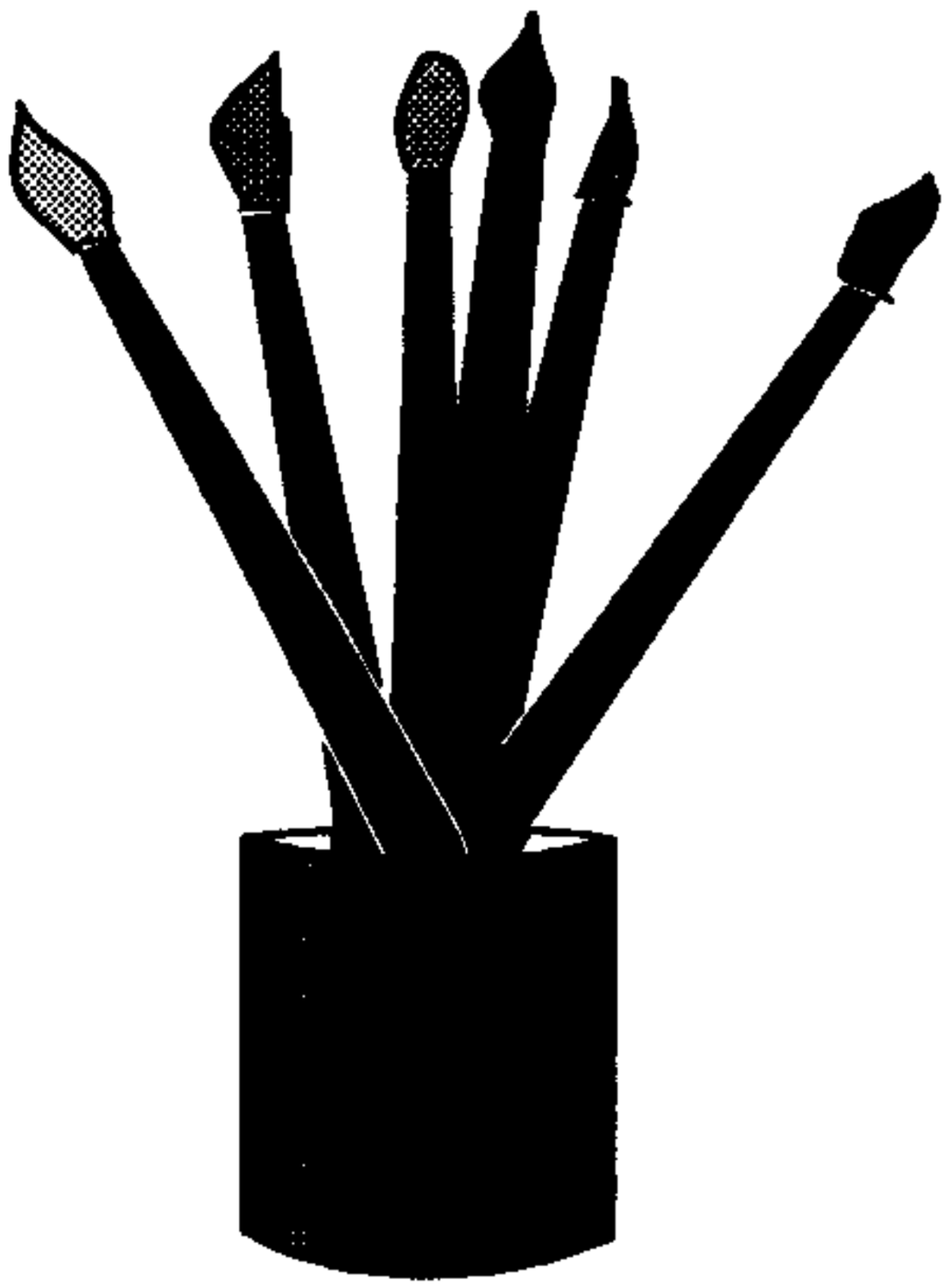
MAPP



By

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INTRODUCTION

There are many paint programs for the TI-99/4A, and several for the Myarc Geneve 9640. Most of them have unique features that make them stand out. On the 99/4A, for instance, *Picasso* has an unusually large paint area and *TI-Artist Plus* has a wide range of features. On the Geneve, *My-Art* allows you to access two of the unique graphics modes of the V9938 graphics processor found on the 9640. One would think, then, that those interested in graphics would be well served those available.

However, this is not the case. While *TI-Artist Plus* and *Picasso* maximize the capabilities of the TMS9918A chip included standard in the TI-99/4A, no graphics package on the 99/4A takes advantage of the capabilities of the increasingly more common 80-column cards (which utilize the V9938 chip). The only drawing program that conceivably would, *My-Art*, allows you to use the new graphics modes, but doesn't support the larger ones, is relatively primitive compared to all 99/4A drawing programs, and doesn't even begin to run on a 99/4A. Furthermore, to use it you have to have a *Myarc Mouse* - which precludes its use by many Geneve owners as well. So, as it turns out, there is no graphics program available that takes full advantage of the capabilities of the V9938 graphics chip found in 4A 80-column cards and the Geneve, contains popular features found in TI-99/4A drawing packages, and will run equally well on a properly equipped 99/4A or a Geneve.

That is, there was no such program until *YAPP*. This program, whose name is an acronym for "Yet Another Paint Program", is by Alexander Hulpke, and is a full-featured paint program that contains everything found in *My-Art*, has many of the most popular features of *TI-Artist Plus* and *Picasso*, includes many new features found in no other paint program, will give you access to four different 9938 drawing modes, and runs on the 4A and the Geneve.

EQUIPMENT REQUIRED

YAPP requires either:

A TI-99/4A
32K memory expansion
1 SS/SD disk drive and controller
Asgard, Mechatronics or Dijit 80-column device
Asgard Mouse or Joystick
either Editor/Assembler or TI Extended BASIC

or:

A Myarc Geneve 9640
1 SS/SD disk drive and controller
Asgard Mouse, Myarc Mouse or Joystick
M-DOS Version 1.14

An RS232 interface and a printer are optional, but recommended.

INSTALLING *YAPP*

Before doing anything with *YAPP*, load your favorite disk manager and initialize a new disk. Put a copy of *YAPP* on it. Store the original in a safe place.

Before leaving your disk manager, catalog your new copy of *YAPP*. Among other things, you should see the following three files:

DSR:AM
DSR:JOY
DSR:MM

These files are "device drivers" that allow *YAPP* to use either an Asgard Mouse or a Myarc Mouse. Using the File Manager portion of your disk manager, you are going to rename one of these files **YAPPDSR.**

- If you have an Asgard Mouse, rename **DSR:AM** to **YAPPDSR**
- If you have a Myarc Mouse, rename **DSR:MM** to **YAPPDSR**
- If you have a Joystick only, rename **DSR:JOY** to **YAPPDSR**

Please note: you cannot load *YAPP* unless you have selected a "Device driver" in this manner.

LOADING YAPP

After you have installed YAPP as described above, you are ready to load it.

On the TI-99/4A

Extended BASIC:

1. Place the cartridge in the module port and turn on the computer. Press any key to advance beyond the Master Title Screen.
2. Place your copy of *YAPP* in disk drive one and select the module from the module menu.
3. An Extended BASIC menu will load and run. Press **1** to load *YAPP*. See the appropriate section of these manual for instructions on using the other options of this menu.

Editor/Assembler:

1. Follow instructions #1 and #2 above.
2. Select option #5 - "Run Program File". To run *YAPP* type **DSK1.YAPP** and press **ENTER**. To run *Hard Copy* type **DSK1.HARDCOPY** and press **ENTER**. To run the 99/4A *GIF Converter*, type **DSK1.GIFFER1** and press **ENTER.**

On the Geneve 9640

From M-DOS:

1. Boot M-DOS as you normally would. Please note that *YAPP* is not guaranteed to work with any other version of M-DOS other then 1.14
2. Place your *YAPP* disk in disk drive one. To run *YAPP* type **EXEC YAPP** and press **ENTER.** To run *Hard Copy* type **EXEC HARDCOPY** and press **ENTER.** To run the 9640 GIF program type **GIF2EXE** and press **ENTER.**
3. Please note that *EXEC* is a fairware program, and a donation is expected.

From the GPL Interpreter:

1. Follow step 1 above.
2. Load the GPL Interpreter as you normally would.
3. Load either Extended BASIC or Editor/Assembler at the module screen. Load the program as described above in the section on loading on the TI-99/4A. NOTE: DO NOT SELECT OPTION #3 OF THE EXTENDED BASIC MENU - DOING SO WILL LOCK UP YOUR GENEVE. This GIF converter is only for use on the TI-99/4A. The Geneve one can be loaded as described above on loading through M-DOS as it is designed to be loaded in that manner.

THE SCREEN

In order to use this program you have to have either an extended graphics device for your TI-99/4A, or a Geneve 9640 computer. All of these devices have something in common - the 9938 video chip. This advanced graphics processor, required by *YAPP*, supports a large variety of new graphics modes and features not found in the TMS9918A chip used in a standard TI-99/4A.

Many of these graphics modes offer new "resolutions" (the number of dots horizontally on the screen and the number vertically). Some of these resolutions allow vastly more detail then the single one supported in the 9918A. The 9938 also offers one new advantage for artists over the 9918A in that, unlike the 9918A, the 9938 allows each individual dot (or "pixel") on the screen to be any of the available colors in all of the new graphics modes. If you've tried to paint color pictures on a 99/4A you've no doubt run into the limitation of having only 2 colors in each 1 by 8 pixel block. Below you'll find a picture that illustrates the differences between a 99/4A equipped with a 9918A and one with a 9938 (or a Geneve).

