The Effects > Stylize > Tint Filter creates a monochromatic tinted image from the original image by separating the image into chroma (color) and luminance channels, replacing the chroma channels only. The chroma is computed from the R, G, B sliders in RGB Mode (or C, M, Y sliders in CMYK Mode).

## Solarize Filter

The Effects > Stylize > Solarize filter applies a solarization effect to the image, which is equivalent to a V-shaped curve. You can achieve

the exact same effect with the Curves dialog; the filter is a shortcut.

Macromedia strongly recommends playing with this filter if you have not tried it before. You can achieve some very interesting results!

## Plug-In Filters

xRes S.E. supports third-party Adobe Photoshop-compatible plug-in filters such as Kai’s Power Tools and Gallery Effects. You should store all plug-ins that you wish to use in xRes S.E. in the same folder or directory as xRes S.E.

### To use Plug-In Filters

- 1 Install the third-party plug-in filters, following the directions that shipped with the third-party application.
- 2 Use the menu command File > Preferences > Set PlugIn Folder. A dialog appears, allowing you to specify the location of the folder that contains the plug-in filters. Click Select at the bottom of the dialog.
- 3 Access General Preferences with the menu command File > Preferences > General. Check the “Support PlugIns” preference and click OK.

This preference sets aside one third of the available memory for using plug-ins. If this preference is not checked, then memory is not set aside for using plug-ins.

- 4 Quit and relaunch xRes S.E.. The plug-ins will appear on the main menu.

If you change the location of your plug-in folder, you should reset the location of the plug-in folder as per step 2, and then relaunch xRes S.E..

If you are not using plug-ins, uncheck the “Supports Plug-Ins” preference in General Preferences.







## Chapter Nine

# 9

## Chapter Nine Working in xRes Mode

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### Overview

This chapter defines xRes Mode and offers strategies for maximizing performance in xRes Mode. Topics include:

- Essential Terms
- Is xRes Mode a Proxy System?
- Working in xRes Mode
- Using the LRG File Format
- Importing an Image to an xRes Mode Document
- Maximizing Performance in xRes Mode

## Essential Terms

### Direct Mode

Direct Mode is the default work mode for xRes S.E.. All features are available in Direct Mode, however, Direct Mode lacks the speed of xRes Mode.

### xRes Mode

xRes Mode is designed exclusively for the quick manipulation of high-resolution files greater than 10 to 20 MB in size, or files with 10 or more objects.

In general, operations that would take minutes to apply in Direct Mode take only a few seconds to apply in xRes Mode. For example, applying a filter to a 500 MB file in xRes Mode takes a few seconds; applying the same filter to a 500 MB file in Direct Mode could take several minutes.

In xRes Mode, the speed of the operation is not dependent on the size of the file. You may work with large files with as little as 16 MB of RAM. For example, xRes Mode operations performed on a 500 MB file occur at the same speed as operations on a 20 MB file.

In xRes Mode, selective processing is used to achieve the rapid speed of operations. xRes S.E. does only the work necessary (1) at the current zoom level and (2) to the area of the image visible on screen.

Delayed processing delays image editing until the image is rendered.

For example, suppose you are working on an image that is 5000 x 5000 pixels and you apply a Gaussian Blur filter. In Direct Mode, the filter is applied immediately to all pixels in the 25 million pixel image. In order for the processor to manipulate 25 million pixels, it needs about 200 MB of RAM. Even with sufficient RAM, the operation could take minutes to apply.

In xRes Mode, the filter is only applied to the pixels currently visible on screen at the current zoom level.

Suppose you are viewing the image at the 1:8 zoom level and you can see an area that is 500 x 500 pixels. The Gaussian Blur filter would be applied only to 500 x 500 pixels, or 250,000 pixels total. Although this may still seem like a lot of pixels, it is 1/100th of the full 25 million pixels in the image. Even with a small amount of RAM this filter can be applied in just a few seconds.

Panning or zooming the image in xRes Mode applies the blur to parts of the image which have not yet been displayed.

When you export the image to a file format such as TIFF, xRes S.E. performs the processing it has delayed, thereby building the final file; this process is called *rendering* the file.

## LRG

The LRG document format was designed by Fauve Software (now part of Macromedia) to specifically address the issue of saving a large document (10 to 20 MB or larger). An LRG document is stored in a series of tiles, making it easy to rapidly access the image data. LRG documents are automatically opened in xRes Mode by xRes S.E.. For more information on the LRG file forms, see “Using the LRG File Format” in this chapter.

LRG documents can be saved as RGB (with 29 channels), CMYK (with 28 channels), or Grayscale (with 32 channels).

You might want to export a document to the LRG format if you plan on opening it later in xRes mode. When you export the document to an LRG format all objects will be merged.

## MMI

This MMI file format is used to save documents while keeping multiple objects independent. An MMI file describes a document by keeping a command set for all objects in the document. Generally, you will not want to export the MMI file to another file format until you have finished editing the image.

If you save to any format other than MMI, all objects will be merged into the background.

To change a document from MMI format to another format, you must export it to the appropriate format; you cannot use the Save As command. See “Exporting Images” in this chapter for more information.

In xRes Mode, the MMI file serves as a pointer to all objects in the document. See “MMI File Format” in this chapter for more information.

## Is xRes Mode a Proxy System?

Proxy systems are commonly used in image-editing to deal with large files. In a proxy system, a 72 dpi file is used to represent the larger, high-resolution file.

The disadvantage of a proxy system is that you may not zoom in and examine effects at the pixel level. For example, you may not examine the effect of a Sharpen filter at the pixel level, so you must guess the result of the effect.

In addition, it is very difficult to do masking work because the 72 dpi file used to represent the file lacks the detail of the actual file. Most proxy systems only allow you to composite and apply a few filters, and they lack the advanced painting and masking abilities of xRes S.E..

xRes Mode is not a proxy system; in fact, it resolves the difficulties typically associated with proxy systems.

In xRes S.E., you can zoom in to the actual pixel data and see the result of any effect. You may also edit, paint, and mask at the pixel level. xRes Mode is a comprehensive work mode which includes the following functions:

- Batch Conversion
- Cloning

- Cropping
- Erasing
- Fill Effects (including Gradients)
- Filters
- Grouping
- Masking
- Moving
- Multiple Undo Levels
- Painting
- Resizing and Rotating Objects
- Text Editing
- Working with Channels and Alpha Channels
- Working with Paths
- Panning and Zooming
- Untransform Command

In addition, when you perform operations in xRes S.E., those operations are performed to the actual pixel data, unlike a proxy system, in which the operations are performed only to a 72 dpi model of the image.

## Working in xRes Mode

As previously discussed, xRes S.E. supports two work modes: Direct Mode and xRes Mode. The work mode is document-specific; that is, each document is either in Direct Mode or xRes Mode.

The top of the image window indicates the active mode. If you are in xRes Mode, the word “xRes” appears in the title bar of the image window. If you are in Direct Mode, the word “xRes” does not appear.

### To Create a New Image in xRes Mode

To create a new image in xRes Mode, use the menu command File > New and choose xRes in the Work Mode menu.

### To Open an Existing Document in xRes Mode

To open an existing document in xRes Mode, use the menu command File > Open As LRG.

### To Use the Untransform Command in xRes Mode

The menu command Modify > Untransform is an additional feature of xRes Mode. The Untransform command restores the topmost active object to its original size and shape while maintaining the other operations performed on the object.

## Features Not Available in xRes Mode

About 5% of the features available in Direct Mode are not available in xRes Mode. These include:

- Magic Wand Tool
- Bucket Tool
- Drop Object and Drop Selection commands
- Indexed 256 Color Mode

## Features That Work Differently in xRes Mode

Certain features work differently in xRes Mode:

- Stamp Tool
- Shape Inspector
- Undo levels
- MMI and LRG files
- Render Command

In xRes Mode, the Stamp Tool clones from one part of an object to another part of the same object, but cannot clone from one object to another object, because post-processing is used. See Chapter Four: Painting, Erasing, and Cloning for more information on the Stamp Tool.

The Shape Inspector allows larger brush sizes in xRes Mode. See “Brush Sizes” later in this chapter.

More undo levels are available in xRes Mode. Object transformation commands do not terminate the undo list. See “Local vs. Global Operations” in Chapter One: xRes S.E. Basics for more information.

MMI files serve as pointers to associated LRG files, which are objects in the image. MMI files save command sets, while LRG files save image data. See Chapter Two: Opening, Saving, and Importing Images for more information.

The LRG file format is available in xRes Mode to handle larger, high-resolution files.

A Render command is available to render files on screen. Additionally, files render automatically when they are exported to any file format except MMI. See “To Use the Untransform Command in xRes Mode” in this chapter.

### Brush Sizes

When brushing, painting, and cloning in xRes Mode, the maximum size of the brush depends on the zoom level of the document.

The maximum size of the brush represents the second number in the zoom level times 100. For example, working at the 1:16 zoom level in xRes Mode, the maximum brush size equals 1600 pixels.

