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Introduction

Welcome to **Brenda * The Batch Renderer**. **Brenda** was written to fill a long-felt need for a way to process large numbers of digital image files in an efficient manner. With **Brenda**, you can select a virtually limitless number of images, set a few options, and sit back (or go to lunch) while **Brenda** does the rest!

Batch Processing Features:

Map true-color images to greyscale

Map true-color images to fixed color palettes at a variety of color depths

Convert true-color or palette mapped images to the same, standardized palette

<u>Create an optimized palette</u> from an assortment of source images (limit 100)

Convert palette mapped images to true color

Perform file format conversions

Additional Features:

Save output files with their original names or as

Serially numbered output files

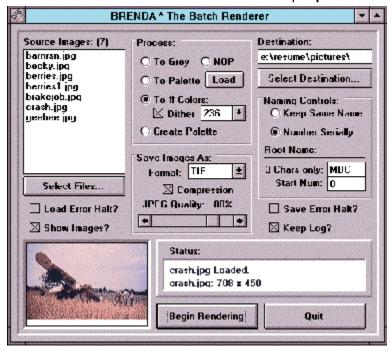
Select whether load or save errors will interrupt processing

Keep a log file for post-processing analysis

Selectable onscreen preview window

Screen Layout

The **Brenda** batch processing panel places all its controls in plain sight. There are no menus and, with the exception of file requester dialog boxes, no hidden or modal panels. If **Brenda** is not already running, you can click on different elements of the image reproduced below for brief pop-up descriptions, or return to **Contents** to view other **Brenda** help **topics**:



More about Brenda

Begin Rendering

When you click this button, **Brenda** will initiate the selected process. Depending on the options you have selected, however, you may be prompted for further information, so dont walk away just yet!

Log File Name

If you have selected to keep a <u>log file</u> (this is selected by default), a file requester dialog box will appear. You must choose a path and specify a filename for this file to be saved.

Palette File Name

This option exists since it is possible you might wish to keep palettes in a directory separate from processed images. If you selected the <u>Create Palette</u> process, a file requester dialog box will appear (after you have supplied a log file name, if the log option was selected). You must choose a path and specify a filename for the palette to be saved.

Note that, as long as it remains running, Brenda remembers the paths associated with Source, Destination, Log and Palette directories and the requesters initialize themselves to the last active directory as appropriate.

Assuming that you have specified all necessary file paths and names, **Brenda** proceeds to process your selected images. Within a few seconds, an **Abort** requester will appear over the **Brenda** main panel. If you wish to terminate the processing session before it is complete, click the **Abort** button (see Quit).

Halt on Errors

If you selected either the Load Error Halt or Save Error Halt options, then processing will be suspended any time **Brenda** cannot perform the requested operation (loadbecause the file is not there, or it is mangled, or there is insufficient memory; savebecause the disk is full or a write-protected file of the same name already exists). On such an error occurs, a Windows™ message box will appear, describing the error.

If you left Load Error Halt and Save Error Halt unselected (their default conditions), then errors will be reported in the log file, but **Brenda** will happily skip them over and continue processing the remainder of the batch.

More on Brenda Screen Layout

About Brenda

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A major dept of inspiration is owed to Nova Design, Inc. of Richmond, VA (authors of ImageFX for the Amiga) for staking out the moral high ground of User Interface Design.

Quitting Brenda

When you click this button, **Brenda** exits, freeing any memory it had allocated. Clicking **Quit** cannot interrupt a batch in progress.

Aborting an Executing Batch Session

While a batch process is running, an **Abort** requester appears over the main **Brenda** control panel. If you wish to terminate the batch in progress, click the button in this requester. Many of **Brendas** processes are extremely processor-intensive, and it may take as much as a full minute for the currently executing process to complete, but you will soon regain control.

