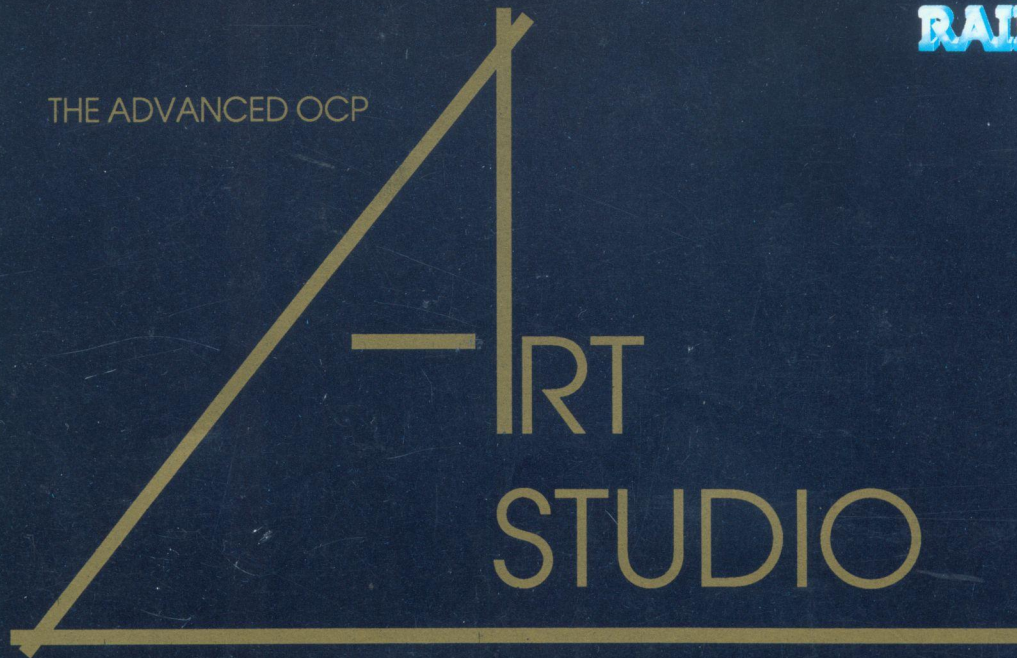


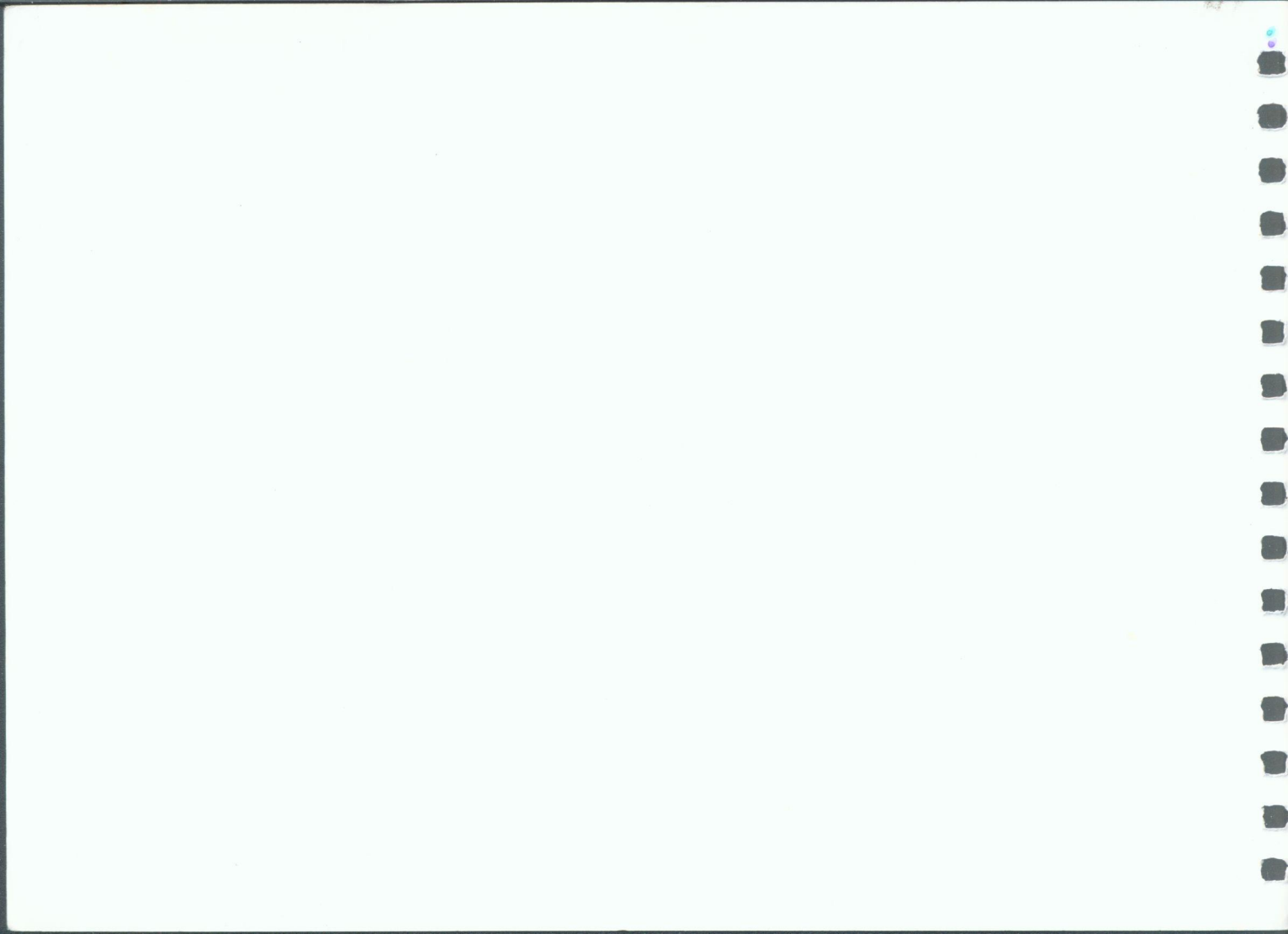


THE ADVANCED OCP



RT  
STUDIO

Realms Software Concepts



THE ADVANCED OCP

— RT

STUDIO



by Chris Hinsley of Realms

## THE ADVANCED OCP ART STUDIO

PROGRAM BY CHRIS HINSLEY OF REALMS

PROGRAM ART BY NEIL STRUDWICK AND NIGEL BROWNJOHN

MANUAL BY JAMES HUTCHBY AND GRAHAM WAYNE

PROGRAM COPYRIGHT C.A.HINSLEY 1987

DOCUMENTATION COPYRIGHT RAINBIRD SOFTWARE 1987

### WARRANTY

If this program fails to load, please return it (without the packaging but well protected) to the address below and it will be replaced free of charge. This offer does not affect your statutory consumer rights.

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### A WORD FROM THE PROGRAMMER

I would like to thank all the staff at Rainbird for making this an interesting and enjoyable project, and particularly Graham Wayne for his hard work on the manual. My thanks also to Nigel Brownjohn and Neil Strudwick for their enthusiasm and keen interest in the program. I hope users of the program will find it a practical product which will be of assistance, not only in the design of graphics, but also in the development of new programs for the Atari ST and other machines.

And last but not least, a special thankyou to Jack Tramiel for his support and encouragement, and for making it all possible.

CHRIS HINSLEY  
JUNE, 1987



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# INTRODUCTION

Introduction  
Using this manual  
Equipment you will need  
How to copy Art Studio  
A short demonstration  
How to run Art Studio

## INTRODUCTION

Welcome to the ADVANCED OCP ART STUDIO, a sophisticated and yet simple to use graphics package for the ATARI ST, a development of the original OCP (Oxford Computer Publishing) concept.

ART STUDIO offers you all the facilities you need to design screens and sprites in one system. It has an array of tools which will be of use to the graphic artist and programmer alike, and even has special functions for designing sprites and game maps intended for use on other machines.

ART STUDIO is file compatible with NEOCHROME. It uses the same screen format as NEOCHROME and pictures can be freely exchanged with it via disc.

There are also many special features in ART STUDIO which you will not have come across before, so take your time getting to know the way the system works; that way you'll get the most out of ART STUDIO without the frustration that sometimes comes when getting to grips with new software. (To speed up the process of finding your way around, help messages appear on screen whenever you select an icon in the toolbox). Following these steps will ensure that you will be able to explore all the creative potential which the combination of ART STUDIO and your imagination makes possible. So step right this way for a guided tour of **THE ADVANCED OCP ART STUDIO**.....

### USING THIS MANUAL

This manual is divided into sections which you may read sequentially, especially if you have not used a system like ART STUDIO before or, if you already have experience of working in this medium, you can turn straight to the section that interests you. We would suggest that before delving further you read the remainder of this introduction in order to familiarise yourself with some of the most important aspects of the system, otherwise you might experience some confusion about the way ART STUDIO works, or worse yet, lose work or corrupt your discs. After that, however, you will be free to explore the potential of the system in any way you choose.

### EQUIPMENT YOU WILL NEED

An Atari ST computer with a minimum 512K of memory and the GEM operating system in ROM, a low or medium resolution colour monitor or a TV if using an ST fitted with a UHF modulator (a 520 STFM for example), one or more disc drives, and a mouse or Pro-Draw graphics tablet. Please note that ART STUDIO will **NOT** work with the hi-res monochrome monitor: the program uses the sixteen colour mode which is only available in low-resolution on the Atari ST.



## HOW TO COPY THE ART STUDIO DISC

Before using ART STUDIO, we strongly suggest that you make a working copy of the ART STUDIO disc. Once you have done this, you should put the master disc away in a safe place and not use it again unless you need to make another copy. This will ensure you have a perfect version of the program in case your working copy becomes corrupted.

### FIRST: FORMAT SOME DISCS

We suggest you format at least two discs before you start using ART STUDIO; one on which you must copy the program and the special files that it requires. The other is to store your pictures, sprites, brushes and other information files relevant to your work. To format a disc (which can only be done from the desktop), put a blank disc in the drive, select the icon for that drive by clicking on it once. The icon becomes highlighted to show it is selected. Now select the file menu and choose the format option. The computer will then prompt you to select the correct options.

**Remember that formatting a disc will erase anything that is on it.  
Permanently!**

**DO NOT FORMAT THE ART STUDIO DISC: YOU WILL ERASE THE PROGRAM YOU BOUGHT.**

### MAKING A COPY

After formatting a disc, put the original ART STUDIO disc in drive A. Now double click icon A to get a catalogue and highlight all the files in the window by dragging an outline around them, or selecting them one at a time by holding down the Shift Key while clicking on the files to highlight them. Then drag all the files over to disc icon B. If you are using one disc drive, the ST will prompt you to switch discs during the copying process. If you have two drives, all you have to do is wait until the files have been duplicated.

**Please note that it is not possible to make a copy by dragging disc icon A over disc icon B, but can only be file copied following the method described above.**

(If you have difficulties in making a copy or formatting discs, you can refer to the ST owner's manual for further information).

## ABOUT COPY PROTECTION

This program uses manual protection to inhibit illegal copying or use of ART STUDIO. When working with a copy of the program you will be requested to type in a specified word from the documentation. The program will then check the entry. Once the program has verified the entry you will be returned to the program.

## A SHORT DEMONSTRATION

If you would like to see a demonstration of how ART STUDIO works, you can run the Demonstration Program provided on your disc. Just double click on the program file called **DEMO.TOS**. ART STUDIO will now perform for you, showing not only the way the tools work, but also how they are selected. Everything you see on the screen is actually a recording of artist Neil Strudwick (who drew the demonstration pictures on the ART STUDIO disc) using ART STUDIO and is therefore an exact realtime simulation of ART STUDIO in use. The animated sprite at the end of the demo was also created using ART STUDIO by artist Nigel Brownjohn and demonstrates the powerful sprite design capabilities of this system.

**Note that due to the size of the demonstration file, you may experience memory problems if you have large desktop accessories installed (especially the control panel). If you experience difficulties, boot up the system without accessories installed to view the demo. This restriction does not apply to running the Art Studio program itself.**

You can return to the desktop from the demonstration at any time by pressing the **reset button** on the back of your ST.

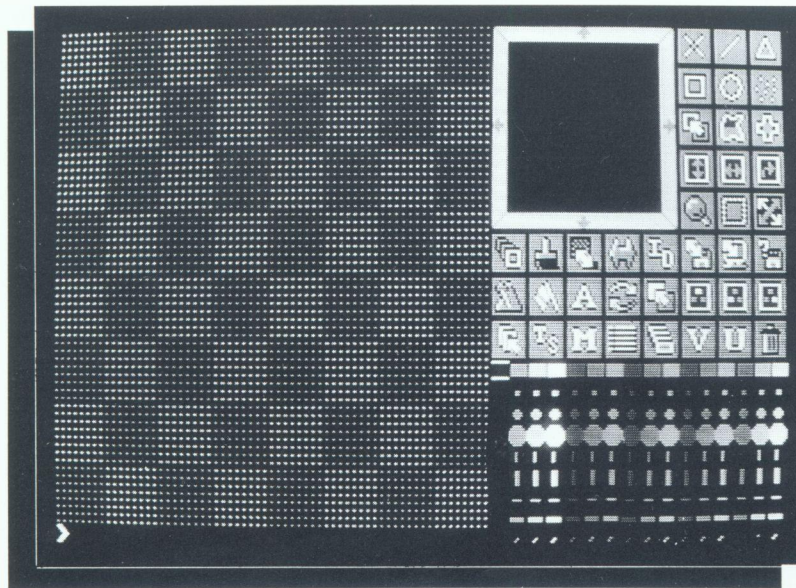
and finally.....

## HOW TO RUN ART STUDIO

Insert your copy of the ART STUDIO disc in to your drive, double click the disc drive icon, then double click the **STUDIO.TOS** program icon.