This allows you to use extremely large brushes when working with large images. The size increments in the Shape Inspector represent the integers 1 through 100 times the second number in the zoom level.



For example, working at the 1:16 zoom level in xRes Mode, the first brush size available is 16 pixels, the next is 32 pixels, the next is 48, and so on, up to 1600 pixels.

In addition, preset brush sizes are saved in screen pixels. The total amount of screen pixels is equivalent to the actual pixels divided by the second number of the zoom level.

For example, a brush that is 160 actual pixels wide working at the 1:16 zoom level is 10 screen pixels. Clicking on this brush at a different zoom level produces a brush size that equals the second number of the zoom level times the screen pixels of the brush.

For example, suppose that the first preset brush equals 1 screen pixel (the default setting). Clicking on this preset brush while working at the 1:1 level produces a brush that is 1 x 1 pixels. Clicking on this preset brush while working at the 1:16 zoom level produces a brush that is 16 x 16 pixels.

## Cloning

In xRes Mode, you can only clone from one part of an object to another part of the same object. You cannot clone to different objects or to different documents.

## Rendering

Rendering, also called post-processing, is the process of performing all operations at the 1:1 zoom level.

Rendering is usually performed at the end of the work routine, but it can be performed at any time. The rendering time varies based on the type of machine, the size of file, the number of objects in the file, and the number of operations performed on the document. Typical rendering times for a PowerMac or Pentium range from five to twenty minutes.

Saving or exporting a file in any file format except MMI automatically renders that file.

## Using the Save As Command in xRes Mode

You may use the Save As command to save to the MMI file format if the document has many objects or to any available file format if there is only one object.

If you are in xRes Mode and save an image in a format other than MMI, you will actually be rendering the file when you save it. Rendering builds the file for final output by merging all objects into the background object.

## Using the Export Command in xRes Mode

The Export command is the only way to save multiple-object documents as file formats other than MMI.

Exporting produces a separate document in the file format. See Chapter Two: Opening, Saving, and Importing Images for the available file formats.

Exporting an image in xRes Mode automatically renders that file. You will be prompted with a

dialog that allows you to save the file at a lower zoom level if desired. You may want to save a file at a lower zoom level to fit it on a floppy disk or simply to print out a quick proof. Export at 1:1 to render the complete image.

The zoom level choices for exporting images are:

- 1:1
- 1:2
- 1:4
- 1:8
- 1:16
- 1:32
- 1:64

Exporting a file at a lower zoom level does not affect the resolution of the file. However, it will change the dimensions of the file in pixels.

Exporting a file at a zoom level of 1:2 saves a file that is half the width and half the height of the original file, or 1/4th the original size. For example, exporting a file that is 8000 x 8000 pixels at the 1:2 zoom level produces a document that is 4000 x 4000 pixels; this exported document is 16,000,000 pixels total, which is 1/4th the size of the original 64,000,000-pixel document.

## Using the Render Commands

To render all of the objects in a document, use the menu command File > Render. You may want to use this command to render a document without saving it as a specific file format.

### Operation Set

Operations performed to an object are called the operation set of an object. An operation set can include applying filters, gradients and fills; painting; and selecting.

Rendering deletes the stored operation set of the object. This allows faster execution of command-based operations. Some common command-based operations include cloning, zooming, and panning.

For instance, if you have performed several operations and find that zooming in the image is slower than you would like, you could apply the File > Render command to make the zooming substantially faster.

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*Note: The menu command File > Render cannot be used as a substitute for the final render of the document, which involves exporting the file format to a different zoom level.*

Using the menu command File > Render prevents the initial undo ability of the object. After applying several operations to objects and applying the menu command File > Render, the menu command Edit > Undo has no effect until further operations are applied to the objects within the document.

## Using the Render Objects Command

The Render Objects command is in the Objects Window submenu. Accessing it will render all active objects within the document.

- 1 Activate all objects you wish to render by clicking on them in the Objects Window (Window > Objects).
- 2 Choose Render Objects from the Objects Window palette submenu. All active objects within the document will be rendered. The objects remain separate image elements that may be freely moved, resized, rotated, edited, and saved.

## How Do I Switch between Direct and xRes Modes?

Use the Modify > Work Mode command to switch work modes. When switching from Direct to xRes Mode, a dialog prompts you to save your objects as LRG files.

## Opening Files in xRes Mode

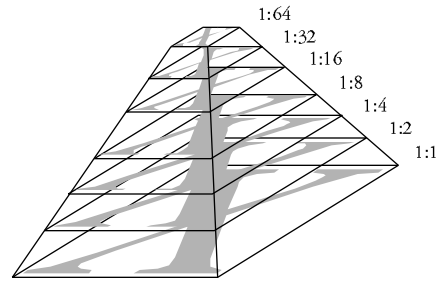
To open files in xRes Mode, use the menu command File > Open.

- Images that were saved in the LRG file format will open in xRes Mode.
- Images that were saved in any file format other than LRG or XRS will open in Direct Mode, with the exception of MMI (below).
- Images that were saved as MMI files open in the mode in which they were saved.

## Using the LRG File Format

The LRG file format is used to organize large tiles of data in a manner that allows them to be rapidly opened, imported, and edited by your computer. When working in xRes Mode, all open or imported images are converted into the LRG file format.

When a file is converted into the LRG file format, up to seven different zoom levels of the document are made at varying resolutions. Each level is composed of several tiles of data. The following diagram illustrates this concept:



For example, imagine a (4000 x 4000 pixel) document converted to the LRG file format. The bottommost level of the LRG file is 4000 x 4000 pixels, the same size as the original document, representing the 1:1 zoom level. However, it is not an exact copy of the image because it is arranged in rectangular tiles, as opposed to line after line of pixel data.

The second level in the LRG file is 2000 x 2000 pixels, representing the 1:2 zoom level. This level is 1/4th the size of the original document.

The third level is 1000 x 1000 pixels, or 1:4; it is 1/16th the size of the original document. There can be up to seven zoom levels ranging from 1:1 to 1:64.

Organizing data in this manner allows selective processing on the image data. When an operation is performed, it is performed on only one of the seven zoom levels. Zooming in or out to a different zoom level performs the operation on that zoom level.

### To Use the Open As LRG Command

- 1 Use the menu command File > Open As LRG.
- 2 Choose the file you wish to open as an LRG from the menu. Click Open.
- 3 A new dialog prompts you with the line “Save LRG As...” Type in a new name for the file, and specify a location for the file on disk.
- 4 Click Save. The file is saved in the LRG format. The file opens as an LRG file in xRes Mode. The first time you use the Open As LRG command, the file may take a few minutes to convert to the LRG file format, particularly if the file is over 30 MB. This is because the original file is being opened and converted into the LRG file format simultaneously. However, opening the same LRG file at a later time will take only a few seconds.

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*Note: After converting the file to the LRG file format you can delete the original file.*

## Converting Images

This section explains how to convert images from one work mode to another.

### To Convert an Image from Direct Mode to xRes Mode:

- 1 Open the file you wish to convert with the File > Open command.
- 2 Use the menu command Modify > Work Mode and choose xRes.
- 3 A dialog prompts you to resave each object as an LRG file. Resaving the objects as LRG files guarantees rapid performance in xRes Mode.

### To Convert an xRes Image to Direct Mode

- 1 Open the file you wish to convert with the menu command File > Open.
- 2 Use the menu command Modify > Work Mode and choose Direct.

You may also convert a file to the LRG format as you open it, which will make the file open in xRes Mode. See “To Use the Open As LRG Command” in this chapter to learn about opening files directly into the LRG format.

## Importing an Image to a Direct Mode or xRes Mode Document

When you are importing an object into a document, the mode of the object changes to reflect the mode of the document.

If you are working in xRes Mode and import an image that is not already in the LRG file format, a dialog prompts you to resave the image as an LRG file. After resaving the file, you can import it into a document in xRes Mode; furthermore, you can delete the original file.

## MMI File Format

The MMI (Macromedia Image) file format is used in xRes S.E. to save all works in progress that consist of multiple objects, whether in Direct Mode or xRes Mode.

In xRes Mode, if an MMI file consists of multiple objects, the MMI file will point to these objects, which are represented as LRG files. When you open an MMI file, the file points to all associated LRG objects in the document and plays back the command set for these objects.

For example, a simple MMI file in xRes Mode reads like this:

*Open house.lrg. Filter: Invert.Import tree.lrg. Filter: Brightness, Contrast*

By storing only the commands, MMI files in xRes Mode typically remain very small.

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*Note: An MMI file in xRes Mode may point to associated LRG files, used to build the image when it is opened. It is important not to delete these LRG files, or else you will not be able to build the document.*

If you have moved or renamed LRG files associated with an MMI file, xRes S.E. prompts you to indicate the new location of these files when opening the MMI file.

## Maximizing Performance in xRes Mode

Understanding the difference between pixel-based and command-based operations can help you work with large files more efficiently in xRes Mode.