More on Brenda Screen Layout

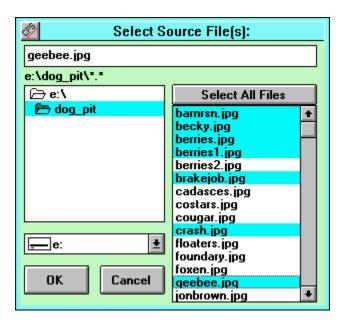
Batch Processing Multiple Files

Brenda * The Batch Renderer is designed to apply various common image processing operations to a large number of files at once. To maximize flexibility and simplify configuration, **Brenda** maintains separate internal channels for the files:

- <u>Source Path and Name(s)</u> -- Images to be processed are considered to be Source images. The
 file requester associated with Source files is designed to allow the selection of a great many files
 once. Brenda keeps track of the Source Path and maintains the selected files in a list.
- <u>Destination Path and Name(s)</u> -- When processed the images are stored to the directory you specify in the Destination file requester. Ordinarily, this path is different from the source, although it need not be. The output files are named according to your selection of <u>Naming Option</u>. Files can either retain their original filenames (with the 3 letter suffix staying the same or changing according to the output file format), or you can select to have the output images numbered serially (to a maximum 99,999 files. This latter method is particularly useful when processing frames from an animation.
- <u>Palette Path and File Name</u> -- When a standard palette isused (either as the basis for fixed color rendering or when created from a list of files), its path and name are specified and maintained separately.
- <u>Log Path and File Name</u> -- When the Keep Log option is selected, Brenda maintains a separate path and file name for the log file as well.

Selecting Source Files

This is the Source File dialog box. Clicking on each of its features will produce a brief pop-up description of its function.



More on Files and File Selection Supported File Formats

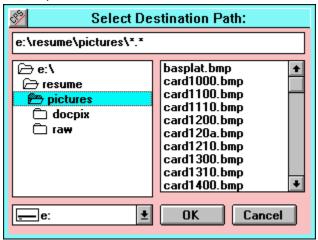
Select Files... Button

When you click this button, the Source File dialog box appears. Select the file(s) you wish to process.

More on Files and File Selection Supported File Formats

Saving Processed Image Files

This is the Destination File dialog box. Clicking on each of its features will produce a brief pop-up description of its function.



More on Files and File Selection Supported File Formats

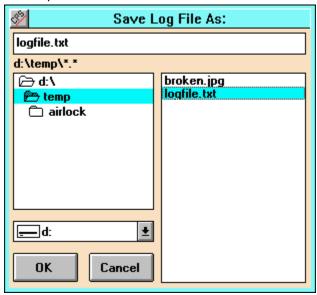
Select Destination... Button

When you click this button, the $\underline{\text{Destination File}}$ dialog box appears. Select the file(s) you wish to process.

More on Files and File Selection Supported File Formats

Keeping a Log File

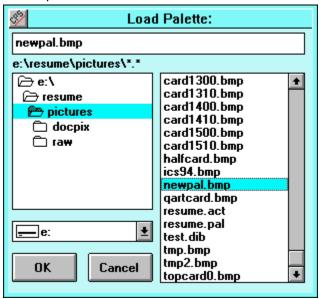
This is the Log File dialog box. It appears automatically when the $\underline{\text{Keep Log}}$ option is selected and you click the $\underline{\text{Begin Processing}}$ button. Clicking on each of its features will produce a brief pop-up description of its function.



More on Log Files
Other Run Time Options

Loading and Saving Palette Files

This is the **Load Palette** File dialog box. It appears any time you click the **Load** button associated with the <u>Convert to Palette</u> processselector. Clicking on each of its features will produce a brief pop-up description of its function.



This is the **Save Palette** File dialog box. It appears automatically when the <u>Create Palette</u> process is selected and you click the <u>Begin Processing</u> button. If the <u>Keep Log</u> option is selected, it appears after you have responded to the Log File dialog box.

Note that this panel contains several additional controls for the selection of palette **output format** and **color depth.** Clicking on each of its features will produce a brief pop-up description of its function.



Brenda Processes

Brenda * The Batch Renderer can perform the following processes:

Convert images to greyscale
Convert images to a (loaded) Standard Palette
Convert images to 'n' Colors
Create a Custom Palette from selected images

Supported File Formats

Convert to Greyscale

When this process is selected, each image in the source file list is converted to greyscale and saved.