YAPP was designed to support many of these new graphics modes for both properly equipped 99/4A users and Geneve users. Using *YAPP* you can now draw pictures in:

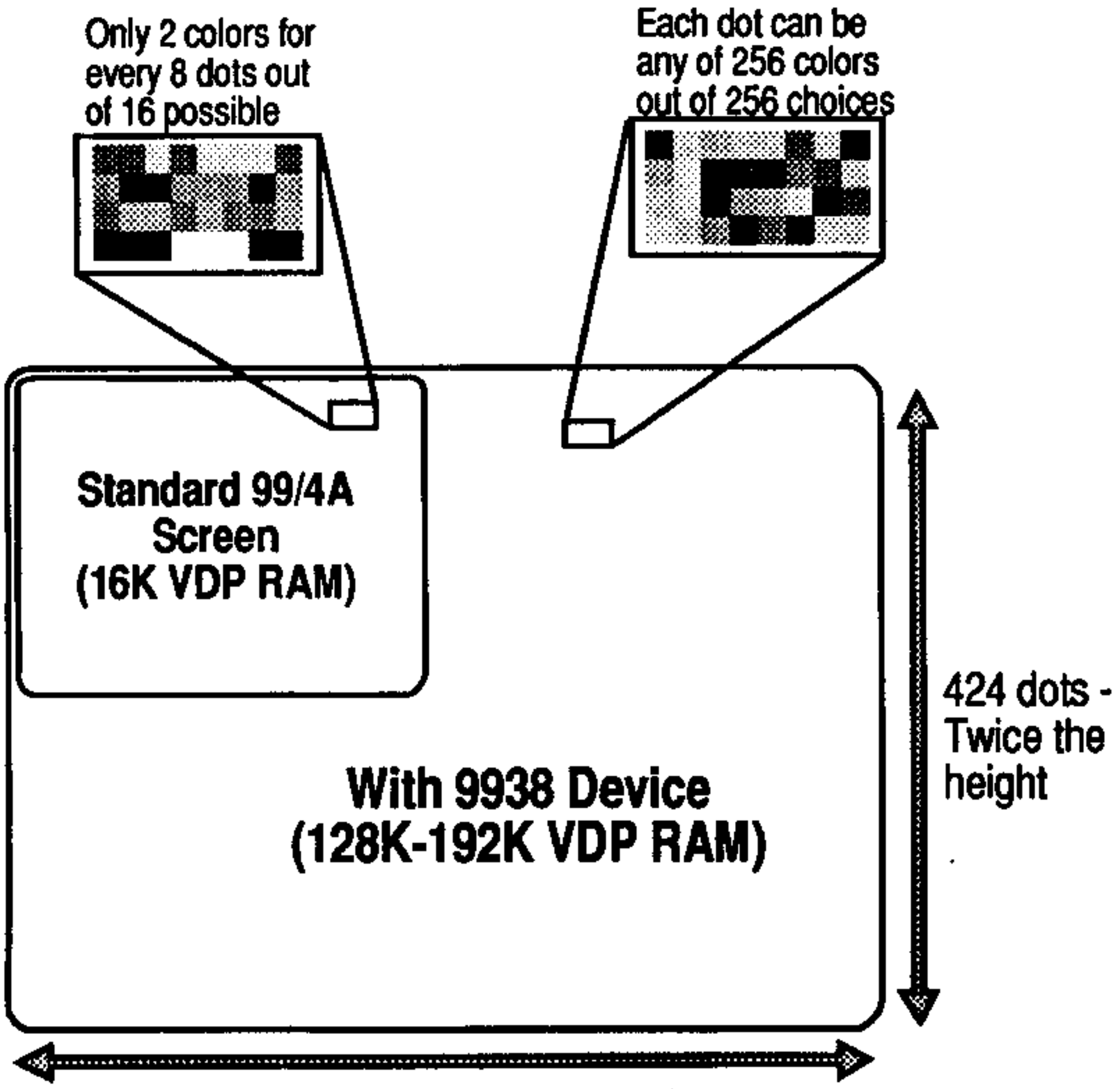
- The 256 (horizontal)by 212 dot (vertical) mode where each dot can be any of 256 colors (referred to as the 256x212x256 mode)

• The 256 x 424 dot mode where each dot can be any of 256 colors (called the 256x424x256 mode)

• The 512 x 212 mode where each dot can be any of 16 colors (where each of the 16 colors can be chosen from the 256 built into the chip). This mode is often called the 512x212x16 mode.

• And, the 512x424 mode where each dot can be any of 16 colors out of 256 available. This mode is called the 512x424x16 mode.

The two modes that offer 256 dots horizontally on the screen are collectively known as "Low-Res" modes, while the ones that offer 512 dots horizontally are "Hi-Res" modes. Those modes with 424 dots vertically on the screen are available when the "Interlace" is turned on (see below for more details). In *YAPP* you can switch between either the Low or Hi-Res modes, and turn on or off the Interlace in order to access the four available graphics modes.



A comparison of the 9918A to a 9938

USING YAPP WITH A MOUSE

When *YAPP* loads it will immediately enter the 512x212x16 graphics mode (from this point on known as "Hi-Res" mode). The screen will clear and a cursor, shaped like a pencil, will appear in the upper left hand corner.

At this point the program is waiting for you to do something. Try moving the mouse. Note that each movement of the mouse causes a corresponding movement on the screen. The mouse, in essence, is an extension of your hand. When the cursor is shaped like a pencil, you are in the "Draw" function. To demonstrate this, as you move the mouse with your hand depress the right mouse button. You will note that a line will be drawn behind the cursor as it is moved. If you look closely, you'll note that the color of the line being drawn is the same as that of the border on the screen.

If you want to change the color you are drawing with, press the middle mouse button. On doing so a "color/menu bar" will appear at the bottom of the screen. This consists of all the colors available to you for drawing. Underneath the color bar you will see little pictures and letters. These are icons that represent various functions. More on using these later. For now, simply move the cursor so that the pencil points to a color that you like. When you've done that, press the right mouse button. You have now "selected" that color. Note that the border, or backdrop on the screen is now in that color. Now press the middle mouse button again - this removes the color/menu bar.

Now, use the mouse to move the pencil around the screen. Depress the right mouse button and the program will leave a trail of dots or line behind the mouse. Stop moving the mouse and simply press the right mouse button. Note that this causes a dot to appear under the pencil. You have now learned how to draw with the mouse.

Bring the color/menu bar onto the screen again by pressing the middle mouse button and select another color from the one you selected before. Remove the menu/color bar (again, by pressing the middle mouse button), and draw a bit with the pencil. Note that if you draw over what you'd drawn in the previous color the new line will just overlap over the other one. If you have any experience with TI-99/4A drawing programs, you may remember that doing this would cause the color to "bleed" into the other line. The fact that every dot on the screen can be a different color is one of the great advantages of the 9938 video processor.

Now we are going to try drawing in different brushes. Bring the color/menu bar up by pressing the middle mouse button. You will note that on the left hand side of the menu bar area there are 4 dots of different sizes. Try selecting the largest one by putting the pencil tip on it and pressing the right mouse button. Remove the color/menu bar by pressing the middle mouse button again, and then draw as you did before. Note that the line drawn is much thicker now. Try experimenting with the two other brush sizes in the same manner - perhaps using a different color with each.

For notes on using the other drawing functions of *YAPP*, refer to the sections covering "Program Features".

Before reading that section, using the program in the three other graphics modes, as well as selecting colors in two of them, should be discussed.

While the Hi-Res graphics mode only has 16 colors available to it, you can select those 16 colors from 256 different ones if you so desire. To do so first bring up the color menu bar by pressing the middle mouse button. Then press **CTRL-A.** Please note the box that appears around the first color square. Using the arrow keys on the Geneve, or **FCTN-S** and **FCTN-D** on the 99/4A, move that box over the color you wish to change. When you have done so press the **R**, **G** and **B** keys to add to that color, respectively, more red, green or blue. In a way it works like mixing paints - to change the color of a paint to get the exact tone required, you'll often add paint of a different color to it. In a way you'll be doing the exact same thing. The results are sometimes fascinating to watch. Note that you can do this repeatedly with all the colors. Press **ENTER** and those color changes will be the set of colors you have available when drawing.

If, for some reason, you made a terrible mistake, press **CTRL-R** to restore the colors to their original hue.

As mentioned above, you can draw in three other graphics modes in *YAPP*. To switch into the 256x212 dot mode ("Low-Res"), make sure the menu/color bar is turned off, and simply press **ENTER**. Note the warning the program displays ("Proceeding will result in the loss of the picture"). Press **FTCN-6** to proceed, or any other key to cancel this command. To switch back into the Hi-Res mode while in Low-Res, simply press **ENTER** again. You'll get the same prompt as before, with the same options.

After entering Low-Res mode by pressing **FCTN-6** at the warning prompt, bring the color/menu bar up again. You'll note that it is substantially the same, except for one big difference - instead of 16 colors across the screen you have 256! In this drawing mode each dot can be one of 256 different colors. As with the Hi-Res mode, to select a color simply move the point of the pencil over the color desired and press the right mouse button to select it.

Note that when you select a color this way another color bar appears slightly to the right in the menu bar area. This is a "zoom" view of the part of the color bar that the pencil is currently pointing to! The problem with so many colors on a single line is differentiating between them. The "zoom color bar" area helps you do this much easier. Please note that you can select a color in either bar - to select one from the zoom area simply move the pencil so it points to the color desired in that area and press the right mouse button. Note that at any time you can select a color from either area.

The last thing you should learn before you read the sections about the many other features of *YAPP* is how to turn on the "Interlace" mode. But first, a description of what this is.

The 9938 video chip will allow you to double the vertical resolution (number of dots) displayed on the screen by putting it into an Interlace mode. This can

be done in both Low-Res and Hi-Res, effectively meaning that the 9938 will support 4 new resolutions beyond those supported on the TI-99/4A: 256x212, 256x424, 512x212 and 512x424 dots. Again, the 9938 will allow a dot to be any of 256 different colors in the Low-Res modes, and any of 16 (chosen from 256) in the Hi-Res modes.

One note before trying out the Interlace modes: unless you have a very high-resolution RGB monitor chances are that the screen may "jitter" with the interlace turned on (depending on the type of monitor used). This happens when the 9938 asks a monitor to display more dots (also known as "pixels") then it was designed to display. The general rule is that the more you spent on your monitor, the less chance you'll have this trouble. However, this isn't a truism - the TI 10" color monitor often jitters less then the more expensive Magnavox RGB color monitors.

To turn on the interlace mode in both Low and Hi-Res modes, simply press **I** (the letter "i", as in "interlace"). Note that you get the same warning when moving between Low and Hi-Res modes - that any picture in memory will be erased. Again, press **FCTN-6** when this message appears to continue, or any other key to cancel the operation.

If you pull up the color/menu bar after turning on the interlace mode you'll note that everything looks as it should (though the screen may jitter some). You won't really notice any differences until you try to draw something. In the 256x424 mode (the Low-Res Interlace mode), you'll note that the pixels you draw will look 'flatter'. This is particularly pronounced if you are using a large brush. In effect, the dots are "flatter" in this mode. You may have noticed that in the Hi-Res mode (512x212), the pixels are "taller". Switch into the Hi-Res Interlace mode (512x424). In this mode, as in the 256x212 mode, the dots you draw will be exactly proportional (either square or round depending on the brush used).