Some operations in xRes Mode are pixel-based and occur at a constant speed, regardless of the size of the file. The speed of such operations is dependent upon:

- Your system.
- The number of screen pixels currently displayed.

Pixel-based operations include painting, applying filters, applying fills, and masking. Pixel-based operations execute at the same speed whether they are applied at the beginning or at the end of the work routine.

Other operations in xRes Mode are command-based. The speed of such operations is based upon:

- Your system.
- The number of screen pixels currently displayed.
- The number of operations previously applied to the displayed pixels.

Command-based operations include transforming objects, zooming, panning, cloning, and

rendering. Command-based operations execute more quickly if they are performed at the beginning of the work routine.

**In addition:**

- If you resize a new object, it takes only a few seconds. But if you apply a few filters and paint strokes and then resize the object, the resizing takes longer. The exact speed difference depends on the speed of your system and the (currently viewable) size of the object.
- If you zoom to the 1:1 level of a newly opened 100 MB file, you will only have to wait a few seconds for the screen to update. If you zoom back out, perform masking work and paint strokes, the zooming and panning will take longer. For optimal speed performance, perform operations that involve accessing the pixel level early in your work routine. Again, the quality of the image will not be affected, just the speed at which the operations are performed.
- If you render a document that has only a few commands applied to it, it will be rendered faster than a document that has several commands applied to it.
- If command-based operations are taking longer to apply to an object than you would like, use the Render Object command to delete the command set of the object.
- If command-based operations are taking longer than you would like on all objects, then use the Render command to delete the command set of *all* objects within a document.







## Chapter Ten

# 10

## Chapter Ten Color Correction

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### Overview

This chapter discusses how to perform color correction in xRes S.E..  
Topics include:

- Essential Terms
- Color Correction Brushes
- Local Color Correction
- Global Color Correction
- Color Correction Commands

## Essential Terms

### Color Correction

Color correction involves changing the color values of pixels. Color correction has several uses in photo-retouching:

- If an image has too much or too little brightness or contrast, color correction can restore the correct brightness and contrast values.
- Color correction adds or subtracts saturation. Saturation refers to the strength of the color values. Saturated images appear very bright; desaturated images appear muted. In xRes S.E., saturation may be added or subtracted to the entire image, or to a selected area.
- The color correction command Selective Color only modifies pixels that fall within a certain color range. For example, you could make all of the blue pixels in an image purple. You can use this command to turn an entire sky, and only the sky, to a slightly different tint.

### History of Color Correction

Before computers were used in digital imaging, photographers placed a filter over the lens of the camera to adjust the color of a photograph. Photographs used a myriad of these filters, ranging from green to blue to red. These filters easily tinted an image or pulled out unwanted areas of the color spectrum. Still, the amount and variety

of effects achieved by these manual techniques is limited compared to modern-day computer-based image editing.

Thanks to the magic of computerized image processing the colors of an image can be manipulated in seconds. A scan of a photograph provides the raw material for a digital artist. Once an image is inside the computer its colors are as malleable as clay.

One of the main uses of color manipulation is to create unusual, artistic color effects. Take an image of a landscape for example, and turn the sky into a burning red. Create a blue rhinoceros, a dalmatian with pink spots, or a zebra with orange stripes. It's all possible in xRes S.E..

Color correction is the mainstay of the photograph retouching industry. Many service bureaus spend most of their time performing these color corrections, which allows precise control of the brightness, contrast, and dynamic range of photographs.

## Local Color Correction

Local color correction refers to correcting color in one particular area of an image under the brush. For local color correction, you may use the Tint brush.

### To Use the Tint Brush

- 1 Select the Brush Tool on the Tools Palette.

- 2 Double-click the Brush Tool to access the Brushes Palette.
- 3 Select the Tint brush in the Brushes Palette.
- 4 Select a variant from the variant menu, located at the top of the Brushes palette. Variants for the Tint brush include Basic, Strong, and Weak.
- 5 Click the document in the area that you wish to color correct. A Brush Icon appears. Clicking and moving the brush applies the effect.
- 6 To change the strength of the effect, access Tool Options with the menu command Window > Inspectors > Tool Options, and adjust the setting of the strength slider.
- 7 Continue applying the correction to the document and changing the Strength value until the desired result is achieved.

### The Tint Brush

The Tint brush is used to tint an image with the current foreground color. The advantage of using the Tint brush over the Tint Filter (menu command Modify > Color > Tint) is that it allows you to better control the color used to tint the image. It also allows you to limit the tint affect to a particular area of the image.

The Tint brush is often used to apply subtle shadow effects by tinting with gray on a low setting. It is also used to draw attention to or away from elements of an image by tinting those elements to a certain color.

To use the Tint brush, select the Brush Tool from the Tools Palette, select the Tint brush in the Brushes Palette, and then select a variant in the Variant menu.

## Global Color Correction

Global Color Correction commands are filters that affect the entire document. When you apply a color correction filter, that filter is applied to all active objects within the document. If there are any selections in the objects, the filter applies only to the areas inside these selections.

Illustrator has several color correction filters used for color correction. These filters are located under the Modify > Color submenu, and include:

- **Invert:** Creates a negative of the image.
- **Levels:** Controls the dynamic range of the image and allows control over brightness and contrast.
- **Brightness/Contrast:** Adds brightness contrast to an image.

## Previewing Color Correction

There are two options for previewing color correction effects:

- You can preview the entire document at one time. When you achieve the desired effect, click OK. This method can take longer than using the preview box.

- You can use a preview box to preview just one section of the image. You can move the preview box around the image to preview different areas. The advantage of using a preview box is it is generally faster than previewing the entire image.

To set the preview preference, access General Preferences, (File> Preferences> General) and check/uncheck “Use Preview Box.”

## Inverting an Image

The menu command Modify > Color > Invert inverts the image by inverting each color channel. As a result, if you are inverting a CMYK image, you should turn off the editability of the black channel to avoid getting a result that is too dark.

## Levels Command

One of the more common problems with scanned images is that they lack tonal range. The image may be over-exposed, under-exposed, or simply lack highlights and shadows. In all three cases, the limited number of grays or colors produces a flat appearance and makes it difficult to distinguish details.

Access the menu command Modify > Color > Levels to easily correct this problem. This operation can also boost or lighten the brightness or contrast in the highlights, mid-tones, or shadows of the image.

When you access the Levels command via the menu command Modify > Color > Levels,

xRes S.E. displays a dialog with a histogram of the image, as well as two sets of sliders: one for the input range and one for the output range. There are other controls on the side of the dialog, including black and white eyedroppers, and an auto button. These features are discussed below:

### Channel Selector

The Levels box contains a Channel Selector which allows you to choose which channels of the image will be affected by an operation. The Channel Selector located at the top of the dialog lists all the editable channels of the image, including alpha channels.

If all primary channels are editable the channel selector also contains a composite channel. Changes to the composite channel will affect all the primary channels in a composite. You can also alter individual channels instead of the composite channel.

### Histogram

A histogram is a chart which graphically depicts the distribution of gray values in an image. A high concentration of gray is indicated by a high bar on the histogram. For example, an RGB histogram which is skewed to the left indicates a dark, under-exposed image. The histogram in the Levels dialog will automatically update itself to reflect the currently selected channel.

The advantage of having the histogram for reference is you can align the input and output slid-

ers to it. For example, you align the left input slider with the beginning of the histogram.

### **Input Levels**

The Input Level sliders consist of two triangles, which together define an Input Range. By default, this range is set to the entire range of 0 to 255 for each channel. By restricting this range to a sub-interval, you are telling xRes S.E. to ignore anything outside of the range and to expand the inside of the range accordingly.

### **Output Level**

Below the Input Level sliders, two other triangles Cameo Output Level sliders can be moved to define an Output Range. This range re-maps the Input Level sliders to how the channels will appear in the final image.

### **Gamma**

The Gamma slider controls the mid-tones of the image. A value greater than 1 will increase the mid-tone levels. A value of less than 1 will decrease the mid-tone levels.

Gamma is typically set between 0.5 and 3.0. Since it only affects the mid-tones of an image, you can think of it as a brightness control. In fact, the Brightness/Contrast command uses the same type of transformation internally.

### **Using Eyedroppers to Set Black Point and White Point**

Instead of using the histogram to determine the black and white points, you can pick two points from the image with one of the two eyedropper tools located in the dialog. Click first on the black eyedropper tool and then click on the darkest point in the image to set the black point. Do the same with the white eyedropper to set the white point. xRes S.E. will use the channel values for each of these points to determine the channel input amounts.

Setting black and white points is not identical to working channel by channel with the histogram as a guide. If you are using the black point eyedropper and click a dark area, then the R, G, B (or C, M, Y) values of that point will be applied to each color channel, regardless of the histogram values for each color channel.

### **Auto**

Clicking on the Auto button selects the black and white points automatically based on the histogram. By default, the black point will be set at 3% of the frequency scale, the white point at 97%. You can change these values by clicking on the Options buttons. The dialog allows you to define different clipping points.

