

**01216bf0-0**

**COLLABORATORS**

	<i>TITLE :</i> 01216bf0-0		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
WRITTEN BY		July 26, 2022	

**REVISION HISTORY**

NUMBER	DATE	DESCRIPTION	NAME

# Contents

<b>1</b>	<b>01216bf0-0</b>	<b>1</b>
1.1	GfxLab24.guide . . . . .	1
1.2	Presentation . . . . .	2
1.3	A quick overview . . . . .	2
1.4	Starting . . . . .	3
1.5	The menus . . . . .	4
1.6	The PROJECT menu . . . . .	4
1.7	Project : ABOUT . . . . .	5
1.8	Project : INFO . . . . .	5
1.9	Project : New picture . . . . .	5
1.10	Project : LOAD . . . . .	6
1.11	Project : Load into Bank . . . . .	6
1.12	Project : SAVE 24-BIT . . . . .	6
1.13	Project : SAVE PREVIEW . . . . .	7
1.14	Project : QUIT . . . . .	7
1.15	The EDIT menu . . . . .	7
1.16	Edit : Bitmap to 24-bit . . . . .	8
1.17	Edit : Clear 24-bit data . . . . .	9
1.18	Edit : Clear Bitmap data . . . . .	9
1.19	Edit : Transparent color . . . . .	9
1.20	Edit : Copy to bank, Copy from bank . . . . .	10
1.21	Edit : Clear Bank . . . . .	10
1.22	Edit : Info . . . . .	10
1.23	Edit : View a bank . . . . .	11
1.24	Edit : Undo . . . . .	11
1.25	Edit : External Viewer . . . . .	11
1.26	The PREFS menu . . . . .	12
1.27	Prefs: PREVIEW . . . . .	12
1.28	Prefs: MISC . . . . .	14
1.29	Prefs : SAVE OPTIONS . . . . .	14

---

---

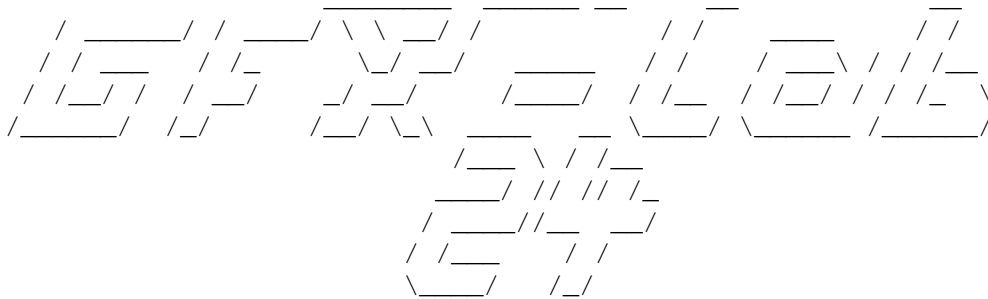
1.30	Prefs : VM OPTIONS	15
1.31	Prefs: Display Mode	16
1.32	Prefs : LOAD	16
1.33	Prefs : SAVE	16
1.34	The Preview menu	16
1.35	The gadgets	17
1.36	Operators	17
1.37	Colour To Gray	18
1.38	Filter	19
1.39	Brightness	19
1.40	Scale	19
1.41	Crop	20
1.42	Emboss	20
1.43	Sketch	21
1.44	Negative	21
1.45	Rotate	22
1.46	Bicolor	22
1.47	Flip	23
1.48	Visual Aspect	23
1.49	Quake	23
1.50	Disperse Pixels	24
1.51	Convolution	24
1.52	Remove Isolated Pixels	25
1.53	Quantize	25
1.54	Operator: Filter Balance	26
1.55	Operator: Fade	27
1.56	Operator : Whirl	28
1.57	Operator : Brush	29
1.58	Operator: Text	29
1.59	Operator : Noise	30
1.60	Operator : Mosaic	30
1.61	The ARexx Port	31
1.62	The ARexx Port: EmptyScript.rexx	31
1.63	The ARexx Port : CatalogMaker.rexx	32
1.64	The ARexx Port : OilPainting.rexx	33
1.65	Ajouts Futurs	33
1.66	Historique	34
1.67	Informations Diverses	35

---

# Chapter 1

## 01216bf0-0

### 1.1 GfxLab24.guide



GFX-Lab 24 v1.7.2

Rodrigo REYES 1994-1995

GFXLab24 is an image processing program, written for AMIGA computers with system 3.0 or more. This program is freely distributable as long as no changes are made on the software or on its documentation.

Presentation

Overview

Starting

The~menus

The~gadgets

The~operators

ARexx~Port

Future~improvements

History

Other~boring~details

## 1.2 Presentation

Presentation.

=====

GfxLab24 is an image processing program, which can deal with bitmap and 24-bit pictures. It can convert pictures between many file formats, and/or apply many effects to enhance or modify the picture.

GfxLab is a FREEWARE program. It is freely distributable, as long as it comes with its documentation (both in french and in english). It should NOT be used for comercial purpose. It must not be modified or disassembled without the agreement of the author

.

## 1.3 A quick overview

GfxLab24 OverView

=====

GfxLab24 is a 24-bit and bitmap image processing program. It runs under AmigaOS 3.0 or higher. Here are some of its features:

- Loading :
  - IFF24
  - IFF 2 à 8 - HAM6 - HAM8
  - JPEG
  - TARGA
  - PNG (bitmap & RGB)
  - Any picture DataType (GIF, BMP, PCX,... etc.)
- Saving :
  - IFF24
  - IFF 2-8bit, HAM6, HAM8
  - GIF (specs GIF87a et GIF89a)
  - Jfif (JPEG)
  - TARGA.
  - PCX
  - PNG (bitmap & RGB)
- Display the picture from 2 to 8 bitplanes + HAM6/8, with or without a fixed palette (13 halftoning/error diffusion modes).
- Fast previewing window. Operators are applied in REAL TIME !

- 24 processing operators:
  - Colour To Gray
  - Mask Filter
  - Brightness
  - Scale (reduction/enlargement by % or with height/width in pixels)
  - Crop
  - Emboss
  - Sketch
  - Negative (on any of the three RGB components)
  - Rotate
  - Bicolor (Turn picture to black and white. 9 halftones.)
  - Flip (horizontal or vertical)
  - Visual Aspect (modify the display and pixels ratios)
  - Quake (horizontally or vertically)
  - Disperse pixel (setting the radius and the probability)
  - Convolve (Applying/Editing/loading/saving matrices library of convolution)
  - Remove isolated pixel
  - Quantize palette (Quantizing/loading/saving palette)
  - Balance filter (modify gamma,sin,brightness,contrast)
  - Fade (fading between two pictures)
  - Whirl
  - Brush copy (with transparent color)
  - Text
  - Noise (white or coloured)
  - Mosaic
  
- Built-in Virtual Memory management, available on ANY Amiga computer, even WITHOUT MMU, and fully adjustable.
  