Please note that the process of selecting a color and drawing is the same in both the Interlace modes and the non-Interlace modes.

You can leave the Interlace mode at any time by pressing **I** again, and **FCTN-6** at the warning prompt.

At this point you should be familiar with:

- How to select a color in all four graphics modes.
- How to draw in that color.
- How to change the brush size.
- How to change the colors used in the Hi-Res mode.
- How to switch into the Hi-Res mode from the Low-Res mode, and vice versa.
- How to turn on and off the Interlace mode and what it is.
- The four graphics modes available and the differences.

If you have questions on any of these things - please re-read this section.

USING *YAPP* WITH A JOYSTICK

YAPP functions exactly the same with a joystick as it does with a mouse - EXCEPT for the following differences:

1. The "middle mouse button", used to turn on the color/menu bar, is simulated by the **SPACE BAR** on the keyboard. Simply press the **SPACE BAR** to bring up the color/menu bar.

2. The Joystick **Fire** button is used just as you would use the right mouse button - to select colors, to draw a line, etc.

With these things in mind, read the previous section on using *YAPP* with a mouse, and simply substitute "**SPACE BAR**" every time you see "Middle mouse button", and "**Fire** button" every time you see "right mouse button".

PROGRAM FUNCTIONS

YAPP has a solid set of commands to make creating or modifying a drawing easier.

Drawing tools:

Pencil

When the program first starts out the cursor is shaped like a "pencil", and in fact works much like one when moved with the mouse or joystick. You can say that the "pencil tool has been selected".

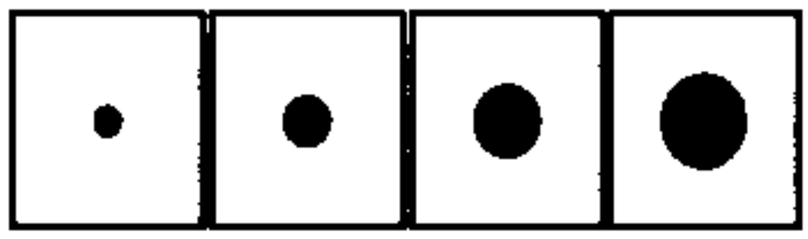
If after switching to another drawing tool you want to return to the pencil tool, you can do so by pressing "**P**" on the keyboard or by selecting any of the brushes on the color/menu bar. To do the latter, simply bring up the color menu bar (by either pressing the middle mouse button or pressing the **SPACE BAR**), and point to one of the brushes with whatever tool you are currently using. Press the right mouse button (or the "fire" button if using a joystick), and the Pencil tool will be selected, and the brush size will be set to whichever brush you selected.

Use this tool as describing in the section on "Using *YAPP* With a Mouse". After reading this section you should be able to:

- Select the pencil tool after using another.

Read this section again, and the section indicated as a reference, if you do not understand.

Brushes



The various brushes available in *YAPP* are useful for everything from fine, detailed work to creating cartoon-ish or thick-bordered pictures.

To select a brush you can do so from the color/menu bar (as described above in the section on "Using *YAPP* with a Mouse"), or you can select them by pressing the keys "**Q**", "**W**" and "**E**" for the next to the smallest, the next to the largest and the largest brushes respectively. The key for selecting the Pencil tool automatically selects the smallest brush size as well.

After reading this you should know:

- How to select the brush sizes from the keyboard.

Read this section again and the indicated reference if you have any further questions.

Erase

There are two ways you can erase a picture or part of a picture in *YAPP*. In most drawing programs for the 99/4A there is a specific key or function for erasing part of the picture. However, with *YAPP* , all you have to do to erase is simply draw over the offending area in the "background color".

The whole concept of "erasing" is different on a standard 99/4A then in *PaInt Pro*. While the 9918A chip in the 99/4A designates one color at any time as the background color and one as the foreground color, this doesn't apply with the 9938. With this chip, any color can be the "background color" at any time. "Foreground" colors are the same as background ones - one doesn't take precedence over the other. Removing the foreground color doesn't automatically give you the background color as it does on a 9918A equipped 4A. When you erase something, you are simply changing the color of a dot from whatever color it currently is to the color you've designated as your background color - drawing over it if you will in the "background" color.

You will note that the background color in all graphics modes is located on the color bar portion of the color/menu bar - as any other color. Simply select it as you normally would any color, and the brush size that you prefer, and start drawing over the area that is to be erased. In the Low-Res mode, where 256 colors are represented on the color bar, it can be difficult to pick out the background color for this procedure. In this case simply point to an area of the background, and use the "color grab" command (the "**G**" key) described below to change the drawing color to the background color.

To erase a large area, you may want to use the "Box" command, also detailed below, and draw a box over the area to be erased. Again, to do this select the background color from the color/menu bar or by grabbing it off the screen, and select the box function as detailed in the section below on using it, and draw a box over the offending area.

To erase an entire screen, simply press **FCTN-4**. This makes every dot on the screen the color currently selected. You can "erase" a screen in this manner to any background color desired, if the default of black isn't appropriate. This is also the method used to change the background screen color.

After reading this you should understand:

- How to erase a small portion of the screen using the pencil.
- How to erase a large area using the box tool.
- How to erase the entire screen.
- How to change the background color of the screen.

Read this section again, and sections indicated as references, if you do not know how to do these things.

Grab Color

This command is used to change the current drawing color to whatever color the pointer or pencil is currently pointing to.

To use this command simply point to the color on the screen with the mouse or joystick that you would like to draw in, and press the **G** key on the keyboard. The backdrop will instantly change to that color (as it does when you select a color on the color/menu bar).

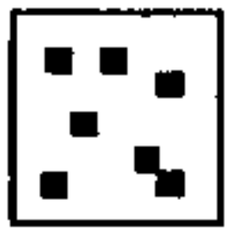
This command is particularly useful in the Low-Res modes where you have 256 colors available. If you are drawing in one color and change to another for something else, you can easily get back to the original color by point to something in it on the screen, and using this command key. Finding a specific color again on the color bar in this mode can be very difficult.

After reading this you should understand:

- How to select a color by pointing to it on the screen.
- How this function is valuable in Low-Res mode.

Read this section again if you do not understand these things.

Airbrush



This function works much like a painter's airbrush. You use it very much like the pencil to draw on the screen.

Unlike the pencil, as you move the airbrush randomly placed dots will appear behind it in the color currently selected. This can give you a "graffiti" like effect in your drawing, or can be used to blend in two areas. The airbrush can be easily used to add a "natural" look to whatever you are drawing.

To select the airbrush, either press the "**A**" key on the keyboard, or select the little picture of random dots (much like the one represented next to the title of this section) on the menu/color bar with the mouse or joystick. To do this, simply point to that pattern and press the right mouse button (or "**fire**" on the joystick). After you have selected this function the cursor will turn into a representation of a spray-paint can.

As with the pencil tool, you can airbrush in any of the colors available. You can select another color as you did with the pencil tool.

After reading this you should understand:

- How to select the airbrush function.
- How to select another color to airbrush in.
- Some uses for the airbrush.

Read this section again if you do not understand these things.

Lines

The Lines tool is used to draw straight lines on the screen with a minimum of effort. It functions similar to line drawing functions in other drawing packages.

To select the line function, either press the "**L**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - much as you would select a brush size for the pencil tool. The Line tool 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this tool has been selected, the cursor will turn into the representation of a line, with an arrow attached to it. The point that the arrow is pointing to is where the line will actually start or end.

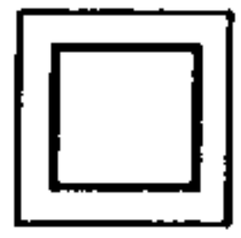
To use the Line tool place the arrow where you wish the line to start and press the right mouse button (or "**fire**" button). Now, as you move the mouse a line will be dragged behind the cursor connecting it to the starting point you selected. This line can be dragged in any direction until it is the way you'd like it to be oriented and of the proper length. When it is the length and orientation desired, simply press the right mouse button again (or again, the "**fire**" button if using the joystick), and the line will be 'placed' on the screen and become part of it.

After you have finished with the Line tool, you can select another. As with the airbrush or the pencil, you can draw lines in any of the available colors, and you can select another color for your lines as you would with the pencil tool.

After reading this you should understand:

- How to select the line tool.
- How to select another color to draw lines in.

Read this section again if you do not understand these things.



Frames

The frames tool is used to draw a "frame", or unfilled box on the screen. This can be a frame around another drawing, or as part of a drawing.

To select the frames function, either press the "**V**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - much as you would select a brush size for the pencil tool. The Frames tool 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this tool has been selected, the cursor will turn into the representation of a frame, with an arrow attached to it. The point that the arrow is pointing to is where a corner of the frame will actually start or end.

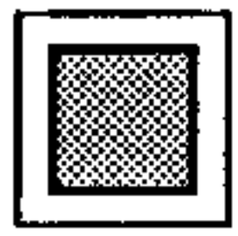
To use the Frames tool place the arrow where you wish the frame to start and press the right mouse button (or "**fire**" button). Now, as you move the mouse a frame will be created behind the pointer on the cursor connecting it to the starting point you selected. This frame can be dragged in any direction until it is the way you'd like it to be oriented and of the proper size. When it is the dimensions desired, simply press the right mouse button again (or again, the "**fire**" button if using the joystick), and the frame will be 'placed' on the screen and become part of it.

As with the airbrush or the pencil, you can draw frames in any of the available colors, and you can select another color for your frames as you would with the pencil tool.

After reading this you should understand:

- How to select the frames tool.
- How to select another color to draw frames in.

Read this section again if you do not understand these things.



Boxes

The boxes tool is used to draw a "box", or filled rectangle on the screen. This can be used as a backdrop for another drawing, or as part of a drawing.

To select the boxes function, either press the "**X**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - much as you would select a brush size for the pencil tool. The Boxes tool 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this tool has been selected, the cursor will turn into the representation of a box, with an arrow attached to it. The point that the arrow is pointing to is where a corner of the box will actually start or end.

To use the Boxes tool place the arrow where you wish the box to start and press the right mouse button (or "**fire**" button). Now, as you move the mouse a box will be created behind the pointer on the cursor connecting it to the starting point you selected. This box can be dragged in any direction until it is the way you'd like it to be oriented and of the proper size. When it is the dimensions desired, simply press the right mouse button again (or again, the "**fire**" button if using the joystick), and the box will be 'placed' on the screen and become part of it.