### **Load/Save**

The Load and Save buttons can be used to load and save preset level adjustments to disk.

To set the black and white points of an image:

An old saying in the photo-retouching world is that nine tenths of the work is getting the right black point and white point. This may be an exaggeration, but it is not completely off the mark. Making sure that the darkest point on the image is re-mapped to pure black and that the lightest point is pure white and not some off-white can dramatically increase the perceived quality of an image. Use the eyedroppers on the levels command for this purpose.

## Using Levels In Practice

Because the Levels command offers so much power over controlling the brightness and contrast over the highlights, mid-tones, and shadows of an image, it is one of the most powerful tools for correcting images that were under- or over-exposed.

### To Lighten or Darken an Image While Reducing Contrast

- 1 Move the left output slider to the right to lighten the image while reducing contrast. Since you will be re-mapping the input range to a smaller output range, the overall brightness of the image will increase, and the contrast will decrease. This is very handy for washing out a background in order to draw attention to another element (for example, a piece of text) in the foreground.
- 2 Move the right output slider to the left to darken the image while reducing contrast.

### To Lighten or Darken an Image While Increasing Contrast

- 1 Move the left input slider to the right to darken an image while increasing contrast. Since you are re-mapping a new limited input range to the previous output range, the contrast of the image increases and the overall brightness decreases. Moving the input slider too far to the left may compromise the detail in the image because pixels of different brightness values are compacted into the same brightness level.
- 2 Move the right input slider to the left to lighten an image while increasing contrast. Since you are re-mapping a new limited input range to the previous output range, the contrast of the image and the brightness of the image increase.

### To Decrease or Increase the Overall Contrast

To increase the overall contrast of the entire image, move the input sliders left and right the same amount. For example, move the left input slider right by 5 and the right input slider left by 5 to increase the overall contrast of the image.

To decrease the overall contrast of an image, move the output sliders left and right the same amount. For example, move the left input slider right by 10 and the right input slider left by 10 to decrease the overall contrast of the image.

## **To Darken/Lighten the Mid-tones of an Image**

To make the mid-tones of an image darker, move the gamma slider to the right. To make the mid-tones of an image lighter, move the gamma slider to the left.

## **To Change the Contribution of any Channel**

Because the Levels command can work on any individual channel, you can significantly change the image by applying changes to the input or output slider (or both) for any specific channel. For example, you could decrease the amount of red in an RGB image by dragging the rightmost output slider to the left, for the red channel only

## **Brightness/Contrast Command**

The menu command **Modify > Color > Brightness/Contrast** allows you to quickly change the brightness or contrast of an image.

The Brightness control affects the overall brightness of the image, that is, the overall lightness or darkness of the image. The Contrast control affects the contrast of the image, or the degree of similarity the brightness values are to each other. The Brightness/Contrast control affects only the mid-tones of an image.

## **Hue/Saturation Command**

The **Modify > Color > Hue/Saturation** command modifies the image in Hue, Lightness and Saturation (HLS) space, even if you are working in RGB Mode or CMYK Mode.

If you keep the saturation and luminosity sliders fixed at zero (no change) and only move the hue slider, the entire image will shift by a fixed hue.

For example, if you decide to shift the hue by a positive 60°, the red areas of the image will shift into yellow, the yellow areas into green, the green areas into cyan, with the magenta areas shifting back into red. (The hue spectrum is measured on a circle, proceeding from 1° to 360°.)

Large color shifts do not serve any practical purpose in complex images, other than creating psychedelic effects or out-of-ordinary photographs.

However, small shifts in hue in either direction can warm or cool a photograph. In addition, if you mask out a single element, such as an item of clothing, then the hue slider can be used to alter the color of that selection without affecting the general luminosity levels.

Also note that all shades of gray, including black and white, are unaffected by hue shifts.

Therefore, changing the hue of an image will have little if any effect on the highlights or the shadows.

If you increase the saturation of an image, the colors become deeper. If you examine magazine advertisements today, you will see that intensely saturated colors are frequently used, even more so than they were just ten years ago.

There are some cases where muting an image creates a more pastel look. Lowering the saturation provides exactly that effect.







## **Chapter Ele ven**

# 11

## Chapter Ele ven Pre-Production

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### Overview

This chapter discusses key concepts and offers tips regarding pre-production and printing. Topics include:

- Essential Terms
- Properties of Color
- Two Color Models
- Printing
- Exporting to EPS

## Essential Terms

### Continuous Tone

If you look closely at an original black-and-white or color photograph, you will see that the image consists of solid shades of gray or color that blend smoothly. An original photograph is called continuous-tone art.

### Halftone Screens

To reproduce continuous-tone art and process colors on a commercial printing press, the image or color must be broken into a series of dots of various sizes and colors, called a halftone screen. In electronic publishing, scanning is the first step in converting continuous-tone art to halftone screens. Black dots are used to recreate black-and-white images and cyan, magenta, yellow, and black dots to recreate color images on the press. When printed, small dots create light areas and large dots create dark areas.

## Properties of Color

Objects appear to be certain colors because of their ability to reflect, absorb, or transmit light, which we perceive as color. Our eyes are sensitive enough to perceive thousands of different colors in the spectrum of visible light—including many colors that cannot be displayed on a color monitor or printed on a commercial printing press.

Many environmental factors, such as changes in lighting or the proximity of colors to each other,

influence our perception of these colors. In general, differences in how we perceive colors do not seriously affect our lives. In commercial printing, however, differences in color perception often affect the success of a print job. Understanding how different factors influence color perception will help you meet your desired printing results.

Every device used to create a color illustration—be it a scanner, color monitor, color desktop printer, or commercial printing press—reproduces a different range of color in the visible spectrum. For example, you can view many more colors on your monitor than you can print on a desktop printer or a commercial printing press.

In addition, scanners and color monitors use a different color model than desktop printers and commercial presses. As colors move from the computer screen to the printing press, they are converted from one color model to another—that is, you do not print exactly the same colors that you see on-screen. However, the calibration system of xRes S.E. ensures that the color seen on screen and in print are as close as possible.

## Two Color Models

Different media manipulate light in different ways. Video technology, such as monitors and film recorders, use the additive RGB Mode; it transmits light which we perceive as different colors. See “Additive Color Model”.

In commercial printing however, translucent cyan, magenta, and yellow inks are printed on a page. Printers also use a fourth ink, black, to deepen shadows, to add depth, and to print true

black type and black lines. CMYK inks absorb and reflect light and we perceive the reflected light as different colors. See “Subtractive Color Model” below.

## Additive Color Model

You can combine varying intensities of three wavelengths of light—red, green, and blue (RGB)—to simulate the range of colors found in nature.

Red, green, and blue are called the additive primaries. If you combine 100% of red, green, and blue, you perceive the color as white. If none of the additive primaries are present, you perceive black.

## Subtractive Color Model

If you subtract red, green, or blue from white light (100% each of red, green, and blue), you create cyan, magenta, or yellow (CMY). For example, you perceive an object as cyan if it absorbs (subtracts) 100% red light and reflects green and blue. Cyan, magenta, and yellow are called the subtractive primaries and form the basis for printed process colors.

## Printing

You can print to an RGB-based device or to a CMYK-based device. The device that you choose affects the available printing options. The following sections discuss printing to a

CMYK-based output device. See “To Print to a Film Recorder” at the end of this chapter for information on printing to an RGB device.

Before printing your image, you must first determine the output type:

- Use a 300 to 800 dpi desktop printer to print initial black-and-white proofs, color proofs, illustrations, or to print final copies which don't require high-quality results.
- Use an imagesetter to print high-resolution images (1200 to 3600 dpi) and camera-ready color separations on either camera-ready paper or plate-ready film.
- Use a high-resolution dye sublimation printer, such as 3M's Matchprint, to print high-resolution color proofs.
- Print to a film recorder to create 35 mm slides of your illustrations.

## Separations

To print continuous-tone color on a commercial printing press, first separate the page containing the composite art into its component colors by printing a film separation for each ink—(cyan, magenta, yellow, black), and any spot colors needed to print the colors in your image. Your printer uses these film separations to create the printing plates used on the press.

The success of your print job depends in large part on the quality of your film separations. When

you select a commercial printer, discuss who is responsible for checking the separations. You or the prepress service provider must check that:

- The dimensions of the image are correct.
- All fonts print correctly.
- All visible objects in the document are printed.
- All the separations printed as specified and with the correct marks.
- Halftones (including scanned images) look consistent and smooth.
- Overlapping process-color separations create rosette patterns and do not show unacceptable moiré patterns.

## Print Options

Before printing in xRes S.E., check that the Monitor Calibration and Printing Inks Calibration is correct to ensure that what you see on the monitor will be reflected on the printed page.

### To Print Directly from xRes Mode

- 1 Set up your Printer Options with the menu command File > Page Setup. The options available depend on the output device specified for the computer. Read the instruction manual that ships with the output device for

the exact options for printing. Page Setup options may include paper size, the number of images printed per page, image enlargement or reduction, and page orientation.