- Intuition 3.0 interface, and preference management.
  
- ARexx Port allowing automatic processing. Some ARexx scripts are provided as example.
  
- Best of all, GfxLab24 is FREeware !!

## 1.4 Starting

Starting GfxLab24

=====

This can be done quite easily by launching the program under the WorkBench. It can also be launched from any cli window. Anyway, you should verify that the stack size is greater or equal to 50.000 bytes.

Two versions of the programs are distributed : GfxLab24, which stand for any amiga computer, and GfxLab24-020, for 68020 or higher processor.

At the beginning, a screen is opened, with an information window inside, and some Gadgets at the bottom. A listview gadget also

---

contains a list of the available processing operators. A Menu is available (by clicking on the right mouse button).

## 1.5 The menus

### THE MENUS

=====

The menus give you access to many important commands of GfxLab24. Three Menus are available.

Project

For any loading, saving, information command.

Edit

For internal picture managing.

Preferences

Is for all the program options & preferences.

Preview

To manage the preview window.

## 1.6 The PROJECT menu

### THE "PROJECT" MENU

-----

This one is quite simple and contains height entries :

About

Informations

Info

Informations

New~Picture

To create a new picture



Load  
Loading a picture.

Load~into~bank  
to load a picture in a bank

Save~24~Bit  
Saving a picture in any of the 24 bits formats  
available.

Save~Bitmap  
Saving the picture in a colormapped format.

Quit  
Leaving the program.

For any of the saving entries, if the option "Ask if overwrite"  
from "

Prefs/Set~Misc  
" menu is checked, and if the selected file  
exists, then a requester will appear, asking for a confirmation.  
Selecting "No" will prevent the file to be overwritten by giving up  
the saving operation. On the other hand, if "Yes" is selected,  
GfxLab24 will erase the old file, and write the new one instead.

Print entry is not implemented yet.

## 1.7 Project : ABOUT

About

-----

Simply displays a requester, into which are printed the name of the  
program, its release version, the author name, etc. Everyone knows  
it is useless... :)

## 1.8 Project : INFO

Info

-----

Displays a requester that indicates the ARexx Port name of the  
program, the available memory, etc.

## 1.9 Project : New picture

---

New Picture:  
-----

If you select this entry of the menu, a window will pop up, and allows you to customize some parameters for a new picture.

You can select, with the gadgets, the size of the new picture (default is 512x512), and the back fill color. If you select "Perform", a new 24-bit picture, back-filled with the indicated colour, will be created.

## 1.10 Project : LOAD

Load  
----

This function display a file requester and attempts to load the selected file.

The image can be in IFFILBM, PNG, JPEG, TARGA, or any format available through the DataTypes Library.

The picture is loaded and converted, if needed, in 24-bit RGB. If the format stores the datas as a bitmap+colormap, then the picture will be kept bitmapped in chip-memory. If the picture is stored as 24-bit (JPEG, IFF24, TARGA) then the picture will be internally stored as 24-bit, so pay attention to the required memory if you don't use the built-in virtual memory.

GfxLab24 accepts IFF 2 to 8, HAM6/8, JPEG, TARGA, and PNG direct loading. Other formats will use Datatypes, which is absolutly not a problem for colormapped picture.

## 1.11 Project : Load into Bank

Load into bank.  
-----

If you select this entry, you must indicate in a sub-menu the bank where a picture should be loaded.

The loading operates just like a normal loading, but the picture is stored into one of the five available banks. You can use or edit this banks with some operators and in the Edit menu.

## 1.12 Project : SAVE 24-BIT

Save 24 bits  
-----

Allows to save a picture in any of the available file format that stores 24-bit data. The save operation can actually be either done using IFF24 (IFF-ILBM with 24 bitplanes), JPEG , uncompressed TARGA or

PNG

.

For all of the file format selected, a suffix will be added automatically.

## 1.13 Project : SAVE PREVIEW

Save Preview

-----

Save the current picture in a colormapped file format. It is possible to select the color depth if the picture is internally stored as 24 bits by using the color option in "Prefs/Set Preview", so as the halftoning method. The picture can be saved as:

- IFF-ILBM : native file format for all the amiga computers.
- GIF : Allows to save the picture in GIF file format from Compu\$erve. Actually the most used format on peecee computers.
- PCX : Allow to save the picture as a PCX file.
- PNG: To save in the very good PiNG format, from Compu\$erve.

BEWARE : GIF, PCX, and PNG format do NOT allow to store HAM datas, as this mode is amiga-specific.

## 1.14 Project : QUIT

Quit

----

The title says all, this entry frees all the memory allocated, and kills the program.

If the "Save prefs when leaving" option from menu  
Prefs/Set~Misc  
is selected, the preferences set by the user will be saved.

## 1.15 The EDIT menu

In this menu, you can found those entries:

Bitmap~to~24-bit  
to convert a bitmap buffer into 24-bit

Clear~24-bit~data  
to erase a 24-bit buffer

Clear~Bitmap~data  
to erase a bitmap buffer

Transparent~color  
to set the transparent color of a picture

Copy~to~bank  
to copy the current picture inside bank x

Copy~from~bank  
to copy the picture of a bank in the current  
buffer

Clear~bank  
to erase a bank content

Bank~informations  
to get informations about the banks

View~bank  
to view the picture of a bank

Undo  
undo and undo-undo

External~viewer  
to view the current picture with an external  
program

## 1.16 Edit : Bitmap to 24-bit

BitMap to 24-bit.

=====

This function converts a bitmap picture into a 24-bit picture. This is necessary is you load a bitmap (which can be stocked in iff, gif, pcx, some png files, etc.) and want to apply some effects that require 24-bit RGB data.

---

However, the bitmap data of the picture is NOT erased. If you want to do so, please refer to the  
 Edit/Clear~bitmap  
 menu.

Of course, the new 24-bit data will use virtual memory management, is selected. If the picture has no bitmap, then the process will fail.

Note that there is no loss of details after the conversion from bitmap to 24-bit (while there can be some loss after a 24-bit to bitmap conversion). The new picture will be exactly the same than the bitmap, with the difference that it is now stored as 24bit RGB.