If the source is a true-color image, it is rendered to and saved as an 8-bit image.

If the source is less than 8-bits deep the destination will be also.

More on Brenda Processing Operations Supported File Formats

Convert to a Fixed Palette

When this process is selected, each image in the source file list is remapped to conform to the loaded **fixed color palette.** If no palette is loaded, you will be prompted to load one before proceeding. **Brenda** will load any palette file created with **Brenda**; and can also load any supported palettized image file and use its palette. This allows you to use a single source image as the base color map for any number of additional images.

Loading Foreign Color Maps

Many users have asked whether **Brenda** will use one or another custom color map in a proprietary palette file format. The answer is:

Maybe. Try it.

If you get a "Unrecognized or invalid data type" message, you may not yet be out of luck. Try using the program which generated the color map (.PAL or whatever) to create a palettized bitmap (.BMP or .TIF) that contains the desired color map -- this can even be a blank imge as small as 2 x 2 pixels, as long as it's palette-mapped with the desired colors! Then, supply this file to Brenda's Load Palette: file requester.

More on Brenda Processing Operations
Supported File Formats

Convert to 'n' Color Palette

When this process is selected, each image in the source file list is **reduced in color depth** to the number specified in the **Colors** drop-down list.

This operation also can be used to **promote** a low-color image to a higher-color dataform. For instance, a 32 color palette-based image can be converted and saved as a 24-bit image. It is important to note, however that no new color *information* is added. The picture still contains only 32 distinct colors. You can, though, now paint into it or composite it with anoter image without disturbing or remapping the original 32 colors.

Destination Colors and Bit-Depths supported by Brenda:

Custom -- Type any number between 2 and 256 into the string.

2 colors -- saved as a 4-bit dataform

4 colors -- saved as an 8-bit dataform

8 colors -- saved as an 8-bit dataform

16 colors -- saved as a 4-bit dataform

32 colors -- saved as an 8-bit dataform

64 colors -- saved as an 8-bit dataform

128 colors -- saved as an 8-bit dataform

236 colors -- saved as an 8-bit dataform

256 colors -- saved as an 8-bit dataform

32k (32,768) colors -- saved as a 16-bit dataform, if the selected **Save File format** supports this depth. Otherwise, saved as a 24-bit dataform.

16M (16,777,216 colors) -- saved as a 24-bit dataform

236 vs. 256 color 8-bit Palettes

The Windows[™] environment reserves 20 colors from its 8-bit display palette for use in common screen elements. As a result, images mapped to a 256 color palette that does not contain one or more of these reserved colors can still undergo unwanted color shifts when displayed in Windows[™].

You can eliminate this problem by selecting and rendering to the 236 color palette (Brendas default). If you dont need to worry about compatibility under Windows™, and wish to use all 256 colors in an 8-bit palette, select 256.

More on Brenda Processing Operations
More on Supported File Formats

Apparent Colors with Dithering

When this toggle control is selected (its default value), the pixels in the processed image are scattered, or "dithered", to give the appearance of more colors than are actually present. **Brenda's** dithering technique is very effective at simulating a broad range of colors.

The Dither toggle only affects the **Convert to 'n' Color Palette** process. Dithering is automatically performed during the <u>Convert to Palette</u> process and is unnecessary when converting to <u>greyscale</u>.

More on Brenda Processing Operations
Supported File Formats

Creating a Custom Palette

When this process is selected, all the images in the Source list are loaded and composited together. Then, the color content of the composite image is analyzed and a "best-fit" palette of the depth specified in the Create Palette file requester is derived.

Destination Colors and Bit-Depths supported for Palettes:

```
16 colors -- saved as a 4-bit dataform
32 colors -- saved as an 8-bit dataform
64 colors -- saved as an 8-bit dataform
128 colors -- saved as an 8-bit dataform
236 colors -- saved as an 8-bit dataform
256 colors -- saved as an 8-bit dataform
Custom -- Type into the text entry field any number of colors you wish (between 2 and 256)
```

In order to conserve memory in low-memory systems (4 MB RAM recommended), this process is limited to a maximum of 100 source images. If you need to develop a palette for more than 100 pictures, select a subset of images that represent the full range of colors.

