

OpalVision



Software and
Hardware
Installation

OpalPaint
Introduction
and Tutorials

Getting Started

opalvision

getting started

designed in australia by

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Introduction

Congratulations on your purchase of the OpalVision System. You now own an extremely powerful set of tools to expand your creativity and unleash your artistic potential.

To get the most out of your new system, please read over this Getting-Started booklet carefully. It contains instructions to install the hardware (the physical OpalVision board) and software (programs such as OpalPaint, OpalPresents and sample images) into your Amiga. It also contains a set of lessons to get you started using OpalPaint, the powerful paint-box software supplied with the OpalVision system. These lessons are most useful if you are in front of your computer and try out each step for yourself.

Even if you are an experienced computer user we suggest you work your way through the lessons in the primer as soon as possible as we introduce and explain many powerful features of OpalPaint you might otherwise miss.

A Look in the Box

When you open the box, you should find the following items. Please check these items now so that if by some oversight anything has been left out of your box you can notify your dealer immediately.

- The OpalVision Main Board card (the most important item!).
- The “Getting Started” manual - (the one you’re reading, so you must have it)
- The Reference Manual.
- A set of disks containing the Installation program, the included OpalVision software and a wide selection of sample images.
- A replacement backpanel plate for use with the Amiga 4000 series.
- A registration card - **VERY IMPORTANT** - Fill it out now and return it for your own benefit. We also request that you complete the short questionnaire attached to the registration card as it will help us to know you, our customers, a little better and design the tools you need most.

Minimum System Required

Although the various components of the OpalVision system *may* still work if your system has less than the following recommendations, we suggest the following as the minimum specifications for productive use of your Amiga and OpalVision system. Your local Amiga dealer should be able to explain the following terms if you are unsure of what they mean or if you are unsure what the specifications of your system are.

	<i>Minimum</i>	<i>Recommended</i>
Chip RAM	1 MB	2 MB
Fast RAM	3 MB	The more the better at least > 4 MB
Hard Drive	40MB	The larger the better
Processor	68000 (but relatively slow, as with all 24- bit programs)	68020, 68030 or 68040
Maths Co-Processor	Not strictly necessary	Yes. 68881/2.
Workbench Version	2.x	2.x
WACOM or Calcomp Graphics Tablet	Not necessary	Very productive. (Requires WB 2.x)

Remember that processing and saving 24-bit graphics involves very large amounts of data when compared to standard Amiga images and places major demands on your system. For this reason you will find that adding RAM or a faster processor card to your system gives direct performance benefits in processing speed and the number or size of images you can work on simultaneously. JPEG support also assists in keeping image sizes and hard disk usage down, but for speed of loading and saving and for interaction with other Amiga software you will find the much larger IFF24 files and thus a large hard drive indispensable.

Installing Hardware

The computer cards of the OpalVision system collectively install in the Video slot of your Amiga. First a warning. **Installation requires removal of your Amiga's case and will void your Amiga's Warranty if not carried out by an authorised Commodore Dealer or Service Centre.**

If your Amiga is out of warranty or you are willing to forego the warranty, the installation should not pose any problem if you are reasonably adept with a screw driver. Otherwise you may still wish to ask the assistance of your friendly Amiga and OpalVision dealer.

If you decide to do the installation yourself we suggest that you read all the way through the following steps **before** picking up your screwdriver and then work through the steps one by one.

Here we go . . .

1. Opening your Amiga

First, turn off the power, disconnect the monitor and remove the power cord from the back of your Amiga. You may find it easier to disconnect all the various cables so you can move the box around to easily work on it. If you own an Amiga 3000 you will have no choice: you need to remove the keyboard and mouse from their sockets on the side of the case before the case lid can be removed.

Next, using a Phillip's (star) screwdriver, remove the screws holding the upper part of the case to the base chassis. For the A2000 and A3000 series there should be five screws in total, with two on each side along the bottom edge and one at the top-centre of the back panel. For the A4000 series there should be only two - one on each end of the top back edge. (Remember to put the screws in a safe place.)

Slide the case towards the front of the computer taking care not to snag any cables with the screw plate that projects downward from the top, back edge of the cover, then remove by lifting up and off. Put the case somewhere close at hand.

2. Ground your Body

First ground yourself by touching the metal cage containing the power supply at the rear right of the machine. This will dissipate any static charge that may have built up on your body while walking around and will minimise the chance of damaging your Amiga, the OpalVision board(s), or other boards in your Amiga with a burst of high-voltage personal lightning. If you need to move away from your Amiga during the following procedure, touch the power supply cage again when you return.

3. Choose RGB Output Level Settings

This section is designed for those users with specific technical requirements and in most cases will *not* require changes to your OpalVision Main Board, so if it doesn't seem to make sense to you then you will almost certainly not require this section.

The peak output voltage of the RGB (Red, Green and Blue) output lines on the 23-way output connector can be switched between 0.7 V p-p (Factory Standard) and 1.0 V p-p. While this higher voltage gives a higher signal to noise ratio, it will not be accepted by all video equipment, so if your genlock / encoder / VCR etc shows a washed-out, overbright display or has trouble syncing then ensure you are using the lower output level.

The output level switching is done in a 4-way DIP switch located in the top-right corner (with the gold edge connector fingers at the bottom) of the OpalVision Main Board, right next to the Phase-Adjust trim-pot. The switch is plainly marked with "ON" and "OFF", and the table below refers to these settings.

The switches are numbered and have the following functions.

DIP Switch	Function	When OFF	When ON	Factory Setting
1	Red Peak Output Voltage	0.7 V p-p	1.0 V p-p	OFF
2	Green Peak Output Voltage	0.7 V p-p	1.0 V p-p	OFF
3	Blue Peak Output Voltage	0.7 V p-p	1.0 V p-p	OFF
4	PROM Area Select	Alternate	Factory A	ON

DIP Switch 4 is designed to allow later selection between several versions of the Master Processor configuration. Unless otherwise directed, this switch **MUST** be set to ON.

4. Install other OpalVision boards or modules.

If you have purchased other OpalVision modules such as the OpalVision Video Processor or the OpalVision Scan Rate Converter, these must first be installed onto the OpalVision Main Board. Most modules in the OpalVision system attach directly to the OpalVision Main Board and therefore must be installed before you can insert the Main Board into your Amiga.

If you have purchased other modules of the OpalVision System, please see the documentation included with each module and carry out those installation instructions now.

5. Install the OpalVision Card

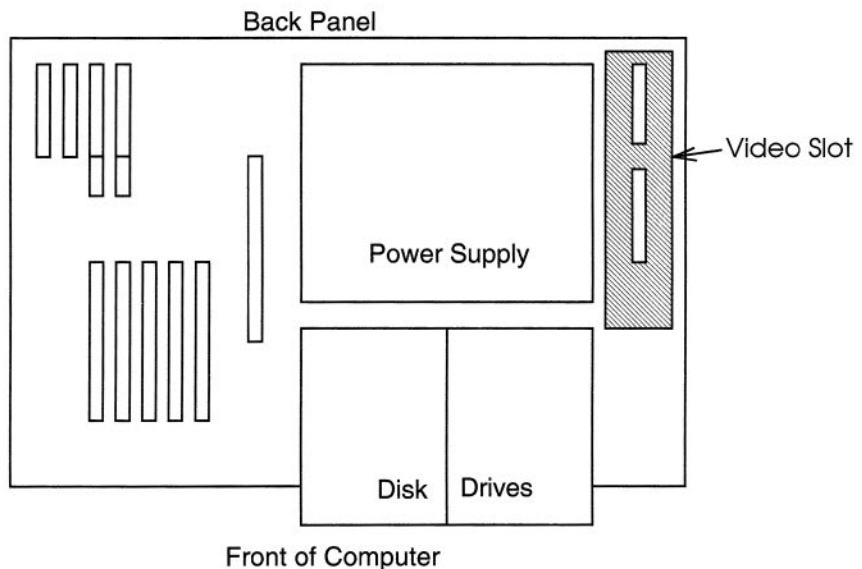
Next locate the Video slot in your Amiga. “Slots” are the connectors on the main mother-board of the Amiga that accept plug-in peripheral cards.

WARNING. Although your Amiga may have several other free slots, the OpalVision board(s) must be inserted in the video slot. They will *not* work in any other slot and must *not* be inserted into any other slot. Doing so may cause serious damage to your Amiga and/or your OpalVision board(s).

Read through the following until you find the section corresponding to your Amiga model.

If you own an Amiga 2000 series

Looking from the front of the case, the Amiga 2000 family has eight slots on the left of the power supply cage (the metal box with ventilation holes punched into it and the power plug and fan opening onto the back panel) and one slot on the right between the right hand side of the power supply and the edge of the main base-plate. **This single right-most slot is the Video Slot.** Slots in the Amiga 2000 series accept cards in the vertical position.



Now turn your Amiga around so you can easily access the rear panel. The OpalVision Main Board has a plate along the back edge that holds the plugs and connectors and covers the hole in the back panel. This plate is held by two screws.

If you already have another card installed in the Video Slot, first disconnect any wires or other connections attaching it to the computer, then remove the mounting screws at the top and bottom of the back plate.

Grasp the card firmly and as close as possible to the edge socket, then gradually lift the card out of the socket on the Amiga motherboard. It may be necessary to gently rock the card lengthwise (*not* side to side) to ease its removal.

If you don't already have another card in the Video slot, remove the screws holding the blank plate over the back-panel hole and put the screws aside for later. Keep the blank plate in a safe place in case you want to move your OpalVision board(s) to another Amiga in the future.

Pick up the OpalVision Main Board with the metal plate to the rear of the computer and the gold-plated edge connector "fingers" aligned with their matching sockets on the Amiga motherboard. Check that the metal plate with the external connector sockets will line up with the hole in the Amiga's back panel.

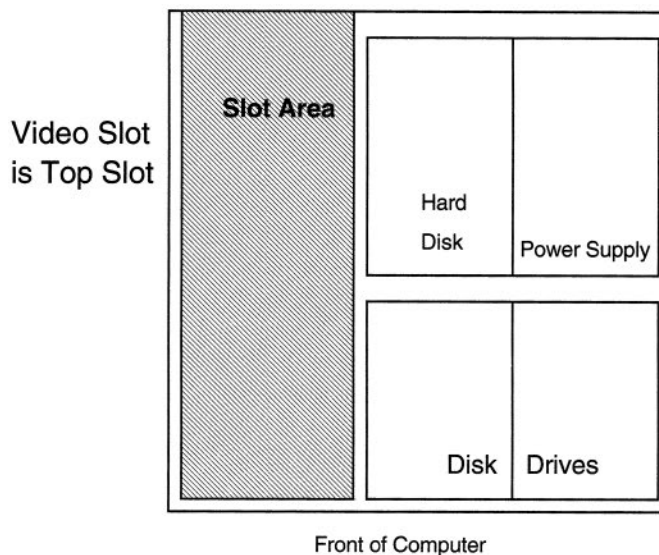
Making sure that both connectors are aligned correctly, apply firm and even pressure to the top of the board from directly above the connectors. It may be necessary to gently rock the OpalVision Main board back and forward lengthwise (*not* side to side) until it is properly seated.