## 1.17 Edit : Clear 24-bit data

Clear 24-bit Data.

=====

This function erases the 24bit data of the current picture. The bitmap, if there is one, is not modified. This can be handy in order to free some memory, when your work only needs a bitmap.

If there was no bitmap data attached to the picture, the current buffer will be totally cleared, so be careful.

## 1.18 Edit : Clear Bitmap data

Clear BitMap data.

=====

When you call this function, the program will erase the bitmap data of the picture. If there is not bitmap loaded in the current buffer, then this function will do nothing. The 24-bit buffer of the current picture is not affected by this function.

When the bitmap is freed, and if there is some 24-bit data associated to the current buffer, then the display of the picture will be done according to the parameters given in the prefs/Set BitMap menu.

## 1.19 Edit : Transparent color

Transparent color.

=====

With the help of this function, you can select the color that will be used as a transparent color for the picture.

If the picture is bitmap only (ie. there is NO 24-bit buffer), the parameter window only contains a slide gadget, called "transparent color". Just modify this slider to select the index of the colour that should be transparent. The default is always 0.

If the picture contains 24-bit buffer (and even if there is a bitmap also), the parameter window contains 4 gadgets. With the "Red", "Green", and "Blue" gadget, you can select the RGB color that shall be transparent. Another gadget, called "tolerance" indicates the degree of tolerance associated with this color. So, if the color is Red (red 255, green 0, blue 0), and if the tolerance is 10%, then any color between (255/0/0) and (230/25/25) is considered to be transparent (10% of 255 are 25).

Please note: the bitmap transparency can be stored in GIF or PNG format, while the 24-bit transparent colour can only be saved in PNG format (not jpeg, not iff, not targa, only PNG). However, the tolerance degree can't be stored by now (maybe in the future).

## 1.20 Edit : Copy to bank, Copy from bank

Copy to bank

-----

Copy from bank

-----

This two function respectively copy an image from the current buffer to a bank, or from a bank to the current buffer.

If the buffer to be copied only has a bitmap buffer, then this one will be copied, while if it contains both a 24-bit buffer and a bitmap buffer, only the 24-bit buffer will be copied to the destination (whatever it be).

Of course, if it contains just a 24-bit buffer, this one will be copied.

## 1.21 Edit : Clear Bank

Clear Bank.

=====

This function erases the content of a bank. All the allocated memory is freed, and the bank can be re-used. Both bitmap and 24-bit buffers are erased.

## 1.22 Edit : Info

Bank Informations.  
=====

If you select this entry of the menu, some informations concerning the storage banks will be displayed in the information window of GfxLab24.

For each of the bank (from 1 to 5), the informations given are : Width and height of the picture, number of colors stored, and memory ressources allocated for it.

If a bank is empty, the message "no picture loaded" is displayed.

## 1.23 Edit : View a bank

View a bank  
-----

Just select a bank here to make the program display it. Fairly simple, I hope.

## 1.24 Edit : Undo

Undo.  
=====

The undo menu is effective only if the "Enable Undo" option of the prefs/Set~Misc window is checked.

This function allows you to undo the last modifications of the picture. There is only one level of undo/redo. So, if you undo, to "redo", just re-select "undo".

However, such an option is heavily undesirable, because of the amount of ressources necessary to store an undo buffer (don't even dare to think about an illimited undo/redo buffer). This is why there is a preview window. :)

## 1.25 Edit : External Viewer

External Viewer.  
=====

This function calls an external program, defined in the preference menu

Prefs/Set~Misc

.

The program is then Execute()d by the DOS library, and GfxLab24 waits for the end of the program.

The argument which is passed as parameter to the external program is the temporary name of an IFF24 file picture.

## 1.26 The PREFS menu

### THE "PREFS" MENU

-----

This menu contains all the preferences of the user. It can be divided into seven submenus:

#### Set~Preview

Is used to determine how the picture will be previewed (selecting Amiga mode, palette, etc.)

#### Set~Misc

Is to modify some miscellaneous options, such as the path for files, control options, etc.

#### Save~Options

This menu is for controlling the particularities for some type of graphic formats.

#### VM~Options

As says the title, this is for the virtual memory manager options.

#### Display~mode

To select a screen mode for GfxLab24's screen.

#### Load~Prefs

To load a preferences file.

#### Save~Prefs

To save a preferences file.

## 1.27 Prefs: PREVIEW

---



SET BITMAP.  
-----

There is globally two ways to display a picture, either taking a fixed palette, which allow high speed but poor quality for the rendering, or either taking a specific palette for the picture, which can be the original palette, or a computed one.

The screenmode gadget allow the user (you !)to select any display mode, with a screenmode requester. There you can choose any mode or screen depth you are allowed to by the requester. Then, all the pictures that are 24-bit will be rendered in that display (when clicking the "Display" gadget, or when saving it as a colormapped picture)

If the button "USE FAST COLORMAP" is not checked, GfxLab24 will use the specific palette for the current picture, and will not take care of the specifications about dithering. On the other hand, the program will use the number a color indicated by the screen mode requester. A picture which has been stored in a 24-bit file format has NO palette, so GfxLab24 will automatically ask for creating a new one if you have not generated it, and if the fast colormap option is not used.

If the button "USE FAST COLORMAP" is checked, the program will use a fixed palette (inverse colormap), and will dither it as specified in the other gadgets of this panel. Colors are then taken from a look-up table for each mode. The quality is of course drastically lower, but can be useful when a big picture is handled, and speed is needed.

NO DITHERING: If you choose this option, the program will not dither the color display. Colors are used after a quick access to the look-up table of this mode, but the quality is really bad.

HALFTONE: With this option, GfxLab24 will dither the picture according to a matrix to be choosen in the halftone submenu. The quality for this mode is better than nothing (ie the "No dithering") but the speed is still good. However, in the lower resolutions (320x256), the results may be quite hazardous.

ERROR DIFFUSION: Dithers the colors with an error diffusion algorithm. The method should be choosen in the error diffusion submenu, according to the fact that the fastest method is Floyd-Steinberg, and the slowest is the Stevenson-Arce.

AUTOSAVE PREVIEW: This last option, in the bottom of the panel, allows the user to select or unselect the automatic-save mode for the preview display. If this option is checked, and if an OS-compliant name is given in the string gadget on its right, the program will save the picture each time it is displayed.

