

Chapter 4

Raytracer

Why a Raytracer in a Paintprogram? - This is the question of many users. But the answer is easy: people want to have the color gold or want to mirror in a ball. Or need some glass-cylinders. This is not solvable in a two-dimensional way. Therefore I thought, a raytracer will be a good idea. In this way you will get a smooth texturing around a ball or cylinder.

This raytracer is **not** a raytracer like imagine or Real 3D. It is a very simple one, which combines only limited primitives with lights. Also the interface is new, but not perfect - as well as this manual. I cant explain everything in this little manual - so please try and play with the raytracer!

For the experienced user there is a short abstract of the user-script-language for people, who want to make more, as the XiPaint interface gives. For this reason you have to start ray with the name of the script.

4.1 Basics

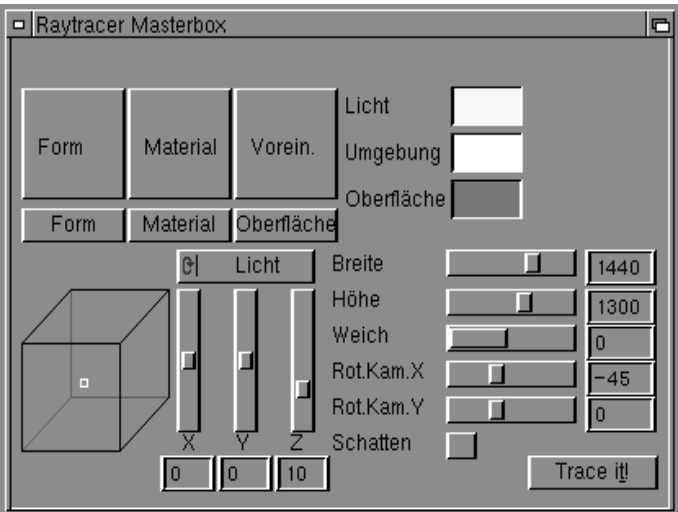
Working with this tracer is easy: you need a choosen brush (for mapping or background). Then, you open the Raytracer-Masterwindow.

Ξ-Paint 4.0

Changes and new Features since 3.2

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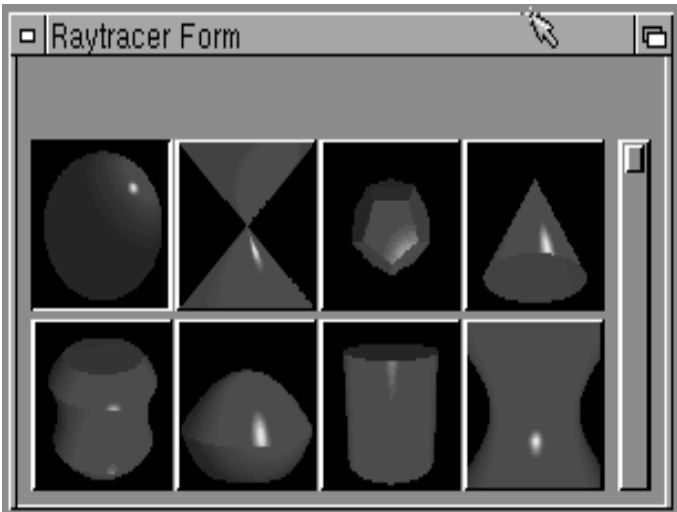
The first time, you will be confused because of the many buttons. But you have only to choose symbols for the first three big gadgets. The first one selects the shape. The second one the material. If you want to have only a ball without texture, or glass, you don't need to select this button. The third one is important: it gives the surface-parameters for the material.

Then you are ready: click on "Trace It" - and wait. A window will open with the traced picture inside.

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4.2 Shape

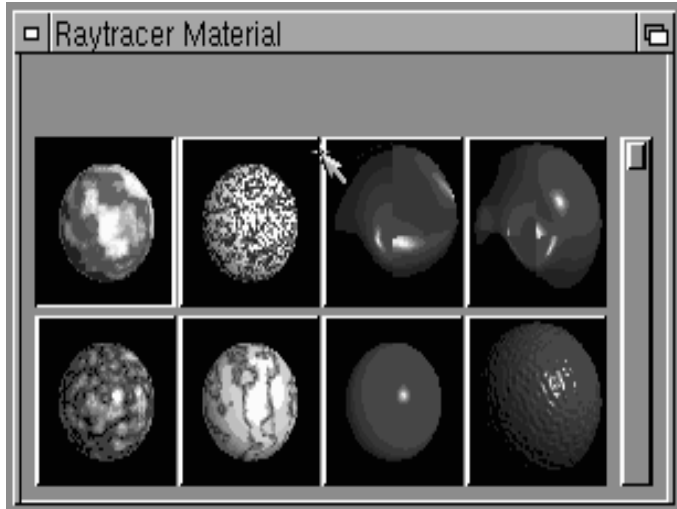


Select your preferred shape. The window will close. Most of the objects need more parameters like size. This is adjustable in the requester, which opens after a click on the button under the last one, which is also called "Shape".