Now screw the back plate to the case of the Amiga using the two screws you removed earlier: one at the top and one at the bottom of the back plate.

Jump to page 18 to continue.

If you own an Amiga 3000 series

Looking from the front of the case, the Amiga 3000 family has four slots on the left of the power supply cage (the metal box with ventilation holes punched into it and with the power plug and fan opening onto the back panel). These slots accept horizontal cards. **The top-most slot is the Video Slot.**



Now turn your Amiga around so you can easily access the rear panel. The OpalVision Main Board has a plate along the back edge that holds the plugs and connectors and covers the hole in the back panel. This plate is attached by two screws to an adaptor plate that is in turn attached by a single screw to the back panel of the Amiga.

If you already have another card installed in the Video Slot, first disconnect any wires or other connections attaching it to the computer then remove the single screw holding the adaptor plate to the chassis of your Amiga.

Grasp the card firmly and as close as possible to the edge socket, then gradually pull the card sideways out of the socket on the Amiga's vertical edge-connector daughter-board. It may be necessary to gently rock the card lengthwise (from front to back, *not* side to side) to ease its removal.

Now remove the two back-plate screws attaching the Main Board to the adaptor plate. Make sure you keep the screws in a safe place, as you will need them later.

If you don't already have another card in the Video slot, remove the screw holding the adaptor plate to the Amiga's chassis, then remove the two screws securing the blank plate over the back-panel hole and put the screws aside for later. Keep the blank plate in a safe place in case you want to move your OpalVision board(s) to another Amiga in the future.

Now attach the video slot adaptor plate to the back-panel of the OpalVision Main Board with the two screws you removed earlier from the adaptor. Make sure the "pointy end" of the adaptor is closest to the gold-plated edge connector of the OpalVision Main Board.

Pick up the OpalVision Main Board with the metal plate and the slot adaptor to the rear of the computer and the gold-plated edge connector "fingers" aligned with their matching sockets on the Amiga Main board. The integrated circuits and other components on the OpalVision Main Board should be facing upward. Check that the metal plate with the external connector sockets will line up with the hole in the Amiga's back panel (the top slot).

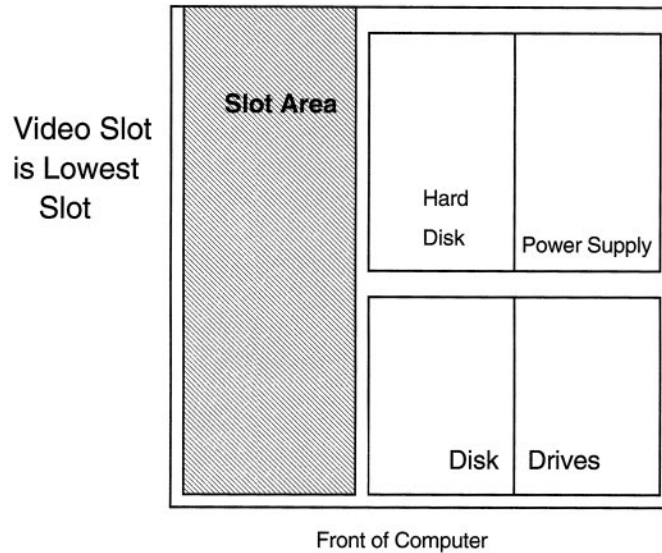
Making sure that both connectors are aligned correctly, apply firm and even sideways pressure to the outside edge of the board so that the OpalVision Main Board is pushed directly into the edge connectors. It may be necessary to gently rock the card lengthwise (from front to back, *not* side to side) until it is properly seated.

Now screw the adaptor back plate to the case of the Amiga using the remaining single screw.

Jump to page 18 to continue.

If you own an Amiga 4000 series

Looking from the front of the case, the Amiga 4000 family has four slots on the left of the power supply cage (the metal box with ventilation holes punched into it and with the power plug and fan opening onto the back panel). These slots accept horizontal cards. **The lowest slot is the Video Slot.**



Now turn your Amiga around so you can easily access the rear panel. The OpalVision Main Board has a plate along the back edge that holds the plugs and connectors and covers the hole in the back panel. Unless already set up for an Amiga 4000, the plate installed on your OpalVision Main Board will be flat with a screw hole at each end as designed for mounting in an Amiga 2000.

If the back panel plate on your OpalVision Main Board has a right-angled bend in the top then it is already set up for the Amiga 4000, so ignore the next paragraph.

In your OpalVision Packaging you should find a metal plate with a D-shaped hole and a short right-angled bend at one end. To attach this plate, first remove the flat plate from your OpalVision Main Board by *carefully* removing the stub bolt (that has a threaded hole in the centre to receive the cable backshell screws) on each side of the 23-way D-connector. The best tool for this job is a 3/16" nut driver, although a small pair of pliers will do the job if used *carefully*. Now replace the flat plate with the bent one while checking that the hole for the D-shaped video connector is oriented the correct way and that the short right-angled bend points outward from the board. Replace both stub bolts carefully and tighten until firm.

If you already have another card installed in the Video Slot, first disconnect any wires or other connections attaching it to the computer then remove the single lock screw holding the back panel plate to the chassis of your Amiga.

Grasp the card firmly and as close as possible to the edge socket, then gradually pull the card sideways out of the socket on the Amiga's vertical edge-connector daughter- board. It may be necessary to gently rock the card lengthwise (from front to back, *not* side to side) to ease its removal.

If you don't already have another card in the Video slot, remove the screw holding the blank back panel plate to the Amiga's chassis then put the blank plate in a safe place in case you want to move your OpalVision board(s) to another Amiga in the future.

Pick up the OpalVision Main Board with the metal plate and the slot adaptor to the rear of the computer and the gold-plated edge connector "fingers" aligned with their matching sockets on the Amiga Main board (the bottom slot). The integrated circuits and other components on the OpalVision Main Board should be facing upward. Check that the metal plate with the external connector sockets will line up with the the Amiga's back panel.

Making sure that both connectors are aligned correctly, apply firm and even sideways pressure to the outside edge of the board so that the OpalVision Main Board is pushed directly into the edge connectors. It may be necessary to gently rock the card lengthwise (from front to back, *not* side to side) until it is properly seated. Finally fasten the back plate to the chassis of the Amiga using the lock screw small slot in the short right-angled bend.

To Continue . . . all systems

6. Replace the Case Lid

Replace the lid of the Amiga case in the opposite order to its removal.

Slide the case down and back into place, taking special care that anything on the front of the chassis (such as the LED holder, power button, disk drive button etc) fits into its hole on the front of the case.

Replace the screws in the sides and back of the case. (5 for A2000/A3000, 2 for A4000)

Reconnect the keyboard, mouse and anything else (except the monitor) you unplugged at the start. Be careful each plug is in the right socket.

7. Connect your Monitor

Now plug in your monitor. If you have a standard Commodore Amiga monitor such as a 1081, 1084, 1084S etc, simply plug the 23-pin-D RGB cable into the 23-pin plug on the back-panel of the OpalVision Main board.

WARNING: Never plug a monitor into the standard 23-pin Amiga Video Port while an OpalVision card is installed in your Amiga. This may overload the output circuitry in your Amiga and cause permanent damage.

If you are using a multi-sync or multi-scan monitor you will need the OpalVision Scan Rate Converter board to directly drive the monitor with a non-interlaced signal, or you will need a 23-pin to 15-pin adaptor to plug the monitor cable into the 23-pin OpalVision output connector. If you purchased a 1950 or 1960 series multi-scan monitors from Commodore this adapter should have been included, but if you have lost it or own a non-Commodore monitor you can order this part from any Commodore dealer or registered repairer. For your reference, ask for part no 390682-01.

If you have a separate 15-pin deinterlaced output you can plug two monitors into the system simultaneously - one into the the OpalVision's 23-pin output and another into the 15-pin output. This will be the case with the Amiga 3000, or when using a deinterlacer that does not require the video slot.

Finally, to use both outputs with a single multi-sync monitor you can use a two-input VGA-switcher with one input plugged into the 15-pin output and the other into the OpalVision 23-pin output via the adapter described above.

8. Power-On

Now replace the power cable and switch on the power to monitor and Amiga.

If your Amiga boots correctly (i.e. the lights on the front of the Amiga come on, you hear the hard drive grind and spin and the Workbench eventually comes up on the screen), go on and install the OpalVision software. This procedure is described below.

If you have any other response, (or no response at all), check the following in order:

- Confirm the monitor cable is correctly plugged into the 23-pin connector on the back panel of the OpalVision Mainboard and *not* the 23-pin connector on the Amiga case proper (see the above warning).
- Check the power and all other cables are firmly seated in their correct plugs.
- Try some other appliance in the power-point to make sure it is "live".

If nothing seems to work stop, have a cup of coffee then check over each step of the installation to make sure you haven't missed anything. If your machine still will not start, remove the OpalVision card and try running your Amiga without it. If your Amiga now runs correctly, consult your dealer for further troubleshooting or warranty repair.

Installing Software

Included with the OpalVision software is an installation program that automates the process of loading OpalPaint, the other OpalVision utility programs and the sample images onto your hard drive.

To begin,

- Start up your Amiga in the normal way and enter the Workbench screen.
- First - **BACKUP YOUR OPALVISION SOFTWARE**. This is always sensible with all software as accidents do happen. You use the Workbench to do this and can consult your Workbench manual for full directions.
- Insert your **backup** OpalVision Installation disk, then double-click using the Left Mouse Button on the disk icon that appears to open a window for this disk.
- Double-click using the Left Mouse Button on the Read-Me-First icon to read about any last-minute inclusions or changes to the system or the manuals.
- Now double-click on the InstallOV icon and follow the instructions that will appear on the screen.

Tuning Your OpalVision

The OpalVision Main Board is, of course, fully tested at the factory. However, due to the wide range of internal timings between Amiga models and even between Amigas of the same model, you may have to synchronise the timing of your OpalVision Main Board to your Amiga.

You will have been given the opportunity to do this during the installation procedure, but if you experience problems with the integrity of the OpalVision 24-bit display it is almost always possible to fix them by re-aligning the timing. This can be done using the Alignment_Adjust program to be found in the OpalPaint:OpalUtils drawer. After running the program by double-clicking on its icon, the following instruction screen will appear:

The following screen will display three horizontal bars showing a gradient from black at the left through grey or white in the centre of the screen to black at right side of the screen. Under the bars you should see two rows, each with 8 red, 8 green and 8 blue squares.

If you see a clear image with these features then continue with installation. Otherwise, insert a small flat-bladed screwdriver into the hole above the 23-way connector on the back-plate of the OpalVision card and engage the trim-pot inside. Turn the screw until the image becomes clear, then continue turning the screw and count the number of turns until the picture is distorted again. Finally, turn the screw back by half the number of turns you counted to place it in the 'centre' of the working range.

Close this window to continue.,

Press Left Mouse Button to exit the Adjustment Screen.,

Introduction to OpalPaint

If you are new to the world of computer art and painting systems, you may be wondering what all the fuss is about. Why bother to use a computer at all when you have perfectly good paint, watercolours or pencils?