---

## 1.28 Prefs: MISC

SET MISC.  
-----

This menu pops up a panel which give access to many options of the program:

LOAD PATH: Allows the user to select a default path when loading a file. The CHOOSE gadget, on the right of the string gadget, gives the user a path requester that makes the selection easier.

SAVE PATH: Allows to define the default path for saving the picture saving . The CHOOSE gadget, on the right, also allows to choose a path easier, by popping up a path requester .

PREVIEW PATH: Just as the two gadgets above, with the same old CHOOSE gadget . You should select here the path for all the preview files (bitma pped).

Below, some other options may be checked:

ASK IF OVERWRITE : If this gadget is checked, the program will ask the user before overwriti ng a picture that ever exists.

ASK BEFORE LEAVING: If checked, this options will make the program to pop up a confirmat ion requester when the user leaves.

DISPLAY WORK IN PROGRESS: If this option is checked (the default is "on"), the program will pop up a panel displayin g the level of accomp lishment for a computing work. If this option is not checked, the program will simply display a busy mouse.

SAVE Prefs WHEN LEAVING: This option will automatic ally save the preferences if checked. The preferences include all the different operators parameters and current options you have changed. If this option is not checked, the program will just not save the prefer ences automatic ally (you will have to do it manually if needed).

## 1.29 Prefs : SAVE OPTIONS

SAVE OPTIONS:  
-----

This menu lets you select options for the saving of some specific file formats.

You can choose the quality level for the JPEG picture. You can set here any number between 25 and 100+. 25 will give you a very good compression ratio, but with a lot of quality lost. 100 will give a perfect quality, but no compression at all. A good average value is 75, which is the default.

In the GIF part of the window you can check or uncheck the "save

---

transparent color" and "interlace" options. Please refer to the transparent color menu for further details about it. If you select the "interlace" gadget, the picture will be displayed progressively.

In the PNG part of the window, you can check or uncheck the same gadget than GIF's. Just note that PNG's interlace and PNG's transparency are much better than GIF's. You can also set some information about the picture, such as the author's name, the picture's title, copyright, and some description. This information will only be stored in the PNG format, so don't set it if you wish to save your picture as JPEG or TARGA. However, PNG is actually a very good (the best?) choice to save your picture. Author, Title, and copyright strings are limited to 128 characters. Description can be up to 256 characters long.

### 1.30 Prefs : VM OPTIONS

VM OPTIONS:

-----

This menu will allow you to fully configure the GfxLab24 built-in virtual memory manager. This manager allows the program to handle very big pictures (virtually any size), if there is enough harddisk space available. This manager does not require any external software, nor MMU, and is available on any Amiga.

The first gadget, "Path", must contain a valid path to a directory that will contain all the temporary data (or an empty string, which will indicate the current directory). A "CHOOSE" gadget will let you select an appropriate path using a path requester. It is important to select a path in a volume that has enough available disk space. You can compute the necessary disk space for a picture with the formula :  $WIDTH \times HEIGHT \times 3$ . So that a 320x200 pixels picture will need 192'000 bytes, and a 640x512 pixels picture will need 983'040 bytes. A 1024x1024 pixels picture will require 3'145'728 bytes (3Mb).

Below this gadget, an integer number gadget, named "Buffer size" will indicate to the program the size of the buffer that will be used for each picture. The default size is 100'000 bytes but you can decrease it down to 10'000 or 20'000 bytes.

A last serie of gadgets will allow the user to determine the way that virtual memory will be used:

- AUTOSELECT: GfxLab24 will use virtual memory only when there is not enough real RAM space available.

- NO VM: The virtual memory is then disabled. You should choose this option if you have no harddisk, or if you prefer to use an external virtual memory manager rather than the internal one.

- VM ONLY: if this one is checked, all the 24 bits pictures will be handled by the virtual memory manager. This can be useful if you

need to save memory, and don't care for the speed.

### 1.31 Prefs: Display Mode

Menu Prefs/Display Mode...

-----

This entry of the menu allows you to select a screen mode for GfxLab24's screen. The rendering quality of the preview window is set according to the depth of the selected screen.

Just select a screen in the screenmode requester, and GfxLab24 will try to open it. If it is not possible (not enough chip mem, etc.), it will open its default screen.

If you own an AGA amiga, you should select an HAM8 screen, or a 256-colour one.

### 1.32 Prefs : LOAD

LOAD PREFS

-----

This menu allow you to load the full program preferences. It pops up a file requester, into which you will have to select a GfxLab24 preference file, and then loads it. This can be handy to store user-specific preferences.

### 1.33 Prefs : SAVE

SAVE PREFS

-----

This menu allow the user to save all the program preferences. The program saves it by default in the ENVARC: location. When starting, the program always tries to load the GfxLab24.config file in the program directory, and if it is not there, it tries in ENVARC:, in S:, and then in the current directory.

### 1.34 The Preview menu

The "Preview" menu manages the fast preview of the current buffer.

If you click on the "Show" entry of the menu, the previewing window opens, and the current picture, if there is one, is displayed inside. To close this picture, click on the close gadget, or select again the "Show" menu.

---

You can also select a rectangular area in this previewing window. Most of the operators will preview there in real-time, so you can easily customize the parameters of each effect.

The second entry of the menu, "Select entire picture" will just unselect the rectangular area.

Be careful, if you select an area, all the operators will try to limit their action to the selected area. You can also unselect the rectangular zone without using the menu if you select a single point of the preview window. To do it, click on the left mouse-button without moving the mouse. A message is then displayed in the message window: "The entire picture is selected".

NOTE: the quality of the preview depend upon the screenmode of GfxLab24's screen. Of course, this preview is not the best available quality for your picture. To show it correctly, select a screenmode in prefs/Set bitmap, and click on the "show" gadget of the main window.

## 1.35 The gadgets

The gadgets

=====

The gadgets placed below the information window do strictly the same than their homonyms from the menu.

When the picture is displayed, a single pressure on a mouse button will get you back on the main screen.

On the right of the screen, a listview contains a list of the available operators for the image processing. To apply an effect on the current picture, click on the listview entry, modify the parameters, and push the button "Perform" to start the process, or the upper-left closewindow gadget to close and cancel.

## 1.36 Operators

Les opérateurs.

=====

Here is a list of the available operators, with their description, and some explanations about the parameters used.