- 2 Use the menu command File > Print or click the Print Icon on the Toolbar. Choices in the Advanced Print Options dialog include:
  - Centered to Page: Check this preference to center the image to the page. Otherwise the image is printed at the top of the page.
  - Print Separations: Check this preference to print one particular channel. If you click this checkbox, a drop-down menu allows you to choose a primary channel to print (C, M, Y or K).
  - Channel in Color: Check this preference to print the individual channels in color, otherwise the channels print in Grayscale. In most cases you will want to print in Grayscale to better distinguish subtle brightness changes within a channel.
  - Fit to Page: Check this preference to fit the image to the printed page. If this checkbox is unchecked, a drop-down menu allows you choose the zoom level for printing your image.
- 3 Click Print.

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*Note: You do not have to render the file before you print while in xRes Mode; rendering takes place during the printing process.*

### **To Print Selected Objects**

You may not want to print all of the objects in the document at one time. If you are interested in printing only one object, or only a few objects out of several, you can specify which objects to print.

Access the Objects Window and uncheck the View box for objects you do not want to print. Only visible objects print.

### **To Print at Different Zoom Levels**

You can create a proof of a large document for a printer by printing at a lower zoom level. You may also want to print a lower zoom level to speed up the printing process; smaller files print faster than larger files.

You can print at any of the following zoom levels: 1:1, 1:2, 1:4, 1:8, 1:16, 1:32, and 1:64. A zoom level of 1:2 prints a document that is half the height and half the width of the original file; a zoom level of 1:4 prints a file that is one fourth the height and one fourth the width of the original file.

To print at a lower zoom level uncheck “Fit to Page” in the Print Options. A Print Level drop-down menu appears. Choose a zoom level in the drop-down menu, and click Print.

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*Note: As an alternative, you can export the file at a lower zoom level and print this exported file at 1:1.*

### **To Print on Different Stocks**

If you are printing on a variety of paper stocks, you should calibrate your Printing Inks for each of these stocks and save the ink settings. The same colors can print differently depending on the texture and thickness of the paper. Use the menu command File > Preferences > Printing Inks to access the Printing Inks dialog. See *Getting Started* for more information on Printing Inks.

When you start a project, you should load the ink settings which correspond to the output device you will use for that project.

### **To Print to Different Output Devices**

If you are printing to different output devices, you should calibrate printing inks for each output device. See the documentation included with the output device for more information.

### **To Print to a Film Recorder**

If you are outputting the image to a film recorder, you should work in RGB Color Mode.

To guarantee that the color in the film recorder matches the color in xRes S.E., make sure that the Monitor Gamma is correctly calibrated. See *Getting Started* for information on setting Monitor Gamma.



## Exporting to EPS

You or your service bureau may decide to print with another application. You can use xRes S.E. images that have been exported as EPS files in a variety of applications. In addition to using EPS files as design elements in page layout documents, you can work with EPS files in post-processing applications to complete prepress tasks.

To export an xRes S.E. document to the EPS format, use the menu command File > Export > EPS. This EPS file may then be opened in a page layout program such as Quark XPress.



## Appendices

## Appendix 1: Frequently Asked Questions

This appendix answers frequently asked questions regarding the installation and operation of xRes S.E..

### Before Calling Technical Support

Before calling Technical Support, scan this chapter to see if your question has been addressed. Below are suggestions to try before calling Technical Support:

- Read the ReadMe file that ships with xRes S.E. for information not included in the documentation set.
- Quit xRes S.E. and relaunch it.
- Delete the xRes S.E. Preferences file by opening the Resources folder (located in the xRes S.E. folder) and dragging “xRes S.E. Preferences” to the trash can. Relaunch xRes S.E..
- Reinstall xRes S.E..
- Macintosh users: Restart the computer with extensions off by holding down the Shift key as the system restarts until you see the message “Extensions Off.” Relaunch xRes S.E..

### Frequently Asked Questions

#### Memory

Q: I have two hard drives with several megabytes available on both, but the Info Inspector says only a few megabytes are available on the swap disk. Why?

A: You must specify which swap disks you wish xRes S.E. to use. The default setting makes the hard disk that xRes S.E. is on the only swap disk. Use the menu command File > Preferences > Memory, and specify a Primary Swap Disk and a Secondary Swap Disk. Relaunch xRes S.E. for the change to take effect.

Q: I'm getting an error message that says “Insufficient swap disk space to complete operation. An additional 71 MB is needed.” Why?

A: You do not have enough swap disk space to complete the required operation. You must free up some swap disk space before continuing. Use one or more of these methods to free up swap disk space:

- Save the file, close the file, and reopen it again.
- Use the menu command File > Preferences > Memory and reduce the number of undo levels. Having only one undo level allows the greatest amount of swap disk space to be available. You must always have one undo level.
- Macintosh Users: Drag unneeded files and folders to the trash and empty the trash.

## Painting and Erasing

Q: I'm painting and nothing is showing up on the image. Why?

A: Examine the Objects Window to make sure that the object you are trying to paint on is active (gray). If it is not, click on it to make it active.

When you use the Brush, Eraser, or Clone Tool, you affect only editable channels within active objects. Make sure the primary channels are editable. Use the Window > Channel command and click the composite channel to make it editable.

If selections are present within the active objects, the painting is limited to those selections. Selections may be invisible. To view an invisible selection, access View > Selection. To delete any selections, access the menu command Select > None.

Also, brushes are only visible if the opacity is set greater than 0. Artistic brushes, which have no opacity value, are only visible if the concentration value is above 0. Make sure the opacity of the brush is greater than 0 in the Brush Options Inspector. For artistic brushes, make sure the concentration is greater than 0 in the Brush Options Inspector.

Note that the Shading, Sponge, and Contrast brushes are not designed to affect solid white or solid black colors.

Q: I have been changing the values in my brush set and now Charcoal and Felt Tip both look like the Airbrush. Why?

A: If you have been experimenting with values in the Brush Options Inspector, you may have inadvertently changed the behavior of the default brushes so that they do not behave as their name indicates.

Choose “Default Brush Set” from the Brushes submenu. The original (default) brush set will be reloaded.

If “Save Brushes on Exit” is checked in General Preferences, the brush changes will be permanent. Uncheck this option to keep your brush changes from being saved when you exit xRes S.E..

Q: The Brush Tools provide unexpected results. Why?

A: Painting occurs only in editable channels. You may receive an unexpected result if you are painting in a mask or painting in an alpha channel.

If the blending mode of an object is not Normal, or the opacity is not set at 100%, painting can produce unusual results. For example, if the opacity of an object is set to 50%, the paint stroke appears translucent. Make sure that only primary channels are editable (checked) in the Channels Palette, accessed by the menu command Window > Palettes > Channels.

Check the opacity and blending mode of the object by viewing the Objects Window, and change the opacity and blending mode if necessary.

Q: I’m trying to erase but getting I’m getting a cube-shaped/calligraphy-shaped/multi-tipped eraser. Why?

A: Erasing is performed with the brush currently selected in the Brushes Palette. If you have selected a cube-shaped/calligraphy-shaped/multi-tipped brush, the eraser acts like this brush. Choose the Hard or Soft brush in the Brushes Palette to simulate typical eraser behavior.

## **Fills and Gradients**

Q: I’m using the Bucket Tool and its filling at half opacity. Why?

A: The Bucket Tool fills at the opacity set in the Bucket Tool Options. If the opacity is set to 50% in the Bucket Tool Options, the fill is only 50% opaque. Access Bucket Tool Options by double-clicking on the Bucket Tool and reset the opacity to the desired level.

Q: I want to make a line-shaped fill with the Gradient Tool and I’m getting a different shape.

A: The shape of the gradient is set with the Shape Menu in the Gradient Tool Options. Choose “Line” to produce a line-shaped fill.

Q: What is that bar below the Color Ramp in the Gradient Options?

A: This is the Opacity Ramp. It determines the opacity level for the color directly above it on the Color Ramp. Opacity levels are set by dropping Grayscale colors into the Opacity Ramp. Entering white into the transparency ramp is equivalent to an opaque gradient; entering black is equivalent to a transparent gradient, and shades of gray correspond to shades of opacity. The range of color affected by each drop into the Opacity Ramp is controlled by the Range Sliders, which appear as two triangles between the Color Ramp and Opacity Ramp. See “Opacity Ramp” in the xRes S.E. *User Guide* for more information.

## Selections and Masking

Q: I'm using the Magic Wand and then applying an effect, but it only applies halfway. Why?

A: The Magic Wand Tool Options allow you to set a selection's opacity from 1% to 100%. If the opacity is set to less than 100%, filters and painting tools will not be applied at their full effect. To create selections that produce 100% opaque effects, access the Magic Wand Tool Options by double-clicking on the Magic Wand Tool and set the opacity to 100%.

Q: I'm trying to mask but I keep getting a cube-shaped/calligraphy-shaped/multi-tipped masking brush.