As with the other tools, you can draw boxes in any of the available colors, and you can select another color for your boxes as you would with the pencil tool.

After reading this you should understand:

- How to select the boxes tool.
- How to select another color to draw boxes in.

Read this section again if you do not understand these things.

Circles/Ellipses

The circles/ellipses tool is used to draw a "circle" or "ellipse", or circular object on the screen. This can be used as an outline for another drawing, or as part of a drawing.

To select the circles/ellipses function, either press the "**O**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - much as you would select a brush size for the pencil tool. The circles/ellipses tool 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this tool has been selected, the cursor will turn into the representation of a circle, with an arrow attached to it. The point that the arrow is pointing to is where the perimeter of the circle or ellipse will actually be located.

To use the Circles/ellipses tool place the arrow where you wish the circle or ellipse to start and press the right mouse button (or "**fire**" button). Now, as you move the mouse a circle or ellipse will be created behind the pointer on the cursor - using the starting point you selected as the center of the shape. This circle or ellipse can be dragged in any direction until it is the way you'd like it to be shaped and of the proper size. When it is the dimensions desired, simply press the right mouse button again (or again, the "**fire**" button if using the joystick), and the circle or ellipse will be 'placed' on the screen and become part of it.

As with the other tools, you can draw circle and ellipses in any of the available colors, and you can select another color for your shapes as you would with the pencil tool.

After reading this you should understand:

- How to select the circles/ellipses tool.
- How to select another color to draw circles and ellipses in.

Read this section again if you do not understand these things.

Fill Tool

This tool is used to fill-in an area in the color currently selected. This function works like the function of the same name in other drawing packages.

To select the fill function, either press the "**F**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - much as you would select a brush size for the pencil tool. The Fill tool 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this tool has been selected, the cursor will turn into the representation of a can of paint being poured, with an arrow attached to it. The point that the arrow is pointing to is where the fill will actually start.

To use the Fill tool place the arrow in the shape to be filled and press the right mouse button (or "**fire**" button). The function will automatically detect the boundaries of the area to be filled, and fill it appropriately.

Note that if the area isn't completely bound by lines or other shapes, then an area much larger then the one intended may be filled. If this happens, refer to the section on "Undo" below.

Also note that this function allows you to fill any shape - in any color. Hence you can fill an area already filled in another color, and the fill took will automatically color over all of the one color in the area being filled with the currently selected color. This can be useful if you want to change the shade of an area to another one of a similar color (as in skin tones, etc.).

Finally, as with other drawing functions, you can fill an area in any color simply by selecting it as you would in the pencil function.

After reading this you should understand:

- How to select the fill tool.
- How to select another color to fill areas with.
- Some of the things to be careful of when filling an area.
- Usage of the fill function.

Read this section again if you do not understand these things.

M

Copy

This function allows you to physically copy part of a picture to another part of the screen. The area selected is copied to the destination selected, and the original area is not changed (unless copied over).

To select the Copy function, either press the "**M**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - much as you would select a brush size for the pencil tool. The Copy tool 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this tool has been selected, the cursor will turn into the representation of a pair of scissors, with a dot on the upper left corner. That dot indicates the location where the area selected or destination selected will start.

To use the Copy tool, first select the area to copy by placing the scissors at a corner of the area to be copied, and then press the right mouse button (or joystick "**fire**" button). Now, as you move the mouse a box will be created behind the pointer on the cursor connecting it to the starting point you selected. The part of the picture in the box is the part that will be selected to be copied. When it is of the dimensions desired, simply press the right mouse button again (or again, the "**fire**" button if using the joystick), and the scissors will change into an icon shaped like a tube of glue. Without pressing the right mouse button, move the icon around with the mouse or joystick. The box representing the area to be copied will move with the icon.

After the destination has been selected, press the right mouse button (or joystick "**fire**" button) again, and the 'contents' of the box (really the part of the picture selected), will be copied over whatever is currently located under the box.

You can then select other portions of the picture to copy.

After reading this you should understand:

- How to select an area to copy.
- How to select the destination where an area will be copied to.
- What this function does to the original location of the picture portion copied.

Read this section again if you do not understand these things.

Move

This function allows you to physically move part of a picture to another part of the screen. The area selected is relocated to the destination selected, and its original location is erased in the color currently being used.

To select the Move function, either press the "**N**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - much as you would select a brush size for the pencil tool. The Move tool 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this tool has been selected, the cursor will turn into the representation of a pair of scissors, with a dot on the upper left corner. That dot indicates the location where the area selected or destination selected will start.

To use the Move tool, first select the area to move by placing the scissors at a corner of the area to be moved, and then press the right mouse button (or "**fire**" button). Now, as you move the mouse a box will be created behind the pointer on the cursor connecting it to the starting point you selected. The part of the picture in the box is the part that will be selected to be moved. When it is of the dimensions desired, simply press the right mouse button again (or again, the "**fire**" button if using the joystick), and the scissors will change into an icon shaped like a tube of glue. Without pressing the right mouse button, move the icon around with the mouse or joystick. The box representing the area to be moved will move with the icon.

After the destination has been selected, press the right mouse button (or joystick "**fire**" button) again, and the 'contents' of the box (really the part of the picture selected), will be copied over whatever is currently located under the box. The area where the 'contents' originated will be erased to the currently selected color.

You can then select other portions of the picture to move.

After reading this you should understand:

- How to select an area to move.
- How to select the destination where an area will be moved to.
- What this function does to the original location of the picture portion moved.

Read this section again if you do not understand these things.

Capture

This function allows you to "Capture" part of a picture and temporarily store it for later use in another area of memory. Please note that this function requires expanded video RAM, and may not be used on the Geneve 9640.

To select the Capture function, either press the "**C**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - much as you would select a brush size for the pencil tool. The Capture tool 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this tool has been selected, the cursor will turn into the representation of a pair of a camera, with an arrow pointing to the upper left corner. That arrow indicates the location where the area the area that will be captured will start.

Select the area to capture by placing the camera at a corner of the area to be stored in memory, and then press the right mouse button (or "**fire**" button). Now, as you move the mouse a box will be created behind the pointer on the camera connecting it to the starting point you selected. The part of the picture in the box is the part that will be captured. When it is of the dimensions desired, simply press the right mouse button again (or again, the "**fire**" button if using the joystick). The area selected is now stored in memory and will be until something else is placed there, or your quit the program.

After reading this you should understand:

- What the Capture function is
- How to select an area to Capture.

Read this section again if you do not understand these things.

D

Display Capture

This function allows you to place a copy of the picture captured with the Capture function back onto the screen.

To select the Display function, either press the "**D**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - much as you would select a brush size for the pencil tool. The Move tool 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this tool has been selected, the cursor will turn into the representation of a tube of glue with a box attached, where the box represents the area where the captured picture will be placed.

Without pressing any buttons, move the icon around with the mouse or joystick. The box representing the area captured will move with the icon.

After a destination has been selected, press the right mouse button (or joystick "**fire**" button) again, and the 'contents' of the box (really the part of the picture selected), will be copied over whatever is currently located under the box. If you aren't sure of the results of what you are doing, first select the logic function XOR (described below in the section on Logic). Then, if the results aren't desirable, simply press the button again and the picture will be restored to what it looked like before.

Note that you can continue to place copies of the Captured picture on the screen as many times as desired. Press the middle mouse button (or the **SPACE BAR**) to leave the Display Capture mode. On doing so the cursor will turn into a Pencil, and that same function will be selected.

After reading this you should understand:

- What the Display Capture function does.
- How to select the destination where the Captured area will be copied to.
- How to place a copy of the picture captured back on the screen.
- How to make this function reversible with the XOR logic command.
- How to leave this function.

Read this section again, and refer to any sections listed if you do not understand these things.

Zoom

This functions allows you to "zoom in", or magnify an area of the picture for fine-detailed work. This function is also useful if you are trying to check the boundary of an area before filling it.

To select the Zoom function, either press the "**Z**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - much as you would select a brush size for the pencil tool. The Zoom tool 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this tool has been selected, the cursor will turn into the representation of a magnifying glass with a point on the end. The point represents the upper left hand corner of the area that will be magnified.

To zoom in on an area, simply move the magnifying glass over the desired area and press the right mouse button (or the joystick "**fire**" button). Within the zoom mode the use of the right mouse button (or "**fire**" button) changes - in the zoom mode it is used to draw with. You can move the cursor around the screen in this mode and draw in the currently selected color by simply pressing this button. To change the color being used simply select another color from the color bar displayed on the bottom of the screen.

After you have made the changes desired, simply press the middle mouse button (or the **SPACE BAR**) to leave the zoom mode. You can leave the zoom mode without any changes made being permanent by pressing **FCTN-.** (period), or **ESC** on the Geneve. This is an easy way to clear things up if you've made a mistake.

Please note that certain graphics modes (the 256x424 interlace Low-Res mode and the 512x424 interlace Hi-Res mode) require more memory then the non-interlace modes, and this function can only be used in those graphics modes provided the computer or display device has a full 192K of memory. In practical terms, this means that this function can only be used to its full potential on a Mechatronics display card, a Dijit card, or the Asgard EGI. On the Geneve (unless the video display memory has been enhanced) attempting to zoom in those graphics modes can cause unpredictable results.

After reading this you should understand:

- How to select the zoom tool.
- How to select the area that will be zoomed into.
- How to edit the picture when in the zoom mode.
- How to leave the zoom mode.
- How to leave the zoom mode without any changes being made.
- The limitations of the zoom function and its memory requirements.

Read this section again if you do not understand these things.

UNDO

The Undo function allows you to undo the last change you made to the picture. Use this function if you've made a mistake and you want to erase it with the least effort.

Before you can "Undo" a mistake, the "Undo" mode must be first turned on. This tells *YAPP* to store the picture in a separate place and restore the saved copy if you tell it a mistake has been made.

To select the "Undo" mode, either press the **FCTN-U** on the keyboard. The Undo mode 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section.

After this mode has been turned on, the last change made to your picture can be immediately eliminated by simply pressing the left mouse button or the U key on the keyboard. On doing so the screen will flash and the picture will be instantly restored to what it once was. Note that this function requires a full 192K of video RAM (not found on a standard Geneve 9640) for pictures in interlace mode. Also note that the flash may take longer if the picture is in interlace mode (because of the way the picture is stored) - and only part of the picture will be restored (as there is only enough video RAM to store half of the picture in the interlace modes). Finally, any operation that entails switching graphics modes or turning on the color/menu bar will erase the stored original screen.