With OpalPaint you can use many traditional art techniques and apply “paint” or colour to your digital canvas or screen in many different ways. You can mix colours on a palette to create the exact shade you need, then use tools such as brushes, chalk and air-brushes and apply it to many different paper textures and types. You can then do things like smear it around on the screen to drag or smooth it.

So far there may seem to be little advantage. However, using OpalPaint you can undo that inevitable mistake and remove just those parts of the last paint application that were wrong. You can save your creations to be worked on at a later date and combine sections from many different images into montages. Cut out a section from your image, then enlarge it, shrink it, flip it, tilt it or wrap it around an irregular shape before pasting it back onto your image in as many places as you need. Fill areas with perfect blends of colour and use tools such as automatic rectangles, circles and ellipses. Easily define stencils or friskets over your image to mask certain areas and apply perfect text onto your picture.

These are a small sample of how OpalPaint provides you the artist with an unprecedented array of tools and support. This power, however, requires a little learning on your part. The chapters following are a Primer to gently introduce you to OpalPaint and explain many of its features and we recommend them to all users regardless of previous experience.

OpalPaint Primer

About this Primer

This primer is designed to start you working as quickly as possible. Each lesson is built around several tasks requiring you to move through the many menus and functions of the OpalPaint program and begins with a list of the topics covered in that lesson. If you have already spent some time working with the program this allows you to pick and choose those lessons most appropriate for your particular needs. However, although much of the information in the first few lessons is quite simple, we recommend that all users read the tutorials at some point as there are many useful features and "tricks of the trade" which you may have overlooked.

Most importantly, the lessons will explore the concepts behind the working of OpalPaint. It is very important to try and learn underlying concepts rather than just following the action-steps and "painting by numbers". This way you will be able to understand and develop your own techniques for producing exceptional images.

Finally, don't be afraid to experiment. Push the software and your creativity to their limits. Remember, you can't hurt the computer and you can re-install the sample image files if you happen to "paint over" them. (By the way, you do have back-ups of all the OpalVision and Opal Paint disks don't you?)

Have fun

Assumptions

The users of the OpalVision system come from a wide variety of backgrounds, ranging from absolute beginners to experienced full-time computer artists. While we would love to produce a perfectly customised tutorial for every user, we have made the following assumptions about your skills:

- ❖ You should understand basic Workbench™ functions as outlined in the Amiga manuals that came with your computer. You should understand how to use the mouse and how to start programs from Workbench. Some knowledge about drawers (directories) and the organisation of the Amiga File system are also very useful. Your dealer should be able to assist you if you get into difficulties.
- ❖ If you haven't done so yet, follow the directions in the booklet titled OpalVision Installation to install the OpalVision board or boards into your computer and the software onto your hard drive. You will make best use of the tutorials if you try out each step using your own system.

Lesson 1 - First Looks

Welcome to OpalPaint, the painting program for the OpalVision system.

The main aim of this first lesson is to give a quick overview of some of OpalPaint's main features and along the way show you why a computer painting program like OpalPaint is in many ways superior to traditional painting methods. Because this lesson is only an overview we will not stop long on any one screen, but will return in later lessons for a more leisurely and detailed examination.

On completing this lesson you should be able to:

- ❖ Start OpalPaint from Workbench
- ❖ Select and use basic Drawing Tools
- ❖ Change the Paint-Pot colour used
- ❖ Use different nozzles with the Drawing Tools
- ❖ Undo the last change to the picture
- ❖ Clear the screen and start over
- ❖ Exit from OpalPaint

Start Program

As mentioned previously, we will assume you have installed the OpalVision board(s) and software into your Amiga (if not see earlier chapters in this booklet).

Now, wherever you see an indented paragraph with a bullet (or dot) in front of it like the one below, it indicates a procedure or step you should actually perform using your own system and OpalPaint.

- Switch on the computer and wait until the Workbench screen appears.
- Double-click on the disk icon for the hard drive that contains your OpalVision software to open that drive's window.

(Throughout the Amiga and the OpalVision systems, "double-clicking" means to move the mouse until the pointer arrow is over the drawer or icon, then quickly tapping twice on the Left Mouse Button. Unless otherwise noted, double-clicking is always done using the Left Mouse Button.)

In the window you will see a drawer labelled "OpalVision"

- Double-click on the OpalVision drawer icon to open it.

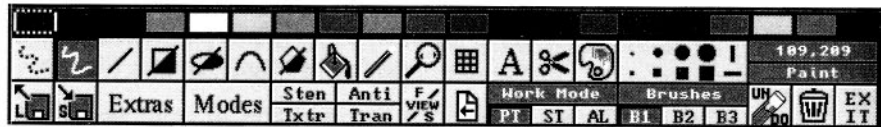
You should see icons for several programs in the opened OpalVision window, including OpalSlide and OpalPaint.

- Double-click on the "OpalPaint" icon to start the program.

In a few seconds . . .

The OpalVision Main Menu

After a few seconds you should see the OpalPaint title page and then the screen will be mostly black with a menu bar along the bottom edge that looks like this:



The Main Menu bar is made up of three rows - a row of 20 coloured boxes with two rows of little pictures called icons below it.

The top-most row of coloured boxes are called the Paint-Pots or the working palette and can be thought of as a row of Paint-Pots to store 20 commonly used colours. Using the palette menu introduced a little later, each of these Paint-Pots can be changed and “filled” with the exact colour you need, with over 16.77 million colours to choose from. If you are familiar with other paint programs on the Amiga you will be pleased to learn that the 20 Paint-Pots or working palette colours can be used in painting and then changed at will without affecting the colour of areas of paint previously applied from that particular Paint-Pot.

We will also explain later how to access a further 12 paint-pot rows from the keyboard, giving you up to 260 different paint-pots to create and use those exact tints and shades. You would need a pretty large wooden artist’s palette to keep all those colours!

For now, lets move on.



- Move the mouse so the pointer on the screen is over the top left most icon which looks like a dotted, bendy line (see the picture in the margin.)

Remember that an icon, at least in computer terms, is a symbol representing a function or option. In this case the icon represents one of OpalPaint's Drawing Tools - the Dotted or Sketch Freehand Tool. The square area occupied by the icon is a button used to access or invoke the appropriate option, in this case the Freehand Sketch Tool. As a reminder of the icon button's function you will notice that when the pointer is over the icon, the message "Freehand" appears in the status bar which you will find on the top right of the menu bar.

- Move the pointer slowly along the top line of icons and watch as the message in the feedback area changes for each icon.

Each icon represents a Drawing Tool or other function you can utilize in your painting or image manipulation. OpalPaint uses the status bar (and all other blue areas on the main menu) to give you "feed-back" such as help information, the coordinates of the screen pointer, warning that an image is saving or loading and so on. In this case, the status bar message will identify the icon and the keyboard shortcut that can be used to invoke that function.

Many icons have a *keyboard shortcut* which is exactly equivalent to clicking the icon button on the Main Menu Bar. For example, the keyboard shortcut for the Freehand Sketch Tool is the letter "s". Note that this keyboard shortcut is shown in the second line of the feedback area. Also note that "s" is lower case (not capital "S") and remember that the case (or capitalisation) of keyboard shortcuts *is* important. Those of you familiar with the popular Deluxe Paint™ series of programs for the Amiga will be pleased to learn that wherever possible the same keyboard shortcuts are used.

For more information about a particular button or menu,

- Position the pointer over the button or menu of interest, then hit the "Help" key above the arrow keys on your keyboard.

The on-line hypertext help system will spring into life. This contains most of the text of the Reference Manual in an explorable form.

- For now, please resist the temptation to "wander" about in the hypertext and click the Close button in the top-left of the OpalHelp screen.

Off we go again.

- Move the pointer into the black area above the row of paint-pots.

This is the drawing area and in the status area you will see the coordinates of the pointer on the screen. The status area will also show the word “Paint”, which is the default (automatically selected) Drawing Mode (more on Modes later).

Now try some simple drawing. First let’s return OpalPaint to a standard setup so we can be sure that we’re both looking at the same screen. We will use the “Panic Button” that sets OpalPaint’s options to a simple set of options.

- While holding down the "Shift" key, hit the “Help” key above the arrow keys on your keyboard.
- Click the “PANIC” button on the information menu.

Because it is possible to configure OpalPaint’s options and tools into an infinite number of permutations, you may at times get yourself confused and wonder why you can’t get the effect you are trying to achieve. It is often useful at times like these to hit the “Help” key and “Panic” button to reset all options and then re-add each option to your configuration after careful consideration.

To continue . . .

- While holding down the Left Mouse Button, drag the pointer around on the screen. You will see a coloured line (white, unless you have changed the colour) following the pointer that stops when you release the mouse button. You can sketch any shape by moving the mouse just as you would sketch using a pencil, pressing and holding the mouse button whenever you want to “paint”.

Experiment with this until you are used to drawing with your mouse or stylus.

Note that if you move the pointer faster, the line may have to “cut corners” to keep up. This Drawing Tool is called the Continuous Freehand tool and so it is most useful when you need to have an unbroken line. The first tool you saw, the Freehand Sketch tool, will not cut corners but will instead draw unconnected dots if you move the pointer rapidly. The Sketch tool is useful to quickly sketch out the rough outline of your painting. You need to choose in each case whether the most important feature of the tool is drawing unbroken lines or keeping up with the pointer through all curves and this will depend on your requirements for each operation.

Now try changing the colour you are drawing with.

- Move the pointer over another coloured Paint-Pot and click once with the Left Mouse Button. The selected paint-pot should now show a dotted outline and is often referred to as the “Current Paint-Pot” or “Current paint-pot colour”.
- Try some drawing again and the line will be in the new colour.

For some variety, try drawing with a different “nozzle” or brush shape.



- Click once on a larger circular or square nozzle in the Nozzle Selection Area shown here. The selected nozzle will be highlighted with a blue outline.

Once again try some drawing and you will find the line will drawn using the size and cross-section of the larger nozzle you have selected. Experiment for a while using different nozzles, colours and drawing speeds.

Now we can experiment with some of the other Drawing Tools. To select a Drawing Tool, for example the Rectangle Tool,



- Move the pointer over the **top-left** half of the Icon Button for that tool, in this case the rectangle and click once with the Left Mouse Button. This selects the “Outline Rectangle” Drawing Tool.

If you had clicked on the lower-right half of the icon you would have selected the “Filled Rectangle” Drawing Tool. The diagonal line across the button tells you that the button is used to access two related but different drawing tools, in this case the Outline and the Filled variants of the Rectangle. Similarly, there are dual-type buttons for Ellipses and Circles, Polygons and Freehand Draw.

- Now move the pointer into the drawing area and hold down the Left Mouse Button. While holding down the mouse button, drag the pointer around the screen and you will see a rectangle on the screen that changes shape. One corner of the rectangle is fixed at the first point you pressed the Left Mouse Button, while the opposite corner moves with the mouse pointer. A tip - to force OpalPaint to draw a proper square, hold down the Shift key on the keyboard while dragging the pointer or press the Shift key at any time before releasing the Left Mouse Button.
- When the rectangle is the size and shape you like, release the Left Mouse Button. You will then see the rectangle drawn using the current Nozzle shape and in the current Paint-Pot colour.