If more parameters are possible, a window will open to adjust the new parameters. Else, an errorrequester will appear to say, that no more parameters are required.

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4.3 Material



Select your preferred material. The window will close. Some of the materials need more parameters like roughness or frequency. This is adjustable in the requester, which opens after a click on the button under the last one, which is also called "Material".

If more parameters are possible, a window will open to adjust the new parameters. Else, an errorrequester will appear to say, that no more parameters are required.

The material is not important, if you want to have a solid object or a glass ball. It is only for 2 or 3 D- textures.

Through this concept, there will be more materials and objects with the same programm in future.

4.4 Surface

Select your preferred surface. The window will automatical close. All the materials need more parameters like glossy, surroundlight

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or mirroriness. This is adjustable in the requester, which opens after a click on the button under the last one, which is also called "Surface".

A window will open to adjust the new parameters.

Surround is a value, which gives the surround light. Diffuse and Shine gives also the parameters for the light. The light of a scene is composed by the surround light, the diffuse and the shiny light. These 3 values together should give 1. But if you want to have a brighter scene, you can make them higher. If you have also mirror or / and translucent selected, these factors should also be within the sum of one of the light.

Gloss is only a value, which makes the glossy point on an object.

4.5 Colors

There are 3 drop-areas in the raytracing-master-window. These are good for the light, the surrounding - light and the color of the material.

Pick a color in the color-requester and let it drop in one of these areas.

4.6 Light

The raytracer could work with many colors - Ξ -Paint gives you only one. The cube beside shows you the position of the light, if you know, that your object is in the middle of the cube. To change the coordinates, change the values with the sliders or direct.

4.7 Shadow

If your object can make a shadow, you have to switch on this button. This costs CPU-power, and therefore this button is normally

disabled.

4.8 View

View gives the parameters how you want to look into a scene. X and Y are the relative height and width of the virtual window, you look through. Z is the parameter for the distance, you are away from the scene.

4.9 Width and Height

This sets the width and height in pixels of the rendered image. Default is the size of the last new project you made.

4.10 Camera

To set the camera position, you can do this with these parameters. The cube shows the position relative to the scene, which is in the middle. Choose a great Z-Value, else the objects are too distorted

4.11 Scaling

If your object is too small or too great, you can scale it with these parameters. Also, you can distort an object, if the X,Y and Z-coordinates are not the same.

4.12 camera Rotation

There are two sliders for rotating the Camera. This rotates the viewpoint to the scene counterclockwise. The X-Rotation is very important if you have more than one object (like a plane or so).

Chapter 1

Ξ-Paint 4.0

Now, you have bought a new version of Ξ-Paint - and probably you have many expectations for that new product. And you may be right! Though time was short between the releases 3.2 and 4.0, some new, partially revolutionary knowledge has been put into it.

As far as I know, there is currently no 2-D paint program in 24 bit, where you can create animations quick and simple and display them as a preview. The built-in simple, but comfortable raytracer is also new.

And there have been many bug-fixes since the last release. That's, why there is a special chapter dedicated to the history of Ξ-Paint. Further, I tried to explain frequently asked questions and to give some help at the installation procedure.

As with the release before, we created an addendum to the manual of release 3.2, which itself is based on the manual of 3.0. It doesn't make sense to give every user, which has upgraded recently, a new manual. And there is an advantage for the beginner, too. He's able to start with the much more simple manual of 3.0 and read the advanced features of the 3.2 and 4.0 later on.

4.13 Scriptlanguage for Professionals

If you want to build more complex objects, you can do this with the script-language of ray. this chapter gives you a short summary.

4.13.1 Coordinate-System

left-handed +x: to right +y: to upper +z: in the monitor

4.13.2 Limits of the Interpreter

maximum pf different surfaces: 100

maximum of different objects: 100

maximum of mapping-oictures: 100

Objects, surfaces and mappings are identified by there number. These numbers are free after the construction of a new object.