A: Masking is performed with the brush currently selected in the Brushes Palette. If you have selected a cube-shaped/calligraphy-shaped/multi-tipped brush, the mask acts like this brush. Choose the Hard or Soft brush in the Brushes Palette to simulate typical mask behavior.

## Performance

Q: I can only apply the Edit > Undo level once, and then the command is grayed out. Why?

A: Set the number of undos in the Memory Preferences (File > Preferences > Memory) greater than 1. The Undo level can be set up to 20.

Q: I'm applying an operation and nothing is happening. Why isn't the program responding?

A: In xRes S.E., operations occur only on active objects. If an object is inactive the operation does not affect it. Access the Objects Window (Window > Objects), activate the object you wish to affect, and increase its opacity if necessary.

Also, if an object has a low opacity, the effect of the operation may not be visible. Increase the opacity of the object via the Objects Window if necessary.

If selections exist within an object, the operation occurs only to the area inside of the selection. To delete a selection, access Select > None.

Most operations only affect editable channels. You can produce unusual results by applying an operation to an object in which only the alpha channels are editable. Access the Channels Window (Window > Channels) and click the composite channel to make it editable.

## Objects

Q: I'm trying to create a dropshadow by applying a blur filter to a text object, but nothing is happening. Why?

A: A mask channel is used in text objects to limit the visible area of the object. To blur the edges of the text, you must blur the mask channel of the text object.

Access the Channels Window (Window > Channels) and click the mask channel to make it editable. Next, click the view box for the composite channel to make all channels visible (to see the result of the blur filter). Apply the Blur filter.

Q: I'm applying the Edit > Cut command and the document turns black. Why?

A: The Edit > Cut command applies to whole objects. By applying the Edit > Cut command, you are cutting the object from the screen onto the clipboard. If you are using the Cut command in the RGB color space and only one object is present, the Cut command leaves an uneditable (black) area on screen.

If you want to cut only part of an object to the clipboard, create a selection encompassing that area, float the selection, and apply the Edit > Cut command to the floating selection.

If you want to delete an area inside a selection, use the Edit > Clear command instead of the Edit > Cut command. The Edit > Clear command will fill the selected area with the background color.



## Printing

Q: Why is my document taking so long to print?

A: The higher the dpi setting, the longer it takes to print. Check the dpi of your printer, consider the dpi needed for the particular project, and make sure that the dpi is not set unnecessarily high.

If you are printing from xRes Mode and have not yet rendered the file, the file is rendered as it is printed. Printing an unrendered file can take longer than printing a rendered file, particularly on desktop printers where the image size is 1 MB or greater.

## Plug-Ins

Q: Why don't my Plug-In filters show up in the xRes S.E. menus?

A: To use Plug-Ins, you must tell xRes S.E. where to locate the Plug-Ins. Access the menu command File > Preferences > Set Plug-In Folder, and select a Plug-In folder.

Q: I'm applying the Plug-In filter and nothing is happening (or) I'm getting an error message. Why?

A: To use Plug-In filters in xRes S.E., you must allocate some of the available memory to Plug-In usage.

To allocate memory to Plug-In usage, access the menu command File > Preferences > General, and check the "Use Plug-Ins" checkbox. Relaunch xRes S.E. for this preference to take effect.

Additionally, some Plug-Ins written by third-party developers were not written to take advantage of the xRes S.E. technology. These Plug-Ins require a great deal of memory when applied to large images and may require more RAM than is available on the machine.

If you receive an error message stating there is not enough memory to run the Plug-In, make sure that you are not running any applications except xRes S.E.; this should free up RAM. Also, increase the amount of RAM available to xRes S.E. by allocating more RAM to the application or purchasing more RAM.

## Filters

Q: I'm trying to preview the entire image before applying a filter, but the preview window shows only a small portion of the image.

A: Access the menu command File > Preferences > General, and uncheck "Use Preview Box."

Q: Filters in xRes Mode appear slightly different on screen than when printed.

A: The image appearance can vary with zoom level. For example, if you are viewing your image at the 1:8 zoom level, one on-screen pixel represents 64 actual pixels. Because the screen pixel represents the average value of these 64 pixels, the on-screen image may be slightly different than the printed image, which (if printing is set to the 1:1 zoom level) displays the true pixel values of the image.

To see an accurate version of your image before printing it, zoom in to 1:1 (View > Zoom In> 1:1).

## Appendix 2: Advanced Tips and Tricks

These tips and tricks assume you know how to access all the xRes S.E. windows, and you are familiar with xRes S.E. fundamentals.

### Tip 1: Creating Brushes

#### Creating Oil Brushes

The Tips and TipSpacing controls the number of “bristles” in the brush, and the space between these bristles. Move the Tips Slider to the right to thicken the brush. The TipSpacing should depend on the number of Tips; in general, TipSpacing should increase with the number of Tips.

Use the Random Sensitivity dialog (accessed by the Brush Options Inspector) to give each bristle a slightly different hue, lightness, or saturation value. Move the slider to the right (higher settings produce more random bristle colors), and click the Hue, Saturation, or Lightness checkboxes to increase the randomness of these values.

#### Creating Textured Brushes

Use the Texture Slider to control the amount of paper texture the brush picks up. The Fringe Slider produces an inverse texture at the edge of the brush. To inverse the texture, check the Inverse checkbox in the Texture Palette.

#### Creating Ink Pens

The Bleed and Blackness values are important when creating ink pens. High Bleed and Blackness values simulate dark liquid ink. If the Blackness value is too high, the ink will always appear dark regardless of the color. The Bleed value gives the paint its liquid appearance; use a very high Bleed value to simulate watercolor effects.

## Creating Spray Effects

Spray-paint thickens if you spray in one place. This quality can be simulated by adjusting the Flow Slider. Holding your mouse button down or holding your pen in one place with a high Flow setting is the equivalent of holding a spray can in the same place—the paint thickens. A Flow value of 50 usually does the job; a Flow value of 100 usually sprays too much paint in one spot to produce a realistic effect.

Another characteristic of spray-paint is its high scatter value. This quality is simulated by adjusting the Scatter checkbox in the Random Sensitivity dialog (accessed by the Brush Tool Options submenu). For spraying paint, set the slider value to about 15; for creating a spray effect with brushes like the Pointillist or Cubist brush, set the slider value to about 30.

## Tip 2: Creating Gradients

The Gradient Palette allows you to save custom gradient fills. Once the Gradient Palette is mastered, the Gradient Tool is incredibly powerful. The trick is in knowing how to manipulate the Gradient Palette to create the desired effect.

Start by envisioning the fill you want: Will it be in a circular, elliptical, rectangular, or a conical design? (Other shapes can be used for special effects.) Next, what colors will be in the gradient?

When you create elliptical or rectangular fills, the colors that you enter in the left of the Color Bar represent colors at the inside of the ellipse or rectangle, and the colors at the right of the Color Bar represent colors at the outside of the ellipse or rectangle.

When you create cone-shaped fills, ensure that the rightmost and leftmost colors in the Color Bar match. Click the Eyedropper on the leftmost color, move the range sliders to the rightmost millimeter of the Color Bar, and drag the sampled color on the Color Bar between the range sliders. When applying the cone-shaped gradient to the canvas, the colors will blend smoothly into one another for all 360° of the cone.

## Tip 3: Compositing with Multiple Objects

Using multiple floating objects is essential for successful compositing. Use these tips to better organize the project:

### 1 Name all of the objects.

By naming all of the objects, you can easily distinguish them using the Objects Window. To rename an object, click on the object's name in the Objects Window or double-click on the object in the document.

### 2 Uncheck “Activates Objects” in the Arrow Tool Options.

Normally, clicking on an object activates that object and allows you to move it. But if “Activates Objects” is unchecked, then clicking in the document only allows you to move objects which are already active. If the image has many objects (for example, more than 10 objects), it is often easier to activate objects with the Objects Window than the Arrow Tool.

### 3 Make use of the Align command.

The Align command is used to align objects to each other by aligning their top, bottom, left, or right sides, or centers. Aligning objects can organize the document and increase visual appeal. To align several objects, activate all the objects you wish to align, use the menu command **Modify > Align**, and choose top, bottom, left, right, or center.

### 4 Make use of the “Lock” checkbox.

If you have decided you do not want to move an object for a while, lock it in place using the Lock checkbox on the Objects Window. The object cannot be moved even if you click on it with the mouse and drag.

### 5 Precisely position the objects.

Make use of the rulers to track the exact location of the objects. Access them using the keyboard shortcut **Command-R** (Ctrl-R in Windows) and set the ruler measurement in the General Preferences. To precisely position an object, double-click the object's name in the Objects Window, or double-click on the object in the document. Enter the position of the object in pixels, inches, centimeters, picas, or points, and click OK.

## Appendix 3: Creating Web Pages

### Why Would You Want to be on the World Wide Web?

The World Wide Web (WWW, or simply “Web”) is the leading edge of academic, business, and personal electronic communication. It is changing the way we work, interact with each other, and entertain ourselves. At press time for this manual, about 20% of all Americans had access to the Web, 15% or so used it weekly, and more than 30% of those users have made some purchasing decision based on information found on the Web. These numbers are expected to double every 6 months.