Try drawing lots of different rectangles on the screen using various combinations of Paint-Pot colours and Nozzle shapes.

Now try drawing some ellipses. First select the Ellipse Drawing Tool.



- Click the Ellipse Drawing Tool button on the Main Menu Bar using the Left Mouse Button. Like the Rectangle Drawing Tool, if you click in the top-left half you will select the Outline Ellipse Tool, while if you click in the lower-right half you will select the Filled Ellipse Tool.

Now paint an ellipse. After choosing the paint-pot colour for the ellipse and the nozzle size if you are drawing an Outline Ellipse,

- Place the pointer over the centre point of the ellipse you want to draw.
- Press and hold down the Left Mouse Button while dragging the pointer away from the centre point. You will see an elliptical outline that changes size and shape as you drag. As with the rectangle tool, holding down the Shift key on the keyboard while dragging the pointer will force OpalPaint to draw a circle rather than an ellipse.
- Once again, drag the pointer around until the ellipse is just the size and shape you need, then release the mouse button.

Try drawing different ellipses using various paint-pot colours, nozzles and both the Filled and Outline Tools.

Undo

By now you will almost certainly have drawn at least one line, rectangle or ellipse in the wrong place. One of the most useful features of OpalPaint is its “Undo” facility. To completely reverse the last drawing action,



- Click on the “UNDO” button on the Main Menu Bar using the Left Mouse Button. Alternatively, you can type the “u” key (lower case) on the keyboard for the same effect.

This undo facility is available for virtually all actions that modify the image. Note that OpalPaint effectively takes a “snapshot” of the image every time the Left Mouse Button is used. This means that you can restore the image from the snapshot if you make a mistake, but it also means that the next time you click or draw on the image using the Left Mouse Button it will make a new snapshot and throw away the old one. In other words the snapshot, usually called the “undo buffer”, can only remember as far back as the last time you started drawing with the Left Mouse Button.

If you wish to undo only part of the last modification OpalPaint provides an incredibly useful feature called Dynamic Undo. This is just like ordinary painting except that instead of adding to the image it removes the previous changes and restores the image. You can think of it as “Undo Painting”. To use this feature,

- Use any of the Drawing Tools such as the freehand, rectangle or ellipse but hold down the Right Mouse Button instead of the Left Mouse Button. If you are using a graphics tablet (and Workbench 2.x) press and hold the Right “ALT” key (right as opposed to left, not right as opposed to wrong) while drawing and it will have the equivalent effect.

Clear the Screen

Of course the ultimate recourse when you make a mess of your picture and wish to start over is to clear the whole screen. To do this,

- Click the Trashcan icon on the Main Menu Bar using the Left Mouse Button.



A small menu will appear, reminding you that you haven’t saved your image and asking for confirmation that you really do wish to clear the screen. OpalPaint uses menus where it needs further information or gives options for you to select from. Most menus have various gadgets such as buttons and sliders that you can operate using the mouse only, while others require you to type a number from the keyboard, but we will come to those later.

Most menus have two buttons in common. If you click on the one marked “OK” it tells OpalPaint to go ahead using the options you have selected and load an image, flip a brush, change colours or perform the function of that menu. The “Cancel” button allows you to exit from that menu without changing the current options, or without loading an image and so on. In the case of this menu, if you click on “OK” the screen will be cleared, but if you click on “Cancel” the clearing operation will be aborted and the image will remain unchanged.

- Click on the “OK” button and the screen will clear.

This is probably a good place to stop and review what you’ve learned so far.



If you don’t wish to continue immediately with the next lesson, exit OpalPaint by clicking on the “EXIT” button in the bottom right-hand corner of the Main Menu Bar. If you have made any changes to the image since saving, a menu will appear asking whether you want to lose those changes, save them before exiting or go back (i.e. not exit after all)

- Click the “Continue” button to discard changes and exit OpalPaint, or click “Cancel” and go back into OpalPaint. If you really want to save your first painting attempts for posterity go on to the next lesson where we will learn how to do this.

Lesson 2 - Files and Brushes

On completing this lesson you should be able to:

- ❖ Load an Image from disk.
- ❖ Use both Left and Right Mouse Buttons
- ❖ Load Cutout Brushes from disk
- ❖ Perform simple pasting and manipulation of Cutout Brushes
- ❖ Save an Image to disk
- ❖ Exit from OpalPaint

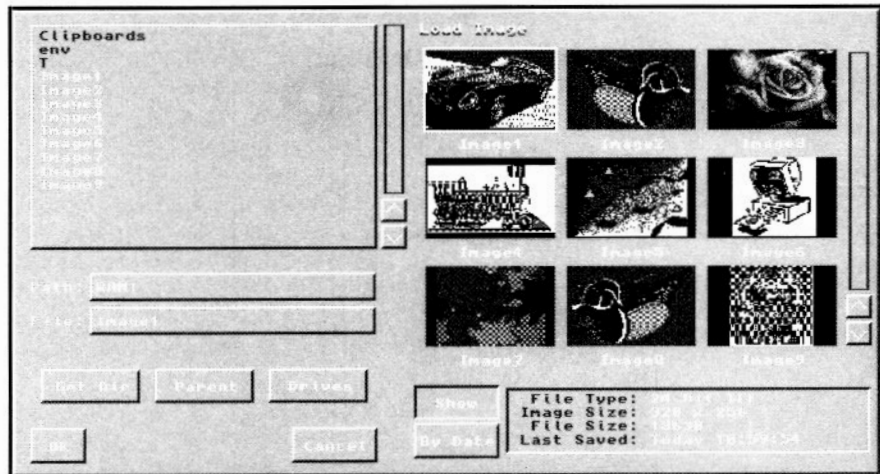
Load an image

Now we will load a sample image from disk and explore the power of cutout brushes.



- Move the pointer down to the bottom row of icons and position it over the icon with a picture of a disk and the letter “L” (for Load) on it.
- Click on this Load Image icon using the Left Mouse Button.

The Load Image File Menu will pop up in the upper part of the screen and looks like this:



OpalPaint uses a File Menu which has a standard layout and method of operation, but varies the function it performs (either loading or saving) and the type of objects it works with (images, cutout brushes, palette sets, loadable modes etc). When accessed using the Load Image Main Menu button, the File menu will allow us to select or specify the image we wish to load.

In the top-left corner of the File menu you will see a list of the various demonstration image files that were placed on your system at installation time (of course these will not be called Image 1, Image 2, Image 3 etc). There are also buttons to change the drawer, as well as the usual OK and Cancel buttons.

This menu searches the current drawer for image files that include a special “thumbnail” picture icon and displays them in the Art-Gallery display to the right of the menu. Now you can choose an image by clicking on its thumbnail picture rather than from a list of words, although you still have the option of clicking on the image’s name if you prefer. Because there are more than nine images in the Art Gallery, the button in the scroll-bar to the right does not completely fill the scroll box.

To scroll through the images in the Art-Gallery,

- Drag the scroll-bar button in the box, or click on the arrows above and below the scroll-bar, or click in the scroll-box above or below the scroll-bar button.

Now load the “Outback” image.

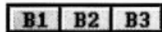
- Click on the thumbnail image showing the tiny picture of a bushland scene, then click on the “OK” button to load the image.

The image will now load and the blue status block on the right side of the Main Menu Bar will show the percentage completed as the loading progresses. Soon you will see an Australian Outback scene that is just crying out for some animal life! If you are already an artist you could probably draw some animals using the Drawing Tools introduced above, but we will use a shortcut and load some Cutout Brushes that have been included with your OpalPaint sample images.

Cutout Brushes

Cutout brushes are one of the most useful features of OpalPaint. They can be cut from any OpalPaint image or the OpalVision Frame Grabber (part of the OpalVision Video Processor), retaining all the colour of the original image and can be of any size and shape. Although they can be used just like nozzles to sketch and draw, in practice they are usually “pasted down” in one spot like real cutouts. Unlike real paper and scissors cutouts, when you paste a Cutout Brush it is not “used up”, but remains attached to the pointer and can be pasted again and again.

OpalPaint can hold three different Cutout Brushes at once. These are very imaginatively called B1, B2 and B3 and each Cutout Brush has its own button on the Main Menu Bar.

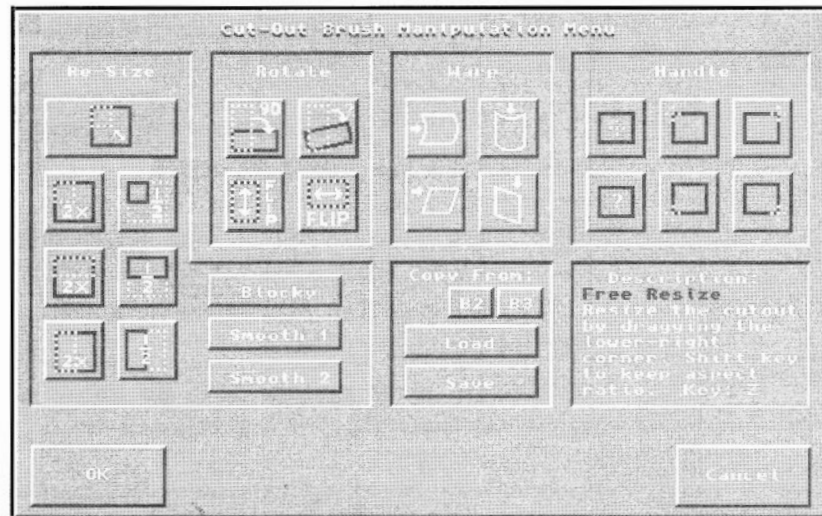


Up to now you have been using only the Left Mouse Button and may have wondered whether the other button was used at all. We now introduce, (drum roll . . .) a **Very Important Principle**. The Right Mouse Button (Right as opposed to Left, not Right as opposed to Wrong) is generally interpreted by OpalPaint as a request to specify options, or to manipulate an object in some way. For example, to specify various manipulations of a particular Cutout Brush you should click on its button using the Right Mouse Button instead of the Left Mouse Button. Another VIP (Very Important Principle) for those lucky people with a graphics tablet is that a double-click on the tablet’s stylus tip (or the Left Mouse Button) is functionally the same as a single click of the Right Mouse Button (which you don’t have when using a tablet).

In this case we wish to load a previously saved cutout into the first Cutout Brush or B1. First,

- Open the Cutout Brush Manipulation Menu by clicking the B1 button on the Main Menu Bar using the Right Mouse Button (or double-clicking with the stylus tip of your graphics tablet).

You will see the following menu appear.



While there is a great array of tantalising options available, be patient for a minute and go to the Load Cutout Brush menu.

- Click on the “Load” button, found near the lower-centre of the Cutout Brush Manipulation Menu.

The general File Menu will appear, this time with the title Load Cutout Brush. As we noted earlier, the File Menu has the same layout and options for all functions so that you only need learn the use of one menu, but when invoked using the “Load Cutout Brush” button the objects displayed and loaded are cutout brushes.

Once again,

- Double-click on the picture of a kangaroo.