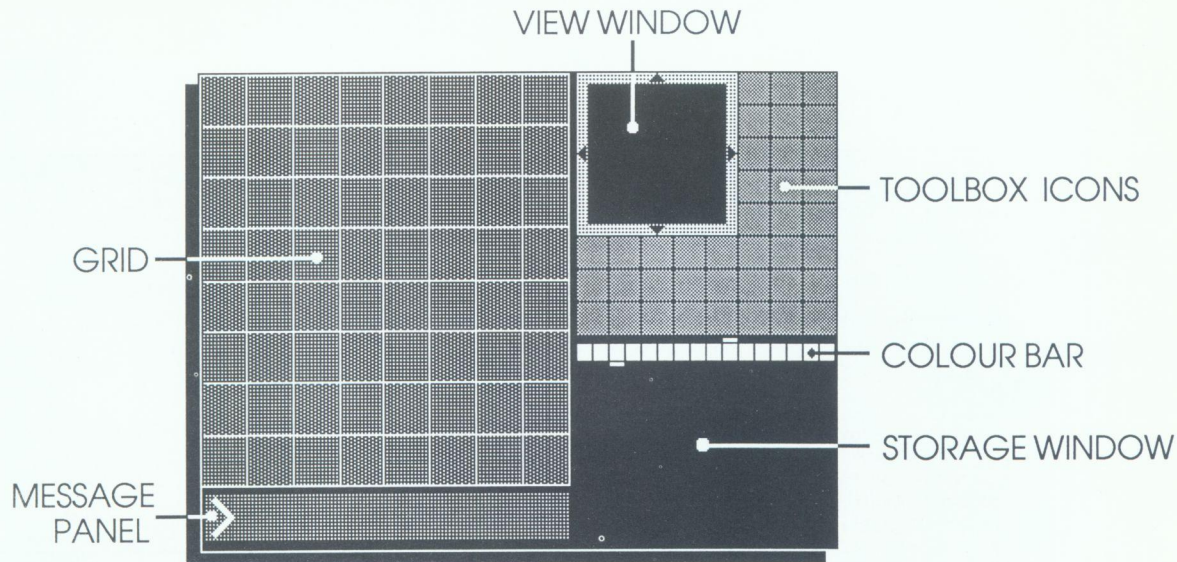
# PART 1

## GETTING TO KNOW THE SYSTEM



Control screen  
Toolbox icons  
Grid  
View window  
Palette and Colour bar  
Storage window  
Message panel  
Work screens  
Selecting functions  
About the colour bar  
Help messages  
Some sample pictures





## THE CONTROL SCREEN

After loading you will be presented with the ART STUDIO **control screen**. From this screen you will control the program, for it provides access to all ART STUDIO functions. The control screen and the work screens have been kept separate from one another so that no restrictions are placed upon the size of pictures and none of your work is obscured. In general, pressing the right-hand mouse button will always return you from a workscreen to the control screen in order to select the next tool you require.

Remember that if you make any mistakes using ART STUDIO the Undo icon will restore your work to the way it was before your last action.



## THE TOOLBOX ICONS

The top right hand side of the screen is taken up by the icons which represent the **toolbox**, small symbols graphically representing the various functions available in ART STUDIO. Functions are selected by clicking the appropriate icons with the mouse. You may notice when you point at any of the icons that, in the window around which the icons are clustered, a message appears describing the way to use the icon you are pointing at. These are the help messages and you may switch them off, if and when you find them to be a distraction. Selection of the icon functions will be explained in Part 2 and examples given of their use.

## THE GRID

The whole left hand side of the screen (except for a single character-height line right at the bottom, which we'll get to in a moment) is the **brush/sprite grid**. This grid is used for designing the brushes or sprites that are a major part of ART STUDIO's specification. In this manual we will refer to objects created on the grid as both brushes and sprites. This dichotomy has been introduced to emphasise the dual nature of these graphic objects. The distinction between the two lies in what they are actually used for. Brushes are for painting on the workscreen; sprites are discrete graphic items usually destined for some other application, although you may use a sprite as a brush to paint with, or even as a pattern to spray with.

The grid represents a block of 64 by 64 pixels, which is the maximum size for a single brush/sprite. Each small dot in the grid equals one pixel in the brush/sprite, enlarged nine times the size it appears on the workscreens. A two-tone arrangement of dots is used to divide the grid into smaller sections as an aid to the laying out of designs.

All the pixels in the grid are initially 'transparent', that is to say they have no colour, and allow whatever is beneath them to show through when they're used. This is very useful as it facilitates the design of brushes and sprites that are irregularly shaped, with the masking out of those parts of the grid that are not required.

## THE VIEW WINDOW

At the top middle of the **control screen**, between the grid and the toolbox, is a bordered window which displays anything in the grid at normal (i.e. workscreen) size. This is known as the **view window**. Any changes made to the grid are echoed in this window so that you can immediately see their effect. The view window is also where the help messages are displayed.

## THE PALETTE AND THE COLOUR BAR

Immediately below the icons is the **colour bar**. This shows the current selection of 16 colours from the ST's palette of 512. In Part 2 we will show you how to customise your own palette and save it on disc for later use. The **colour bar** is used to specify the colour to be used when drawing on the screen etc.

## THE STORAGE WINDOW

Below the colour bar is the brush/sprite **storage window**. ART STUDIO can store many brushes or sprites in its memory, but only a portion of them can be displayed on screen at any one time. The storage window, however, can be scrolled through the available brushes/sprites. A brush/sprite is moved from the storage window into the grid for alteration, and then moved back to the window afterwards.

## THE MESSAGE PANEL

At the bottom left of the screen is the **message panel**, identified by the '>' prompt at the beginning of the line. This area is reserved for filename prompts, error messages etc. If ART STUDIO wants you to type in the name of a file or some other information, this is where your input will appear. You can correct any mistakes you make using **backspace** in the normal manner.

## THE WORKSCREENS

On the 520ST there are two full-sized screens which are your canvasses; owners of a 1040ST have access to ten screens if they wish. These are accessible through the **view icon**, by using the function key corresponding to the screen number or from items in the toolbox that automatically put you on a workscreen ready to use the tool you have just selected.

## SELECTING FUNCTIONS

To select an ART STUDIO function, use the mouse to move the on-screen pointer (the arrow) to the icon for the function you wish to use, and press one of the buttons on the mouse. The two buttons generally select different forms of the same function. For example, when selecting the icon to draw lines, pressing the left mouse button allows lines to be drawn on the brush/sprite grid, and pressing the right mouse button allows lines to be drawn on the work-screen. In the latter case, note that a return to the **control screen** is made by pressing the right mouse button a second time.

## ABOUT THE COLOUR BAR

The colour bar is used to specify three colours, known as the '**current ink colour**', the '**current paper colour**' and the '**border colour**'. The current ink colour is the more important of the two as most drawing is done in this colour. For example, all lines are drawn in the current ink colour. The current paper colour is less often used, examples of its use being the colour to clear a window to, or a colour to be excluded when pasting a window.

To change the current ink colour, click the new colour with the left mouse button. A small marker above the colour indicates the current selection. To change the current paper colour, click the new colour with the right mouse button. A small marker below the colour bar indicates the current paper colour. Note that ART STUDIO flashes briefly the RGB values for the selected colour in the message panel at the bottom of the screen. This information will primarily be of use to programmers.

The Border Colour is determined by the palette setting of the first square in the colour bar, reading from left to right. To change the border colour you must set the colour in that square to the colour you require the border to be. (Details of how to change the palette settings are given in Part 2 under the title DRAWING FUNCTIONS).



## HELP MESSAGES

There is an information or help facility provided in ART STUDIO to aid your familiarisation with the program. This facility can be switched off if you find it a distraction by clicking on the message panel with the right mouse button. It can be switched back on again by clicking on the message panel a second time. The abbreviations used in the help pages are 'L' for the left mouse button, and 'R' for the right button.

Note that translations of the help messages are available in the French language. To switch between languages use **ALternate F** for French and **ALternate E** for English.

## SOME SAMPLE PICTURES

There are several sample pictures included on the ART STUDIO disc. To see some examples of the system's capabilities, click the left hand mouse button on the **load/save screen icon** and type in any of the files listed in Appendix 6 that end with the extension name **.NEO**, which signifies a picture file. Having typed in the name (you do not need to enter the extension) press return and the picture will be loaded. Then click the right button on the **view icon** and you will see the picture. Click the right button again to return to the control screen.

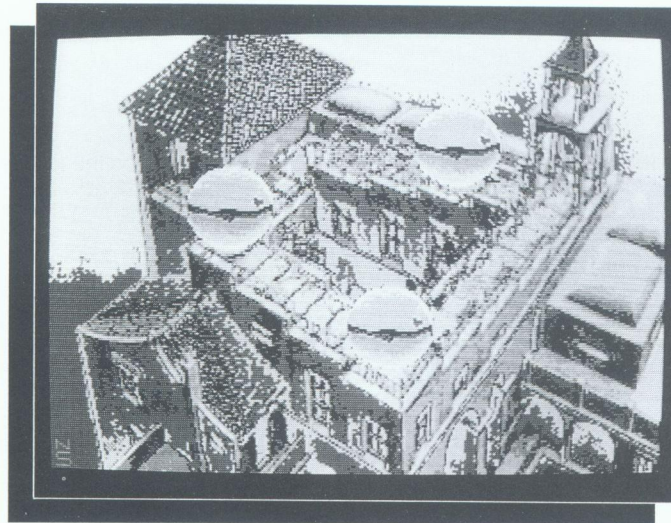
There is also an animation file on the program disc which you can load into the system. To do this, click the left button on the **load/save brushes icon** and enter the filename **DEMO**, which is the brush file used in the demonstration program. To view the animation, sprites for which are at the end of the store, click on the **animate icon** with the left button to see the animation in the view window, or the right button to see it on the workscreen, in which case you must first hold down either button, position the outline box on the screen and then release the button. Click the right button to return to the control screen.



# PART 2

## USING ART STUDIO

### 2.1 THE DRAWING FUNCTIONS



Draw  
Line  
Triangle  
Box  
Circle  
Spray  
Copy  
Fill  
Outline  
Exchange colour  
The Palette



## ICON NAME: DRAW

The **draw** function is the freehand tool which can be likened to a pen or pencil and can be used to plot single pixels or draw continuous lines. To select draw, first place the pointer over the icon. A message now appears in the view window to tell you which tool you have selected and how to use it.

There are two options immediately available to you; by pressing the left mouse button you can draw on the grid and pressing the right button allows you to draw on the selected workscreen.

**Note that when using a draw tool on the grid you may select another ink colour at any time without de-selecting the tool.**

### DRAWING ON THE GRID

First point at the **draw icon**. Now click the left mouse button. The icon highlights to show you it is active. At this point you may freely move the pointer anywhere on the screen without drawing anything; the pen only becomes active when you hold down another button. Now position the pointer anywhere over the grid. Hold down the left mouse button and move the mouse and you will draw a thin line in the current ink colour. (To change the ink or paper colour, refer to the relevant section in Part 1).

When you release the button you are free to move the pointer to another position on the screen and continue drawing, or change to another ink, as the draw function will stay selected until you choose another item in the toolbox.

Drawing on the grid while pressing the right mouse button 'undraws' pixels, in other words the pen now draws with a transparent ink. The effect of using this mode is that any pixels on the grid are removed, leaving the grid visible. (If you transfer a picture from the grid to a workscreen, any area of the picture through which the grid was visible will now be replaced by the corresponding pixels that lie 'underneath' the transferred picture, either the paper colour or pixels drawn in an ink that constitute part of your picture).

DRAW



## DRAWING ON THE WORKSCREEN

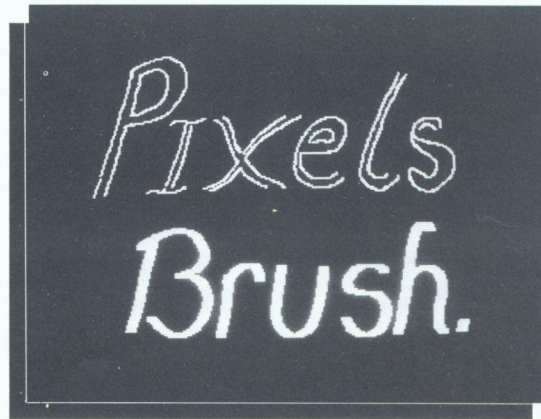
Again, start by pointing at the **draw icon**. This time click with the right button and you are immediately transferred to the current workscreen. Now, if you hold down the left button you will be able to draw in the current ink. However, there is no transparent function on the workscreen as all pixels here must have a colour value; either ink or paper. Instead, clicking the right button will return you to the **control screen**.

**Note that when you are operating ANY tool on a workscreen, clicking the right button will always return you to the control screen.**

### ADDITIONAL OPTIONS:

**WORKSCREEN ONLY** - by holding down the **ALternate** key and the left mouse button together you can draw in the current selected brush.

**Freehand drawing with a single pixel line and a brush.**





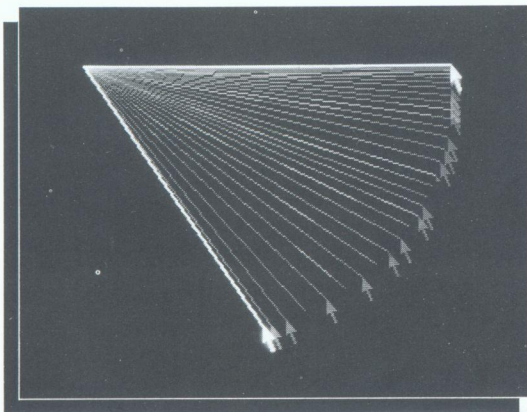


## ICON NAME: LINE

This tool allows you to draw straight lines between two points.

### LINES ON THE GRID

Click on this icon with the left mouse button to draw lines on the grid. Then go to the grid and click one end of the line to be drawn with the left button. Now, holding the button down, drag the line into position. Release the button to fix the line in place. All lines are drawn in the current ink colour. The right button plots transparent lines in the same fashion as the draw tool.



First a line is drawn out.  
Then it's put in place

### LINES ON THE WORKSCREEN

To select the line function on a workscreen, point at the icon and click the right button. As with all the drawing tools, you are now placed on the workscreen. Hold down the left button to draw the line and release the button to fix it down. Again, the right button returns to the **control screen**.

### ADDITIONAL OPTIONS:

WORKSCREEN ONLY - you can plot a line in the current brush: after plotting the line on the screen, **but before you release the left button**, click the right button and the line you have plotted will be traced with the brush currently held in memory.