4.13.3 Start Calculation

TRACEIT(objectNr,PicWidth,PicHeight,shadowed)

objectNr: Number darzustellenden objectes

PicWeidth, PicHeight: Width and Height of the new picture in pixel

shadowed: 0: no shadow

1: calculation of shadow

4.13.4 Basic objects

Basic objects are generated by the objectNumber and some parameters. These objects are situated in the middle of the scene, in the 0-point. Some Basic objects are cutted by an other object to make the calculation easier (ETorus, Quart) or to make them real (EKegel, EZylinder etc.).

1.1 Pictures on this CD, Competition

Almost all pictures, that were on the 3.2-CD, have been included here, too. Some ugly pictures have been deleted and therefore many new and pretty pictures have been added. The old pictures are included as a JPEG file, too.

As it was the last time, there is a competition for you, too: please send your pictures, created with Ξ -Paint to my address! Add a small curriculum vitae and your address. The 50 best will recieve the next Ξ -Paint-CD for free as reward for their efforts.

Please note, that you should not break any copyrights, and that you have to give me the right to publish your picture on the Ξ -Paint-CD.

1.2 Contents of this Manual

The very detailed tutorials of the 3.0 part remained the same and therefore you can use them to learn the basic functions of Ξ -Paint. What has changed dramatically, is the AREXX-Port of Ξ -Paint and therefore completely new in this manual. But the functions that were contained in 3.2 remained compatible.

The topic "system-settings" has changed beetween release 3.0 and 3.2. So I recommend to use the 3.2 part for that topic. Only some special settings are new for 4.0 and explained in this part of the manual.

The I/o-system of Ξ -Paint has been completely rewritten for release 3.2, it remained the same for 4.0. So in this case, you should consult the 3.2 part.

Some important facts of the 3.2 maunal are also included and extended here. This, for example, are the answers for frequently asked questions concerning the handling of Ξ -Paint.

In this 4.0 manual I concentrate on the essentials of animation and raytracing and will explain some new features. Should there remain some questions or confusions, don't hesitate to contact me:

KUGEL(objectNr,Radius)

Ball with radius: Radius

TORUS(objectNr,Radius)

Radius: this is the thickness of the Torus-tube, the big-tube is always 1.0. The Torus lies in the X-Z-Plane.

ETORUS(objectNr,Radius)

Torus cutted with the standardball.

QUART(objectNr)

Mixture between ball and cube.

ZYLQUART(ObjketNr)

Mixture between cylinder and cube.

PLANE(objectNr)

Unlimited Plane in the X-Z-dimension.

KUBE(objectNr,Len)

Cube with the lenght of 2*Len, centered in the middle.

PYRAMID(objectNr,sides)

Pyramide with n sides on the X-Z-Plane standing with height 1.0.

OKTAEDER(objectNr, side)

Combination of 2 n-sided Pyramids.

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1.3 Corrections to the Manual of Version 3.2

1.3.1 Retina

On some places, there was mentioned, that the Retina driver will not be included at the CD. But this has changed immediately before the CDs were pressed. So *every* output driver we've ever written, is contained on the CD.

1.3.2 Printing the Manual

It was offered to ship a paper manual. Some customers of Ξ -Paint are willing to pay up to 20\$ for it. But sadly this isn't possible. A paper manual would be three times the cost. This is not only caused by the printing, also by the cost of shipping and handling. Therefore the manual is contained on the CD only, for printing with DeskJet, LaserJet and PostScript.

It was mentioned, that one could use double sided printing. This is not new to mee, too. But I know from own experience, that if a paper gets stucked you have to reprint the complete manual another time. So I appeal to the ones that wanted to do so, to appreciate that. Doing a double sided manual would cause the anger of the people with not so perfect printers. For those ones, that have AmigaTeX, I have included the DVI-file. With that you

DODEKAEDER(objectNr)

”Ball” through 12 Fiveedges.

ZYLINDER(ObejtNr,Radius)

Unlimited Cylinder along the Y-axis.

EZYLINDER(objectNr)

Cylinder with Radius 1, cutted at Y=1.0 and Y=-1.0

KEGEL(objectNr)

Unlimited double-cone with peak in the 0-point.

EKEGEL(objectNr)

Cone with Raduis 1.0 cutted at Y=1.0 and Y=-1.0

HYPERBOLOID(objectNr,Value)

Value for the bending.

EHYPERBOLOID(objectNr,Value)

Cutted Hyperboloid

PARABOLOID(objectNr)**EPARABOLOID(objectNr)****4.13.5 Material Definition**

To make an object visible, you have to relate it to a material.