This is a shortcut - generally if you double-click on an object in a menu it is the same as clicking once on the object then click on the OK button, in a similar fashion to the Workbench where double-clicking on an icon has the same effect as clicking once on the icon then selecting the “Open” menu option.

Now the pointer will show a rectangle with a kangaroo-shaped outline so you can see where the brush outline will appear if you paste it on the image.



First select the Sketch Drawing Tool, which is generally the best tool for pasting brushes.

- Click the Sketch Drawing Tool button using the Left Mouse Button.

Now lets put some kangaroos in the picture.

- move the pointer with the attached Cutout Brush outline until it is in a suitable position on the image.
- Click once with the Left Mouse Button. A kangaroo will now be added to your picture.

Remember that if the kangaroo is in the wrong place you can remove it completely by clicking the “UNDO” button on the Main Menu Bar.

Try placing a few more kangaroos in different parts of the picture by moving the pointer and clicking.

Now we can put some Koalas in the trees. Load a cutout showing a Koala into the second Cutout Brush,

- Click on the B2 button using the Right Mouse Button to bring up the Cutout Brush Manipulation Menu for cutout B2. We use B2 rather than B1 so we can keep both cutouts in memory at once and quickly switch back and forth between them.
- Click on the “Load” button to call up the Load Cutout Brush Menu.
- The “Show” button should be still active. Double click on the Koala picture and the cutout will load.

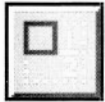
Now you can paste koalas in the trees in the same way you placed kangaroos on the ground, by positioning the pointer and clicking with the Left Mouse Button.

You can also switch back and forth between the B1 cutout (with the kangaroo) and the B2 cutout (with the koala) by clicking either the B1 or B2 button using the Left Mouse Button. You can also switch to a nozzle or any other tool and draw at any time, then return to a cutout later.

You have probably wondered about all the options in the Cutout Brush Manipulation Menu. They provide various ways of resizing, tilting and warping a cutout brush. Now is your chance to experiment with some of these manipulations.

Let us assume you want to resize the kangaroo cutout, making it smaller so it can be placed further into the “background” and still appear in scale. Because Cutout Brush manipulations are among the few OpalPaint operations that cannot be “undone”, it is good practice to use another Cutout Brush position for your experimentation and retain the original Cutout unchanged. In this case, the kangaroo is in B1, so we will use B3 to hold the resized kangaroo.

- First call up the Cutout Brush Manipulation Menu for B3 by clicking the B3 button on the Main Menu Bar using the Right Mouse Button.
- Just above the “Load” button you will see two small buttons labelled “Copy From”. Click on the small “B1” button to copy the contents of B1, i.e. the kangaroo cutout, into the brush B3.
- Now click on the resize $\frac{1}{2}$ button and the kangaroo cutout will be made half the size.



Now you can paste down the smaller kangaroo like you did with the unchanged B1 cutout.

Using the technique described above you can change the size, flip and warp the cutout in various ways. In each case the icon on the button should show you the effect of the manipulation you are about to perform and the description box will explain a button’s function as you move the pointer over it. Another point to remember is that Brush Manipulations are cumulative, that is you can perform a string of changes on the same brush. For example, you can take a cutout brush, double its size, rotate it by 90°, then flip it and shear it horizontally by using successive Cutout Brush Manipulations.

Save an image.

By now the picture you have created probably has more kangaroos than the Australian Outback under a 'roo plague, but let's save the picture anyway.

Call up the "Save Image" menu,



- Click the Save Image icon at the far left of the bottom row of the Main Menu Bar.
- The Save Image File menu will now appear. Once again it is the familiar File menu - just like the Load-file menu except with a different title and function.
- Click in the File Name text box using the Left Mouse Button. A cursor block will appear and you can type in a name for your masterpiece. Try "AussieScene", or choose your own name.
- Now click on the "OK" button and your picture will be saved to your hard drive.

That concludes this lesson. Check back over the the objectives on the first page of this lesson (page 35) and make sure you have understood each of them. Exit from OpalPaint using the "Exit" button on the Main Menu Bar, or push on to the next lesson where we will explore the wonderful world of colour.

Lesson 3 - Colour

In this lesson we will look at the way OpalPaint handles colours and how you can choose the exact colours you need for your drawings. We will also explore some basic colour theory that will be invaluable for getting the most out of the OpalVision system.

After completing this tutorial you will be able to:

- ❖ Access and use the Palette menu.
- ❖ Mix and customise colours for your Paint-Pots.
- ❖ Understand how colours can be broken into *components*.
- ❖ Move between different Paint-Pot rows or Palette Sets and load additional Palette Sets from disk.
- ❖ Select colours by name.

The Palette Menu

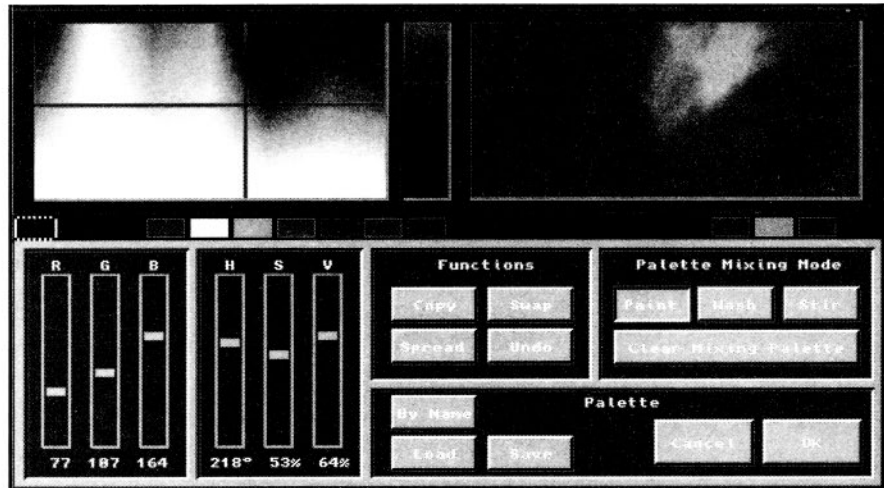
If you are not already in OpalPaint, start the program as we learnt in Lesson 1.

First call up the Palette Menu.



- Click the Palette Button on the Main Menu Bar using the Left Mouse Button.

The menu looks like this.



First some basic but important theory. If you have ever ordered a particular colour house-paint you have probably seen the shop assistant look up a book, mix various tints with a basic white or dark paint and then shake it. The precise colour from the colour chart is made up of various “components” or ingredients that both “describe” the colour and can be combined to “generate” it.

OpalPaint provides you with several ways to describe a colour. In the first, any colour can be described by its *Hue*, or very pure colour from the spectrum, its *Saturation*, or the amount of White added to that pure *Hue* and its *Value* or *Lightness*, which is the amount of Black added to the colour.

The large coloured block and the narrow block beside it in the top left half of the Palette Menu are used to select various colours for the paint-pots. In the larger colour block you will see the colours of the rainbow across the top, smoothly changing to pure white at the bottom of the box.

- Click anywhere in the large colour box, but preferably near the top edge where the stronger (or more saturated) colours are.

You will see a set of crosshairs on the colour box. The crosshairs specify the components of the colour you have selected. Once again think of a colour as being made up from three different ingredients. The vertical line in the crosshairs locates the position of your selected colour's pure *Hue*, while the horizontal line shows the *Saturation* or amount of White in the colour. You will notice that the colour directly under the crosshairs appears at the top of the second, narrower colour block to the right, which shows a range from the first colour down to completely black at the bottom. This block corresponds to various levels of *Value*, or addition of Black to the pure colour.

In this way you can choose any colour you need with two clicks of the mouse:

- First click in the larger block to choose a *Hue* with the right amount of *Saturation*,
- Then if necessary click in the Value block to specify the amount of Black to be added.

Note that as you select colours from the colour blocks, the colour being selected shows in the selected Paint-Pot (i.e. the paint-pot with the dotted white line around it). To change the colour of another paint-pot,

- Click on the paint-pot using the Left Mouse Button.
- Now select the required colour from the colour selector blocks using the above procedure.

You will also notice that if you move the pointer around in the colour selector blocks while you have the mouse button depressed the colour shown in the paint-pot changes dynamically. This is useful to locate the exact shade or tint you need.

Now we shall use the Palette Menu like you would use a real artist's palette and paint.

- Draw in the Mixing Area to the right of the two colour selector blocks. You will see an area of the current paint-pot colour.
- Now select another colour, either by clicking on another paint-pot or clicking in the colour selector blocks and paint with the new colour.
- Click on the “Wash” button. Now as you drag the pointer around in the Mixing Area you will see edges between colours run together like real water colour paints would if you applied water. The “Stir” button is also useful, as it actually drags the colours into each other and mixes them like real paint.

Experiment for a while adding different colours and using the Wash and Stir buttons to create new colours. You can pick up any colour from the Mixing Area and place it into a Paint-Pot at any time using the following procedure.

- Click on the paint-pot you wish to change using the Right Mouse Button. Then move the pointer over the Mixing Area and you will see the colour in the paint-pot constantly changing to match the colour precisely under the pointer. When you have located the exact colour you like, click once on the Left Mouse Button.

Another way to change the current paint-pot colour from the Mixing Area at any time is to

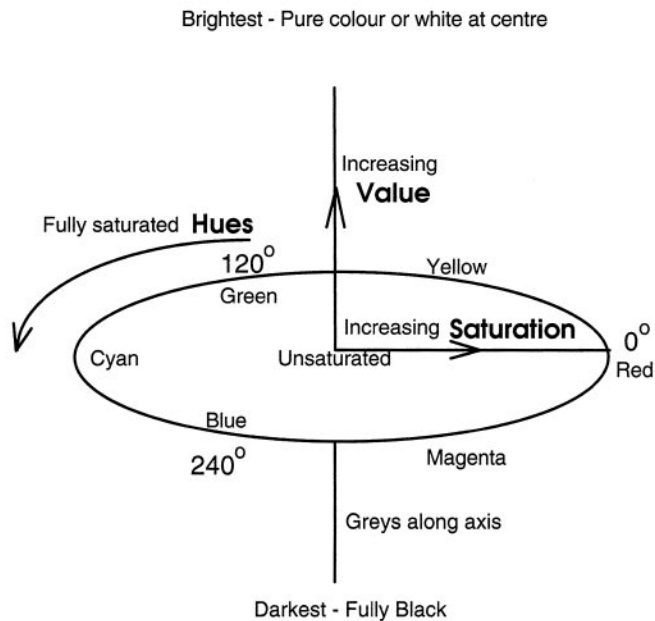
- Click over the desired colour in the Mixing Area using the Right Mouse Button.

HSV Sliders

By now you will probably have noticed the six sliders below the main colour selector block moving as you change colours. The three on the left correspond to the *Hue*, *Saturation* and *Value* or HSV components we discussed previously and allow you to precisely adjust individual components. To adjust the position of a slider,

- Drag the slider button to a new level. You will notice the numbers below the slider will show the exact setting as you change its level. To move the slider by single steps click in the slider box above or below the slider button.