# ICON NAME: TRIANGLE



This icon allows you to draw regular or irregular triangles, normally in the current ink.

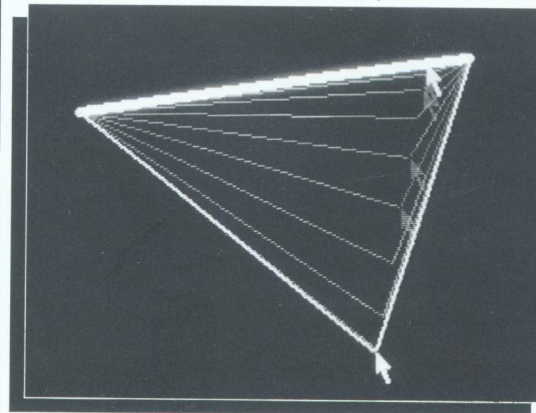
## TRIANGLES ON THE GRID

Point at the icon and click the left button to select the grid. Then position the pointer over the grid and hold down the left mouse button to draw the first side of the triangle on the grid in the same way as a single line (see line). Now release the button and, without clicking again, the other two sides can be dragged into any position and either button pressed a second time to fix it in place. (If you click before you position the other two sides, only a single line will appear on the screen). As before, the right button can be used to draw transparent triangles on the grid.

## TRIANGLES ON THE SCREEN

Point at the icon and click the right button. Now you are on the workscreen. Holding down the left button will plot the first side of the triangle. Drag the other two sides into place and click either button to fix it down. Clicking the right button after this operation returns you to the **control screen**.

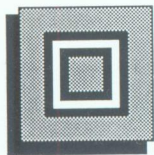
After one side is drawn drag the others to where you want them.



## ADDITIONAL OPTIONS:

**WORKSCREEN ONLY** - to draw a triangle in the current brush, plot the first side and, **before releasing the left button**, click the right button. The first side will be filled with the current brush and you can then, without clicking, drag the other two sides to the position you require. Click on either button to fix them down and they will automatically be traced in the current brush.

TRIANGLE

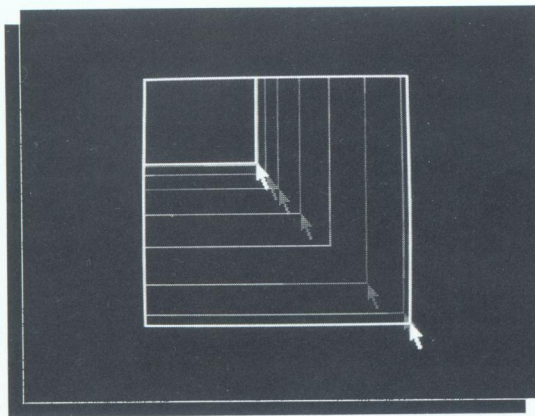


## ICON NAME: BOX

This icon is used to draw rectangular boxes, normally in the current ink.

### BOXES ON THE GRID

After pointing at the icon, click the left button to select the grid. The left button is first pressed to define one corner of a box, held down as the opposite corner is dragged into position and then released. The right button will draw a transparent rectangle.



Drag the box out to the correct size

### BOXES ON THE WORKSCREEN

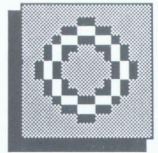
First point at the icon and click the right button to transfer you to the workscreen. Now press the left button to define a corner and, holding down the button, drag the box into position and release the button. The right button will now return you to the **control screen**.

### ADDITIONAL OPTIONS:

**WORKSCREEN ONLY** - to draw boxes in the current brush; after dragging the box to its required size, **but before releasing the left button**, click the right button and the box will be traced in the current brush.



# ICON NAME: CIRCLE



This drawing icon plots a circle, and works in a similar fashion to the other draw icons.

## CIRCLES ON THE GRID

The left mouse button is first pressed while pointing at the icon to select the grid. Then, after moving the pointer to the grid, press the left button to define the centre of a circle, then hold it down and drag the circle, which is expanded to the required size. Releasing the button fixes the circle, which will be drawn in the current ink colour. As expected, using the right mouse button on the grid will draw transparent circles.

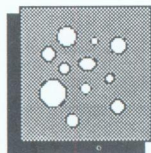
## CIRCLES ON THE WORKSCREEN

Click the right button to select the workscreen. The left button defines the centre of the circle and, by holding the button down, you can drag it to the required size. Release the button to fix it down. The right button returns you to the **control screen**.

## ADDITIONAL OPTIONS:

WORKSCREEN ONLY - circles can be drawn in the current brush. First define the centre and drag out the circle to the required size. Click the right button **before you release the left button** and the circle will be traced in the current brush.

CIRCLE



## ICON NAME: SPRAY

This tool sprays a random pattern of dots in the current ink colour.

### SPRAYING ON THE GRID

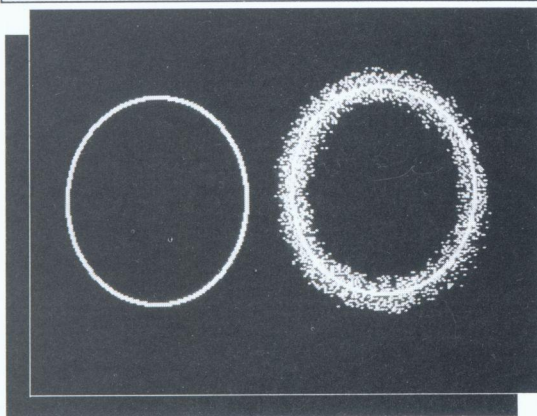
After clicking the left button on the icon to select the grid, you can spray by clicking the left button and holding it down. The arrow may then be moved as you are spraying to produce graffiti-like effects. The right mouse button will spray transparent pixels.

### SPRAYING ON THE WORKSCREEN

Point at the icon and click the right button to transfer the tool to the workscreen. Holding down the left button will spray in the current ink. Clicking the right button will return you to the control screen.

### ADDITIONAL OPTIONS:

WORKSCREEN ONLY - you can spray with the current brush by holding down the ALternate key AND the left mouse button while spraying. This facility implies that to spray a customised pattern you may design a brush for this purpose.



A copy of a circle with sprayed edges

## ICON NAME: COPY



This icon allows you to copy a rectangular block of pixels on the grid or the workscreen to a new location.

### COPY A SECTION OF THE GRID

Click on the icon with the left mouse button to copy a block on the grid. Then click one corner of the block to be copied with the left mouse button, hold the button down and drag out an outline to contain the block. Release the button and move the outline as a whole around the grid to the point you wish to copy the block to, then click one of the mouse buttons. The right button copies all the pixels underneath, including those considered transparent i.e. where the grid can be seen. The left mouse button copies only pixels in the current ink colour, but merges with existing pixels already on the grid at the receiving area.

### COPY A SECTION OF THE SCREEN

On the workscreen, first click on the right button to select the workscreen. Now define the block to be copied in the same way; the right mouse button copies all the pixels in the block to the new location, and the left button copies only those pixels in the current ink colour. After copying a block on the workscreen, you have the option of copying another block - just drag out another outline with the left mouse button as before, or press the right mouse button on its own to return to the **control screen**.

COPY



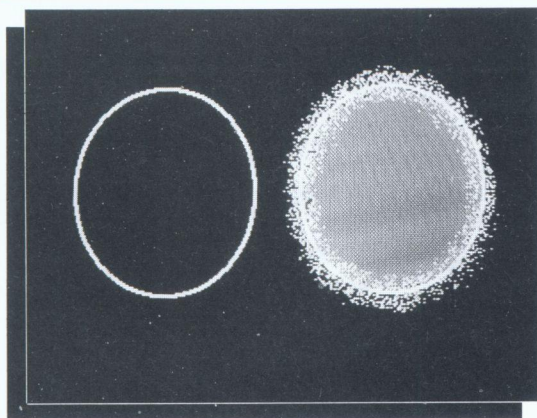


## ICON NAME: FILL

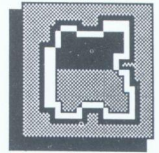
Filling is a technique for rapidly setting all the pixels within an object or shape on the grid or the main screen, even with a complex outline. An object can be filled with solid colour or it can be filled with a pattern using one of the brushes/sprites. Note that if a fill 'leaks' out of the object being filled, or is in any way unsatisfactory, you can of course undo it by clicking the **undo icon**.

### FILLING AREAS OF THE GRID

To fill an object on the grid, point and click the icon with the left mouse button, then move the arrow pointer to some point within the object you wish to fill. Click the left mouse button to fill the object with the current ink colour, or the right mouse button to fill it with transparent pixels.



Before and after filling

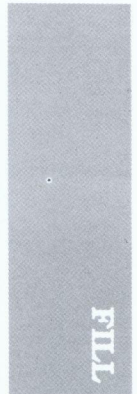


## FILLING AREAS OF THE SCREEN

To fill an object on the workscreen, click the icon with the right mouse button. Then, having previously selected the size of brush using the **brush size icon**, move the pointer to some point within the storage window and click one of the mouse buttons to select the brush/sprite to be used as a fill pattern. The workscreen will then be displayed. Now click with the left mouse button on some point within the object you wish to fill. To return to the **control screen** when you have finished filling, press the right mouse button.

## ADDITIONAL OPTIONS:

There are two ways to fill on the workscreen. Clicking a brush/sprite in the storage window with the left mouse button selects what is known as a flood fill, while clicking with the right mouse button selects an over fill. The distinction between the two types of fill rests on their different 'boundary conditions'. A flood fill proceeds outwards in every direction from the chosen point until a pixel of a different colour (to the starting point) or the edge of the screen is encountered. An over fill proceeds outwards from the starting point until a pixel in the current ink colour or the edge of the screen is encountered.



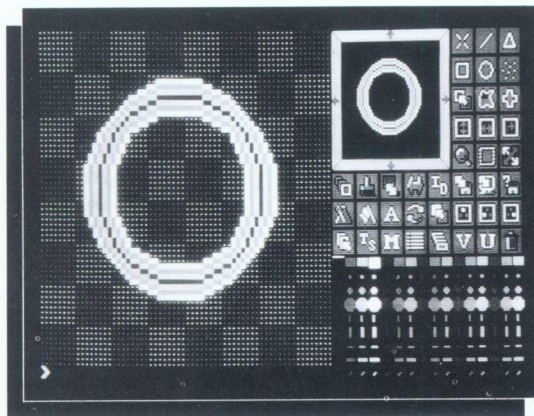


## ICON NAME: OUTLINE

The outline function is one of the ART STUDIO functions related to its sprite designing capabilities. It draws an outline of a single pixel width around the grid contents.

### OUTLINE - ON THE GRID ONLY

Click the left button on the icon to outline in the current paper colour. Click the right mouse button to remove any outline in the currently selected paper colour (i.e. sets pixels back to transparent).



A circle on the grid, outlined several times in different inks.



# ICON NAME: EXCHANGE COLOUR



This icon enables any colour to be changed into the current ink colour on either the grid or the workscreen.

## EXCHANGING A COLOUR ON THE GRID

Click the left mouse button on the icon to use the function on the grid. Then click any pixel that is in the colour to be changed. All the pixels on the grid in that colour will be changed to the current ink colour. The right mouse button on the grid will turn the selected colour to transparent.

## EXCHANGING A COLOUR ON THE WORKSCREEN

After clicking on the icon with the right button, pointing at a part of the picture containing the colour you wish to change and clicking the left button will change that colour to that of the current ink. The right mouse button on the workscreen will return to the **control screen**.

It should be pointed out that this function physically changes the colour of pixels on the grid and workscreen, and has nothing to do with changing the palette settings.



RED GREEN AND  
BLUE

## ICON NAMES: R.G.B. AMOUNTS

### RED AMOUNT, GREEN AMOUNT AND BLUE AMOUNT

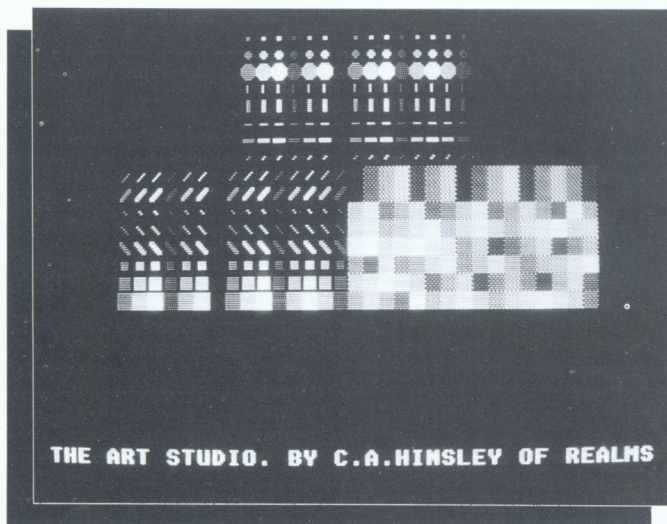
These three icons allow you to alter the current selection of 16 colours from the ST's palette of 512. The icons set the red, green and blue (R, G and B) components respectively for the current ink colour (the one with a small marker over it in the colour bar). Each of the three colour components has a value between 0 to 7.

### CREATING YOUR OWN PALETTE

To change a particular colour, you must first make it the current ink colour by clicking it with the left mouse button in the colour bar. Note that the border will always be the same as the first colour in the colour bar. Clicking an icon with the left mouse button increases the selected colour component by one; clicking on it with the right mouse button decreases it by one. When a colour is changed, the new RGB values are displayed briefly in the message panel.

When a screen or the brush/sprite store is saved to disc, the current palette settings are saved as well. Thereafter, whenever the screen or the brushes/sprites are loaded back into ART STUDIO, you will be given the option of restoring the original palette used when creating the work you have saved.