More on Brenda Processing Operations

More on Color Depth Considerations

Supported File Formats

Change File Formats

When the **NOP** process is selected, no actual processing is performed on the image data. Each image in the file list is simply loaded and stored in the destination directory using the selected <u>Save File format.</u>

Use this Process when you simply want to convert file formats without any other processing.

More on Brenda Processing Operations
Supported File Formats

Image File Formats

Digital images can be stored using a number of different techniques or formats. Some are more appropriate to low color images, while others work best with true-color or 24-bit data. Some formats are recognized by a wider range of host platforms (e.g.: Macintosh and Workstation systems), while others serve a specialized function (e.g.: DIB under WindowsTM)

Brenda supports the following file formats:

- **TIFF** -- A very rich image file specification developed by *Aldus Corporation* and popular across many platforms. TIFF images can be 1, 2, 4, 8, or 24 bits in depth. **Brenda** can use compression with TIFF images to minimize file size.
- Targa -- An image format made popular by *TrueVision* Targa video hardware. TGA can support 8, 16, 24 or 32 bit depths, although Brenda can only store 8, 16 and 24 bit versions of files. Brenda can read compressed TGA files, but can write only uncompressed files.
- BMP -- This is the most common format for digital image files within the Windows™ environment.
 On startup, Brenda is initialized to the BMP setting by default. Brenda will read compressed and uncompressed BMP files, but it can write only uncompressed BMP files.
- **DIB** -- While it is also a format for storing digital images, the Device Independent Bitmap (or DIB) is most commonly used in the Windows™ environment as an internal data format. Once a file is loaded -- from whatever source format -- it is converted to a DIB for display in Windows™. **Brenda** can write only uncompressed DIB format files.
- PCX -- This is the file format used by the Windows™ Paintbrush program (from ZSoft corporation).
 It is fairly widespread as a lowest-common-denominator exchange medium. Brenda can write compressed and uncompressed PCX files.
- **JPG** -- This is a highly compressed true-color (24-bit) only format developed by the Joint Photographic Experts Group. True-color images stored in the JPEG format can be a fraction of the size of 8-bit images stored using one of the other methods. However, JPEG sacrifices some amount of picture information to achieve this compression. You determine how much detail is lost by setting the <u>JPEG Quality</u> slider in the **Save As:** section of the **Brenda** control panel.

Selecting an Output Format

Clicking on this control causes a list box to drop down. You can select any format item in the list as your output or Destination file format.

The initial list item '???' causes Brenda to save the output files using the same file format as the input files. In this case, the format is determined by examining the three-letter suffix associated with the source file name. A file called 'mypic.bmp' would be saved as a .BMP file type and a file called 'newfile.tga' would be saved using the .TGA file type.

The '???' selection will only be effective as long as the source files are correctly named! If a file labeled 'mypic.bmp' is actually a .JPG file type, it will, nevertheless, be saved using the .BMP format.

Image File Formats supported by Brenda

Selecting File Compression

This toggle specifies whether **Brenda** should use compression when storing its output image files. Depending on the <u>Save File</u> format selected, **Brenda** can use LZW or RLE compression algorithms.

On startup, **Brenda** is initialized with the Compression setting enabled. If a file type cannot be saved using compression, this setting is simply diregarded. It is, therefore, a good idea to leave the option selected, so that those formats for which compression is supported can take full advantage of it.

If the images are destined for use on another platform that may not support compression for a particular file type (some programs will only accept uncompressed TIFF files, for instance) then de-select the Compression toggle before storing the files.

File Formats supporting Compression

JPEG Quality Slider

By adjusting the setting of this slider, you can specify the quality factor applied to images compressed using the **JPEG** frue-color format. The setting is expressed in terms of a percentage and represents *fidelity* or closeness to the original image. A setting of 95 means that 95% of the original image data is retained. A setting of 60 means that up to 40% of image data *may* be sacrificed in favor of decreased file size.