MATERIAL(NewobjectNr,OldObjketNr,MaterialNr)

can decide, how to print the manual for your own.

Additional the is a file in the CD in the printing dircetory, with that will print the missing page 21.

1.4 Libraries

Starting with release 3.2 on CD, there were many problems with the Ξ-Paint libraries. Some CD-ROM drivers change the file names to upper case. The operating system needs them to be lower case. This special problem should be fixed with the 4.0 release of the Ξ-Prefs program. So, from now on, it should be possible to start Ξ-Paint directly from CD. But quitting the program after that will be no fun, if you worked with brushes. Ξ-Paint tries to save them within the actual dircetory, which obviously fails.

In a later version, the brush-management will contain different libraries, that are contained in a database.

On some systems it happens, that Ξ-Paint doesn't start or Ξ-Prefs doesn't find any output drivers. Try to step through all parts of the LIBS: path and delete all Ξ-Paint libraries you find there. After restarting your Amiga delete the ENV:XiPaint variables. If the problem is still there (and *only* in this case), copy all libraries from xipaint/libs to LIBS: (but be careful to put them to lower case names).

With logical operators you are able, to make complex objects. The following operations are possible:

Union, (UNION A+B)

Difference, (DIFFERENCE A-B)

Intersection (INTERSECTION A and B)

These operators are also good to optimize the calculation, if you can intersect some objects so that the result has less complexity. The optimized operators (SUNION, SINTERSECTION, SDIFFERENCE) are ignoring the material.

INTERSECTION(NewobjectNr, objectA, ObjectB)

Result: Intersection from object A and B The resulting object has the material from B and the surface from A.

DIFFERENCE(NewobjectNr, objectA, ObjectB)

Result: object A without object B The material comes from object A, but at the cutting points, it has the surface from B.

UNION(NewobjectNr, objectA, ObjectB)

Union from A and B B is there, where is no A.

Chapter 2

Extended Functions

2.1 Magic Fill

This simple but powerful tool allows you to fill colored areas with similar intensity at one pass. An example: you want to brighten the background sky of a digitised picture. Choose the mode "Brighten" and a 1-pixel-pen. Click on the fill symbol (paint pot) to select the fill mode. At the "system-settings", page "picture" you have to switch on the gadget "Magic fill". Though the sky contains more than one blue, it should get filled at once. Since you have chosen the mode "brighter", it will get brighter.

To vary the range of intensity that is accepted, use the slider "Magic Delta" at "system-settings", page "Picture". The greater you set this value, the more diverging colors are concerned by the fill operation.

2.2 Red-Green Composition

Now you have the possibility to create depth pictures for those red-green glasses at a very simple way. You only have to load the two pictures for the left and right eye. After that you can shift their

SINTERSECTION(NewobjectNr, objectA,ObjketB)

SDIFFERENCE(NewobjectNr, objectA,ObjketB)

SUNION(NewobjectNr, objectA,ObjketB)

4.13.6 Transformations

TRANSLATE(NewobjectNr, OldobjectNr, dx,dy,dz)

SCALE(NewobjectNr, OldobjectNr, sx,sy,sz)

ROTATE _ X(NewobjectNr, OldobjectNr, angular)

Rotation around the null-pointt (+Z to +Y)

ROTATE _ Y(NewobjectNr, OldobjectNr, angular)

Rotation around the null-pointt (+Z to +X)

ROTATE _ Z(NewobjectNr, OldobjectNr, angular)

Rotation around the null-pointt (+Y to +X)

4.13.7 Color-Textures

CTEST(NewobjectNr, OldobjectNr,turbulenz)

BOZO(NewobjectNr, OldobjectNr,turbulenz)

MARBLE(NewobjectNr, OldobjectNr,turbulenz)

WOOD(NewobjectNr, OldobjectNr,turbulenz)

SKY(NewobjectNr, OldobjectNr,turbulenz)

SPOTTED(NewobjectNr, OldobjectNr,turbulenz)

AGATE(NewobjectNr, OldobjectNr,turbulenz)

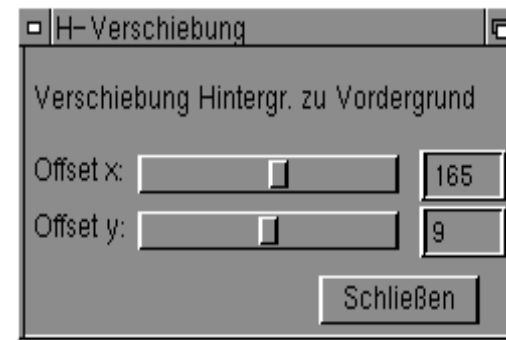
GRANITE(NewobjectNr, OldobjectNr,turbulenz)

origins with the lighttable function. To do so, open the window "Background-Shift".