## 2.2 WORKING WITH BRUSHES



View (brush)  
Brush draw/grab  
Brush/sprite size  
Brush/sprite storage  
Brush store scroll  
Insert/delete brush





## ICON NAME: VIEW (BRUSH)

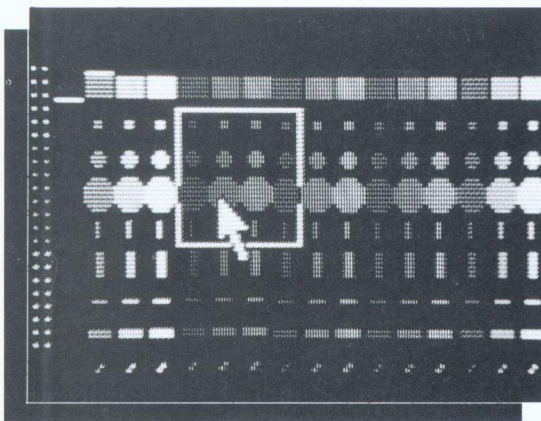
This icon is used to set the current brush and view the whole of the brush/sprite store on a separate screen. (The **view icon** also has functions connected with the workscreens which are described in the Picture Manipulation section).

### CHOOSING THE CURRENT BRUSH/SPRITE

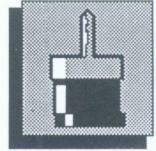
Clicking on this icon with the left mouse button allows you to select the current brush/sprite (this is used when drawing shapes, entering text, and designing maps). Then click on the desired brush/sprite in the storage window with the left button and it will become the current brush.

### VIEWING THE BRUSH STORE

After clicking the icon with the left button, clicking on a brush/sprite in the storage window with the right button then displays, from that brush/sprite onwards, the contents of the store area on a separate full-sized screen. The store comprises a maximum of 40K of memory (by comparison, one workscreen takes up 32K) so it is possible to have more brushes or sprites in memory than can be displayed at one time. To overcome this problem, any display of the store starts at the brush you select; to see other brushes in the store, start the viewing from further into the store memory.



Viewing the store and selecting a brush or sprite



## ICON NAME: BRUSH DRAW/GRAB

This icon allows a temporary brush to be used for painting on the workscreen, as well as allowing a brush to be 'grabbed' from the screen onto the grid. The brush is temporary for two reasons: it is only available until a new tool is selected and it does not overwrite the currently selected brush selected through the **view icon** (see section on view for more detail).

There are several ways of using this icon providing great versatility.

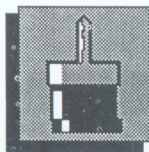
### PAINT WITH A TEMPORARY BRUSH

Click the icon with the left mouse button to paint with a brush. Then click on the desired brush in the storage window. (Remember that you can set the size of the brush with the **brush size icon**). There are two ways to use the brush; if you select it with the left mouse button you will be able to paint with it smoothly, if you select it with the right mouse button it will be 'snapped' to a grid of 8 by 8 pixels on the screen.

After selecting a brush the workscreen will be displayed. Press the left mouse button to paint with the brush on the screen. You can move the mouse while painting to draw solid lines etc. Click the right mouse button to return to the **control screen**.

### ADDITIONAL OPTIONS:

WORKSCREEN ONLY - with ART STUDIO you can paint with an animated brush. To use this function, click on the **animate icon** after you make a left button click on the **brush draw/grab icon**. Clicking with the left button allows you to paint smoothly, clicking with the right button snaps the animated brush to the grid. (To paint with an animated brush you must have previously set the animation range using the **set frames icon** described below).



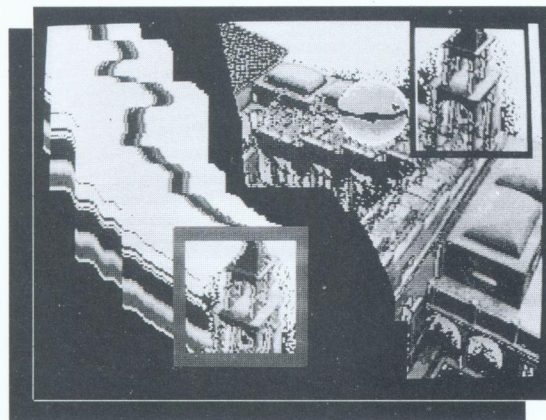
## CAPTURE A BRUSH FROM THE WORKSCREEN

Click the **brush draw/grab icon** with the right mouse button to capture a brush from the workscreen. The screen will be displayed. Press and hold either mouse button and drag an outline around the screen until it encloses the section you wish to grab. The left mouse button allows you to move the outline smoothly, the right mouse button locks it to the grid scale. Upon releasing the button the **control screen** will be displayed again. You then have to decide where to place the captured section on the grid, ready for transfer into the Brush/Sprite store.

### ADDITIONAL OPTIONS:

Click on the grid with the right mouse button to grab the whole of the section (except the current paper colour), or the left button to grab just the current ink colour.

BRUSH DRAW/GRAB



After grabbing a section of the screen you can paint with it.



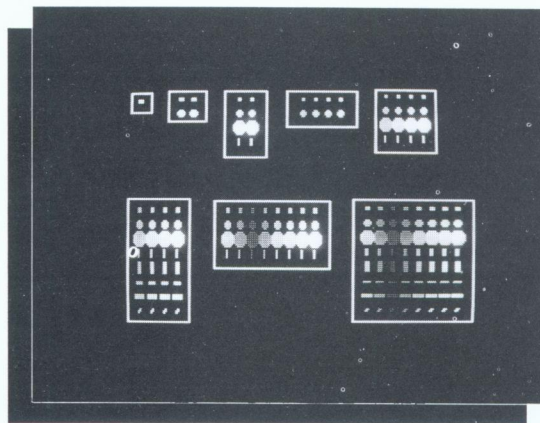
## ICON NAME: BRUSH SIZE



This important icon changes the brush/sprite size. Eight sizes are available, namely 8 by 8 pixels, 16 by 16, 16 by 32, 32 by 16, 32 by 32, 32 by 64, 64 by 32, and 64 by 64 pixels. Clicking with the left mouse button selects the next brush size down; clicking with the right mouse button selects the next brush size up. The new size is indicated by an outline which is flashed briefly on the grid.

The brush size is important because all the brush/sprite functions operate in terms of this size. For example, when using a brush to paint on the screen, the size of the brush is determined by this icon. As another example, the dimensions of the sprites in an animation sequence are set using the **brush size icon**.

Different sizes of brush taken from the same area of the store: note that the same patterns appear in the top lefthand corner but at different scales.



BRUSH/SPRITE SIZE



## ICON NAME: BRUSH STORAGE

This icon is the link between the brush/sprite grid and brush/sprite store. The left mouse button copies a selected brush/sprite from the storage window to the grid prior to editing; the right mouse button returns a brush/sprite to the storage window after it has been edited, or after a section of the workscreen required as a brush has been grabbed from the screen to the grid.

### TRANSFERRING A BRUSH FROM STORE TO GRID

In this case, click first on the **brush store icon** with the left button. The brush/sprite to be transferred is then selected by clicking on it in the storage window. Its destination may then be selected by clicking some point on the grid.

### ADDITIONAL OPTIONS:

The left mouse button transfers just the pixels in the current ink colour, the right button transfers all the pixels (but not any transparent pixels).

### TRANSFERRING A BRUSH FROM GRID TO STORE

After selecting the icon with the right button, the second option works in reverse to the first option. A section of the grid is defined by dragging an outline, then the brush/sprite to be placed in storage is clicked in the storage window at the point you wish to place it.

### ADDITIONAL OPTIONS:

Again the left mouse button transfers just the current ink colour, and the right button transfers the whole brush/sprite.

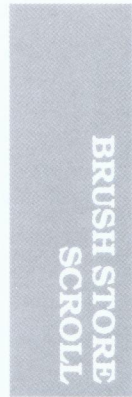
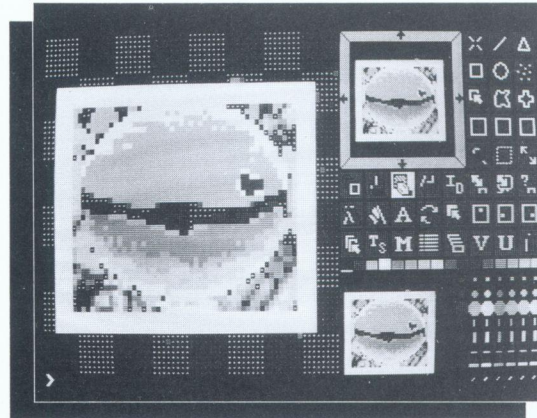
**Note that if you have edited your brush/sprite, you must move it back to the storage area for the changes to become permanent.**

# ICON NAME: BRUSH STORE SCROLL



The **brush store scroll icon** is used to scroll the brush/sprite storage window through the available brushes/sprites, for there are more brushes/sprites contained in memory than can be displayed at any one time in the storage window. Click the left hand side of the icon to scroll the window to the left, or the right hand side of the icon to scroll it to the right. The window can be scrolled at two speeds - clicking with the left mouse button scrolls it by one sprite (in the current size), clicking with the right mouse button scrolls it by sixteen. Note that the scrolling auto-repeats if the mouse button is held down.

Having created a new brush/sprite, it must be transferred to the store which can then be saved to disc.







## ICON NAME: INSERT/DELETE BRUSH

This icon inserts spaces or deletes brush/sprites from the brush/sprite store and is used for removing unwanted brushes/sprites or making room for new ones.

### INSERTING A SPACE IN THE STORE

Click the icon with the left mouse button if you want to insert a space into the store. Then click some point within the storage window on screen with either button and a blank will be inserted at that point.

### DELETING A BRUSH/SPRITE IN THE STORE

Click the icon with the right mouse button to delete a brush/sprite. Then, as before, click some point within the storage window. The brush/sprite under the cursor will be removed and the remaining brushes/sprites shunted up to close the gap.

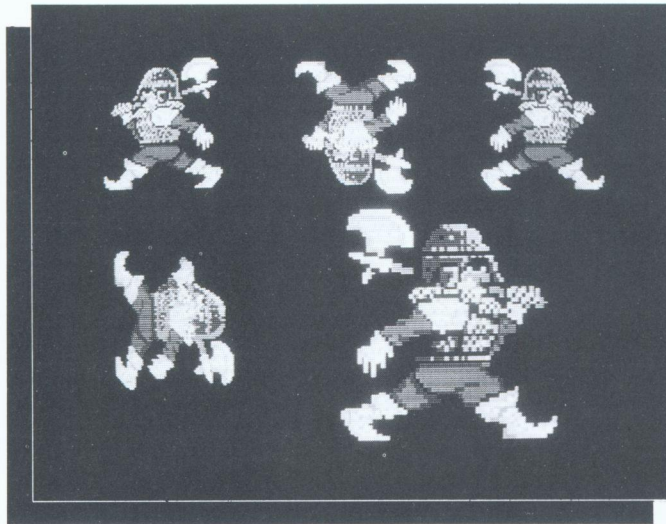
**Note that the size of the brush/sprite to be inserted or deleted is determined by the brush/sprite size icon described above.**

### UNDOING CHANGES TO THE BRUSH/SPRITE STORE

Clicking on the message panel with the left mouse button will highlight the brush/sprite storage window. If you then click on the storage window itself with the left mouse button, you will undo any changes made to the brushes/sprites. Note that if you do this a second time then you will undo the undo itself. Press the right mouse button if you decide you don't want to undo after all.

INSERT/DELETE  
BRUSH

## 2.3 PICTURE MANIPULATION



Vertical flip  
Horizontal flip  
Rotate  
Magnify  
Window  
(clear, cut and paste,  
rescale, smooth)  
Scroll  
View  
Undo  
Trashcan



## ICON NAME: VERTICAL FLIP

THE NEXT THREE TOOLBOX ICONS OPERATE IN EXACTLY THE SAME MANNER AS THEY DEAL WITH MOVING PARTS OF A PICTURE ABOUT A GEOMETRIC AXIS.

This icon allows a window to be flipped vertically (i.e. flipped about its horizontal axis), either on the grid or on the workscreen. All the pixels in a window can be flipped, or just pixels in the current ink colour can be flipped.

### FLIPPING ON THE GRID

To flip a window on the grid, select the icon with the left mouse button. Then use the mouse to drag an outline on the grid (in the same way that a box is drawn). Release the mouse button and the window will be flipped. If the window is dragged out with the left mouse button, then the pixels in the current ink colour will be flipped. If the window is dragged out with the right mouse button, then all the pixels in the window will be flipped. In the latter case, note that the flipped window is 'merged' with what was originally beneath it.

### FLIPPING ON THE WORKSCREEN

To flip a window on the workscreen, click the icon with the right mouse button. Then drag out an outline with the left mouse button to flip only those pixels in the current ink colour. Note that in this case pixels 'left behind' by the flip are changed to the current paper colour. To flip the whole window you must follow a slightly different procedure. Drag out the window outline with the left mouse button, and press the right button **before releasing the left button**. Press the right mouse button on its own to return to the **control screen**.



# ICON NAME: HORIZONTAL FLIP



# ICON NAME: ROTATE RIGHT

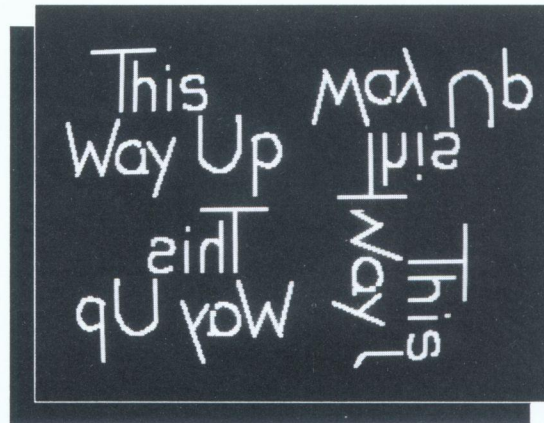


## HORIZONTAL FLIP

This is similar to the previous icon, but this time the window is flipped horizontally (flipped about its vertical axis). Its use in respect of the way the mouse buttons work is exactly the same as for a vertical flip.