If you have products to advertise, hobbies to pursue, or information that you want to retrieve, then Web access is a great investment to make. Whether it involves putting your resume or portfolio on-line, selling car parts to the far corners of the earth, or downloading the latest tax forms, there is a place for you on the Web.

### What is the World Wide Web?

The Web is a means of displaying information across the Internet with graphics. It is a network made of networks, which are owned and run by governments, educational institutions, private corporations, and individuals. These diverse networks communicate with each other using Telecommunication Communication Protocol / Internet Protocol (TCP/IP). A computer attached to these combined networks is, in theory, accessible by all other computers on the Internet.

The bulk of information on the Internet is stored in files that are designed to be downloaded to your computer for local use. However, documents can be formatted for the Web to be displayed on your computer directly. These Web documents can also act as interfaces for on-line databases, e-mailing lists, and newsgroups; Web documents can also be interfaces for downloading software from Web sites.

### How to Create Graphics for the Web

Since the information on the Web is designed to be seen as quickly as possible, there are a number of considerations you need to keep in mind when designing graphics for the Web.

#### Size

The size of the graphic is important, since the size determines how fast the document will be transmitted to your machine. The size refers to the height, width and resolution of the file, attributes which are

measured in pixels. The resolution should be 72 ppi. Normally you want the graphic to be as small as it can be and still be of value to the page you are designing. Examine your Web page to determine the size of the graphic needed in inches. In xRes S.E. you can keep the image small by working in Indexed 256 Color Mode.

### **Color Depth**

Color depth refers to how many colors are in the image. An image displayed on the Web should have as few colors as possible, so that the user does not have to wait a long time for the image to appear on the screen. Rather than 24-bit images, many images for the Web are 8-bits (which allows 256 colors) and are dithered to give the illusion of more colors. Unlike many image-editing programs, xRes S.E. can use Indexed 256 Color Mode to create an 8-bit image.

### **File Format**

Current Web browsers read graphics in the CompuServe GIF and JPEG formats. In the near future, Web browsers will accept Portable Network Graphics (PNG) files, which allow much more flexibility than GIF and JPEG. xRes S.E. supports the JPEG, Progressive JPEG, GIF, GIF 89, and PNG formats, so it is ideal for Web document design.

## **How to Get Information for Designing Your Own Page on the Web**

Once you have a sketch of what you want to do with your page and you have produced the graphics, you need to build your Web page. For more information access [home.netscape.com](http://home.netscape.com) and use the index for HTML commands. In addition, you can browse the computer section of your local bookstore for more information on designing Web pages.

## xRes S.E . Glossary

### **Acquiring Images**

The Acquire command is used to open documents scanned with the TWAIN interface. The Acquire command can use third-party acquire modules (also called import modules).

### **Alpha Channels**

Alpha channels are non-primary channels used to store intermediate channel operations and special effects. Certain file formats retain alpha channels; others delete the alpha channels.

### **Blending Mode**

The blending mode of an object determines how it will be affected by the objects beneath it.

### **BMP**

BMP has an advantage over all other file formats: it is the official file format for Microsoft Windows® images. BMP is an RGB-only format. It supports Indexed 256 color documents, as well as Grayscale and 24-bit RGB documents, but does not support CMYK documents.

### **CCW**

Abbreviation for Counter Clockwise.

### **Channel**

A channel stores the color information for an image; for instance, the R, G, and B channels store the red, green, and blue information for an image.

### **Cloning**

Cloning is the process of replicating one part of an image and pasting it to another part of the image.

### **Color Correction**

Color correction involves changing the color values of pixels.



### **Color Mode, Grayscale**

Grayscale allows you to choose a color that is pure black, pure white, or varying shades of gray from 1% to 100% black.

### **Color Mode, HSB**

HSB allows you to choose a color with a hue value from 0° to 360° and a saturation and brightness value from 1% to 100%. The hue value is based on the color wheel, with 0 referring to the red value on the color wheel. For example, if the hue is set to 250, a blue value is displayed, because blue is 250 degrees clockwise from red on the color wheel.

### **Color Mode, HLS**

The HLS Color Mode allows you to choose color with a hue value from 0° to 360° on the color wheel and a saturation and lightness value from 1% to 100%.

### **Color Mode, RGB**

The RGB Color Mode allows you to choose a color with red, green, and blue values ranging from 0 to 255.

### **Color Mode, YIQ**

The YIQ Color Mode allows you to choose colors based on the luminosity, chroma, and intensity of the pixels. The advantage of this method is that it may offer a smoother transition of colors than the other methods.

### **Color Mode**

This is the means by which color is represented in the document: RGB, CMYK, Grayscale, or Indexed 256.

**Color Model, Additive**

You can combine varying intensities of three wavelengths of light—red, green, and blue (RGB)—to simulate the range of colors found in nature. Red, green, and blue are called the additive primaries. If you combine 100% of red, green, and blue, you perceive the color as white. If none of the additive primaries are present, you perceive black.

**Color Model, Subtractive**

If you subtract red, green, or blue from white light (100% each of red, green, and blue), you create cyan, magenta, or yellow (CMY), respectively. For example, you perceive an object as cyan if it absorbs (subtracts) 100% red light and reflects green and blue. Cyan, magenta, and yellow are called the subtractive primaries and form the basis for printed process colors.

**Color, Matte**

The Matte Color refers to a color that is transparent when the image is composited. Common matte colors are black and white.

**Color, Void**

The Void Color refers to the compositing color used while using the Indexed 256 Color Table. To set the Void Color, select the desired color, and click the Set Void Color button.

**Continuous Tone**

If you look closely at an original black-and-white or color photograph, you will see that the image consists of solid shades of gray or color that blend smoothly. An original photograph is called continuous-tone art.

**CW**

Abbreviation for Clockwise.

## **Direct Mode**

Direct Mode is the default work mode for xRes S.E.. All features are available in Direct Mode, however, Direct Mode lacks the speed of xRes Mode.

## **Document**

A document is simply an open file. The relation between the terms “document” and “file” in xRes S.E. is similar to that found in word processing; you can open, create, or close a document which in turn is saved to a file.

## **EPS**

EPS stands for Encapsulated PostScript. PostScript is a page layout language which Adobe Systems developed about fifteen years ago. All PostScript output devices, including most Hewlett Packard and other desktop laser printers (as well as document setters) read PostScript files.

## **Exporting**

The menu command File > Export saves a copy of a file to a different file format including file formats of third-party vendors. An exported document will have all objects merged and all alpha channels deleted.

## **Filter, Plug-in**

A plug-in filter is a filter from another program which you wish to use in xRes S.E.. xRes S.E. supports third-party Adobe Photoshop compatible plug-in filters such as Kai's Power Tools and Gallery Effects. You should store all plug-ins that you wish to use in xRes S.E. in the same folder or directory.

## **Filter**

A filter is an effect applied to an image by a menu command that effects the pixel data in the image. Filters such as Gaussian Blur, Add Noise, and Unsharp Masking are essential to photo-retouching. Other filters are useful for special effects, such as Wave, Ripple, and Solarize. All of the filters in xRes S.E. can be applied to documents in RGB, Grayscale, or CMYK modes. Filters only apply to

active objects in the document. If there are selections inside of the objects, the filter applies only to areas inside of the selection. Note that filters only apply to editable channels.

## **Floating**

You can create an object by “floating” a selection within the document. A selection may be created with any of the masking tools (such as the Ellipse Tool or the Rectangle Tool) or the Mask Window. Once your selection is made, use the menu command **Select > Float**. The pixel data within the selection is now a freely floating object. This new object may be resized, rotated, positioned, and edited as any other object.

## **Gamma**

Gamma refers to calibrating your RGB monitor for accurate colors on-screen. See *Getting Started* for more information on setting gamma levels.

## **GIF**

The GIF format is an 8-bit color format frequently used in on-line services. GIF files are typically very small, which make them convenient for uploading and downloading data using a modem.

## **Global Operations**

Global operations are operations performed at the document level that change the position, size, or shape of an object. Global operations support only one level of undo.

## **Half tone Screens**

To reproduce continuous-tone art and process colors on a commercial printing press, the image or color must be broken into a series of dots of various sizes and colors, called a halftone screen. In electronic publishing, scanning is the first step in converting continuous-tone art to halftone screens. Black dots are used to recreate black-and-white images, and cyan, magenta, yellow, and black dots are used to recreate color images on the press. When printed, small dots create light areas and large dots create darker areas.

## **Histogram**

A histogram is a chart which graphically depicts the distribution of gray values in an image.

## **HLS**

HLS is a Color Mode which xRes S.E. uses to generate Noise. It cannot be accessed by the Modify > Color Mode command; it is a Color Mode only used while applying the Add HLS Noise command.