After reading this you should be able to:

- Select the Undo function from the keyboard or with the mouse/joystick.
- Understand the limitations of the function, as well as its requirements.

If you aren't able to do either, please re-read this section.

Cursor Speed

When drawing with a mouse (or a joystick) it often helps to be able to slow it down or speed it up. A slow speed is appropriate if you are trying to get something "just right". A fast speed is necessary if you are drawing large objects, or simply want to move quickly around the screen.

YAPP supports two speed settings, slow and fast. You can switch back and forth between the two simply by pressing the "." (period) key on the keyboard. If the speed setting is too slow or too fast simply press this key and it will switch to the other setting. This is known as a "toggle".

After reading this you should be able to:

- Change the speed setting of the mouse.
- Understand the uses for the different speed settings.

Re-read this section if you don't know either or both.

Saving & Loading Pictures:

Of course once you've created a picture, you would certainly want to be able to save it. Additionally, you will of course want to load in pictures others have created, or that you yourself created earlier. *YAPP* provides a function for this.

How the function works

To select the "Storage" function, as it's called, either press the "**S**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - as you would select any of the other tools on the color/menu bar. The Storage function 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this function has been selected, the screen will instantly clear and the following menu will appear:

Save, Load Picture / Directory?

To save a picture from this menu, simply press "**S**". To load a picture, as implied, press "**L**". To catalog a disk (either a floppy disk drive, most RAM-disks, or a hard disk sub-directory), press "**D**". To leave this menu, simply press **CTRL-.** (or **ESC** on the Geneve). On doing so you will be returned to your picture.

The program will ask you to enter in the filename if you select the Save or Load options, and the pathname (read the "device name" if you have floppy disk drives only), if you wish to catalog the disk or sub-directory. If you wish to erase the characters starting at the current cursor position simply press **ESC** (or **CTRL-.**). After entering in the filename or pathname, simply press **ENTER** to load or save the picture or catalog that disk or directory. After either saving or loading is completed you will be returned to the picture currently in memory.

The program savés and loads pictures in a modified form of *My-Art* format. That is to say that it will load pictures stored in either *My-Art* or *YAPP* format, and it saves pictures in a format similar to that used by *My-Art*, but not guaranteed to work with that program. This compatibility with *My-Art* instantly allows you to access the hundreds of pictures created in this format, and use those programs that convert pictures in other formats to *My-Art* format. Two freeware utilities for converting *GIF* format files to *My-Art* are included with this package (see documentation on the 'External Utilities' in this manual).

Additionally, *YAPP* will also allow you to load pictures stored in *GIF* format directly into the program. Read the section below on doing this.

For more detailed technical information about the *YAPP* format, please refer to the Technical Specifications portion of this manual.

Saving and loading pictures is relatively straight-forward. The directory function, however, is somewhat different from others of its type. After the program catalogs the disk or sub-directory, it displays a listing of all the files found, and highlights the first file in inverse characters. You can move this highlight bar to other filenames by moving the mouse or joystick. To select a file to load simply press the right mouse button or joystick "**fire**" button, and that filename will automatically be appended to the device or pathname cataloged. Press **ENTER** and that file will be loaded. You can also change the filename with the arrow keys, or abort the operation at this point by pressing **FCTN-9**.

After reading this you should understand:

- How to access the "Storage" menu.
- How to Load and Save a picture
- How to get a directory of a floppy disk, RAM-disk or Hard-disk sub-directory.
- How to load a file from a directory.
- What format pictures *YAPP* will load.

If you have any questions, please re-read this section.

Loading *GIF* Format Pictures

In order to load *GIF* files directly into *YAPP* you must have either a Supercart on your TI-99/4A, or have expanded your Video RAM on your Geneve to 192K. This functions requires the extra RAM provided by a Supercart (which is standard on a Geneve) as well as 192K of video RAM (which is standard on TI-99/4A 80-column devices). Once loaded the *GIF* format pictures will be saved in the standard *YAPP* format.

If you do not have the extra video RAM or a Supercart, you can use the provided utilities to do almost the same thing (though the color selecting scheme used by *YAPP* is generally superior to that used in the stand-alone utilities provided).

To load a *GIF* format picture in *YAPP* (provided your system meets the above prerequisite), simply specify the filename of the *GIF* file at the prompt for the Load picture filename, and press **ENTER**. The program immediately recognizes it as a *GIF* picture and tells you how many colors are in it, and its vertical and horizontal dimensions in dots.

It will then prompt you to enter a "horizontal" and "vertical" displacement. A positive value shifts the picture, respectively, right and down. A negative shifts it left and up. The program will then ask you if you wish to squeeze the picture to fit the display mode (if it is larger then the display mode). The program will then load the *GIF* picture into the graphics mode that you were in before you attempted to load the picture.

For more information about *GIF* format pictures refer to the section "What is GIF?" in the External Utilities section of this manual.

After reading this section you should understand:

- What you need to use the built in *GIF* loader.
- How to load a *GIF* format picture.

If you have any questions, refer to the sections indicated and re-read this section.

Graphics Mode Considerations

When loading files you have to be careful which graphics mode you are loading them into. If you load a picture created in one graphics mode into another (say one created in the Low-Res mode into Hi-Res), you will get unrecognizable results on the screen. If you load a picture created with the interlace on when the interlace is off, you'll simply get the top half of the picture.

To avoid this, *YAPP* has an "auto-detect" key that tells the program to automatically detect which graphics mode a picture being loaded was created in, and whether the interlace was turned on or off, and automatically set the program into that mode before loading the picture. This function is optional. To turn it on, from the drawing screen simply press **CTRL-D**. To turn it off again, press **CTRL-D** again. When this function has been selected, it will be indicated as such in the upper right hand corner of the "Storage" screen described above. This will of course be absent if the function is turned off.

Please note that pictures not created by *YAPP* may not have their graphic mode detected properly. To set the graphics mode "switch" of a *My-Art* picture so that its graphics mode will be automatically detected by *YAPP*, use the *PICIND* utility provided on the disk (and documented below), or simply load the picture into *YAPP* in the proper graphics mode, and save it again with the same filename.
After reading this you should know:

- What the Auto-Detect function is.
- How to turn it on and off.
- How to know when it's been turned on.
- How to convert *My-Art* pictures so that their graphic mode will be auto-detected.

If you still have questions, re-read this section.

Text mode:

YAPP allows you to type in any of its graphics modes with fonts designed for use with *TI-Artist* and *TI-Artist Plus*. This function can be used to add titles to your pictures, or even for use in creating simple signs or flyers. There are literally hundreds if not thousands of *TI-Artist* compatible fonts available. Several such fonts are included with this package.

How the function works

To select the "Text" function, as it's called, either press the "**T**" key on the keyboard, or select the little picture (or icon) representing this function from the menu/color bar - as you would select any of the other tools on the color/menu bar. The Text function 'icon' on the menu bar is shaped much like the one illustrated at the beginning of this section. After this function has been selected, the screen will instantly clear and the following menu will appear:

Load, Type / Directory?

To load a font from this menu, simply press "**L**". To type some text, as implied, press "**T**". To catalog a disk (either a floppy disk drive, most RAM-disks, or a hard disk sub-directory), press "**D**". To leave this menu, simply press **CTRL-.** (the **CTRL** key and the "period" simultaneously), or **ESC** on the Geneve. On doing so you will be returned to your picture.

The program will ask you to enter in the filename if you select the Load option, and the pathname (read the "device name" if you have floppy disk drives only), if you wish to catalog the disk or sub-directory. If you forget to add the "_F" suffix customary with *TI-Artist* fonts, *YAPP* will automatically do so. After entering in a filename or device/pathname, simply press **ENTER** to load the font specified or catalog that disk or directory. If loading, after the font has loaded you will be returned to this menu. A list of the characters available in that font will be displayed at the bottom of the screen.

At that point you can select the Type option. If you select it prior to loading in a font the program will automatically ask you for the filename of the font. Otherwise, or once the font is loaded, the program will ask you to enter a text string to be converted into that font. Please note that the program will automatically "truncate" strings that are too long (remove characters past the width of the screen). At this prompt you can only enter the characters that are displayed at the bottom of the screen.

After converting the text the picture currently in memory will appear, along with a box. That box can be moved with the mouse (or joystick), and "contains" the text string you just typed. Locate the box in the desired location, and press the right mouse button (or "**fire**") to place the string. If

you aren't sure if the location is appropriate, you can press and hold the "**T**" key to see the text located there temporarily. The text will remain there as long as that key is depressed. Once the key is no longer depressed, you will again have the option of moving the text "box" around the screen. Press the middle mouse button (or the **SPACE BAR**) to abort this operation and return to the Text menu. After placing the text string, you will also be returned to this menu.

From here you can enter and place another string, load another font, or press **FCTN-9** (or **ESC** on the Geneve), to leave this menu.

After reading this you should understand:

- How to select the Text menu.
- How to load a font.
- How to type a text string.
- How to locate and place the text string on the screen.
- How to leave this menu.

If you have difficulty with any of these things, re-read this section.

Logic Functions:

Unless you are a programmer or a mathematician, you are probably not familiar with the concept of "Logic" - particularly in how it relates to drawing pictures.

However, this handicap won't prevent you from appreciating some of the interesting effects you can create by using the built in logic functions in *YAPP*. But first, a note of explanation.

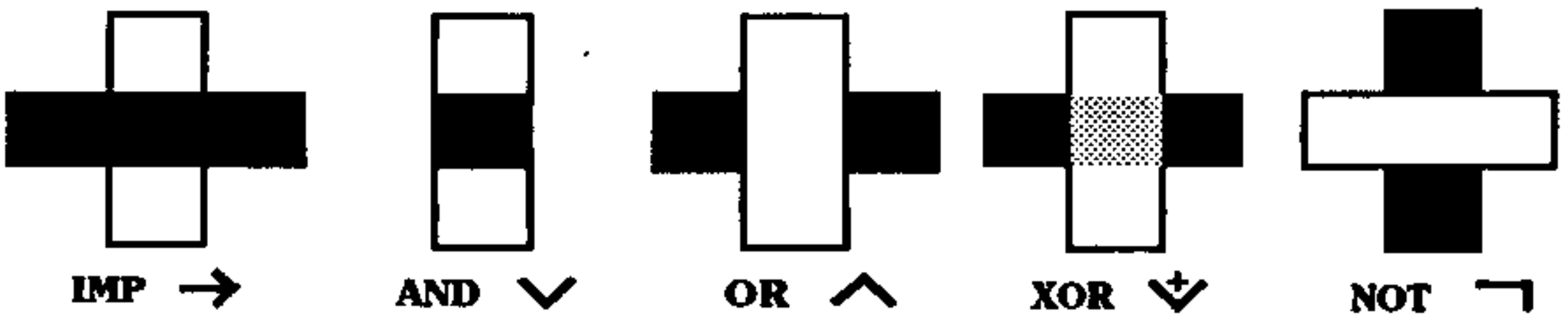
When you are drawing with the pencil tool, creating a circle with the circle/ellipse tool, or drawing a box with the box tool you are physically placing dots of the color you selected on the screen. These dots aren't effected by what was previously located where you are drawing. If you, say, draw a blue line, that line will be blue - even if you've drawn it over a red box.