## ROTATE RIGHT

This icon rotates a window by 90 degrees (a quarter turn) to the right about its centre point. Its use in respect of the way the mouse buttons work is the same as for a vertical flip. **Note that the window to be rotated is forced to be square.**

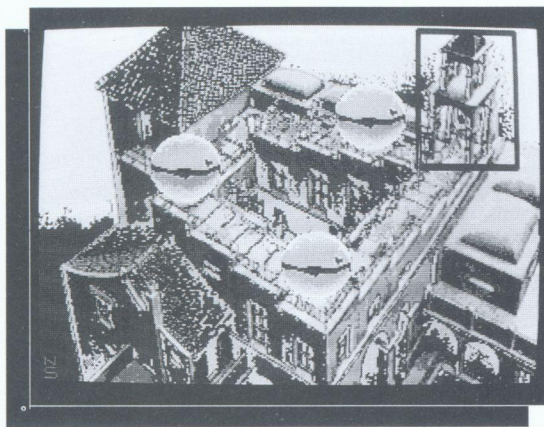




## ICON NAME: MAGNIFY

The **magnify icon** is a link between the separate sprite and screen designing capabilities of ART STUDIO. This icon transfers a section of the workscreen to and from the grid, and so makes grid editing facilities available for workscreen editing. This section of the screen can be worked on as an enlarged image, making it much easier to alter its individual pixels. Changes you make can then be transferred back to the exact position at which the window was set.

By using the **scroll icon**, the magnifying window can be 'floated' around the workscreen to edit other areas of the picture, which can then be replaced to the position on the workscreen over which the window 'hovers' when the changes are made.



Position the window outline over the area of the picture you wish to magnify.



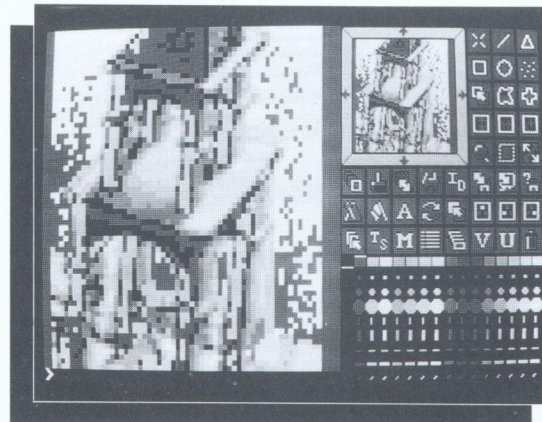
## SET MAGNIFY POSITION AND GRAB TO GRID

After clicking on the **magnify icon** with the right mouse button the workscreen is displayed. Press and hold either mouse button and an outline will appear (of the same size as the grid). This outline can be moved about the screen until it encloses the area to be magnified, either smoothly if moved with the left mouse button or 'snapped' (i.e. locked to the unit-scale of the grid) if moved with the right mouse button. Release the button and the area will be copied onto the grid. The normal editing functions (such as **draw**) can then be used on the magnified image on the grid, and the required changes made to it.

## TRANSFER CHANGES BACK TO WORKSCREEN

When the changes have been made, clicking the **magnify icon** with the left mouse button puts the grid back to the exact point it was copied from on the workscreen, so fixing the changes.

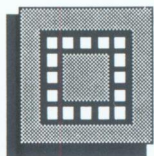
**AN IMPORTANT NOTE:** It is essential to realise that any changes made to the grid are not automatically made to the workscreen; it is necessary to actually put the grid back for the changes to become permanent.



The magnify window  
transferred to the grid

MAGNIFY





## ICON NAME: WINDOW

This is one of the most powerful icons in ART STUDIO's toolbox. It allows a number of operations to be performed on whole sections of the screen at a time. Any window operation can be undone by clicking the **undo icon** with the right mouse button.

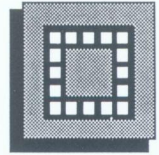
### DEFINING A WINDOW

Before some action can be performed on a window, it must be defined. Click the icon with the left mouse button to define a window. The workscreen will be displayed. Simply drag out an outline with the left button to enclose the section of the screen you want as a window. You can drag out the outline from any corner. Then press the right mouse button to return to the **control screen**.

### USING THE WINDOW PROCESSING FUNCTIONS

After defining a window you can select a window processing function. Click the **window icon** with the right mouse button and a prompt line will appear in the message panel (at the bottom of the grid). The options available are:- (F)at pixels, (C)lear window, cut and (P)aste window, (R)escale window, smooth (G)rid, and (S)mooth window. Press the key for the option you want or ESCape to abort the command.

WINDOW



## FAT PIXELS (F)

The fat pixel option allows you to convert the defined window into the screen format of many popular 8 bit computers by duplicating every other pixel on the x-axis, thus halving the horizontal screen resolution. To use this function, click on the **window icon** with the right button and press F to convert the window area you have previously defined.

## CLEAR WINDOW (C)

The clear window option does just what it says it does, it clears the section of the screen within the window outline to the current paper colour. After clicking the right button on the icon, press C to clear the defined window. The workscreen will be displayed after a window has been cleared. Press either mouse button to return to the **control screen**.

## CUT AND PASTE (P)

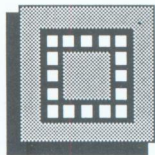
Cut and paste is a more sophisticated form of the copy tool we have already met. It allows multiple copies of a window to be made, selected colours or all colours to be copied, and it allows copying to and from the second screen (see view below). After defining the window, click on the **window icon** with the right button. Now select key P and the workscreen will be displayed with a window outline under the cursor. Move this outline to the desired point on the screen you wish to copy. Press the left mouse button to copy those pixels in the window in the current ink colour, or the right mouse button to copy all the pixels in the window except those in the current paper colour.

**Note that ART STUDIO will paste what was on the screen when the window was defined, even if that part of the screen has subsequently been altered.**

## ADDITIONAL OPTIONS:

If you want to paste the window a second time, press the left mouse button and another outline will appear. Press the right mouse button to return to the **control screen**.

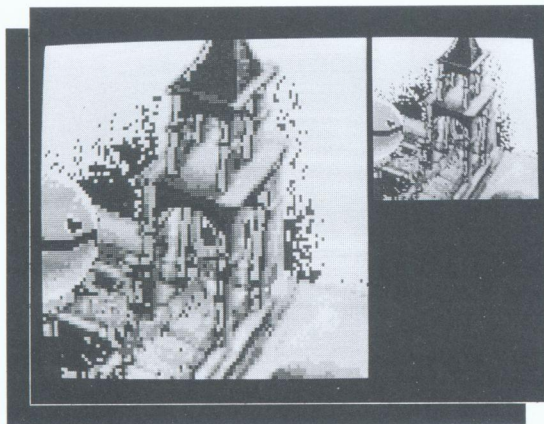
WINDOW: FAT PIXEL  
CLEAR  
CUT AND PASTE



## RESCALE (R)

Rescaling is a powerful facility that enables you to stretch, squash, enlarge or reduce a window. After selecting the Rescale option, you will be able to define another window. The original window will then be 'mapped' to this second window, being rescaled as necessary to fit into the new outline. Just the current ink colour can be rescaled by dragging out the second window with the left mouse button. To rescale the whole window (all except pixels in the current paper colour), drag the outline out with the left mouse button and, **before the button is released**, click the right button.

WINDOW: RESCALE

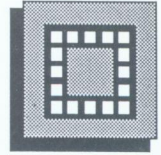


## ADDITIONAL OPTIONS:

WORKSCREEN ONLY.- the original window can be rescaled again by dragging out another outline, or a return to the **control screen** made by pressing the right mouse button on its own.

Any area of the picture  
can be rescaled





## SMOOTHING THE GRID (G)

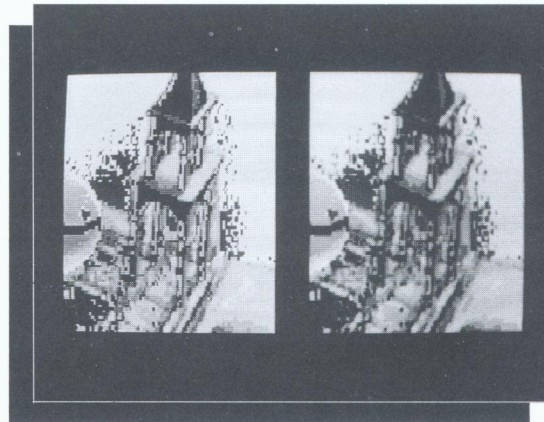
This function will 'blur' the boundaries between areas of different colour on the grid - the technical name for this process is 'anti-aliasing'. ART STUDIO will choose the best colours from the existing palette so as to 'soften' outlines and 'smooth over' rough edges. To select this effect, click on the **window icon** with the right button and then press key G.

**Note that the smooth grid option doesn't require a window to have been defined.**

## SMOOTH WINDOW CONTENTS (S)

Smooth window is similar to smooth grid but smooths the defined window on the work-screen, using the same algorithm as that employed on the grid. It is effective at improving the aesthetic appearance of pictures, particularly digitised ones. For this effect, click on the icon with the right button and then press key S. The screen will be displayed after a window has been smoothed. Press either mouse button to return to the **control screen**.

**Before and after smoothing**



SMOOTH GRID  
SMOOTH WINDOW



## ICON NAME: SCROLL

You may have noticed the little arrows on the borders of the view window and wondered what they were for. Well, the arrows are for use in conjunction with the **scroll icon**. This allows you to scroll the brush/sprite grid in any direction, or to move the magnification window around the workscreen.

### SCROLLING THE GRID

Click the icon with the left mouse button to scroll the grid. Then move the cursor to one of the four arrows and press the left mouse button to scroll slowly (by a single pixel) or the right button to scroll more quickly (by eight pixels at a time). The scrolling is in the direction of the selected arrow, for example, upwards for the up arrow. Note that the scrolling 'wraps around', that is, pixels which disappear off one side of the grid reappear on the opposite side. To finish scrolling, just select the icon for another function.

### SCROLLING THE MAGNIFYING WINDOW

Clicking the **scroll icon** with the right mouse button allows you to change the position of the magnification window over the workscreen (this icon should only be used after a section of the screen has been copied to the grid with the **magnify icon** - see below). This time the left mouse button scrolls the window by 8 pixels, and the right mouse button scrolls it by 32 pixels.

Note that the grid is 'put back' to the workscreen (to the point it was captured from) before the scrolling starts, but any changes made to the grid after the scrolling is finished are not automatically made to the workscreen - the grid must be put back either by clicking the **magnify icon** with the left mouse button, or using the **scroll icon** again. To finish scrolling, select the icon for another function.

SCROLL

## ICON NAME: VIEW

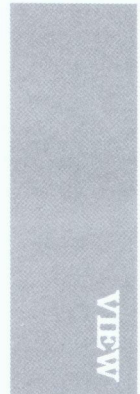


This icon has two distinct functions: selecting the current brush/sprite for use, and viewing or switching between workscreens. Only the operations concerning workscreens are described here; for information on the brush/sprite options see the section **working with brushes**.

### VIEWING AND TOGGLING BETWEEN WORKSCREENS

**520ST:** Clicking the **view icon** with the right mouse button enables you to view the workscreen (click again with the right button to return to the **control screen**). To view the other workscreen, either click the left button while the first screen is being viewed or use the function keys F1 and F2 to toggle between them. Thereafter, any workscreen function will operate upon this second screen, until the first screen is reselected. This feature enables you to work with ART STUDIO on two different pictures at the same time, flipping between them via this icon.

**1040ST:** Using the **view icon** is the same as on the **520ST**, except that now you have ten screens available, which you can switch through sequentially by clicking on the left button while using the **view icon** or by pressing one of the function keys **F1 to F10**. Additionally, once a draw or brush tool has been selected you may step directly, **without de-selecting the tool in use**, to any of the ten screens available by pressing a function key corresponding to the screen you wish to work on next. (This manoeuvre applies equally to any of the window functions as screens can be swapped between defining and using a window).







ICON NAME: UNDO



ICON NAME: TRASHCAN

## UNDO

This is a very useful (probably indispensable) facility which enables you to undo any mistakes. It works by cancelling the effects of the last operation done to the grid or to the work-screen. For example, if you cleared the grid by accident, then clicking on the **undo icon** with the left mouse button would restore it. Clicking on the icon with the right button undoes any changes to the workscreen (the screen is displayed after it has been undone, press either button to return to the **control screen**).

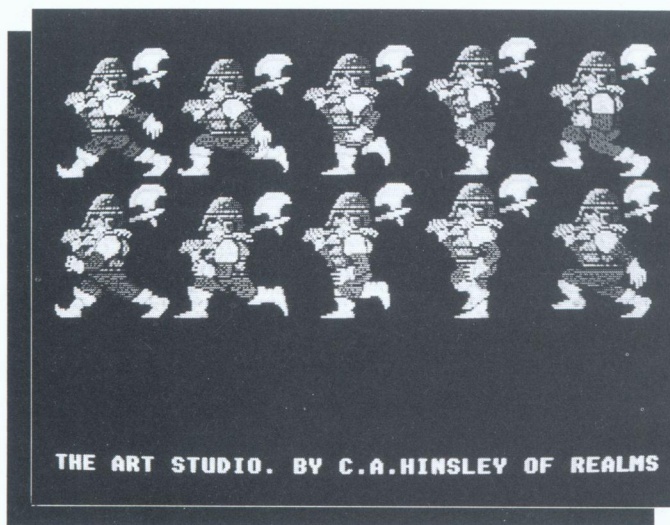
To avoid disappointment, it is important to realise that this facility only works immediately after any changes have been made (or more strictly up until another change is made). Note that you can 'undo an undo' by clicking the icon a second time.

## TRASHCAN

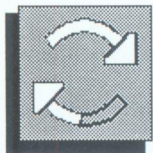
The **trashcan icon** is used to clear the grid or the workscreen. Click on the icon with the left mouse button to clear all the pixels on the grid to transparent. Click on the icon with the right mouse button to clear all the pixels on the workscreen to the first colour in the colour bar (i.e. clear the screen to the border colour). The workscreen will be displayed after it has been cleared: click either button to return to the **control screen**. As a safety feature, note that the **undo icon** will restore a trashed picture provided no other operation has taken place since throwing the work into the bin.

UNDO  
TRASHCAN

## 2.4 ANIMATION TECHNIQUES



Colour cycle  
Set frames  
Animate  
Metronome



## ICON NAME: COLOUR CYCLE

This icon defines a range of colours in the colour bar to be cycled. Colour cycling is an eye-catching effect whereby colours appear to 'ripple' into each other. Colour cycling can be used to add a measure of animation to an otherwise static picture.