Colour~To~Gray

Filter

Brightness  
Scale  
Crop  
Emboss  
Sketch  
Negative  
Rotate  
Bicolor  
Flip  
Visual~Aspect  
Quake  
Disperse~pixel  
Convolve  
Remove~isolated~pixel  
Quantize~palette  
Balance~Filter  
Fade  
Whirl  
Brush  
Text  
Noise  
Mosaic

## 1.37 Colour To Gray

Color To Gray:  
-----

The Color to gray operator is used to transform a color picture into a grey-level picture, as a black & white tv set will do. The parameters Red/Green/Blue will allow you to give a different weight to each of the primary color.

By default, the setting suits the PAL/SECAM standart, 0.2989 for

---

the red component, 0.5866 for the green one, and 0.1144 for the blue.

It is of course possible to apply different setting, by modifying the three slide gadgets corresponding to the three primary colors. The numeric values are given at the 1/1000.

Below the three gadgets, two buttons allows the user to fill the setting with the standart PAL/SECAM values (R:0.2989, G:0.5866, B:0.1144) or with the HDTV standart (R:0.2122, G:0.7013, B:0.0865).

## 1.38 Filter

Filter:

-----

The filter gadget has the same effect than a color filter applied onto the picture. Each of the Red/Green/Blue component can be affected a ratio to the original colors.

If the ratio of a primary color is lower than 100, the color will loose its luminosity and go darker, while it will gain luminosity if the ratio is higher than 100.

The effect of this operators if different from the "Brightness" one, as the darkest colors are very less affected than the brightest one by this filtering (a red filter will leave the black intact, but turn all the brightest color into reddish).

Some filters are pre-defined, just click one of the gadget below the sliders to select them.

## 1.39 Brightness

Brightness:

-----

This operator allows the adjustment of the brightness with a ratio value. Just modify the level indicated by the slide gadget, and click on the Perform gadget. With this effect, you can adjust the global luminosity of the picture, by increasing or decreasing each of the primary color value.

## 1.40 Scale

Scale:

-----

This operator allows you to reduce or enlarge a picture.

---

In the parameting window you can select a new size for the current picture.

You can modify the X and Y percentage for the width and height of the picture with the two "X %" and "Y %" sliders. So, you can reduce a picture and keep safe the x/y ratio.

You can also set much more precisely any pixel width and height with the two integer gadgets, called "Size X" and "Size Y". Those two parameters set the picture to the width indicated by "Size X", and to the height indicated by "Size Y".

A cycle gadget can be modified to select either a fast re-scaling, but with a rather bad quality, or either a good but slow re-scaling, that will compensate any loss of pixel. If the current buffer is bitmap only, the "slow and good" option won't be effective, as this can't be done using a bitmap-only buffer.

## 1.41 Crop

Crop:

-----

Use this operator if you need to crop the picture.

With this operator you can enlarge or reduce the picture (without scaling it).

To reduce the picture, and do a focus on a small part of the picture, you just need to set the starting X and Y coordinate of the part you want to extract, and the width and height. You can also click on the "Selection" gadget to catch those coordinates from the selected area in the previewing window. You can get back to the original values of the picture by clicking on the "Un-select" gadget.

To enlarge the picture size, and have a border on its sides, just set a value higher than the picture's default in the width and height gadgets. To center the current picture in the new one, you can use the "Center X" and "Center Y" gadgets.

## 1.42 Emboss

Emboss:

-----

The Emboss operator makes the picture looks like an image made upon sand or rock.

In parameting window opens, four slider gadgets allows you to customize the way your image will be embossed.

---



First of all, the two "X" and "Y" gadgets indicate the direction and the deepness of the relief. The default is 1 for both, but you can set them from -3,-3 to +3,+3. When both X and Y parameters are positive, the light source seems to come from the lower right side of the image. Any negative number invert the light direction in X or Y. The higher those numbers are, the more relief impression you will get.

The "Light" gadget indicates the brightness of the lightsource. Modify it to get a darker or brighter picture.

The "Thres" gadget, which stands for "Threshold", indicates to the operator not to take into account meaningless details. The higher is this value, the lower details will be kept from the original picture. Just try it out.

## 1.43 Sketch

Sketch:

-----

The Sketch operator renders a rough description of your picture.

To customize the operation, you can modify three gadgets: Pen size, Threshold, and Deepening.

The "pen size" simulates the size of the pencil. In reality, it indicates the number of pixels shifted to make the edge detection. So, a too high value can render a doubling effect on some images.

The "Thres" gadgets (that stands for Threshold) indicates the tolerance for details. The higher this value is, the more details will be rendered.

The "Deepening" gadget gives the lowest intensity value that should be used by the operator. The lower this value is, the darker will be the rough printed by the operator.

## 1.44 Negative

Negative:

-----

This operator simply negates the picture.

In the parameting window, three gadgets allows you to customize the operation: Red, Green, and Blue. Check or uncheck the gadgets to enable or disable the operation on each of the components.

To undo a negative operation, just do it twice...

## 1.45 Rotate

Rotate (Rotation):

-----

This operator rotates a part of a picture or an entire picture.

Two gadgets, "CenterX" and "CenterY" allow to point the center of the rotation, and "Angle" indicates the angle of the rotation in degrees.

The gadget "Perform on full picture", if checked, indicates that the operation will be executed on the entire picture. If not, the area selected inside the Preview Window will be used to specify the rotated area.

The "Center" gadget allows you to set the central point according to the selected area (in the Preview Window).

## 1.46 Bicolor

BiColour:

-----

This operator changes the current picture in a new black and white one.

The first parameter is the "Threshold", and allows to obtain a darker or brighter picture. The lowest the threshold, the brightest the picture will be. At the contrary, the highest the threshold, the darkest the picture will be.

Another range of gadgets allows to select the working mode of the operator. You can select a mode among the nine available. This nine modes are the followings:

- None : No dithering at all. The picture will look like a lithography. With a high threshold, it can look like chinese shadows, depending the original picture.

- Floyd-Steinberg,
- Burkes,
- Stucki,
- Sierra,
- Jarvis, Judis, & Nunke,
- Stevenson-Arce :

are six dithering modes, which allow to simulate different colors. This 6 methods are given in order of computing complexity. The fastest is the Floyd-Steinberg mode, and the slowest mode is the Stevenson-Arce one. Those dithering modes give similar results, but with different fades and dithering. It's up to you.

---

- Edges : This mode is a kind of convolution, which does not operate any dithering, but shows the edges of the picture.
- Boundary Extrusion : This is a mode which can be used as "Edges". It allows to emphasize the edges, but applies a particular dithering which makes the picture looks like an old engraving.

## 1.47 Flip

Flip :

-----

This operator flips the original picture.

The parameting window allows to choose between a vertical or horizontal flip.