When you tell *YAPP* to use one of the built in logic functions, as you draw the program compares the color of the dots you are drawing to the color of the dots you are drawing over. It then performs some calculations on the color of the dots you are drawing. The results can be quite different from what you would otherwise get.

It might add the colors together and give you an altogether different color dot. It might subtract the color of one from the other. It might erase one color dot in preference of another. *YAPP* supports 10 different such operations - all selectable from the keyboard.

To be truthful, even when you are just drawing as you normally would you are using a logic operation - the 'IMP' one that says "draw over any dot that is already in that spot with the a dot the color I've selected". This operation and four other ones (AND, OR, XOR and NOT) are illustrated below. In all of these examples the light colored bar was drawn first and the dark color bar was drawn on top of it:

You will note that each logic operation has a symbol attached to it. That is the symbol used in mathematics to represent that logic operation. It is also, intentionally, the symbol displayed in the lower right hand corner of the color/menu bar when that logic operation has been selected.



To select a logic operation, the following keys have been designated:

"**1**" - IMP (the default logic operation)
"**2**" - AND
"**3**" - OR
"**4**" - XOR

"5" - NOT

To turn on XOR logic processing , for instance, you simply have to press the "4" on the keyboard. If you select the color/menu bar, you should note that the symbol representing XOR will be in the lower right hand corner. From that point on anything you draw will be compared to what you are drawing over, and the XOR function will be applied.

You may have noticed only 5 logic functions are listed above and earlier I stated there are ten. The last five are variations of the first five. The results are roughly the same as those you'd get with the first five, EXCEPT that they will result in no modifications to the picture where the color involved is the default color. This can be particularly useful in manipulating clip-art - for example you can select a piece of clipart and copy it onto another area and only the object will be copied. The picture file *LOGIXSMPLE* included illustrates this.

These functions and the keys to get them are:

"!" - TIMP
"@" - TAND
"#" - TOR
"$" - TXOR
"%" - TNOT

To select a variation function of one of the first five, appropriately, press the **Shift** key and the number of the function to be reversed. For example to select the NOT function you'd press "5", to get TNOT you'd press **Shift** "5", or "%".

When a logic function is selected it effects all of the tools and functions of the program with the exception of *Zoom*, *Save*, *Erase Screen* and *Fill*. It does effect other functions, including *Load* (for an interesting experiment, try loading a picture on top of another with the XOR logic function selected).

Finally, as stated above, the "normal" logic mode for drawing is the IMP logic function. Simply press the "1" key on the keyboard to return to this mode. The best way to understand the logic modes is to draw with them. Try switching into the various modes and drawing on the screen with the pencil, line or box tools and observe the results that you get.

Please note that while logic functions are correctly calculated in the low resolution modes, in the high resolution modes the limited number of colors sometimes results in strange modifications to the picture when logic is used in drawing, moving, or copying.

After reading this section you should understand:

- What Logic functions are.
- How to select the various functions.
- Which tools and commands are effected by Logic functions.
- How to return to the "normal" drawing mode.

If you have difficulty with any of these concepts, please re-read this section.

Miscellaneous Functions:

In addition to the functions described in the previous sections there are a number of commands that defy easy categorization.

Crosshairs

Sometimes when drawing you need to place dots, corners of boxes or a circle very precisely. This function makes this much easier. By pressing **CTRL-L** you turn on "crosshairs" that always cross at the current cursor position. These lines are very precise, but do slow down the program substantially. To turn them off again simply press **CTRL-L** a second time.

Change Cursor Color

This function allows you to change the color of the cursor to another. It can be difficult to draw with, say, the pencil tool if it is the same color as the line being drawn. To cycle through the available cursor color options press **CTRL-S**.

NTSC/PAL Switch

You'll only be interested in this function if you know what it is. *YAPP* automatically starts out in NTSC mode, which is appropriate for users in North America and the Far East. If you are in Europe or Australia, and you have a PAL monitor, you will want to press **CTRL-Q** to put the program into PAL mode.

Quit

There are a number of ways to quit from *YAPP* on the TI-99/4A and the Geneve, but unexpected problems may occur unless the designated "quit" keys are used. On the Geneve the results could be scrambled screen characters. On the 4A it can mean inexplicable lockups. Telling *YAPP* to quit properly will assure that these problems don't happen.

On the 99/4A, press **CTRL-.** (the **CTRL** and the 'period' key) to quit from the program. On the Geneve, simply press **ESC**. On pressing either the program asks if you really wish to quit (in case either key was hit accidently). Simply press **FCTN-6** (proceed) if you do wish to quit, or any other key to return to your picture.

EXTERNAL UTILITIES

Hardcopy, OR HOW TO PRINT PICTURES

After you've created or modified a picture, you would certainly want to print it out. As with other graphics programs, *YAPP* allows you to print out pictures. However, unlike most graphics programs, this function is not built into the paint program.

Why? For many reasons. For one thing, *YAPP* was designed to work on a 99/4A, which is more limited in program memory then a Geneve. For another, there is no sense in including a simple black and white "print dump" routine, similar to the ones found in most 99/4A graphics programs, when *YAPP* pictures can have so many colors in them. We *could* make the program require a color printer, but that would limit its utility to the few computer users with color printers. Instead, the author has produced a program that converts color into shades of gray - called *Hardcopy*.

Because *Hardcopy* converts a color picture into black and white, using increasingly darker patterns of dots to represent each color (called a "grayscale"), it takes a lot of room - which the 99/4A unfortunately doesn't have. However, for the price of a little inconvenience every user can print out his/her pictures.

CREATING A PRINTER DEFINITION

If you have a standard Epson or compatible printer you can skip this section and continue onto the next. If you don't, you'll have to create a printer definition file for use with *Hardcopy* that contains the codes necessary to print out a picture on your printer.

The utility to do this, *HCSETUP*, is provided on the *YAPP* disk. This is a small Extended BASIC program that creates a file loaded by *Hardcopy* and containing the proper codes for your printer. If this file doesn't exist *Hardcopy* assumes you have an Epson or compatible. To load *HCSETUP* follow the directions for loading *YAPP* on the TI-99/4A with Extended BASIC, and instead of selecting option **1**, select option **5**. This utility will load and run shortly.

After it has loaded the program will first ask you the device name for your printer. Use the arrow keys (**FCTN E** and **FCTN X**) to move the pointer up and down to the appropriate answer. Press **ENTER** to select one of them. If none is appropriate, select the fifth option "Other" and enter the proper device name.

Next, you'll be asked to enter the printer type. Select it in the same manner that you selected the printer device name. If you have an Epson or compatible select the first option, an Epson variant select option two, and something else, select the third.

If you select the third option "Other" the program will ask you a series of questions:

- The decimal printer codes to turn on High Resolution graphics
- The codes for a carriage return and a 23/216" line feed
- The codes for a carriage return and a 1/216" line feed

and

- The codes for a backward 24/216" carriage return

In each case you will enter a series of numbers that you will have to obtain from your printer manual. The answer to the first question, for an Epson printer, would be:

27 76

Place a space between each code. Note that the last codes asked for are not currently used by *Hardcopy*, but are provided for future use. Enter in a 0 for this prompt if your printer doesn't support it.

After you have answered these questions, or if you told *HCSETUP* that you have an Epson or Star printer, the program will ask you to select the filename the printer codes will be saved under. If you have only one printer select the first option - otherwise one of the other options. The program will next save your printer codes to disk one.

After reading this you should understand:

- What *HCSETUP* is and that it is optional for Epson or compatible users.
- How to load *HCSETUP*.
- How to use the program to enter codes for your printer.

If you don't understand these things, please re-read this section.

LOADING Hardcopy

Hardcopy can be loaded on either the 99/4A or the Geneve.

On the TI-99/4A

Extended BASIC:

1. Place the cartridge in the module port and turn on the computer. Press any key to advance beyond the Master Title Screen.
2. Place your copy of *YAPP* in disk drive one and select the module from the module menu.
3. An Extended BASIC menu will load and run. Press **2** to load *Hard Copy*.

Editor/Assembler:

1. Follow instructions #1 and #2 above.
2. Select option #5 - "Run Program File". To run *Hard Copy* type **DSK1.HARDCOPY** and press **ENTER.**

On the Geneve 9640

From M-DOS:

1. Boot M-DOS as you normally would. Please note that *YAPP* is not guaranteed to work with any other version of M-DOS other then 1.14
2. Place your *YAPP* disk in disk drive one. To run *Hard Copy* type **EXEC HARDCOPY** and press **ENTER.**
3. Please note that *EXEC* is a fairware program, and a donation is expected.

From the GPL Interpreter:

1. Follow step 1 above.
2. Load the GPL Interpreter as you normally would.
3. Load either Extended BASIC or Editor/Assembler at the module screen. Load the program as described above in the section on loading on the TI-99/4A. NOTE: DO NOT SELECT OPTION #3 OF THE EXTENDED BASIC MENU - DOING SO WILL LOCK UP YOUR GENEVE. This GIF converter is only for use on the TI-99/4A. The Geneve one can be loaded as described above on loading through M-DOS as it is designed to be loaded in that manner.

Using Hardcopy

Using *Hardcopy* can be very confusing if you don't carefully follow these instructions.

After the program has loaded, first enter the filename of the picture to print. The program will then tell you how many colors are in the picture.

At this point you will be immediately asked to select the printer patterns for each color of the picture. As mentioned above, *Hardcopy* assigns a different dot pattern for each color. Presumably darker colors would have darker dot patterns and lighter ones lighter patterns. In this way color pictures can be printed in black and white on your printer.