### SETTING THE COLOUR RANGE OF THE CYCLE

Click the **colour cycle icon** with the right mouse button to set the colour range. Then select the range you require by clicking on the first colour of the cycle in the colour bar with the left button, followed by clicking on the last colour in the cycle with the right button. All the colours between and including these two are involved in the cycling.

### STARTING THE CYCLE

After defining a range of colours, the colour cycling is started with the **metronome icon** (see below). The cycling can be to the left or the right; click the metronome with the left mouse button to cycle to the left, or with the right mouse button to cycle to the right. The cycling starts off very fast, but can be slowed down by repeatedly clicking the metronome with the same mouse button.

### STOPPING THE CYCLE

The colour cycling can be stopped at any time by clicking the **colour cycle icon** with the left mouse button. The colours will be reset back to the default palette.



# ICON NAME: SET FRAMES



This icon allows a sequence of sprites to be defined for animation purposes.

## FIRST SPRITE IN THE SEQUENCE

The left mouse button is used to mark the first sprite in the sequence, the start frame. Click on the icon with the left button and then click either button while pointing at the sprite with which you wish to start the animation sequence. Use the **brush scroll icon** to find the sprite you need if it isn't in the storage window at this time.

## LAST SPRITE IN THE SEQUENCE

Click on the icon with the right mouse button to mark the last sprite in the sequence, the end frame. All the sprites between and including the start and end frames will then be used in the animation sequence.

SET FRAMES



## ICON NAME: ANIMATE

After a sprite sequence has been defined using the **set frames icon**, the animation can be set in motion with this icon and can be watched in the view window or on the screen.

### ANIMATION IN THE VIEW WINDOW

Clicking the left mouse button animates a sprite in the view window. You may use the **metronome icon** while the animation is running to alter the frame rate. To stop the animation just click either button, on or off the toolkit.

### ADDITIONAL OPTIONS:

While the animation is running, you can reset the speed to a medium default speed by pressing ESCape at any time.

### ANIMATION ON THE WORKSCREEN

After clicking on the icon with the right button you must select some point on the screen for the animation to take place. Do this by pressing and holding down either mouse button, dragging a window outline into position and then releasing the button. Note that you can't do anything else while the animation is taking place: it is only a preview facility but will be of use to game designers who wish to see how a sprite looks in context. The animation continues until either mouse button is pressed.

Since the **metronome icon** can't be accessed from the workscreen, it is suggested that the correct speed is set while animating sprites in the view window first.

# ICON NAME: METRONOME



The **metronome icon** sets the speed of sprite animation as well as the speed of colour cycling. It is also used to start colour cycling.

## ALTERING THE ANIMATION SPEED

In the first case the left mouse button speeds the animation up, and the right button slows it down, **but note that you have to repeatedly click the icon, it does not auto-repeat.**

## ALTERING THE COLOUR CYCLE SPEED AND DIRECTION

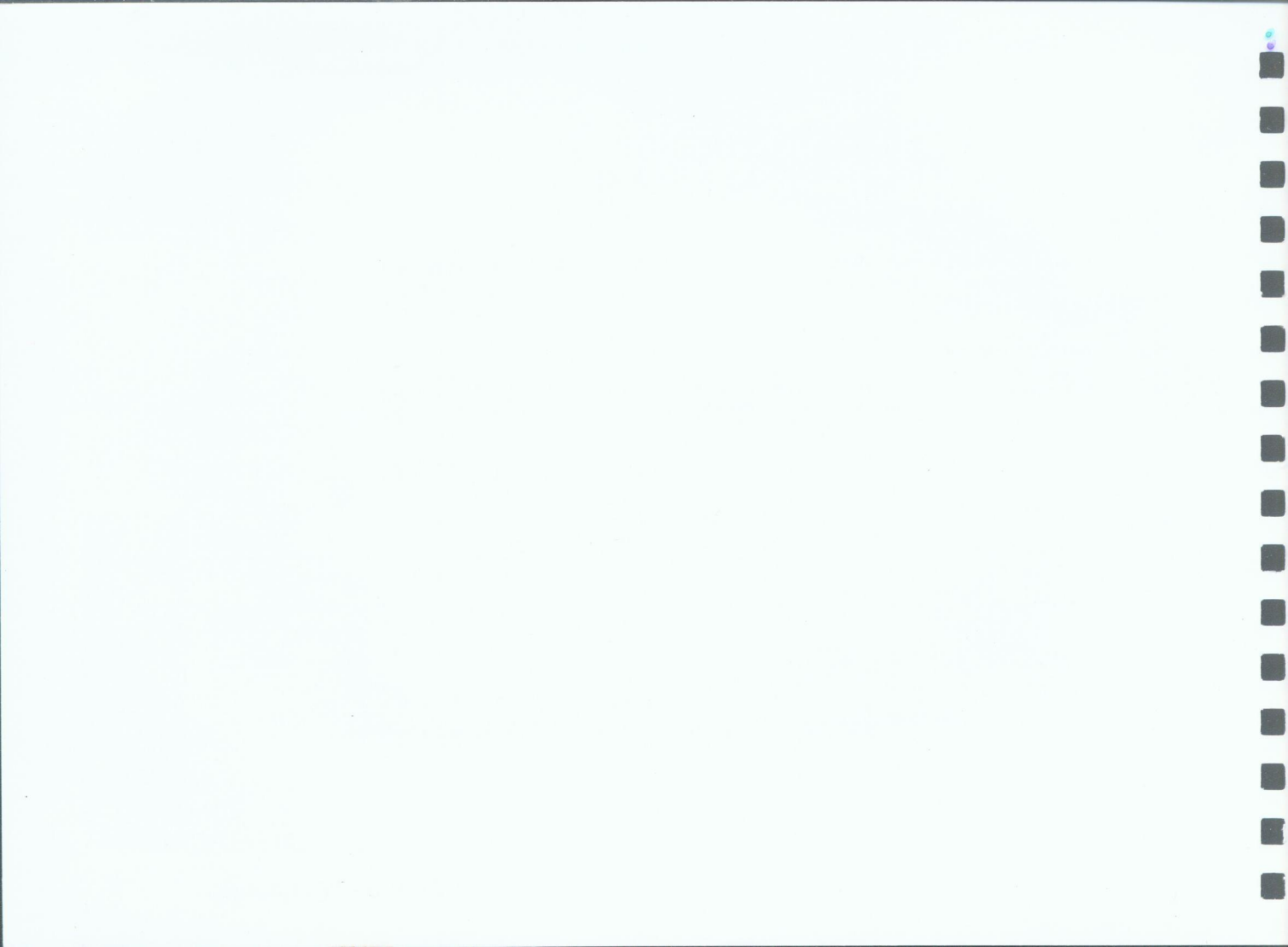
In this case the left mouse button decreases the cycle speed to the left (or in other words increases the cycle speed to the right), and the right mouse button decreases it to the right (or increases it to the left). The 'mid-point' of the metronome corresponds to no cycling - it can be immediately reset to this position by clicking the **colour cycle icon** with the left mouse button.

## ADDITIONAL OPTIONS:


This icon is also used to start colour cycling, by clicking on it after using the **colour cycle icon** (see **colour cycle icon** for more detail).

METRONOME





## 2.5 HOUSEKEEPING



Load/save screen  
Load/save brushes  
Disc Management  
(delete, set pathname,  
default drive, directory)

## GENERAL INFORMATION

When using the file facilities in ART STUDIO, the following points should be kept in mind.

You will be prompted to enter a filename for any disc operation. Once the filename has been entered it becomes the **default filename** and will be displayed on the prompt line whenever you use the disc icons. That means that any subsequent disc file operations will use this name **unless a new filename is entered when prompted**. Pressing return will perform the selected function on the displayed filename. To enter a new filename, use backspace to erase the previous name from the prompt line (the cursor is always positioned at the end of the default name) and type in the new name. **DO NOT ENTER ANY SPACES IN THE FILENAME AS THE ATARI ST REGARDS A NULL CHARACTER AS THE END OF THE FILENAME.**

The default feature allows you to work with a set of files carrying the same name, each with its own extension i.e. **.NEO** for a picture file, **.EDT** for brushes etc. thus saving you the trouble of retyping the filename each time. For example, if you have a brush, picture and font file on a disc, each called "myscreen" plus the appropriate extension, you can load or save any of them by just pressing return when prompted, after having entered the filename when you load the first item.

**It is not necessary to include an extension when loading or saving: the correct one will be appended automatically. (For a list of file extensions see appendix 4).**

Also note that if you try to save a file and a file with that name already exists on your disc, ART STUDIO will warn you and give you the option of aborting the save or overwriting the old file.

In certain situations ART STUDIO will be unable to perform the disc operation required (for example, when no disc is in the drive or the requested file is on another disc) in which case an error message will appear in the prompt line and will remain until any key is pressed to continue.



# ICON NAME: LOAD/SAVE BRUSH



If you accidentally select this icon, you can abort by pressing the ESC key at the top left of the keyboard.

This icon is used to transfer the brushes/sprites to and from disc along with the palette in use when originally drawn.  
Click the icon with the left mouse button to load the store with a new set of brushes/sprites. Click the icon with the right mouse button to save the existing set of brushes/sprites.

## ADDITIONAL OPTIONS:

After the store has been loaded you will be given the option of using the palette settings in force when the brushes/sprites were saved. Answer Y to use this new palette, or N to remain with the current palette.

Note that other information pertaining to the brushes/sprites is also saved in the file - specifically the palette in use, the current brush/sprite size and the start and end animation frames.

A standard brush/sprite file is provided on the supplied disc with the filename "STUDIO.EDT" - this contains a useful set of bushes, stipples etc. To examine the whole file, you can transfer the entire contents of the store to the screen using the **view icon**.

LOAD/SAVE  
BRUSHES/SPRITES



## ICON NAME: LOAD/SAVE SCREEN

If you accidentally select this icon, you can abort by pressing the ESC key at the top left of the keyboard.

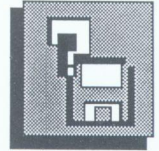
This icon is used to transfer screens to and from disc, and functions in a similar way to the previous icon. Use the left button on this icon to load a screen file into memory, and the right button to save a file to disc.

Note that after a screen has been loaded, it is not immediately displayed. You must use the **view icon** to see it. There is no need to specify a filetype in a filename. The extension **.NEO** is appended automatically (this is so screen files can be exchanged with the NEOCHROME art package). When saving or loading a screen file the palette is automatically saved with the file, and you are given the option when loading to use the current palette or the new one loaded with the file.

A folder name can be set using the enter pathname option below.

Some sample screens are included on the ART STUDIO disc.

LOAD/SAVE SCREEN



## ICON NAME: DISC MANAGEMENT

This icon has three functions. It will delete any specified file, catalogue a disc or set a pathname (sets a folder name in effect).

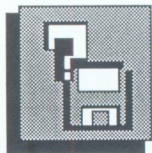
### DELETING A FILE

Clicking the **disc management icon** with the left mouse button provides two options. You are first asked, by a prompt in the message panel, if you wish to delete a file. If you wish to do so, press key Y and the current default filename will be displayed. You may then specify the new name of the file to be deleted or perform the delete on the default name.. **In either case, as a safety measure, you must specify the file extension i.e. .NEO or .DAT etc.** (The full stop must also be included so a valid filename for a delete would be MYSCREEN. EDT). You will then be asked to confirm the delete.

### SETTING A PATHNAME (FOLDER NAME)

After clicking the left button on the icon, you must answer NO (key N) to the prompt asking if you wish to delete a file. Then, the program allows the current pathname to be changed and offers a path prompt. An example of a pathname would be \MYPICS\ which you would use if your ART STUDIO files were in a folder called MYPICS. Once you have set the current folder, any files you save or load are automatically put in or taken from that folder. Note that you can always override the current pathname by entering a filename in full when prompted.  
(If you need more information about the concepts of pathnames, folders and sub-directories, refer to your ST manual).





## CHANGING THE DEFAULT DISC DRIVE

The icon can also be used to change the default drive in the disc pathname option. Enter B,C,D etc. to select the required drive, or A: to reselect the first drive.

## OBTAINING A DIRECTORY LISTING

Clicking the icon with the right mouse button will display the directory of the current path. A list of the files on a disc will be displayed in the grid; if the list is too long to fit on one screen, click the left button to view the next page. Press the right button or any key, after reading the directory, to restore the grid. If no pathname has been entered then this option will display the files in the root directory on a disc (equivalent to double clicking a floppy disc icon from the desktop).

If you accidentally select the delete function of this icon, or you make an incorrect entry to prompt messages, you can abort at any time by answering N (no) to the initial prompt, then pressing the ESC key at the top left of the keyboard.

## 2.6 SPECIAL FUNCTIONS



Text and  
System  
Output  
Map modes  
Control 1  
Control 2



## ICON NAME: TEXT AND SYSTEM

The **text and system icon** has three different functions - it is used to exit from ART STUDIO, to clear all the brushes/sprites from memory i.e. empty the brush/sprite store, and to add text to a picture.

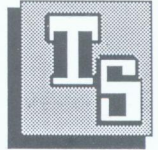
### EXITING FROM ART STUDIO

Click the icon with the right mouse button and ART STUDIO will ask if you wish to exit the program. Press key Y and you will be returned to the desktop (be sure to save your artwork to disc before doing this). Type N if you change your mind.

### CLEARING THE BRUSH/SPRITE STORE

If you click the icon with the right mouse button but type N in response to the question 'do you wish to exit the program', ART STUDIO will then ask if you wish to clear the brush/sprite store (the whole of it, not just the window on screen). Again, you must answer Y (to continue) or N (to abort the operation). Note that the clear can be undone by clicking on the message panel with the left mouse button and then clicking on the storage window with the left button.





## USING TEXT IN ART STUDIO

The text entry function in ART STUDIO allows individual brushes/sprites to be assigned to the keys on the keyboard, and to be printed on the screen using the keyboard.

## LOADING A FONT

Before you can enter text, a text font must be loaded into the brush/sprite store. There are some sample fonts on the supplied disc. Click the **load/save brushes icon** with the left mouse button and enter the filename, or the filename you have assigned to a font previously created and saved to disc. (See Appendix 6 for a list of files supplied with the program).