It is interesting to note that most photographic images can be stored using a 75% JPEG quality setting with virtually no *perceivable* loss in detail. Artificial images (like computer rendered 3D objects), however, will quickly show characteristic distortion artifacts when compressed too highly. Effective JPEG quality selection comes, mostly, as a matter of experience.

Brenda defaults to a JPEG quality setting of 85. This provides a generous compromise between image fidelity and file size efficiency.

More on JPEG and other file formats.

Brenda Options

In addition to its several processing operations, **Brenda * The Batch Renderer** has some helpful options settings. Careful attention to these settings can save valuable time when scheduling extensive batch processing sessions:

Options:

Keep a Log File
Output File Naming Options
Loading and Saving Error Control
Show Preview Images

Keep Log Option Selection

As **Brenda** processes through your list of source files, it reports messages periodically to the Status box in the main control panel. At your option, these messages can also be recorded in a text file on disk.

It is often extremely useful to keep log files for later review; particularly if the output results prove disappointing in some way. For instance, you may proceed through a batch of fifty files only to find the supposed destination directory empty on completion. A review of the log file for that session may reveal that the destination path was incorrectly specified and all the images were stored somewhere else; or that each image reported a Save failure, perhaps associated with the disk being full or write protected.

By default, **Brenda** is set to keep Log files. If you dont wish to use this option, uncheck the Keep Log checkbox.

Output File Naming Options

At your option, **Brenda** will store its output files using the same names as the original files, or using a serial numbering scheme that is customizable.

By default, **Brenda** is set to use the **Same Name** as the source files for output files.

You may choose to use serial numbering if all the source images are relatedparts of an animation sequence, for instance. In this case, you can specify a three-letter identifying prefix and an optional starting number.

For instance, if you select **Serial Numbering** and supply 'ABC' as the <u>Root Prefix</u> and '75' as the <u>Root Starting Number</u>, the sequence would be saved as follows:

ABC00075.BMP ABC00076.BMP ABC00077.BMP -- etc. --

Error Control Options

Even under the best of conditions, errors can occur (e.g.: The destination disk is full; the source file is corrupt). Normally, when an error occurs, Windows™ presents some form of message box to apprise you of the problem. Program execution is halted until you respond to the message box.

The whole point of a tool like **Brenda**, however, is to permit unattended operation; you may not even be in the room when the alert box appears. And, in the meantime, the batch operation is halted.

At your option, you can instruct Brenda to skip over **Load Errors** and/or **Save Errors** as they occur. The alert messages will still be recorded in the log file (providing that the <u>Keep Log</u> optionis enabled) for later review. This is the default setting.

Show Preview Images Option

The **Brenda** main panel contains a small preview window that can display each image as it is loaded and processed. By default, the **Show Preview Images** option is enabled. Under certain circumstances, however, you may wish to turn off the preview option.

256 Color Display

If your computers display system is set up for **8-bit (256 color) only display**, enabling the Show Preview Images option can add appreciably to program execution time. This is because, in addition to processing each image according to your specified operation, **Brenda** must also process the preview image to optimize it for display in a fixed-color Windows™ palette. This process adds nothing to the end product; it only takes longer. In this case, it is best to turn Show Preview lamges off, in order to allow the batch to process at top speed.

High-Color or True-Color Display

If your system has a **high-color** or **true-color** graphics adapter and is set to use a high-color or true-color display mode, then no Preview image processing need take place. The loaded images can simply be mapped into the existing view with all their original colors intact. On such a display system, enabling the **Show Preview Images** options does nto add appreciably to processing time.

Root Name Prefix

Use this control to set a three letter prefix for a filename **Root** when the Serial Numbering naming option has been selected. This option supports up to 99,999 sequential files.

For instance, if you select $\underline{\text{Serial Numbering}}$ and supply 'ABC' as the Root Prefix and '75' as the Root Starting Number, the sequence would be saved as follows:

ABC00075.BMP ABC00076.BMP ABC00077.BMP -- etc. --

Start Number

Use this control to set a starting number for a filename **Root** when the Serial Numbering naming option has been selected. This option supports up to 99,999 sequential files.