Using the up and down arrow keys (**FCTN E** and **FCTN X**) you can list through each of the colors used in this picture. To the right you'll see the dot pattern assigned for each. Using the left and right arrow keys (**FCTN S** and **FCTN D**) you can change the dot patterns for each color. There are 256 different dot patterns available - numbered 0 to 255, where 0 is darkest and 255 lightest. If you like, you can also enter in the number of a dot pattern desired by simply typing the digits and pressing the up and down arrow keys to move to the next.

Please note that when assigning dot patterns to colors that what looks good on a monitor screen doesn't necessarily print well. For instance, white text on a black screen is quite readable, but on a printout the black background would swallow up the text quite easily. With this in mind, you may want to select the background color as light as possible in order to make the picture stand out.

After all the patterns have been assigned, or if you want to load in a set of pre-made pattern definitions, press **ENTER** to proceed to the next stage. A menu will then appear with the following options:

0. Process new file
1. Select patterns
2. Printsize H=1 V=1 S1
3. Printclip H=0 H=0
4. Print _ dH=512 dV=212
5. Load Table
6. Save Table
9. Exit

As suggested by the numbers, to select an option you select the number of the option. The following options have the following functions:

0. Process new file

Press **0** to start all over again.

1. Select patterns

This option will take you back to the pattern assignment portion of the program that you were in right after you entered in the filename when the program began. Select this option by pressing **1**, and leave it again by pressing **ENTER**.

2. Printsize H=1 V=1 S0

You can set the final size of the printout with this option. The letters and numbers refer to the Horizontal and Vertical magnification of the picture. If these are set to 1 (as they are when the program begins) then the picture will be printed in normal size. If you set them to 2, by pressing **2** and then entering 2 for both "H" and "V". If you just want to double the horizontal width (for better pattern distinction), enter the value 1 for "S", otherwise leave as is.

The quality of your printout will sometimes increase dramatically by printing the picture enlarged as the dot patterns are much more distinguishable.

3. Printclip H=0 H=0
_ dH=512 dV=212

You can select part of the picture to print using this option. While it may be difficult to read on the screen, what you'll be doing is entering both the starting and ending coordinates, in dots, of the picture to be printed. To print

the entire picture don't select this option - it will automatically be set to the size of the entire picture.

This option has a number of interesting uses - for one thing if you are doing enlargements you can print small pieces of a picture enlarged to full page size, and connect them together as a poster or wall-paper.

4. Print

Selecting this option (by pressing **4**) allows you to print the picture according to the settings you gave for the other options. Please note that sometimes it is better to use an older ribbon for printing color pictures in this manner then a new one - with a new one all the subtle shades of "gray" being produced will blend together because of too much ink.

5. Load Table

This option loads a stored pattern table created with option 1. Simply select it by pressing **5**, type in the filename and press **ENTER**.

6. Save Table

You can save a modified pattern table with this option. Use it as you would the previous option.

9. Exit

This option allows you to quit from the program back to the Master Title Screen.

After reading this you should understand:

- What *Hardcopy* is and how it's used.
- The different commands available and how to select them.
- How to modify, save and load pattern files.
- How to optimize pattern files for printing pictures properly.

If you don't understand these things, please re-read this section.

Converting GIF Pictures to *YAPP*

What is GIF?

GIF format is a form of "universal" picture format that allows you to easily take pictures created on one computer and display them on another. Currently, there are programs that allow you to display *GIF* pictures on almost every computer, and create them on most. There are literally tens of thousands of *GIF* format pictures on the various telecommunications networks, local BBSs, and in many user group libraries.

GIF pictures can currently be created and displayed on both the TI-99/4A as well as the Geneve 9640. However, the utilities provided with *YAPP* only allow you to convert *GIF* files to *My-Art* (and *YAPP*) format. Both of these utilities are fairware.

On the TI-99/4A

The freeware utility *G99* is provided on the program disk to allow you to convert *GIF* files to *YAPP* format on a TI-99/4A.

While *YAPP* will allow you to load a *GIF* file automatically as any other picture, in order to do this within *YAPP* on your 99/4A you must have an 80-column device expanded to 192K, as well as a Supercart, Mini-Memory, or some device in the cartridge port that gives the computer extra memory there (GramKracker, etc.). If you don't have one of these devices, this program can be used.

To load *G99* follow the directions for loading *YAPP* on the TI-99/4A with Extended BASIC, and instead of selecting option **1**, select option **3**. This utility will load and run shortly. Or, you can load it with the Editor/Assembler module with the following procedure: select option #3, "Load and Run"; type in the filename **DSK1.G99** with the *YAPP* disk in disk drive one and press **ENTER**. The program will then execute after it loads.

After the program loads follow the on-screen prompts. At the first prompt enter the filename of the *GIF* picture to be converted and press **ENTER**. When saving the converted picture specify *My-Art* format. As mentioned above, *YAPP* will load pictures stored in *My-Art* format with no other requirements.

After reading this you should understand:

- When you need to use *G99*.
- How the program is loaded.
- How to use the program.

If you don't understand these things, please re-read this section.

On the Geneve 9640

As mentioned in the previous section, you can load *GIF* files directly into *YAPP* if your 9938 system is equipped with 192K of video RAM, as well as extra memory in the space normally used for cartridges. While the extra memory in the cartridge space is no problem (it is standard on a Geneve), 192K of video RAM is. For better or worse all Geneve computers shipped by Myarc are equipped with 128K of video RAM. For this reason, a number of functions are not very usable on the Geneve. However, it is possible to extend your Geneve's video RAM to 192K. For more information contact Myarc.

So, unless you have expanded your Geneve's video RAM you will have to use the freeware *GIF* utility provided in this package in order to first convert the pictures to *My-Art* format before loading them into *YAPP*. Fortunately, the *GIF2EXE* utility by Paul Charlton is relatively simple to use.

This utility is the only one provided on disk designed to run directly from M-DOS. Using version 1.06 or later, after booting M-DOS place the *YAPP* disk in disk drive one, type **GIF2EXE** and press **ENTER**. The utility will automatically load and run, and present you with a prompt "]_".

At this point you have a number of commands. As with M-DOS itself, to send the program a command you have to type it and press **ENTER** at this prompt. A list of commands is available by typing **HELP** and pressing **ENTER**.

The commands, other then "HELP" itself, are:

EXIT
USE
DISPLAY
MO
M1
I0
I1
LEFT #
UP#
MSAVE

EXIT

Typing **EXIT** and pressing **ENTER** simply returns you to M-DOS.

USE

This command is the first command you will most likely type, and is the one used for selecting a picture on the disk to convert to *My-Art* format. A sample *GIF* picture is included on the 2nd picture disk provided with *YAPP* - the file *CHERR-GIF*. Place this disk in disk drive one and type:

USE DSK2.CHERR-GIF

and press **ENTER**. The program will then tell you the display characteristics of the picture (its size and number of colors). Use this same sort of procedure

with all of your *GIF* format pictures.

DISPLAY

After you have set the display mode and shifted the picture in any manner desired (see below for details on these things), to display the picture you'd simply type:

DISPLAY

and press **ENTER**. The program will then display the picture that you specified above with the "USE" command. Press the **SPACE BAR** to return to the command line for the utility.

M0

As mentioned in the section on screen characteristics, the 9938 video chip supports many different display modes. This utility allows you to switch between the different modes. Typing **M0** and pressing **ENTER** allows you to switch into the 256 dot across, 256 color mode. The utility starts in this mode. This mode is suggested for pictures up to 320 dots wide (as noted when you use the "USE" command). You will have to type this command again to get back into this mode if you leave it with the below command.

M1

As implied from above, this command allows you to switch into the 512 dot across, 16 color mode. If your picture is larger then 320 dots in width then you should select this mode by typing **M1** and pressing **ENTER**.

I0

This mode is the one the program is in when it first loads, and is the 212 dot high mode. Unless a picture is over 250 dots or so in height, this mode is recommended. Select it by typing **I0** and pressing **ENTER**. You will have to type this command again to get back into this mode if you leave it with the below command.

I1

This is the interlace mode, and is recommended for pictures up to 424 dots high. Select it by typing **I1** and pressing **ENTER**.

LEFT #

This command is used for "shifting" a picture to the left. For instance, the file *CHERR-GIF* is 320 dots wide, yet the optimum display mode is the 256 dot wide modes (M0). If you use the 512 dot mode you'll lose all the colors in the picture (it has 32 colors in it), and it will look too narrow.

This command allows you to center the picture on the screen so that you don't lose part of it. To calculate the amount you need to shift use the following equation:

(Dot width of picture - Dot width of screen) / 2

or

(320 - 256) / 2 = 32

Simply type **SHIFT 32** and press **ENTER** and the picture will be centered on the screen. Negative numbers may also be specified to shift the picture to the right.

UP #

This command functions exactly as the "SHIFT #" command does, except that it allows you to shift the picture up and down instead of left and right. A positive value shifts the picture up and a negative one shifts it down. To center *CHERR-GIF* exactly on the screen you may type **UP -6** and press **ENTER**.

MSAVE

The last command is used to save the picture after you have set all the display characteristics (with the "M", "I", "LEFT" and "UP" commands). After displaying the picture simply hit the **SPACE BAR**, and type the **MSAVE**, a space, and the filename that you want to save the *My-Art* picture under. For instance:

MSAVE CHERRY/M

and press **ENTER**. The utility will then save the picture and return you to the *GIF2EXE* command line.

After reading this you should understand:

- When to use *GIF2EXE*.
- What the program is and how it is loaded.
- How to load and display *GIF* pictures.
- How to save them as *My-Art* pictures for use with *YAPP*.

If you don't understand these things, please re-read this section.

Converting My-Art Pictures with *PICIND*

Under the section on Loading and Saving pictures in *YAPP* you were introduced to the Auto-Detect function (**CTRL-D**). This function is particularly useful if you aren't sure which format a picture is in. Unfortunately, *My-Art* pictures don't normally carry information within them that tells the Auto-Detect function what graphic mode a picture was created in.

The *PICIND* utility provided allows you to modify *My-Art* format pictures so that they do contain the necessary information.

To load *PICIND* follow the directions for loading *YAPP* on the TI-99/4A with Extended BASIC, and instead of selecting option **1**, select option **4**. This utility will load and run shortly.

After the program loads you'll be asked if you want it to operate "automatic", "asking" or "manual". Select the option by pressing either **1**, **2** or **3**. The program will then ask for a device name or pathname where the pictures are located (e.g. "DSK1.", "WDS1.YAPP.PICS.", etc.).