This window tells you about the current offset beetween front and back picture.

To merge the two pictures, choose "RG-Composition" at the menu "Misc". Now you are asked for the first picture, the red one. After that you have to specify the green picture. After that, the function will generate a third picture with the same size of the first two ones. The shift of origins you have set at the lighttable-preview is applied to them. The target picture only contains the red- and green-data of the source pictures.

2.3 Background Shift



This function opens a window, where you can specify the shift beetween the front and a selected background picture. This only makes sense, if you want to rub throuh the background with the corresponding paint mode, or use the shift for red/green-composition.

The background picture automatically gets tiled, even if it is has a differnt size than the front picture.

4.13.8 Material-Textures

SCHECKER(NewobjectNr, OldobjectNr, Surface1, Surface2, Value)
3-D Chessboard, Value has no meaning.

PCHECKER(NewobjectNr, OldobjectNr, Surface1, Surface2, Value)
3-D Chessboard, Value has no meaning.

ZCHECKER(NewobjectNr, OldobjectNr, Surface1, Surface2, Value)
CylinderMap for Chessboard, Value is the angular velocity.

KCHECKER(NewobjectNr, OldobjectNr, Surface1, Surface2, Value)
BallMap for the Chessboard, Value is the angular velocity.

4.13.9 Normalvector-Textures (3-D)

NTEST(objectNrNew, objectNrOld, frequency, Phase, Roughness)

RIPPLES(objectNrNew, objectNrOld, frequency, Phase, Roughness)

WAVES(objectNrNew, objectNrOld, frequency, Phase, Roughness)

BUMPS(objectNrNew, objectNrOld, frequency, Phase, Roughness)

DENTS(objectNrNew, objectNrOld, frequency, Phase, Roughness)

WRINKLES(objectNrNew, objectNrOld, frequency, Phase, Roughness)

4.13.10 Picturemapping-Textures

TESTMAP(objectNrOld, objectNrNew, sx, sy, dx, dy, repeat, smooth, PicNr)

Undefined testingfunction. sx, sy: Scaling of the picture
dx, dy: Shifting of the picture

2.4 Picture Operations

Although this function were already part of Ξ -Paint 3.0, I'd like to remind you of following shortcuts:

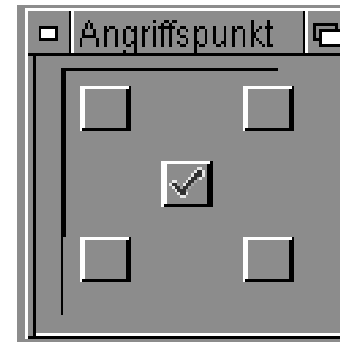
2.4.1 Mirror Picture by x-Axis

By pressing Alt-y you can mirror the actual project by the x-axis.

2.4.2 Turn Picture by 90°

The shortcut Alt-z turns the current project by 90° counterclockwise. It uses very few additional memory!

2.5 Brush Grab



In this requester you can select the position, where the mouse pointer (cross-hair) "grabs" your brush. Currently there are only 5 possibilities:

- Upper left
- Lower left
- Upper right

repeat: 0: no repetition

smooth: 0: no smoothing

PicNr: Number of the mapping picture

- Lower right

- Center

PMAP(objectNrOld,objectNrNew,sx,sy,dx,dy,repeat,smooth,PicNr)

Plana mapping.

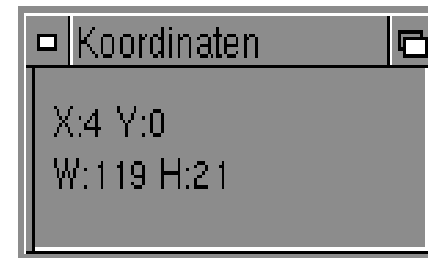
2.6 Coordinates

ZMAP(objectNrOld,objectNrNew,sx,sy,dx,dy,repeat,smooth,PicNr)

Cylindric mapping

KMAP(objectNrOld,objectNrNew,sx,sy,dx,dy,repeat,smooth,PicNr)

Spherical mapping.