## 1.48 Visual Aspect

Visual Aspect :

-----

This operator allows to modify the datas concerning the display of the picture.

The upper part of the parameting window allows to select the horizontal resolution of the display :

- Low Res : 320 pixels wide.
- High Res : 640 pixels wide.
- SuperHigh Res : 1280 pixels wide (on AGA machines only).

You can also select between interlaced or non-interlaced display modes.

The second part of the window allows to choose the X/Y ratio of the picture, by setting the two numerical string-gadgets (called "X Ratio" and "Y Ratio"). The MX Gadgets on the left are three available presetting modes, which are set according to the current mode (low/high/superhigh res, interlaced or not).

This operator does not modify the picture itself, nor the palette. Only the display will be affected.

## 1.49 Quake

Quake :

-----

This operator simulates a quake effect on the picture. The quake

---

can be applied horizontally or vertically.

This selection can be done in the parameting window, with the direction gadget.

The "Radius" gadget allows to determinate the quake area. Thus, the shift for each line will be randomly computed in a range of 0 to the selected number. The highest the number, the blurest the impression is.

## 1.50 Disperse Pixels

Disperse Pixel :

-----

This operator disperses the pixels in the selected area.

In the parameting window, the "Radius" gadget determinates the pixels displacing area. This radius is not a real radius. The pixels are displaced in a rectangular perimeter (not a circular one), to improve the computing speed.

The "Probability" gadget indicates the statistical probability for the pixel to be displaced. With 100%, every pixel of the picture will be upsetted, while at 0% none of them will be displaced.

## 1.51 Convolution

Convolution :

-----

The "Convolution" operator is quite powerful, as it allows to apply to the picture a particular matrix.

In the parameting window, a matrix of 5x5 gadgets allows the user to generate his own matrix.

The matrix technic is easy to use: The operator will compute the average value between the different elements of the matrix, in a way to re-calculate the value of the central point.

The matrix accepts negative values. In this case, the values will be substracted from the average. This will generally give a sharpening effect (and edge-detection).

The "Threshold" gadget allows to parameter precisely the result with determinating the minimal difference between the original value, and the resulting value.

You can store a matrix library, with the help of two gadgets:

LOAD MATRIX: This will pop up a file requester showing the

"Convolve/" directory (in the program path). You can select a new matrix file with pointing the "Select" gadget.

SAVE MATRIX: With this gadget, you can save or modify your own matrix. A file requester will be displayed, as soon as you point on the gadget. Just press "Select" to save the matrix. If the file already exists, and if the "Ask if overwrite" option (from "Prefs/Set Misc" menu) is selected, a window will be opened, and you will have to confirm the overwriting.

## 1.52 Remove Isolated Pixels

Remove Isolated Pixels:  
-----

This operator is fairly simple, as it allows to slightly smooth the picture by removing the isolated pixels.

In the parameting window, you can customize the effect:

THRESHOLD: give the minimal difference that must exist between the central pixel and the pixels immediatly around. A value higher than 200 will only eliminate different pixels, while 0 will eliminate non identical points.

CONTEXT THRES: Allows to customize the minimal consistency of the pixel environment. In other words, the smoothing will be applied if the average of the eight pixels around the point and their difference is lower than this "context thres" number. If you set a high number, the program will be able to delete isolated pixels when the colors around shade off.

The value of the "CONTEXT THRES" gadget should always be lower than the value of the "THRESHOLD" gadget.

## 1.53 Quantize

Quantize:  
-----

This operator will compute the bitmap palette for the 24-bit raw data of a picture.

A range of gadgets allows you to choose the number of colours that should be generated by the operator. This function can be selected by pointing the "Generate Palette" gadget.

According to the selected algorithm (in the "Mode" gadget), the operator shall find the most effective palette, within remaining in the limits indicated by the "Color #" gadget. You can't choose more than 256 colors (and not less than 2).

---

It is possible to know how many colors are represented in the picture by the "Count Colours" gadget.

The "Save" function allows to save the current picture palette. A file requester pops up, and asks for a file name. The saving is done in the IFF format (so it is strongly advised to add the extension ".iff" to the file names).

The "Load" gadget allows to load a file colour palette, which will replace the current one. This function will load files saved with the "Save" gadget, but can also pick up a palette from an IFF picture.

"Edit Palette" will help you to modify the current palette of the current picture. This function opens a screen, in which you can access and modify the RGB values of the colours.

In fact, this function works differently if you have a 24-bits picture, or a bitmap one.

In 24-bits mode, when you modify a colour palette entry, it does not change the original picture, but only the display palette (when the "Use Fast Colormap" option in "Prefs/Set Bitmap" is not checked).

In bitmap mode, when you modify a colour palette entry, you change all the pixels of this colour in the picture.

The colours can be modified by selecting a color in the palette gadget, and by modifying the Red, Green, or Blue components.

Some tools are also available in this screen, according to the current color. When selected, you are asked to choose a second color in the palette. Those tools are:

Spread : Makes a shade off within the range of the two selected colours.

Copy : Copy the first colour onto the second colour.

Swap : Swap the values of the two selected colours.

## 1.54 Operator: Filter Balance

Filter Balance:

-----

This operator helps to manage more precisely the filtering of the picture than the "Filter" operator.

The operator works this way: for each colour of the picture, it modifies the red, green, and/or blue components according to the relative filter values.

The filters are accessible in the boxes which are headed by the

---

"Red", "Green", and "Blue" checker gadgets. The transformation function is at the beginning a linear function as  $f(x)=x$ , which means that no transformation is effective (the beginning value  $x$  is the same as the final value,  $x=f(x)$ ). You should then modify this function according to you.

Five kinds of filtering operations are available:

- Negative: Just inverts the filters of the selected components.
- Contrast: By clicking on the "+" and "-" gadgets of this function, the selected filters are modified to emphasize or reduce the picture contrast.
- Brightness: This function allows you to increase or decrease the brightness of the picture.
- Gamma: avoids a linear repartition of the colours, by increasing or decreasing the gamma correction. So you can decrease the contrast of the darkest colors, and increase the contrast of the brightest ones, by increasing the gamma value. You can also increase the contrast of the brightest colours, and decrease the contrast of the darkest colours, by decreasing the gamma value.
- Sin (sinus): is similar as Gamma function, but works as a sinusoidal function. By decreasing the value ("-") gadget), the contrast of the darkest and of the brightest colours will be increased. By increasing the value ("+" gadget), the contrast of the average values will be increased, and the brightest and darkest colours will be less represented.