In all three modes the program will scan the disk (or directory). and come up with each picture. In the "automatic" mode it will just process each file in turn. In the "asking" mode it will ask you if you wish to modify each picture file found and what graphics mode (G6 for the 512 dot mode and G7 for the 256 dot mode, 0 for no interlace and 1 for interlace) you wish it to be in.

In the "manual" mode the program will ask you for a specific filename and then the display characteristics as above for the "asking" mode.

When done the program will return to the main Extended BASIC menu for *YAPP*.

After reading this you should understand:

- What *PICIND* is and how to load it.
- The three modes of operation of the utility.

If you still have questions, please re-read this section again.

TECHNICAL SPECIFICATIONS

The YAPP Picture Format

This program stores pictures in an extended version of the *My-Art* format. *YAPP* can load and display all *My-Art* pictures, but because it makes special use of header information, the opposite isn't necessarily true.

My-Art pictures are stored in D/V-128 format, since this allows the best sector usage. You may also read it from Basic, without any problems with length bytes.

The file starts with a two byte "magic word". The first byte is the background color. Since there is no official interpretation of the second byte, there are several possible interpretations. *My-Art* itself writes in the second byte a version-dependent number (>FA/>9E).

There are three loaders, that will interpret it, and select the display-mode according to it: Advanced Basic has an "CALL MYART" command, that works nearly always. This function, however, does not need the first word, but instead interprets the entire file. The other two really interpret the Header word: Barry Boone's *My-Art* loader uses >FF to indicate that the picture is a G6 (512 dot wide) picture. The Austrian *Myload Loader* uses the last nybble to hold the value for VDP register 0.

Since the author prefers the last format, *YAPP* incorporates it. If you select the Austrian byte in the patch area. Simply set it to 255 to use this format (LOADing the picture into *YAPP* instead of changing the picture with a sector editor is recommended). Be prepared, that you might not be able to load older pictures after that change.

The header bytes in *YAPP* are arrayed as follows:

```
 0 1 2 3 4 5 6 7 8  9  10 11 12 13 14 15
+-+-+-+-+-+-+-+-+--+--+--+--+--+--+--+--+
|Background Clr |IL|OM|CA|xx|A0|G7|A1|A2|
+-+-+-+-+-+-+-+-+--+--+--+--+--+--+--+--+
```

IL: When reset the picture is in Interlace mode (1).
OM: When reset the picture is stored in the "wrong" mode, just to save disk space. This feature will be included last! Regard this bit as reserved (1).
CA: When reset, the file does not contain a picture, but clipart. This is reserved for future expansion. (1)
xx: reserved for future expansion (1)
G7: When Set, the picture is in G7 mode otherwise G6 mode.
A0,A1: (1)
A2: (0) these Bytes are set for compatibility with the "Austrian" format.

Finally, interlaced pictures are stored in logical order (like on the screen) and not in physical order (like in memory). This permits compatibility between the two modes and prevents possible dark stripes in the picture, when loading in pictures in interlace mode.

Device Drivers

YAPP is very flexible in the types of devices it allows you to attach. As implied on the section on Installing YAPP, you have to select the device driver from the ones provided. *YAPP* automatically loads the device driver at the time when the program itself loads.

Device drivers used by *YAPP* are compatible with those designed for *TI-Artist* and *TI-Artist Plus* but wish some differences.

For one thing, device drivers in *YAPP* are limited in size to >200 bytes. They also support a SPEED function, and the setting of VDP register 8 has been modified to allow for the redefinition of color 0

Like *Artist* device drivers, they must be assembled in compressed object code format, as well as be relocatable. Furthermore, the program references many of the same data names as do the *TI-Artist* drivers. These include:

ZOOM	Tells whether or not zoom mode is on
ZOOM2	Tells whether or not to ignore zoom
A	X location 1
B	Y location 1
C	X location 2
D	Y location 2
E	X location 3
F	Y location 3
G	X location 4
H	Y location 4
MNA	X location 5
MNB	Y location 5
WNA	X location 6
WNB	Y location 6
XMIN	Minimum acceptable X location
YMIN	Minimum acceptable Y location
XMAX	Maximum acceptable X location
YMAX	Maximum acceptable Y location
FIRE	Tells whether fire button has been pressed
SPACE	Tells whether Space Bar has been pressed
DELAY	Tells whether to delay for fast speed
DELAY2	Tells whether to delay for slow speed
DELCNT	Delay count for fast speed
DELCNT2	Additional delay for slow speed
SPEED	Speed setting

Data names used as indicators (flags) have two states - they are true if set to >FFFF and false if set to >0000. The data for X and Y locations are accessed using R15 as an index register, and using A and B as the base address, just as with *TI-Artist*. Finally, R14 is used to tell whether auto-repeat is turned on or off - if true then it's off otherwise it's on.

The source code for the *Myarc Mouse* DSR is included on the *YAPP* disk in the file *MMDSR/S*.

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YAPP Addendum
version 1.1

Introduction

This is the first major update since the release of YAPP, and hence has a dual purpose. Not only does 1.1 contain new features it also corrects many of the deficiencies that inevitably creep into initial releases. Version 1.1 of YAPP is a mature, integrated program that still exploits the capability of the 9938/9958/9978 video processors better then any other drawing program.

Description

Version 1.1 of YAPP contains the following changes from the prior release:

1. An updated joystick driver that functions much better on both the TI-99/4A and the Myarc Geneve 9640.

2. A somewhat improved GIF converter that functions better with the Dijit 80-column card.

3. An integrated Hardcopy function available directly from the command line that is easier and more convenient to use.

Please note that the latter two features require at an 8K Supercart or SuperSpace on a TI-99/4A. The old Hardcopy utility described in the main manual is also included for those not so equipped.

Additionally, the GIF converter requires 192K of Video RAM - requiring Geneve owners to upgrade from 128K. A text file containing information on how to do this (with the filename VDPUPD) is included on the program disk.

Finally, please note that there is one known problem with this update - the Asgard Mouse driver has some difficulty reading the mouse buttons on a Geneve (and possibly the 99/4A). This problem will be corrected shortly. If you are effected by this, contact Asgard Software and we will provide a new driver to you free of charge when it is available.

Using the Integrated Hardcopy

In order to use the Hardcopy routine integrated into the program, your system MUST have an 8K memory expansion cartridge. Some users have found a Mini-Memory (with 4K) is adequate for the GIF converter (which also requires extra memory on a 4A), but this function definitely requires a full 8K.

As with the Hardcopy utility described in the manual, the program must be properly configured to work with your printer. To do this use the HCSETUP utility described on pages 32 and 33 of the manual. This utility creates a file HC#SU which contains the control codes specific to controlling your printer. The default codes are fine for most Epson or compatible printers.

Hardcopy (which in this version is better referred to as the "printing function" of YAPP), is accessible from both the menu bar (refer to pages 5-7 of the manual for explanation) and by direct key-press. To select from the menu bar point to the icon between the "T" and "C" symbols that looks like a printer and either press the joystick fire button or the right mouse button. Otherwise, press "H" to directly select the function from the key-board.

Either way the function is selected, the cursor will change its shape to look like the printer icon, with an arrow pointing to the upper left. To print an area of the screen simply point to the upper left hand corner of the area desired with the pointer, press and hold the right mouse button (or joystick button), and drag a box to encompass the area. After selecting the area the screen will clear, and an option menu will appear that functions similar to the utility described in the manual.

There are a number of significant differences, however.

1. As with the original Hardcopy utility, colors are printed as various patterns of black and white dots, which in turn simulate a "gray scale". Press the "C" key, or the Up and Down arrow keys, to select the color number whose pattern you wish to modify.

2. You can then select the pattern you wish to assign to that number (255 patterns are available), with the left and right arrow keys, or by pressing "P" and a number (from 0 to 255). The standard patterns are calculated differently then in the original Hardcopy utility - hopefully an improvement in the screen to printout brightness correspondence.

3. Press "L" or "S" to Load or Save a pattern file. The original pattern file (PATTERN256) is available for those low-resolution pictures that don't print well with the new pattern set but printed fine with the old one. This function is compatible with files created in the old Hardcopy utility.

4. You can select the Magnification (both horizontal and vertical) of the resulting picture by pressing "M".

5. Alternately, you can select Double Spacing by pressing "S" - which simply stretches the printout. This is reflected on the screen in the pattern.

6. Press "D" to change the printer device name. You can use the HCSETUP utility to do this on a permanent basis. This utility will allow you to dump a printout to a disk file for later printing.

7. You can change the quality of the resulting printout by pressing "Q" - by setting it to either "Draft" or "Repro"duction quality. While the Draft mode is the same as in the old Hardcopy, the Repro mode has been enhanced to double strike alternate pixels.

8. Finally, you can print the picture by pressing "G", for "Go".

This function works in all other respects like the Hardcopy utility described in the original manual.

Manual Errata

A number of significant errors have been noted in the original manual since its release. The following section notes the more serious errors, as well as provides correct information.

Page 3 - Line 6

The Geneve GIF converter was always located on the program disk, but now has the proper filename (GIF2EXE).

Page 25 - Section "Loading GIF Format Pictures"

This utility does not automatically set the program to the appropriate graphics mode - you have to do this manual as described on page 7 of the manual.

Page 27 - Paragraph 1, Line 5

No Artist fonts are included with this package. Fonts in this format are so common that additional ones offered little extra value to the package in relation to the cost of including them.

Page 37 - Section "On the TI-99/4A"

This is a major error due to incomplete testing. The G99 utility included with YAPP does not convert GIF pictures to other formats. It can only be used to VIEW GIF pictures.

Page 42 - Section "The YAPP Picture format"

Paragraph 6, Line 1 should read:

"The bits of the 2 header bytes of YAPP are arranged as follows:"

Paragraph 7, Line 9 should read:

"A2:(0) this bit is set for compatibility with the Austrian format"

Additionally, this section should contain information about how the screen data is stored. In the Low-Res mode (bit 13 set), each data record is 2 bytes. The first byte is the color of the pixel to be drawn, and the second byte is the number of pixels on the current scan line of that color. If this value is "0" it means the line should be drawn to the end of the scan line.

In Hi-Res mode each data record is still 2 bytes, but the first nibble (4 bits) is used to represent the color (there are only 16 colors in this mode), and the latter 12 bits the number of pixels of that color. Additionally, 16 bytes of pallet information is stored at the beginning of the file after the header bytes.

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