A useful thing to note is the way each of the HSV sliders corresponds to a single line in the crosshairs over the colour selector blocks. The *Hue* slider also moves the vertical line in the main colour selector block, the *Saturation* slider moves the horizontal line and the *Value* slider moves the line in the smaller colour block. For example, as you increase the level of the *Saturation* using the slider, the crosshairs in the main colour block move up toward the fully saturated, pure *Hues* at the top of the block.



The HSV Colour Wheel

Now compare the HSV sliders to the diagram of the HSV Colour Wheel. This is a graphical method to represent the relationships between the three different colour components. The *Hues* appear around the circumference of the Colour Wheel, starting with Red and moving through Yellow, Green, Cyan, Blue and Magenta back to Red again. If you look at the Palette Menu you will see these colours across the top of the Main Colour Block. These pure *Hues* on the outer edge of the wheel are *fully saturated*, or contain no White, while moving toward the centre increases the amount of white and reduces the *Saturation* of the colour. Comparing this to the Palette Menu, this is like moving the colour selection crosshairs up and down on the Main Colour Selector block. Finally, the whole wheel can move up and down along the *Value* axis to change the amount of Black in the colour. Increasing *Value* increases the brightness, (i.e. decreases the amount of Black in the colour). In the Palette Menu this function is performed by the smaller of the two Colour Selector Blocks.

RGB Sliders

Another method of describing colour is to break it down into its additive primary colour components of Red, Green and Blue. The RGB sliders allow you to change the level of these Red, Green and Blue components in the current paint-pot colour.

Because the HSV method we described above is far more intuitive for most people we will not say much here about the RGB method of describing colours, except to note that it is the native method of storing colours in the OpalVision, the Amiga and in the “IFF-24” image file format we saw in the previous chapter. There is a more complete description in the Reference Manual. In case you are interested and at the risk of your eyes glazing over, the very term “24-bit” comes about because the OpalVision represents colours by using 8 bits for Red, 8 bits for Green and 8 bits for Blue, a total of 24 bits. Thus there are a possible 2^8 or 256 possible levels for each primary colour and with three primary colours that gives $256 \times 256 \times 256 = 16,777,216$ possible colour combinations. (Don’t say I didn’t warn you. Anyway, you don’t really need to know this to use OpalPaint, but some people find it fascinating!)

Use of Paint-Pots

You may wish to arrange colours in the Paint-Pots for a particular purpose, such as making a range of greens for painting foliage. While you can individually choose and set up the colour in each Paint-Pot, it is easier to let OpalPaint work out intermediate colours in a range.

The best way to do this is to set up the colours at each end of the range. As an example that will also illustrate the effect of Saturation and Value on a pure Hue, let's set up a range of greens across the Paint-Pot row using the Copy and Spread buttons.

- Unless you have changed the colours much, you should see a bright green paint-pot above the Saturation slider. Click on it once using the Left Mouse Button in order to “select” it, then you should see a dotted white line around it. (If it has been changed, change it back to its original colour using the RGB sliders - it should have a Green level of 255 and a 0 level of Red and Blue.)
- Click the “Copy” button and the pointer should show the word “TO” next to it. Now click on the first paint-pot at the left and it should become exactly the same shade of green as the paint-pot from which you are copying.
- Now copy the same colour to the centre paint-pot (under the Value colour box) and the far-right paint-pot.
- Click on the first paint-pot and using the Saturation slider change its saturation to 0%. Leave its Value at 100%.
- Now click on the last paint-pot and set its Value to 0% while leaving its Saturation at 100%.
- Click the “Spread” button and once again the pointer will show the word “TO” to give a reminder that you are halfway through an operation. Click on the middle Paint-Pot and you should see a smooth range of greens from black (zero value) to pure green (maximum value) in the paint-pots between the centre and the right-hand end of the row.

- Similarly, create a spread between the centre paint-pot and the first paint-pot to generate a range of greens between white (fully unsaturated) to green (fully saturated).

Try the same procedure with red, blue and other pure colours so you can become familiar with the effect of changing Saturation and Value on a colour. The skill of mentally analysing colour components will become invaluable later on, as you will find in the lesson on stencils.

For now, other useful buttons are Swap, which exchanges the colours in two nominated paint-pots and Undo, which undos the last change to a paint-pot. Experiment with their use until you are comfortable with them.

Palette Sets

This is probably the time and place to break to you some good news - there is more than one row of paint-pots available. In fact you have 13 to choose from giving a total of 260 individual paint-pots. A complete group of 260 paint-pots is called a Palette Set and these sets can be loaded and saved to your disk for later use.

First we should learn how to access these extra paint-pot rows using the keyboard.

- To move between paint-pots using the keyboard, use the [and] (square bracket) keys just above your return key. When you move across through the paint-pots to the end of the row, the next row will then be shown.
- To go directly to the previous or next paint-pot row, use the shifted version of the square bracket keys, i.e. { and }. Note that after 13 presses of the same key you will see the same paint-pot row, as they “wrap around” in a loop.
- If you want to use the mouse or stylus there is an “invisible button” at each end of the Paint-Pot row. To use it move the pointer to the far right or far left of the row and click the Left Mouse Button to move to the next Paint-Pot row or the Right Mouse Button to move to the previous row.

Now you probably want to know how to load a palette set from disk.

- Click the “Load” button. The same familiar file menu will appear, except the title will now be “Load Palette”. If the Show button is selected, the thumbnail images in the Art Gallery will show the paint-pot row visible at the time of saving, along with a shrunken version of the mixing area. A selection of palettes is provided for your use. To load a palette set, double-click on the desired thumbnail image or name.

A point to note here - the palette sets supplied with OpalPaint are slightly different to the ones you will save yourself. When you save and reload a palette set there will be 13 rows of 20 paint-pots, but so you can add single rows of preset colours to your working palette set, the canned palettes supplied only replace the currently visible paint-pot row.

Selecting by Name

Finally let's look at the "By Name" button. This is useful when you want to choose a colour by a description such as Electric Blue, Banana Yellow, Majestic Purple or Deep Azure.

To change the current paint-pot to a named colour,

- Click the "By Name" button. You will now see a list of colour names that is obviously longer than the display window because the slider button in the scroll-bar does not fill the slider box.
- As you click on colour names, you will see the colour described by that name appear in the current (selected) paint-pot. Scroll through the names, trying out different colour names.
- When you have located the one you need, click the OK button or double-click on the colour name and you will be returned to the Palette menu screen.

Well that ends our little excursion through the rainbow. You should now be comfortable specifying, choosing and making the exact colours you need for your artistic endeavours.

Lesson 4 - Stencils

OpalPaint Stencils provide a powerful tool for controlling painting areas, picking up very detailed Cutout Brushes and generating priority masks that the OpalVision Mainboard can use to setup foreground and background areas when combining Amiga graphics and OpalVision graphics. We will investigate Area and Colour Stencils and along the way touch on such useful items as text brushes, gradient fills and Drawing Modes.

After completing this tutorial you will be able to:

- ❖ Create text into a cutout brush and manipulate it.
- ❖ Switch between Paint Work Mode and Stencil Work Mode.
- ❖ Create an Area Stencil
- ❖ Setup and use a Gradient Fill
- ❖ Setup and use Colour Stencils with Tolerance Ranges.

One of the most-used tools of the traditional Airbrush artist is a stencil or frisket, used to mask areas of the picture and prevent overspray while working on other parts of the picture. You may also have used stencils to produce quick, tidy lettering for sign writing.

OpalPaint provides two types of stencil. First we will look at Area stencils or friskets.

Area Stencils

Before we begin, start OpalPaint and load the “Smooth_Rock” image from the sample-image drawer. We will use this picture as a backdrop and place your name across it. What's more, we will fill the letters of your name with a gradient of colours.



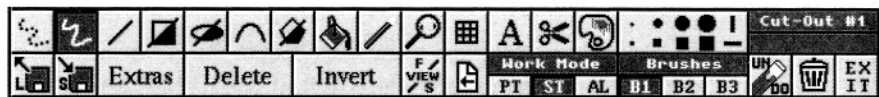
- Click the Text Tool button on the **Main Menu Bar**. Click on the Diamond font name and then on the arrow above the font-size box to select the 20-point font size. (You may have other fonts installed on your system - OpalPaint can use all standard Amiga fonts including Compugraphic and Colorfonts - but all Amigas should have Diamond).
- Click in the “Text” text box (no, this is not a stutter, it means the text entry box labelled “Text”). A cursor block will appear to indicate you can type and edit text.
- Enter your name in the “Text” box, then click on the “OK” button and the menu will disappear leaving the text attached to the pointer like a cutout brush.
- Hit the “H” key (the upper-case is necessary). This is the keyboard shortcut for the “Double Cutout Brush both Horizontally and Vertically” command. (You will find a list of all these very useful keyboard shortcuts at the back of the Reference Manual)

While you could paste this name down using the currently selected Paint-pot colour (try it if you like, then undo), we are after fancier things. What we want to do is create the OpalPaint equivalent of a cardboard stencil with a text-shaped hole in it through which we can apply paint. This is called an area stencil.

Below the Text button on the **Main Menu Bar** you will find three Work Mode buttons labelled “PT”, “ST” and “AL”, which represent PainT, STencil and ALpha-channel or transparency work mode. Each work mode allows you to modify a different aspect of the image using the usual drawing tools and you can jump back and forth between Work Modes with a click of the mouse on the appropriate Work Mode button. You will currently be in Paint work mode, which is the one you have probably used up to now; but now switch to Stencil work mode.

ST

- Click the “ST” Work Mode button on the Main Menu Bar using the Left Mouse Button. The top row of the Main Menu Bar will be unchanged, but two extra buttons, “Invert” and “Delete”, will appear on the bottom row. The pointer will also show the italic letter *s* next to the cross-hairs. You are now in Area-Stencil drawing mode.



In the Stencil Work Mode, all the usual Drawing Tools are available to build up an Area Stencil. However, instead of 16.77 million colours available, the Stencil Work Mode allows only two - the current paint pot colour, or no colour. If you paint with the Left Mouse Button you will add to the stencil and if you paint with the Right Mouse Button you will remove the stencil and see your image.

- Move the text brush with your name over the centre of the image and click once to paste it down. You will see the brush in the current paint-pot colour.
- Now switch to the Rectangular Outline Tool. Using a small nozzle, draw a rectangular frame or box around your name. (Remember, position the pointer over one corner of where you want the frame then hold down the Left Mouse Button while dragging the pointer to the opposite corner before releasing the button.)
- Now change to another Paint Pot colour (it doesn't matter which).

You will see the text of your name and the box change to the new colour. Remember that the stencil is not really coloured, but is a pixel by pixel “switch”. Each pixel in the stencil is either on or off. Assigning a colour to this stencil is for convenience only, so you can choose a stencil colour that has a high contrast to the colours in your picture.

Before you return to Paint Work Mode, remember that the coloured areas in the stencil are the parts of the image that will *not* be affected by paint. The non-coloured areas, or the parts where you can see the image unchanged, *will* be changed when painting. This is clearly the wrong way around and we need to reverse the stencil so that the coloured parts become clear and visa versa.