## SET THE SIZE AND RANGE OF TEXT

After loading a font file, there are two further things you must do before you can enter your text. The first is to set the size of the characters in the font. Use the **brush/sprite size icon** for this. The second thing is to indicate to ART STUDIO where the letter 'A' occurs in the font. Click the **view icon** with the left mouse button, then the letter 'A' in the storage window with the left button. After this you will be ready to enter your text.

## ENTERING TEXT

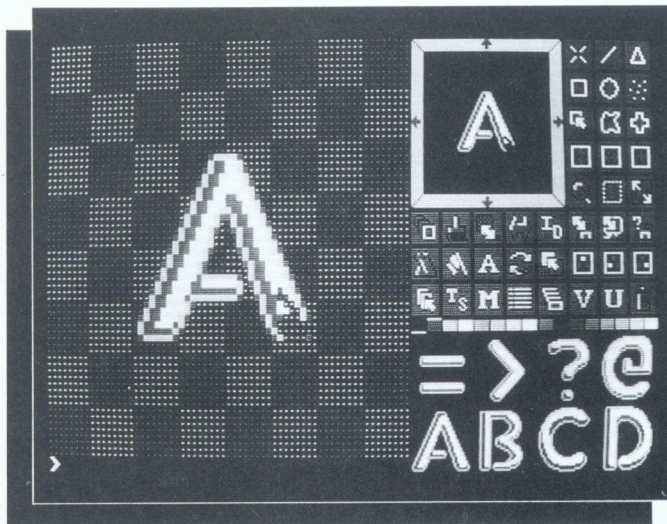
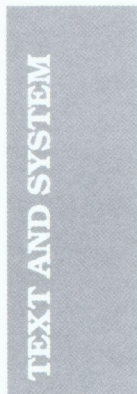
Click the **text and system icon** with the left mouse button and the workscreen will be displayed. Press either mouse button and drag the outline (which is the size of the current brush) around the screen. Release the button when the outline is at the point you wish your text to start. Then simply type in your message using the keyboard. Use the cursor keys to move around the text to correct or overprint characters (allowing you to combine characters such as a letter and a circumflex accent, as in French language text). Return takes you to the start of the next line down the screen. Press the ESC key when you have finished to return to the **control screen**.

There are several sample character fonts on the supplied ART STUDIO disc which you can freely use in the design of your own pictures. Use one of these as a guide to designing your own fonts.



## DESIGNING A FONT

Using the grid, you can design the characters for your own fonts whilst seeing them in the view window at the size they are going to appear on the workscreen. When you are satisfied with the character you have designed, transfer it into the brush/sprite store in the correct place (in relationship to the other characters). In order for the space bar to work, a space must be included in the stored font at the correct position relative to the keyboard layout. Only by using the standard ASCII keyboard layout (as demonstrated in the supplied fonts) will the keyboard actually type in the correct characters.



Each character can be designed on the grid before transferring them to the brush store

## ICON NAME: OUTPUT



This icon is related to the sprite designing capabilities of ART STUDIO. Its function is to send sprite data to a disc file or to the ST's serial port (use the **control 1 icon** to toggle between the two destinations). The first option would be used when sprites are being developed for an ST application, the second when another computer is the target machine.

### SELECTING SINGLE/MULTIPLE SPRITES

A single sprite or a sequence of sprites can be sent. Click the icon with the left mouse button to send a single sprite, then click on the chosen sprite in the storage window. Click the icon with the right mouse button to send a sequence of sprites, where the sequence has previously been defined using the **set frames icon** (see below). A filename will be requested when sprite data is output to a disc file. The default extension for these files is **.DAT** and is appended automatically when saving the file. You do not need to enter the default extension when loading a file as the program does this for you. If you have a file you wish to load which has a different extension, you may enter the extension as part of the filename, preceded by the necessary full stop.

OUTPUT

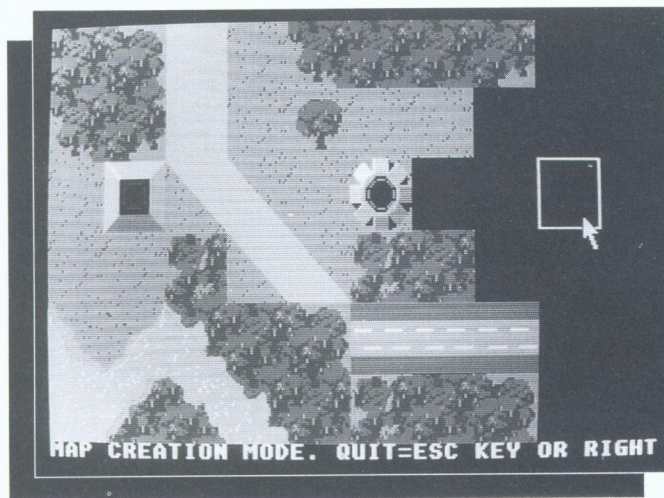




## ICON NAME: MAP MODES

Map making is another useful tool for programmers who have the task of designing games built around mazes or maps. It allows a map to be constructed consisting of brushes/sprites. This makes for efficient use of memory, as only the brush/sprite numbers need to be stored to define the map, rather than the whole pixel description (of course, the brush/sprites themselves would have to be stored somewhere, but only once rather than each time they're used). ART STUDIO can be used to develop maps for ST games or for games on other machines, in the same way that it can be used to design sprites for an ST application or for an application on another computer.

MAP MODES



A map  
under construction



## SETTING PARAMETERS

Before a map can be designed, its parameters must be set. Click the **map modes icon** with the right mouse button then press the M key. ART STUDIO will prompt for each parameter in turn: simply type in the value you require and press **return**. If you are working on a previously saved map and wish to change parameters, the current parameters will be displayed at the end of the prompt line. Note that pressing the ESC key leaves a parameter unchanged.

'**Map width**' specifies the x-dimension and '**Map depth**' specifies the y-dimension of the map, both in terms of the brush/sprite size. Values should be entered from 1 upwards. The only limitation on the values is that the product of width and depth (i.e. the number of squares in the map) should not exceed 16384. You can have very wide or very long maps if you want (an extreme example would be a map 16384 wide by 1 deep!).

'**X direction**' and '**Y direction**' specify the origin of the map. Enter 0 for left/top, or 1 for right/bottom. For example, if you entered 1 for both directions then the origin of your map would be its bottom right corner. The origin is important because it determines the order in which the map is output. The default is the origin at the top left corner, in which case the map would be output, from left to right, from top to bottom.

'**RS232**' specifies the destination for the map. Enter 1 for serial port output or 0 for disc file output.

'**Modulo**' specifies the number of columns per line in the source file defining the map. ART STUDIO outputs standard assembler files containing 'dc.b' statements, with this number of constants following each pseudo-op. The default is 8 per line.

The map is laid out using the keyboard, in a similar fashion to the way text is added to a picture. A particular brush/sprite must be associated with the letter 'A' first - use the **view icon** to do this. The size of the map squares must also be set with the **brush size icon**.



## ENTERING THE MAP

Click the **map modes icon** with the left mouse button and a blank screen will be displayed upon which the map can be constructed. An outline will appear under the cursor (of the size of a single map square) which can be moved about the screen. A square can be added to the map by pressing a key in the range A to Z or shifted A to Z. Pressing A prints the current brush/sprite under the cursor, pressing B prints the next brush/sprite, and so on. Note that the left mouse button repeats the last entered map square.

If the map is too large to be shown on the screen, cursor keys can be used to scroll in four directions. The ESC key or the right mouse button returns to the **control screen**.

## ADDITIONAL OPTIONS

Other functions associated with map making are selected by clicking the **map modes icon** with the right mouse button. An option line will appear in the message panel. Type a single letter for the option you want or ESC to abort the selection. The options are:-

**R** - sends any workscreen image to the RS232 port in word format starting with plane 0. The bit significant values for the colour planes must first be set using the **control 2 icon**.

**S** - save a map to disc in ART STUDIO's internal format. The default filename extension is **.MAP**

**L** - load back a previously saved map.

**M** - allow the map parameters to be set or altered. (As described above).

**O** - output a map to a disc file or the ST's RS232 port (the destination previously set by the modify map command). This is the command to be used when a map has been finished and is ready to be used. The sprite numbers in the output file are absolute (i.e. relative to the very first brush/sprite in the store, not the brush/sprite defined as the letter 'A' when the map was constructed), with 0 indicating the first brush/sprite, 1 the second, and so on. If the map is being output to a disc file, ART STUDIO will prompt for a filename. The default extension is **.S** (as most assemblers use this extension to signify source code).





## OUTPUT FILE FORMAT

The output file will be in ASCII and can be easily merged with other assembler source code using any standard editor. Note that an asterisk will be appended to the end of each source line. This is to allow any trailing byte(s) that are needed to be simply added using a global replace. If this isn't required, the asterisks must be stripped out before assembling, otherwise they will generate assembler errors.

To keep a complete record of a map, the sprites themselves must also be output. Use the output and control icons to do this.

## FAT PIXEL MODE

Another useful facility in ART STUDIO is its ability to work with 'fat' pixels. These are double width pixels, such as are found on AMSTRAD CPC computers in screen mode 0. Thus ART STUDIO can be used to design sprites for these machines as well.

**Note that Fat Pixel mode applies to grid operations but not to workscreen operations.**

## USING FAT PIXELS

Click the **map modes icon** with the right mouse button and then press the F key to toggle fat pixel mode (the mode is initially off). For example, clicking the **lines icon** with the left mouse button enables you to draw double width lines on the grid. The other shape functions work similarly when in fat mode, as do flips, colour exchanges, copies etc. Note, however, that brushes and sprites are not output in fat pixels, but it is a simple matter to ignore every second pixel when processing the data.

MAPS: OUTPUT  
FAT PIXELS



## ICON NAME: CONTROL 1

The next two functions are only of use to programmers designing sprites with ART STUDIO. The functions are to be used in conjunction with the **output icon** above.

### LINES PER SPRITE

Clicking the **control 1 icon** with the left mouse button sets the number of pixel lines in each sprite to be used when outputting sprite data. A prompt requesting the number of lines will appear in the message panel; enter a number in the range 0 to 64, where 0 means use all the lines in the sprite.

### OUTPUT DESTINATION SELECTION

Clicking the icon with the right mouse button toggles between using a disc file and the ST's RS232 serial port as the destination for the sprite data. The new destination will be briefly displayed in the message panel whenever it is changed.



## ICON NAME: CONTROL 2

### SELECTING COLOUR PLANES

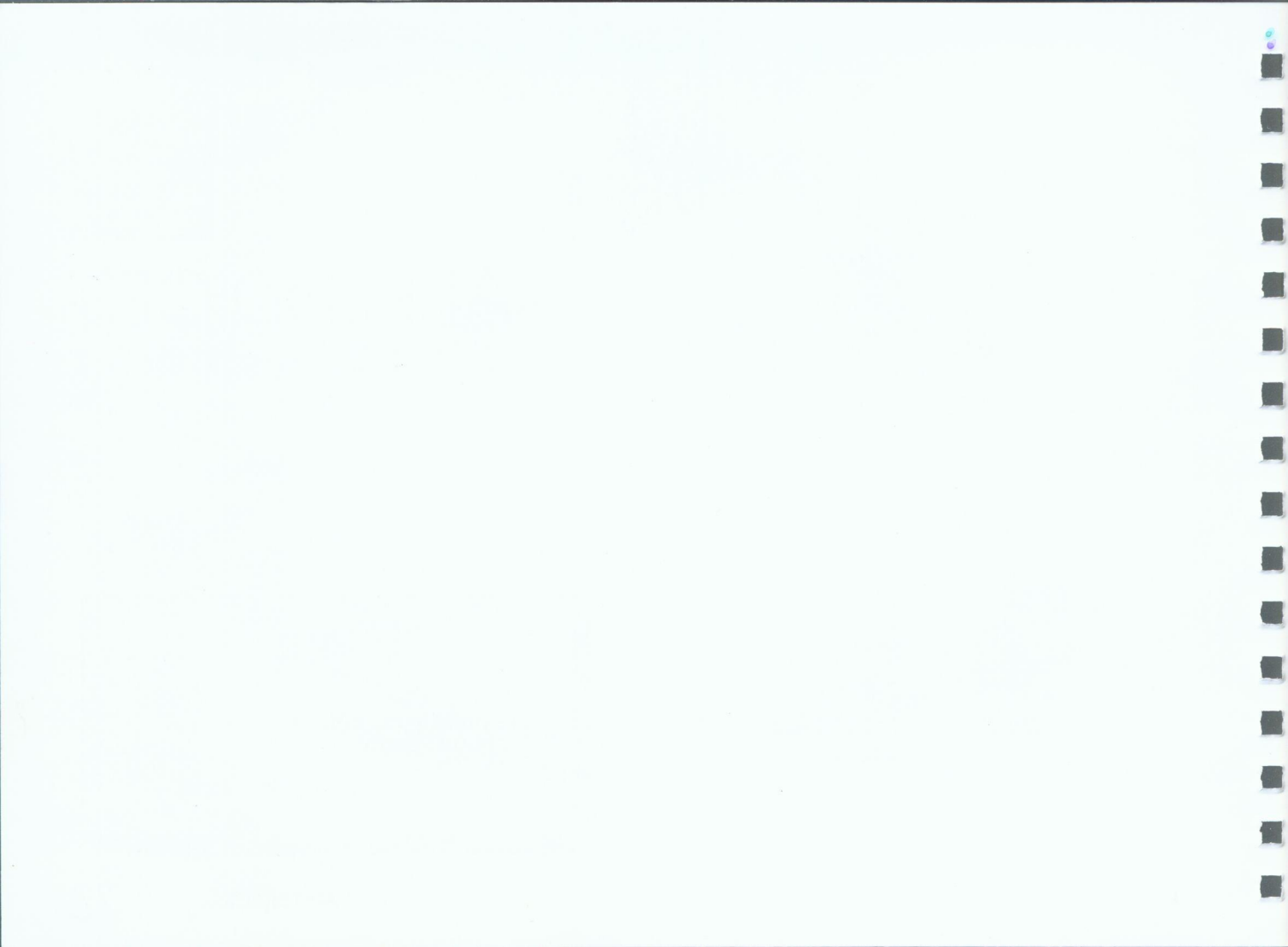
Clicking the icon with the left mouse button allows you to specify which colour planes are to be used when outputting sprite or screen data. (It is beyond the scope of this manual to explain the term colour plane. Interested readers are referred to a suitable reference book on ST graphics for a detailed coverage of the subject). A bit significant argument is required by the function, with bit usage as follows:-

Bit 0 = colour plane 0  
Bit 1 = colour plane 1  
Bit 2 = colour plane 2  
Bit 3 = colour plane 3  
Bit 4 = masking

If a bit is set, then the corresponding colour plane is included. If bit 4 is set, an extra plane is output which can be used as a mask for the sprite. A set bit (bit equals one or on) in the mask indicates a transparent pixel in the sprite, a reset bit (bit equals zero or off) in the mask indicates a coloured pixel. For example, the argument 17 would send the first colour plane plus a mask plane (as one would require if one were designing sprites for a Spectrum game). The least significant colour plane is plane 0, the most significant is colour plane 3.