For instance, if you select <u>Serial Numbering</u> and supply 'ABC' as the <u>Root Prefix</u> and '75' as the **Root Starting Number**, the sequence would be saved as follows:

ABC00075.BMP ABC00076.BMP ABC00077.BMP -- etc. --

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Displays **number** of pictures selected.

Lists selected source image files by name.

Click this button to select source files.

When checked, file **load errors** suspend processing.

When checked, the Preview window displays images while processing.

Window displays image while processing, if **Show Images** option is enabled.

No process is performed; use for simple file format conversion.

When selected, files are converted to **greyscale** using lowest possible bit depth.

When selected, images are remapped to the loaded **fixed-color palette**.

Click this button to **load** a fixed-color palette file.

When selected, reduces the selected images to the specified **number of colors**.

Use this drop-down list to select the **number of colors** used to render the images.

When checked, images are **dithered** to simulate more colors.

When selected, images in source list are analyzed for color content and a **custom palette** is created. Color depth and palette file format are specified in the Palette file requester.

Use this drop-down list to specify the **file format** used to save processed images.

When checked, this enables **compression** for those file formats that support it.

Use this slider to specify a **JPEG quality** factor (as a percent: 85%)

The **Status Box** provides a running display of Brenda processing.

This line in the Status box reports each processing step as it occurs.

This line in the Status box describes the currently loaded image.

This text field displays the path selected as **destination** for processed images.

Click this button to **select a Destination** path.

When this option is selected, each Destination file is stored usinng the same name as its correspondir Source file.	ηg

When this option is selected, Destination files are numbered serially according to a Root name you specify.

Use this text string to enter a 3-letter Root name **prefix.**

Use this text string to enter a **Starting frame** number (up to 99,999).

When checked, a file **Save error** will cause processing to be suspended.

When checked, a **Log** of batch processing operations will be kept in a text file of your specification.

Click this button to **Begin** a batch processing operation.

Click this button to quit Brenda.

Destination path is displayed here. You may type in any path you wish.

Navigate through **directory** structure when selecting a Destination path.

Contents of selected directory are displayed in this list. this requester. Path only is selected.	You can select a file by name, but it is ignored in

Use this control to select among available **drives** and devices.

Click **OK** to accept Destination path settings.

Click **Cancel** to abandon destination settings. You will be cautioned if you select cancel.

Selected **Source Filenames** are displayed in this text string.

Navigate through **Directory** structure using this control.

Contents of current directory are displayed here. Select as many **image files** as you wish.

Click this button to **select ALL** the files in the current directory.

Use this control to select among available **Drives** and devices.

Click \mathbf{OK} to accept selected files for processing.

Click **Cancel** to abandon source file selection. You will be cautioned if you select Cancel.

Path and name of selected **palette file** is displayed in this text string.

Navigate through **Directory** structure using this control.

Contents of current directory arre displayed in this file list.

Use this control to select among available **Drives** and devices.

Click **OK** to accept selected palette file.

Click **Cancel** to abandon palette file selection. You will be cautioned if you select Cancel.

Path and name of selected log file are displayed in this string. wish.	You may type in any path and name you

Navigate through **Directory** structure using this control.

Contents of current directory are displayed in this File List.

Use this control to select among available **Drives** and devices.

Click \mathbf{OK} to accept selected Log file name.

Click **Cancel** to abandon Log file selection. You will be cautioned if you select Cancel.

Enter name for palette file in this text string. a suffix matching the selected file format type	If you supply a filen e.	ame suffix (.xxx), it will t	oe replaced with

Navigate through **Directory** structure using this control.

Contents of current directory are displayed in this File List. wish it to be replaced with the new Palette file.	You may select an existing file name, if you

Use this control to select among available **Drives** and devices.

Select a **File Format** type for the saved Palette file.

Select the desired Color depth.	r Depth for the saved Palette f	ile. You may also type ir	n a custom value for color
·			

Click **OK** to accept Palette file settings.

Click **Cancel** to abandon Palette file settings. You will be cautioned if you select Cancel.