The "Init" gadget allows to reset the filters to their initial values.

This functions will only affect the selected components.

Les gadgets 'Load' et 'Save' permettent respectivement de charger ou de sauvegarder les filtres:

The "LOAD" gadget will pop up a requester pointing to the "Filters/" directory. You can choose any of the available filter to be loaded.

The "SAVE" gadget will also make a file requester appear. You can save your own filter. If the file already exists, and if the "Ask if overwrite" option (from "Prefs/Set Misc" menu) is selected, a window will be opened, and you will have to confirm the overwriting.

With this two functions (save and load) you can edit and store your own filters library.

## 1.55 Operator: Fade

---

FADE:

----

The "fade" operator allows to make some fading between two pictures.

The "First Picture From" gadget determinates in which picture bank is the initial picture and you can choose between the current picture and a stored one.

The "Last Picture From" gadget determinates in which picture bank is the last picture of the fading. You can also select a black screen ("black screen") or a white one ("white screen").

If the selected bank has no data, it will be automatically replaced by a black screen.

The "Level" gadget determinates the fading level: At 0%, the resulting picture is the initial picture, while at 100% the resulting picture is the last one. Of course, you can choose any fading level value, from 0 to 100%.

It is also necessary to indicate the bank where the program shall put the resulting picture. So, you can choose any picture bank in the "Destination into" gadget. If there is a picture in the destination bank, it will be deleted and replaced by the resulting picture.

The two original pictures can be either in bitmap or 24-bits mode, while the resulting one will always be given in 24-bits.

The resulting picture will have the same dimension than the first picture. If the two original pictures do not have the same width and height, GfxLab24 will scale the last one to fit the first one.

## 1.56 Operator : Whirl

Whirl:

-----

This function simulates a whirl effect upon the picture, just like a water whirl (or dust whirl, if associated with the Emboss operator).

In the parameting window, four gadgets are available:

Center X: Determinates the horizontal offset for the central point of the effect.

Center Y: Indicates the vertical offset for the central point of the effect.

Default : If you click on this gadget, the two gadgets above ("Center X" and "Center Y") will be automatically set to the central point of the selected area.

---



Of course, the central point of the whirl effect can be anywhere in the picture, even outside.

Level: Gives the rotation degree of the whirl effect. At 0, the picture will not be modified, while at 1000 it should be a whirl-trauma.

## 1.57 Operator : Brush

BRUSH:

-----

This operator simulates a brush copy, using a bank and applying it to the current picture, in a selected area.

In the parameting window, eight gadgets are available:

The "Brush Is" gadget determinates which bank shall be used as a brush.

"StartX" and "StartY" are number gadgets that indicates the upper left corner of the area where the brush will be copied, in the current picture.

"Width" and "Height" are number gadgets which contain the width and height of the area where the brush will be copied. These values are relatives to the "StartX" and "StartY" values. The brush picture will be scaled to fit precisely this area.

"Transparent" is a checker gadget. If checked, the brush copy will be done using the Transparent color of the picture as a transparency element which will not be copied; ie, if the brush is a 24-bits picture, and if its transparent color is black (which is the default), then the black pixels of the brush will not be copied onto the destination picture. This is the same for a bitmap picture, the transparent color should be an entry in the palette.

The "Selection" gadget will fill the "StartX", "StartY", "Width", and "Height" gadgets with the coordinates of the area selected in the preview window.

The "Fade" gadget indicates the fading degree of the the brush copy. With a value of 100%, the brush will entirely cover the area (with the exception of the transparent color, if selected). At 0%, the brush will not be copied. And at 50%, the brush will be mixed with the current picture in the selected area. This can be useful for special effect.

## 1.58 Operator: Text

---

Text:

-----

This operator allows you to put texts on a picture.

The first gadget, called "Text", contains the text that shall be added to the picture. You can put any text here, even insanities, in the limit of 256 characters.

The second gadget below allows to select the font that shall be used to display the text. If you click on it, a font requester will pop up, and you can select there any available font.

On the third line, two gadget, "X" and "Y" can be used to specify the coordinates where the text shall be put. The "Select" gadget automatically fills up those two gadget with the values of the upper left corner of the selected area in the Preview window.

The three gadgets "Red", "Green", and "Blue" shall contain the values for the three RGB components of the text.

## 1.59 Operator : Noise

Noise:

-----

The Noise operator add colour noises to a picture. This noises can either affect the luminosity or any of the three primary RGB components of a pixel.

If you want to add white noise (which only affect the luminosity) to the picture, check the "White Noise" gadget, and select the degree of noise that should be applied. At 0%, no noise will be seen, while at 100%, the picture will look terribly noisy.

To add noise to any of the three RGB component independently, select which component should be affected ("Red Noise", "Green Noise", and/or "Blue Noise"), and set the values for each of them.

## 1.60 Operator : Mosaic

Mosaic:

-----

This operator pixelize the picture, in order to make it look like a mosaic.

In the parameter window, select the pixel size for the mosaic. If you check the Crackling gadget, some blank lines will be left between each piece of the mosaic. If there is only a bitmap buffer, the blank line will be of colour 0. If there is a 24-bit buffer, the crackling line will be black.

---

## 1.61 The ARexx Port

The ARexx Port

-----

GfxLab24 owns an AREXX message port, always called "GFXMLAB24.x", where x is 0, and incremented if there already exists a copy of the program running with such an AREXX port name. The standart name for GfxLab24's ARexx port is "GFXMLAB24.0".

So, any ARexx script can call this port, which understand a set of commands that can manage most functions of the program.

Of course, the GfxLab24 program should be running in the background when a script is started.

This commands are documented in amigaguide format, in the file "GfxLab24\_Arexx.guide".

Some scripts are included in the package, and allows you to do automatically many slow and boring operations.

When you indicate some file names to the included ARexx script, remember to add the complete path, because the program always search them in its own directory (and not the directory where the script have been launched from).

If you are the author of an useful ARexx script for GfxLab24, please EMail it to me, so that I can include it in the archive.

Available scripts are:

EmptyScript

Is an example script, which does nothing at all, but can serves as a skeleton to make new ones.

CatalogMaker

A script which makes automagically picture catalogs.

OilPainting

To make pictures look like oil-painted ones.

## 1.62 The ARexx Port: EmptyScript.rexx

The Arexx Port: EmptyScript.rexx

-----

The script does nothing, but it is possible (and strongly recommended) to complete it to automate any action.