- Click the “Invert” button on the Main Menu Bar and this reversal will occur. You will now see your name and the box around it as clear areas in a sheet of colour, just like our cardboard letter stencils.
- Making careful note where the “hole” in the stencil is, click on the “PT” button to return to Paint Work Mode. The coloured stencil will disappear, but the “STEN” button will be selected to show that the stencil is enabled.

Now any painting or modification of the picture will only effect those portions where the stencil was clear in Stencil Work Mode.

Now set up a gradient fill.

- Click the lower-right corner of the Rectangle Drawing Tool button using the Right Mouse Button and the Area Fill Options Menu will appear.
- Click the “Gradient” button and you will see the Gradient colour bar. Select a Paint-Pot colour for one end of the colour gradient, say a blue, then click on the “+” button. Select a Paint-Pot colour for the other end of the gradient, say a red and click on the “+” button again to generate the smooth gradient from blue to red. To see what this gradient will look like, click in the preview square at the top right corner of the Area Fill Options Menu using the Left Mouse Button. Click on “OK” to return to the painting screen.

- Now drag a filled rectangle across the area where you set up the framed text in the stencil. (A tip: If you have forgotten the exact position, use the keyboard shortcut Control-s to quickly switch to the Stencil Work Mode to see the stencil, position the pointer, then hit Control-s to switch back to Paint Work Mode and drag out the rectangle.)

The background picture will be unchanged except for a smooth colour gradient across the framed text.

An important point to note is that the “STEN” button works in the Paint and Transparency Work Modes to quickly enable and disable Area and Colour Stencils. It does not change the area-stencil you draw using the “ST” button for the Stencil Work Mode, just temporarily switches it on or off.

Colour Stencils

Colour stencils are another way of masking areas of the picture when modifying it. To see how this works,

- Load the “Clowns” image from the sample image library on your hard drive.

Imagine we want to change the red-faced clown into a blue-faced clown. This presents several problems. Firstly, how do we change the underlying base colour while retaining the shading of facial features. Secondly, how do we limit the changes to just the face and prevent changes to the background and the clown’s hat and collar.

Luckily OpalPaint provides powerful solutions to both these problems that would stump almost any other artistic mediums. We will accomplish the basic colour change using the TintH drawing mode, but will concentrate on the second problem first - that of constraining the changes.

But, I hear you say, we can use the area stencil work mode introduced only minutes ago to make a frisket or mask over the areas we wish to exclude from painting. Yes, that would work fine, but you would need to spend a lot of time making sure every pixel (screen dot) of the stencil was exactly right. There is an easier way - the colour stencil.

OpalPaint's Colour Stencils work like Area Stencils in that as you paint or otherwise change the image, the stencil acts like a little switch for each and every pixel, either allowing or preventing modification of the existing colour at that point. The difference is that with an Area stencil the on/off decision is made on the basis of the mask you paint using Stencil Work mode, while with a Colour Stencil OpalPaint automatically compares the existing colour at each point with a *range* of colours you set up and "throws the switch" to prevent changes when the existing colour falls anywhere within that colour range.

You can do this by setting up two Colour Range Stencils: one to *exclude* the whole image and another *Include* stencil to chop a hole in the exclude stencil and work just on the range of reds in the face of the clown.

To access the stencil control menu,

- Make sure you are in Paint Work Mode.
- Click the "STEN" button on the Main Menu Bar using the Right Mouse Button (If you are using a graphics tablet, double-click on the "STEN" button).

In this menu you will see six crossed squares. Each of these squares corresponds to an individual colour stencil and consists of three parts, a colour box, a set of tolerances and an Include/Exclude button. Each colour box holds the colour that is the centre of that colour stencil range. When you click on a colour box to select it, the Tolerance sliders on the right of the menu become active for that colour stencil and show the particular percentage tolerances for Hue, Saturation and Value that will be applied on each side of the Hue, Saturation and Value of the colour in the colour box. Finally the button beside each colour box can be toggled between "E" to *Exclude* all image colours that fall within the tolerance range, or "I" to *Include* all image colours that fall within the range.

Let's look at the mechanism behind colour stencils. Let's imagine you have set up an *Exclude* Colour Stencil with a middish blue in the colour box and the HSV tolerance sliders all set to 10% . Now as you draw on the image OpalPaint goes through the following "decision" steps for *every* pixel you try to paint over:

Look at the existing colour (not the new colour) at that point on the image.

Does the existing colour fall within the tolerance range you have set up, i.e. if the Hue of the blue in the colour box is 240° , does the Hue of the existing colour fall between 220° and 260° ($\pm 10\%$ or 20°). Similarly both the Saturation and Value sliders specify a percentage around the Saturation and Value levels of the colour in the colour box to check.

If the Hue, Saturation *and* Value of the existing colour all fall within their equivalent ranges, then that pixel of the image will be *Excluded* from the painting operation and will remain unchanged. (This is because we specified an Exclude stencil. If it were an Include stencil, this pixel would be included in the painting operation).

Go on to the next pixel and repeat the check.

Now lets return to our clowns.

To change only the reds in the clown's face we first need to *Exclude* every colour in the whole image, then specify an *Include* stencil to "chop a hole" through the exclusion and specify which colours we wish to change. Another Very Important Point to remember - Include Colour stencils **always** override Exclude Colour stencils.

First select the Exclude All stencil.

- Click the Exclude All button using the Left Mouse Button. This button is a convenient shortcut exactly equivalent to setting an exclude colour stencil with all three tolerance sliders (H, S and V) set to 100%.

If you tried painting now, nothing you tried would affect the picture, as every single pixel would be excluded.

Now we can set up an Include Colour Stencil for the clown's face.

- Temporarily close the Colour Stencil Options Menu by clicking on the "OK" button.

- Click a paint-pot using the Right Mouse Button and the pointer will change to show the word “PICK” next to the cross-hairs. Now click once on the clown’s red face over a pixel that is roughly central in the overall range of reds. (Say on the area just below the highlight on a cheek).
- Now go back into the Colour Stencil Options Menu by clicking the “STEN” button using the Right Mouse Button.
- Click on the first Colour Box to select it. Click again to enable it (i.e. remove the cross) and then click on the red paint-pot you just “filled” from the screen. The colour box should now be filled with the mid-range red.
- The Include/Exclude button should already have an “E” in it, click the button once to change it to an “I” for Include.
- Now comes the fun bit.

The tricky part with colour stencils is learning how to judge and specify tolerance ranges. To be perfectly honest it is a skill that only comes with practice, but it is extremely useful to cultivate, being useful in several other areas of OpalPaint. For example, you can use Tolerance Pickup to easily strip the background when cutting out brushes for painless composites and use Tolerance Ranges when doing Flood Fills over irregular areas.

The best way to choose settings for a stencil tolerance is to keep in mind the definitions of the colour components we looked at in the lesson on colour. Remember that the Hue of a colour is its basic, pure position on the colour wheel, so a Hue change or tolerance is equivalent to a variation in basic colour such as from a purplish red to a greenish red. The Saturation refers to how pure the colour is, so a Saturation tolerance refers to the range of how “washed-out” the colour appears. Finally, the Value refers to the basic “brightness” of the colour, or how much black has been added.

The trick is to look at the range of colours in the area you wish to include or exclude and try to concentrate on a single component of those colours at one time.

First think about the range of Hues and ask yourself how much variation in basic colour there is. Is there a tight range of a base colour such as red, cyan, yellow or purple, or is there a wide selection of hues, such as a range from yellowish greens to bluish greens. The greater the variation, the greater a percentage tolerance you will need to cover the range.

Next think about the range of Saturations. How much variation in the purity of those Hues, or how “washed-out” the colours are. Once again the percentage tolerance will depend on the amount of variation.

Finally consider the Value range. If it helps, think of Value as “Brightness”, or how much black is in the colour. Try to ignore Hue and Saturation variance and concentrate on the variation in Value only.

A very useful tool in learning to judge colour ranges is the Palette menu. From an earlier lesson you will remember that the larger colour block shows the range of Hues across the top of the block, so a Hue tolerance range can be visualised as a horizontal variation in the main colour block crosshairs, regardless of the vertical position of the crosshairs. Examine the Palette Menu and familiarise yourself with what a variation in Hue looks like. Similarly, a variation in Saturation corresponds to a vertical movement in the horizontal Saturation cross-hair line, again in the main colour block. Finally, familiarise yourself with the changes caused by a variation in Value, or vertical movement in the smaller colour block.

Now that you’ve been forced to get some intrinsic understanding of Hue, Saturation and Value you will appreciate the assistance of the colour-feedback area in the Extras Menu Bar described below.

- Keeping the preceding suggestions in mind, guess the variations in the HSV components of the reds in the clown’s face. You may have to click the “OK” button to exit the menu and view the image. While away from the Stencil Options Menu, click on the “Extras” button on the Main Menu Bar to show the Extras Menu Bar, and notice that the area under the Feedback area on the far right of the menu bar gives you the exact HSV and RGB components of the colour under the pointer as you move it across the image. A little mental arithmetic should let you guess the variation in the range of H, S and V.

- Click the “STEN” Main Menu Bar button using the Right Mouse Button to return to the Stencil Control Menu.
- Drag the sliders marked Hue, Sat and Val to the percentage variation you have guessed. Once you have guessed the tolerance ranges, return to the Main Menu Bar.
- Before you attack the picture, check that the “STEN” button on the Main Menu Bar is selected (highlighted). This button enables and disables the overall use of Stencils of both types, so to temporarily switch off the stencils without losing any options, colours, tolerances etc you need only click on this button.
- It is also probably a good time to save your image using a name like “Temp”. The colour stencil settings will be saved with the image.
- Now select the Continuous Filled Outline Drawing Tool (the lower-Right half of the Continuous-Freehand button) and a blue paint pot. The first of our two problems, that of keeping the tones and shadows of the original image, can be solved by using the TintH Mode. Click the “Modes” button on the Main Menu Bar, then select TintH near the bottom of the second column of buttons. This mode replaces the Hue of the existing image with the Hue of the new colour, without changing the Saturation and Value levels.
- Now draw a rough circle around the face of the clown. You don’t need to be anywhere near exactly on the edge of the face as we are using the Colour Stencil to exclude non-face pixels, but don’t make the outline too far away either as there may be other pixels in the background and the collar that have a colour that falls within the tolerance range.
- You should see the pixels in the face change to blue as the outline fill occurs, but no other parts of the picture should change. If you chose the wrong set of tolerances don’t be too concerned. Try and analyse which colours were incorrectly included or excluded by the colour stencil and by comparing those colours to the ones that *were* changed work out which tolerance range setting(s) were wrong. For example, if some purplish or yellowish colours were included in the pixels changed to blue, the Hue tolerance was probably too large. If the lighter parts of the face were unchanged, perhaps you had the Saturation setting too low. If the shadows around the neck were ignored you probably had the Value slider too low.

- Remember you can change the tolerance settings by hitting the UNDO button (or the “u” key), changing the slider levels, then hitting the “a” for “again” key to redo the filled area in exactly the same position. (Yet another Very Important Point: make sure you hit the undo button *before* you go into the colour stencil menu to change the sliders, because OpalPaint will loose the undo buffer.