### OUTPUT IN WORD OR LINE FORMAT

Clicking the **control 2 icon** with the right mouse button toggles between word and line format for the sprite data. The new format will be briefly displayed in the message panel whenever it is changed. Word format means that ART STUDIO outputs the first 16 bits of each of the colour planes, then the second 16 bits, and so on. Line format means that it outputs all the bits of the first colour plane, then all the bits of the second plane etc.





# APPENDICES

- 1 Using a printer
- 2 Customising ART STUDIO
- 3 Format of Neochrome files
- 4 File extensions
- 5 Using the Pro-Draw graphics tablet
- 6 List of files in ART STUDIO

# APPENDIX 1: USING A PRINTER

Pressing the ALTERNATE and HELP keys simultaneously will dump whatever is on the ST screen to a printer. If you press these keys after having selected a work-screen using the **view icon**, you will get a hardcopy of your picture. To stop printing at any time press ALT and HELP again.

## APPENDIX 1: USING A PRINTER

### SETTING UP YOUR PRINTER

Use the desktop accessory contained on your language disc to set up your printer before loading ART STUDIO. We suggest you copy the **CONTROL.ACC** file from the language disc to your working copy of the ART STUDIO disc. Then re-boot your machine with this disc. Refer to the ST owner's manual for details on how to install your printer.

## APPENDIX 2: CUSTOMISING ART STUDIO

If you want to change any of the icons in ART STUDIO's **control screen**, you can edit them to your individual taste. This is possible because the control screen is stored on the ART STUDIO disc in the normal format (its filename is **EDSCREEN.NEO**), and it can be loaded like any other picture and modified. It is also possible to change the default palette which is loaded when the program is first booted up. To do this, load **EDSCREEN.NEO**, change the palette on the control screen in the usual fashion and save Edscreen back to disc. When the program is booted, the palette you have designed will become the default palette. Do not change the colours of the colour bar in Edscreen; the palette colours would then fail to change when altering the colour content of any segment.

Although you are free to change the graphic representations of the icons, you cannot move the position of them on the screen. The program knows which icon you have selected by measuring the position of the pointer in relation to the screen every time you click. The screen location of any tool is fixed within the program so moving the **draw icon**, for example, will not change the location the program expects to read. Clicking on the icon will therefore have no effect once moved, and any icon now put where the **draw icon** was will still select draw, no matter what icon image fills that screen area.

For obvious reasons you **must not** modify the ART STUDIO master disc, but make a working copy beforehand and experiment with the files on the copy.



## APPENDIX 3: FORMAT OF NEO FILES

If you intend to use pictures developed with ART STUDIO in your own programs, you may be interested to know the format of screen files. A **.NEO** screen file consists of 32000 bytes as an image of the ST screen memory, preceded by a 128 byte header as follows:-

Header relative byte:	Contents:
0 - 3	undefined
4 - 35	16 words = contents of the palette registers
36 - 48	undefined
49	high nibble = start ink in cycle (0 - 15), low nibble = end ink in cycle (0 - 15)
50 - 52	undefined
53	cycle speed = number of frames between cycles (sign gives direction, 0 if no cycling)
54 - 127	undefined

## APPENDIX 4: FILE EXTENSIONS

The following is a complete list of file extension names which follow the standard ATARI ST grammar and syntax.

.EDT	This extension is given to all brush or sprite files saved within ART STUDIO using the <b>load/save brushes icon</b> .
.NEO	Extension given to any screen picture files saved using the <b>load/save screen icon</b> .
.DAT	File extension given to brush/sprite output files i.e. any files created using the <b>output icon</b> .
.MAP	This is the extension given to any map files created by using the <b>save map</b> facility.
.S	This extension is given to the output derived when using the output map function. The file and its extension comprise a standard ASCII source file.

## APPENDIX 5: USING A PRO-DRAW TABLET

### APPENDIX 5: PRO-DRAW TABLET

ART STUDIO is compatible with the Triangle Pro-Draw graphics tablet, which can be substituted for the mouse as an input device. To enable Pro-Draw, press the ALTErnate and CONTRol keys together. You will then be asked to confirm the selection of the new input device. Once Pro-Draw has been selected, the mouse is inactive. Control of the program is then determined by using the following options in the Pro-Draw system; with the stylus (supplied as standard) all left mouse button functions are replaced by depressing the stylus tip and right button functions are transferred to the button on the body of the stylus. If you are using the Pro-Draw tablet with the optional cross-hair puck then button 1 replaces the left mouse button functions and button 2 is substituted for the right mouse button.

To return to mouse control, press ALTErnate and CONTRol and answer yes to the prompt.

### FOR INFORMATION ABOUT PRO-DRAW

The Triangle Pro-Draw graphics tablet is distributed by Eidersoft Software Ltd. who may be contacted at the following address:

EIDERSOFT SOFTWARE LTD. UNIT 4, STANNETS, LAINDON, ESSEX, ENGLAND, SS15 6DJ



## APPENDIX 6: LIST OF ART STUDIO FILES

### PROGRAM FILES

STUDIO.TOS  
DEMO.TOS

ART STUDIO program.  
Demonstration program.

### BRUSH/SPRITE FILES

STUDIO.EDT  
FONTS.EDT  
DEMO.EDT

Default brush/sprite file loaded when the program is booted up.  
Sample fonts.  
Brushes and sprites used in the demonstration program plus example set of animation sprites. This file may be loaded into the program by the user.

### PICTURE FILES

EDSCREEN.NEO  
SCREEN.NEO

Control Screen picture file used by the program.  
Sample picture

### DATA FILES

EDFONT.DAT

Font file ART STUDIO uses for displaying help messages etc.

### MISCELLANEOUS

DEMO.DEM

Special file containing demonstration data.

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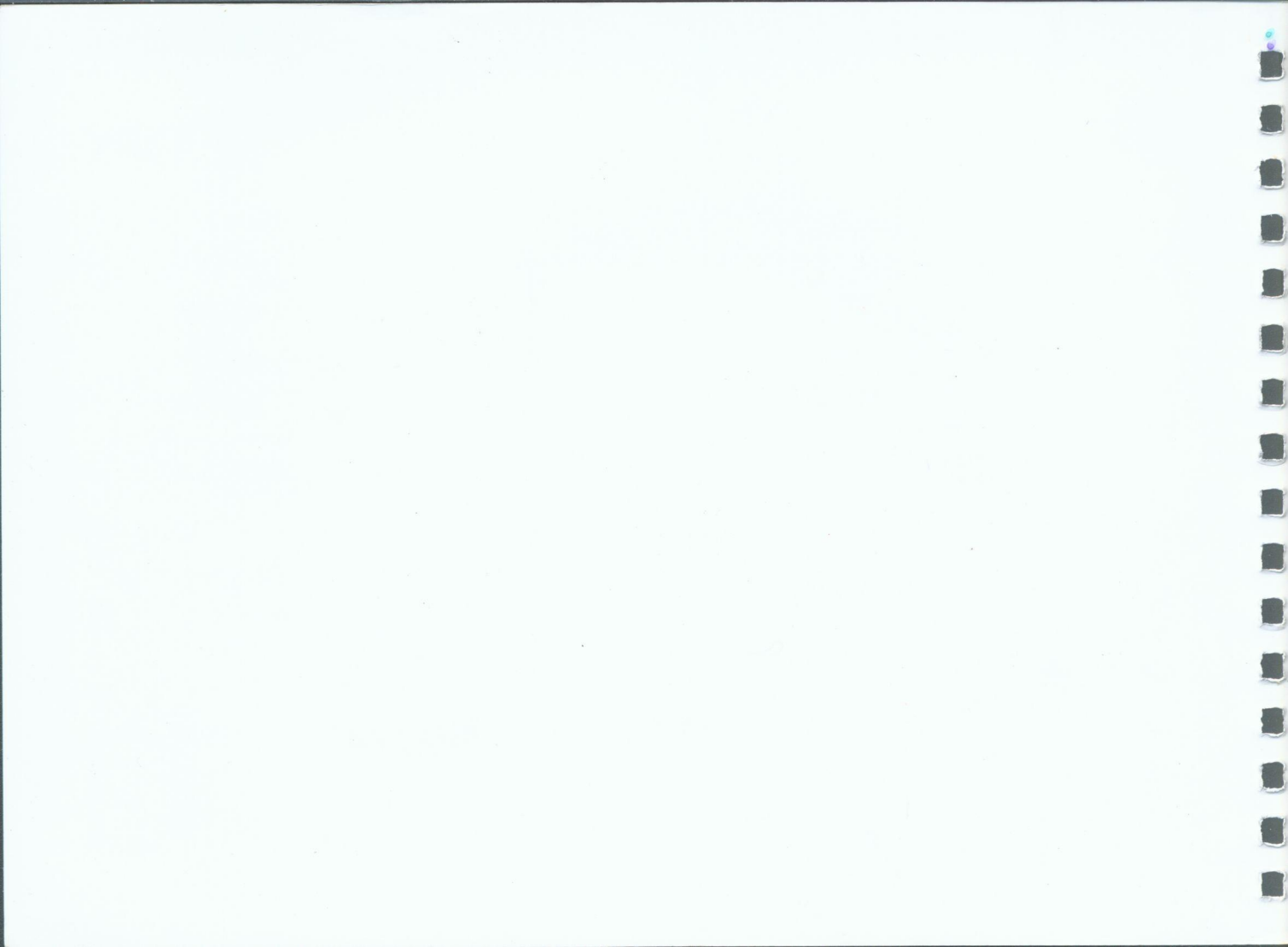
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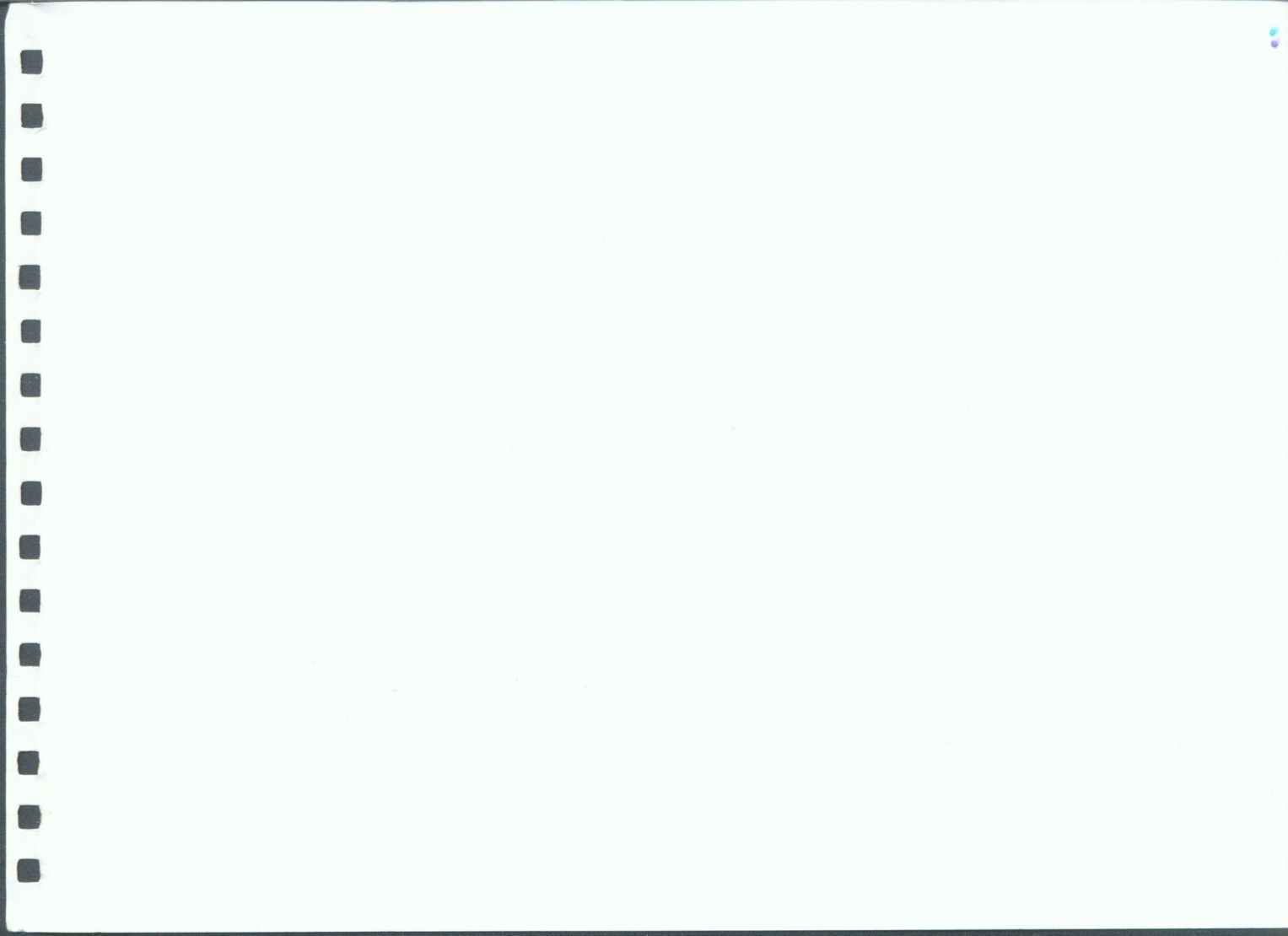
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