---

It shall be called by the "rx" command:

```
Rx EmptyScript.rexx [parameters]
```

This script takes into account every file given as parameter, and understand amigados patterns as well. Thus, a command like:

```
Rx EmptyScript.rexx tutu.iff #?.gif #?.jpeg hop.iff24
```

is perfectly correct.

## 1.63 The ARexx Port : CatalogMaker.rexx

The ARexx Port: CatalogMaker

-----

The CatalogMaker script allows you to make picture catalogs.

Just call it, with any picture filename or pattern passed as parameters, and it will make picture catalogs containing all the pictures. The catalogs are created under the name of "catalog.x.jpeg", where x is a number starting at 0.

Thus, you should just call the script as follow:

```
Rx catalogmaker.rexx mypic.iff #?.jpeg #?.gif image.targa
```

As a result of this command, some catalogs of pictures will be generated, containing 16 pictures per image. The name of the picture will be added under each stamp.

You can indicate to the script the number of picture per catalogs, and many more parameters.

The default parameters for the catalog are : (You can change any of them by just specifying it in the command line with a parameter, if needed. ie:

```
rx CatalogMaker.rexx #?.GIF BASENAME mycat ROWS 6 COLUMNS 4
```

The options can be found anywhere in the command line.

**BASENAME** : Name of the catalog that will be created. It will be saved under the name BASENAME.#.jpeg, with "#" is the index of the created catalog, 0 for the first, 1 for the second, etc. Default is "Catalog"

**NOTEXT** : This is a flag, and require no extra parameter. If you put this keyword on the command line, no text will be added under the pictures. This is not set by default.

**ROWS** : This option specify the number of rows of pictures the catalog will have. By default, it is set to 4, so that 4 pictures will be put in a single line.

---

COLUMNS : The number of columns the catalog picture will have. The default is 4, so that 4 lines of pictures will be put in the catalog file

IMAGEWIDTH : This option let you specify the width in pixel for a picture sample. The default is 120.

IMAGEHEIGHT : As above, but this option is for the height in pixel of the picture sample. The default is 120.

HIGHQUALITY : This flag, if found in the command line, will improve the quality of the rendered pictures, by converting the bitmap picture to 24 bits, & scaling them with highquality scale, before adding them in the catalog. Of course, the original pictures won't be affected.

## 1.64 The ARexx Port : OilPainting.rexx

The ARexx Port: Oil Painting

-----

With this script, you can automatically apply an "oil-painting" effect to a picture.

To use it, just specify on the command line which image should be processed. See

EmptyScript.Rexx  
for more details.

## 1.65 Ajouts Futurs

FUTURE IMPROVEMENTS (THE "TO DO" LIST)

-----

- Icon saving, representing the picture (with NewIcons).
  - Saving BMP, EPS, etc.
  - Many more operators:
    - Ripples
    - Stars
    - Mapping
    - Solarize
    - Bubble
    - And any you would indicate me... :)
  - Printing.
  - (Fill HERE what YOU want)...
-

## 1.66 Historique

### HISTORY:

-----

- v1.7.2 - A bug in the ARexx port is removed.
    - The Fade operator is bug-fixed
    - "Un-select" function added in the Crop operator
    - ARexx command for MOSAIC added.
    - A bug in the Bicolor operator is bug-fixed.
  
  - v1.7 - Most effects are now applied on the previewing window in real-time.
    - Area selection bugfix
    - PNG Loading/Saving (Bitmap and 24-bit)
    - GIF Saving comes back.
    - Mosaic operator added.
    - English documentation available !!!
  
  - v1.6 - Preview mode becomes BitMap mode, and a real preview is added. It is possible to select a rectangular area on the preview window.
    - It is now possible to select the screenmode for the GfxLab24 screen.
    - A bitmap picture can be loaded as a 24-bits picture if there is not enough chipram available.
    - Bug fixes, ever ! :) -
  
  - v1.55 - A bug in the GfxLab24 screen removed (screen size was not standart)
    - GfxLab24 becomes FREEWARE. No big changes in fact, as it was NOT crippled.
  
  - v1.5 - bitmap display improved, and now accepts the error diffusion dithering
    - "Load Bank" et "View Bank" added to the EDIT menu
    - Minor bugfixes
  
  - v1.4: - Brush operator added
    - Text operator added
    - Noise operator added
    - An ARexx port is added.
    - GIF saving removed for legal reasons
    - bank management improved
    - Minor bugfixes
    - An icon can be added to the picture when saved
  
  - v1.2: - Fade operator added
    - Whirl operator added
    - PCX bitmap saving
    - Palette edition in the QUANTIZE operator
    - Many minor bugfixes
  
  - v1.0: - All the operator have been modified (and many re-written from scratch) to accept bitmap mode processing.
-

- BitMap mode processing
- bitmap picture management improved

v0.995 - Balance filter operator added!

- v0.99:
- HAM8 et HAM6 display
  - HAM8 et HAM6 loading/saving
  - string management improved
  - GIF saving
  - A bug in the convolve operator fixed
  - virtual memory management for 24-bits data.

v0.98: The GUI is done with GadToolsBox v2.0b  
15 operators:

- Colour to gray
- Filter
- Brightness
- Scale
- Crop
- Emboss
- Sketch
- Negative
- Rotate
- Bicolor (9 méthodes)
- Flip
- Visual Aspect.
- Disperse Pixel
- Quake
- Convolve

14 dithering methods:

- NO DITHERING
- HALFTONE
  - Ordered 2x2
  - Ordered 4x4
  - Horizontal lines
  - Vertical Lines
  - Magic Square
  - Halftone 90\textdegree{}
  - Halftone 45\textdegree{}
- ERROR DIFF
  - Floyd-Steinberg
  - Burkes
  - Stucki
  - Sierra
  - Jarvis, Judice & Ninke
  - Stevenson - Arce

- Preference loading/saving

## 1.67 Informations Diverses

INFORMATIONS DIVERSES.

---

GfxLab24 is still in hand, and I invite you to send me any comment, bug report, or suggestion about this program. You can also indicate me new effects or operators (hey, don't be shy! :)). If you create new filters, convolution matrix, palette, etc, please send them to

---

me, so that I can include them in the GfxLab24 package.

You can contact me quite easely:

Snail-Mail:

-----

Rodrigo Reyes  
20 Res. de la grande Prairie  
91330 Yerres.

E-Mail:

-----

Internet:   rodrigo.reyes@ramses.fdn.org  
Fidonet:    2:320/104.16  
AmigaNet:   39:180/1.16

Using telepathy:

-----

Think about me, and wait for my answer.

---