V:60%
S:40%
H:15%

If you get stuck and have trouble working out the correct tolerance settings for the sky colour stencil, a set that works for us at Opal Tech is shown in the margin. However, let us stress again how useful tolerance ranges and colour stencils can be and suggest you work at the concept until it “clicks” with you. (Yes, we know the ranges are printed upside down. No peeking unless you are desperate.)

Lesson 5 - Cutouts Revisited

In an earlier lesson you learnt how to load cutout brushes from disk, paste them into an image and manipulate them in various ways. In this lesson we will learn how to cut our own brushes from an image. We will also examine some other areas of OpalPaint where cutouts are utilized for great effects.

After completing this lesson you should be able to:

- ❖ Cut brushes using the various Cutout Tools.
- ❖ Cut brushes while ignoring a range of background colours
- ❖ Setup stencils to limit the areas of the image that are cut and included in the cutout brush.

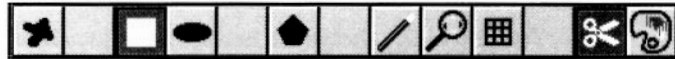
Cutting Brushes

As usual, if you haven't already started OpalPaint on your Amiga do it now. Load "Starship_Lesson" from the sample images directory, which is the image we will use for this lesson.

Lets jump straight in -



- Click the scissors icon on the Main Menu Bar using the Left Mouse Button. The top row of the Menu Bar will change to show the available Cutout Tools and will now look like this.



As you have probably gathered, you can use a freehand outline, a rectangle, ellipse, polygon or the magic wand to specify the area to be cut. Note that the rectangle tool is selected along with cutout brush B1 (assuming you haven't changed either). These options are the *defaults*, or the automatically-selected options upon first entering the program.

- For this example, ensure the rectangle tool is selected.
- Now move the pointer up into the drawing area and you will see the word "CUT" next to the pointer cross. Using the rectangle tool in the normal way, drag a rectangle outline so the starship in the image is centred in the outline.
- Now release the mouse button or stylus and the word "Cutting" will appear in the menu feedback area for a few seconds while OpalPaint does its stuff. When cutting is complete you will see a rectangular block with an outline of the starship attached to the pointer.
- After making sure you have selected the Sketch tool (generally the best tool to use for brush pasting), move the pointer to the right of the screen and click the left mouse button or the stylus once. A copy of the cutout brush will be pasted onto the image.

You will notice that you have pasted down a rectangular block of image with the starship in the centre, but including the background planet surface from the original position of the starship.

Just keep that in mind as you try another cutout tool - the ellipse. For comparison use the second cutout (B2) this time.

- Click the scissors icon and the B2 button (in any order, it doesn't matter) then the ellipse cutting tool button. Once again the pointer message will read "CUT".
- Place the pointer over the approximate centre of the starship then hold down the Left Mouse Button or stylus as you drag out an ellipse big enough to include all of the object, then release the button and wait while the cutting process occurs.
- Now paste the cutout beside the first one and compare the differences.

You will notice that in the areas outside the ellipse the background has not been picked up.

Finally try the freehand outline cutting tool. So we can compare the results of all three cutting methods use cutout B3 this time.

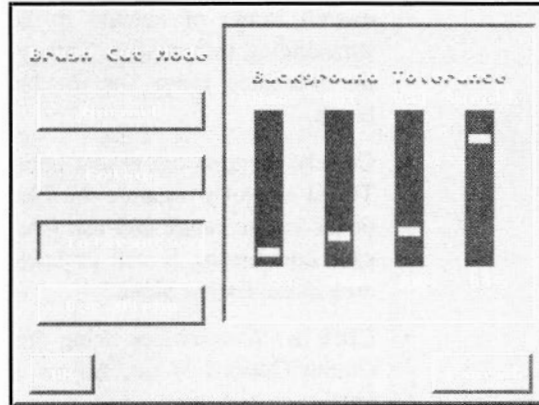
- Click the B3 button, the scissors icon then the freehand cutting tool button. Once again the pointer message will read "CUT".
- While holding down the left mouse button or stylus, carefully trace around the starship. Release the button when you reach the starting point or at a place where OpalPaint can draw in a straight line for you to connect the starting and ending points. The message "Cutting" will, as usual, appear in the feedback area followed by a brush outline.
- Once again paste the cutout beside the first two.

By clicking in turn on B1, B2 and B3 you will see that each cutout is contained in a rectangular area, but cutouts B2 and B3 both have transparent areas where the cutout tool specified a non-rectangular shape or outline.

If you want to pick an object out of a background you could possibly trace it using the freehand cutting tool, but tracing any but the simplest outline is either very tedious, very difficult or both. There is also the problem of enclosed areas of background such as with a donut-shaped object or a grid, or highly detailed edges such as hair against sky.

OpalPaint provides the perfect solution to these problems in several ways. First look at the Cutout Options Menu for some clues.

- Click the scissors icon using the Right Mouse Button. The following menu will appear.



There are several options available here. The first, “Normal”, is the one you have used up to now. It takes all pixels within the area specified by the cutout tool. The second, “Colour”, ignores the single background colour you specify in the paint-pot selected when you do the cutting. This is useful if you are working against a solid background such as when you are painting a picture from scratch, but most 24-bit images, especially those scanned or frame-grabbed, have different colour values for almost every pixel in the image. Even pixels that appear to be the same colour can have slightly different components.

What we need is an option that ignores a *range* of colours and this is provided by the “Tolerance” button.

- Click the Tolerance button in the Cutout Options Menu.

The menu will now look like the example above with four sliders. The first three, Hue, Saturation and Value, are used to specify a tolerance range around the current paint-pot colour in exactly the same way as you learnt to specify colour stencils in a previous lesson. It may be useful to review that lesson now with the important section beginning on page 57.

For this example,

- Close the Cutout Options Menu using the OK button.
- Click the currently selected paint-pot using the Right Mouse Button then pick up the colour that seems to be close to the centre of the overall range of colours in the planet background immediately surrounding the starship. This paint-pot will be used as the centre of the tolerance range for the background-ignore when cutting the brush.
- Closely examine the planet background colours behind the starship. Try to mentally separate the Hue, Saturation and Value components of the colour range and ask yourself how much variation there is in each component. It will probably help the use the Colour-Feedback area in the Extras Menu.
- Click the Scissors icon using the Right Mouse Button to re-enter the Cutout Options Menu. Adjust the Hue, Sat and Val sliders to the levels you estimated.

The “Smooth” slider controls the way OpalPaint treats edges. When set at zero, any colours even slightly inside the tolerance range you set will appear fully transparent in the cutout and will not appear when you paste the cutout. However, as the Smooth slider is moved up, colours only slightly inside your specified exclusion tolerance range are set at partial transparency, becoming more and more transparent as the image colour moves further into the tolerance range. This transparency is part of the cutout and is used when pasting the cutout to fade-in the edges of the cutout.

- Set the Smooth slider to a medium level, then click OK to commence the cutout as you have done above.
- Paste down the cutout in a blank part of the image and examine it closely.

Like you did when practicing with colour stencils, look at the colours in the regions of the image either included or left out of the cutout in order to refine the tolerance settings. Once again a good technique to develop is to mentally separate the Hue, Saturation and Value components of the colour(s) and decide which sliders need to be adjusted. Remember you can hit the undo key or button, adjust the slider settings and do the cut again, repeating until the setting is right. Specifying colour tolerances is not easy at first, but be assured that it is an extremely useful skill and a very powerful tool.

What you should end up with is a cutout brush that has transparent regions wherever there were colours from the planet in the original image. Now you can paste this cutout brush down anywhere to add starship objects regardless of the existing background at that point.

Another good way to limit cutout areas is using stencils. Using the techniques developed in previous lessons you can set up area and colour stencils over parts of the image and if the “STEN” button on the Main Menu Bar is enabled when you cut those stencilled areas will be ignored. In other words, the stencilled areas will be fully transparent in the cutout brush.

Because we have previously covered all the steps in this technique we won't go through this technique in detail but will leave it as an exercise for you. Below are some rough steps to give you a guide.

- Use Stencil Work Mode (the “ST” button on the Main Menu Bar) to make an Area Stencil over parts of the image you wish to exclude from the cutout.
- In addition (or alternatively if you prefer) set up colour stencils in the Stencils Option Menu (Right Mouse Button on the “Sten” Main Menu Bar button) to include and/or exclude portions of the image. Also in this menu, check that the “
- Make sure the “Sten” button is selected on the Main Menu Bar.
- Click the Scissors button and cut out a cutout brush in the normal way. You can still use the ignore-background feature in combination with the stencils, especially if you want certain edges to be “faded in” by the smoothing of the ignore-background by tolerance.
- Don't forget to switch off the “Sten” button if you want to paste down the new cutout brush in a “stenciled” area otherwise you will wonder why nothing seems to happen.

Some other areas utilizing cutout brushes that warrant investigation are texture patterns and brush warping. By this stage you should be familiar enough with the system to follow the instructions in the Reference Manual, so following are pointers to get you started.

Texture patterns allow you to set up a repeating pattern across the image that is “revealed” when you paint. In effect the cutout brush provides the colour information for painting instead of the usual paint-pot or gradient-fill information. You can resize and move the brush pattern or “tile” it for smooth edges. Check out the chapter called “Texture Patterns and Rub Through” in the Reference manual.

Brush wrapping is also fun. Select the “Brush” fill type in the Area Fill Options Menu (instead of “Solid” or “Gradient”) and specify which cutout brush to use (B1, B2 or B3). Now when you draw a filled object using an Area-Fill Drawing Tool the cutout will be stretched to fit inside the object. The “Warp” slider is also available to make the centre of the warped brush bulge outward and give a 3-D appearance. You will find more information on this feature under Area Fill Menu in the Drawing Tools chapter of the Reference.

Finally, a great topic to get your teeth into is Alpha Work Mode, which enables you to define, on a pixel by pixel basis, a transparency “layer” or alpha channel over you image. This alpha channel is useful in three main areas:

- a) When painting, to define the transparency of each pixel.
- b) Before cutting a brush, to set the transparency of each pixel in your brush to be used when pasting it down.
- c) With the OpalVision Video Processor - as an alpha channel or linear key to define the transparency of each pixel with respect to live video.

These wonders are described in more detail, including a mini-tutorial, in the Reference Manual's chapter on the Alpha Work Mode.

We hope this introduction to OpalPaint has been instructive and useful, and will now set you loose to create your own personal masterpieces. A word of warning - don't get so busy "playing" that you forget to do your work! Seriously, now that you understand the underlying structure of OpalPaint it should be easy to experiment with the infinite range of combinations possible to get the exact result you need. You will find that you will very rapidly learn to predict the results of a particular combination of tool, mode, colour, stencil etc.

Please don't think that you now need to throw this particular volume away. Re-read in a few days or weeks and you will find it clarifies what you have found in practice. Also take the time to read the chapter in the Reference Manual on the Operation Chain - it *is* theory but still very useful.

Remember that you have full on-line hypertext help, the Reference Manual, and technical-support on the phone if things get really tough.

Happy OpalPainting!



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