## **Image**

An image is a graphic or illustration that you view using xRes S.E.. An image is viewed within a document, which can consist of single or multiple objects.

## **Importing**

The menu command File > Import imports an image into the active document as an object. xRes S.E. can import an image of any file format that it can open except MMI.

## **Interpolation Mode**

The Interpolation Mode refers to the method xRes S.E. uses to ensure that object transformation commands do not cause image degradation. The Interpolation Mode is set on the General Preferences dialog accessed by the menu command File > Preferences > General, and it is represented by a checkbox called “Bilinear Interpolation.” If Bilinear Interpolation is unchecked, xRes S.E. will use “Nearest Neighbor” Interpolation.

## **JPEG**

JPEG stands for Joint Photographic Experts Group; it is one of the most efficient compression file formats. JPEG compression can vary from high quality (saving a document at low compression, such as 2:1) to low quality (saving a document at high compression, such as 100:1).

## **Local Color Correction**

Local color correction refers to correcting color in one particular area of an image under the brush. For local color correction, you may use the Dodge, Burn, Sponge, Smear, Noise, Tint, or Contrast brushes. These brushes allow you to control the exact strength and location of these local color effects.

## **Local Operations**

Local operations are performed at the object level and do not change the position, size, or shape of the object. Local operations support multiple levels of undo.

## **LRG**

The LRG document format was designed by Fauve Software (now part of Macromedia) to specifically address the issue of saving a large document (10 to 20 MB or larger). An LRG document is stored in a series of tiles, making it easy to rapidly access the image data. LRG documents are automatically opened in xRes Mode by xRes S.E..

## **Marquee Tool Options**

Marquee Tool Options are settings that affect the Rectangle Tool and the Ellipse Tool. There is no single tool called the “Marquee Tool;” the Rectangle Tool and the Ellipse Tool are the two marquee tools.

## **Mask Channel**

The Mask column in the Channels Window is used to mask out certain areas of the object. Clicking the Mask checkbox for a channel masks that channel in the object. The white areas of the channel represent opaque sections of the object, black areas of the channel represent transparent areas of the object, and gray areas of the channel represent translucent sections of the object.

## **Masking, Unsharp**

The term “Unsharp Masking” refers to a photographic process of blurring a negative, collating it with the original positive and then exposing the combined pieces of film. This technique allows photographers to increase the overall sharpness of an image in post-processing. With the Effects > Sharpen > Unsharp mask command, xRes S.E. performs the same process digitally.

## **MMI**

The MMI (MacroMedia Image) file format is used in xRes S.E. to save all works in progress that consist of multiple objects, whether in Direct Mode or xRes Mode. The MMI file format is used to save documents with multiple objects which you want to keep independent. An MMI file describes a document by keeping a command set for all objects in the document. Generally, you will not want to export the MMI file to another file format until you have finished editing the image. If you save to any format other than MMI, all objects will be merged into the background. To change a document from MMI format to another format, you must export it to the appropriate format; you cannot use the Save As command.

## **Noise**

Noise sets a random level of hue, saturation, and brightness to each pixel affected by a Noise filter.

## **Object Channels**

Each object can contain up to 32 channels. To view the channels of an object, use the menu command Window > Channels. The channels for one object will be different from the channels of another object unless the objects are duplicates.

## **Object, Active**

An active object is the same thing as a selected object, which is represented as gray in the Objects Window. (Inactive objects are white in the Objects Window.)

## **Object**

An object is an individual item in a document which can be moved, altered, and even saved separately from the document. Editing an object might consist of applying a filter to it, painting over it, or any other operation that changes the object's pixel data. In xRes S.E., objects in the document are displayed in the Objects Window. When an object is selected, it is called an active object. More than one object can be active at a time. A document can contain multiple objects. Documents with multiple objects are often reduced to having only one (background) object when they are exported to other file formats.

## **Objects Window**

The Objects Window, accessed by the menu command Window > Objects, serves as a shortcut for many common object operations. It is used to change the opacity and Blending Mode of an object, to change the visibility of an object, to lock objects in place, and to delete objects.

## **Opacity**

A 100% opaque object does not reveal objects beneath it; an object with 0% opacity is clear and reveals all of the object beneath it. The opacity of an object can be set with the opacity slider in the Objects Window.

## **Operation Set**

Operations performed to an object are called the operation set of an object. An operation set can include applying filters, gradients and fills, painting, and selections.

## **PhotoCD**

Kodak's PhotoCD® file format is designed for reading files from specially encoded CD's. PhotoCD uses a multiple resolution document representation. This is similar in concept to the LRG file format used in xRes S.E..

## **Photoshop 3.0**

The Photoshop 3.0 format was designed by Adobe Systems to store and edit multiple-object documents.

## **PICT**

PICT is the standard image format for Macintosh. It was designed as both a vector and raster image format. PICT raster format is not efficient for storing large documents (10 to 20 MB and larger) and cannot store documents with alpha channels or store documents in CMYK Color Mode.



## **PNG**

Despite being less than a year old, the PNG (pronounced “ping”) file format is gaining popularity due to its lossless compression ability, true color support, free reference implementation, and full alpha blending. Unlike the GIF format, PNG is royalty-free.

## **Pressure-sensitivity**

Pressure-sensitivity refers to differing brush behavior based on the pressure placed on a pressure-sensitive tablet. Placing more pressure on the tablet produces a larger brush, and placing less pressure on the tablet produces a smaller brush. Pressure-sensitivity behavior allows you to simulate natural brush behavior by giving the brush a gradual build-up in size, opacity, and blackness.

## **Primary Channels**

The primary channels of a color mode are red, green, and blue in the RGB Color Mode; cyan, magenta, yellow, and black in the CMYK Color Mode; shades of gray in the Grayscale Color Mode; and indexed color in the Indexed 256 Color Mode.

## **Process Colors**

Process colors are created by overlapping dots (halftone screens) of cyan, magenta, and yellow (CMY) inks to simulate a large number of different colors. Since CMYK inks are translucent, they absorb some colors and reflect others. To create blue, for example, you combine cyan dots (which absorb red and reflect blue and green) and magenta dots (which absorb green and reflect blue and red). Your eyes merge the cyan and magenta dots to perceive the color blue. You can use process colors to simulate spot colors and to reproduce color images.

## **Proxy System**

xRes S.E. is not a proxy system. Proxy systems are commonly used in image-editing to deal with large files. In a proxy system, a 72 dpi file is used to represent the larger, high resolution file. The disadvantage of a proxy system is that you may not zoom in and examine effects at the pixel level.

**Raster Image**

See Bitmap Image.

**Resolution**

When an image is scanned, the image is broken into thousands of pixels. Each pixel is typically encoded as three numbers, corresponding to the red, green, and blue components of its color in the RGB color space. Resolution is typically described as the pixels per square inch (ppi) of the image, as it is displayed on the monitor.

**Selected Area**

The selected area is the area inside the dotted black line or flashing marquee created with the marquee tools, FastMask, or the Mask Window.

**Selections**

Selections mask out an area of an object and are displayed on screen as a flashing black and white line or “marquee.”

**Speed-sensitivity**

Speed-sensitivity refers to different brush behavior based on the speed of the mouse or stylus. Moving the mouse faster produces a thinner brush, and moving the mouse slower produces a thicker brush.

**Spot Colors**

Spot colors are printed on a printing press with premixed inks. (You can choose from among hundreds of different spot-color inks.) Use spot colors to achieve an exact color match—for a corporate logo, for example—or to add visual impact to a one, two, or three-color illustration at a nominal cost.

## **Swap Disk**

A swap disk is simply the amount of hard disk space xRes S.E. can use to edit your document. The amount of swap disk space needed depends on the size of your image, the number of objects in your image, and the number of undo levels you plan to use.

## **Swatches**

The term swatch refers to a small square of color on a color palette, or one of the microswatches at the bottom of the Tools Palette which control the foreground and background colors.

## **TGA**

Targa (TGA) is the file format of True Vision Corporation, which is best known for its video boards for IBM PCs. TGA is an RGB-only format, and can contain only one alpha channel. This format is referred to as 32-bit color; 3 x 8 bits for the document, plus 8 bits for the alpha channel.

## **TIFF**

The TIFF format was developed over ten years ago by Aldus Corporation (now part of Adobe) as a general purpose format for raster documents. TIFF stands for Tagged Image File Format; the format consists of tagged fields which are general enough to handle any type of document.

## **Vector Image**

A vector image is different from a bitmap image. A vector image is an image composed of shapes saved as mathematical relations to each other. An example of a vector-based image editing program is Macromedia FreeHand.

## **Work Modes**

xRes S.E. supports two document-specific work modes: Direct Mode and xRes Mode. Direct Mode is designed for images that are less than 10 to 20 MB in size and contain less than ten objects. xRes Mode is designed for images that are greater than 10 to 20 MB in size or contain 10 or more objects.

**xRes Mode**

xRes Mode is designed exclusively for the quick manipulation of high-resolution files greater than 10 to 20 MB in size, or files with 10 or more objects.