It opens a window that shows the current position of the cursor within a project window. If a rectangle is drawn, it shows its current width and height.

4.13.11 Adjust Camera

KAMERA(width,height,length)

width, height: Width and Height of the picturewindow

length: Distance of the eye-point to the 0-point (negative Z-Axis)

Target is the 0-point.

TRANSKAMERA(dx,dy,dz)

Shifting of the camera-target-point.

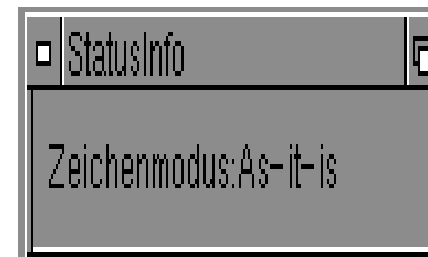
ROTKAMERAX(angular)

Rotation of the Camera through the X-axis.

ROTKAMERAY(angular)

Rotation of the Camera through the Y-axis.

2.7 Status Informations



A small window showing the current drawing mode is opened.

4.13.12 Ambient Light

AMBIENT(r,g,b)

Color of the surrounding light.

4.13.13 Light

LICHT(x,y,z,r,g,b)

Position and color of the light.

4.13.14 Material-Defintion

SURFACE(SurfaceNumber,r,g,b,surround,lightd,lights,shiny,mirror,trans,refraction)

r,g,b: Color of the material

surround: Part of the surrounding light

lightd: diffuse part of the light

lights: mirror part of the light

shiny: Coefficient for Shinylight (if higher the value, higher the shiny)

mirror: Coefficient for reflexion ($0. < 1.0$)

trans: Coefficient for transparency ($0. < 1.0$)

refraction: Refractionindex (> 0.0 , Luft == 1.0)

4.13.15 Mapping-Picture Definition

TESTMAPPIC(PicNr)

Internal definition.

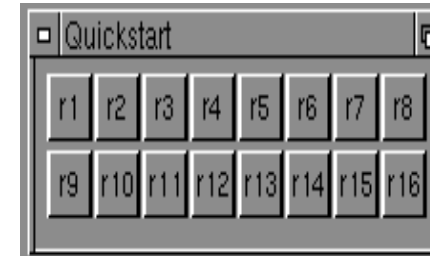
BRICKMAPPIC(PicNr)

Internal definiton like the bricks.

LOADMAPPIC(PicNr,"Name")

To load a mapping-picture (in DEEP-format).

2.8 Quick Start Box



The Quick Start Box is a small window with 16 plain buttons in it. But these buttons represent 16 AREXX-Scripts, which will be executed automatically after clicking on a button. So this window will be your own configurable toolbar! The scripts have to be in the drawer 'xipaint/rexx' and have to be named from 'r1.rx' to 'r16.rx'.

2.9 Support of Graphic Tablets

2.9.1 Overview

If you own a WACOM tablet, you can use it for **Xi-Paint** with the driver from Roland Schwingel (Shareware, on this CD). Best is version 1.50 or higher.

Other tablets like Summagraphics are currently not supported (may change in future).

You can select the tablet in the Xi-Prefs programs at the list "Available Mouse-Drivers". In the main program Xi-Paint you must switch on the button "Use Tablett?" in the pressure menu (open the menu with "Misc/Pressure Menu").

At "Available Mouse-Drivers" you can select one mouse driver that is supported by the corresponding output module. Further you have to set the pressure range and threshold of the tablet. This is necessary since the different WACOM-tablets have different ranges

(even physical). So you can set the pressure range by the following gadgets:

Minimum: Sets the minimal pressure, if the pen touches hardly the tablet or is away from it.

Threshold: The value represents the switch-point of the top switch of the pen at newer WACOM tablets.

Maximum: Sets the maximal pressure value the tablet will send. werden kann.

Some values can be obtained from the used tablet driver, others have to be set by the user. Therefore most drivers have some test-programs. With the driver on our CD, there is a developer-drawer, which contains this programs. By using them while pressing the pen and watching the button state (0 or 1) you can get the values needed. Basically you should be very conservative by setting this values (minimum too high, maximum too low). Otherwise Ξ -Paint may crash!

There are following mouse-drivers:

Amiga-Maus: Uses the Intuition mouse-interface and the tablet-interface of the OS 3.0. This allows the usage of any tablet-driver, that supports this interface. Since the OS-interface is misdesigned and doesn't supply the pressure range, you have to find out and set all three values.

Wacom II-S/IV Tablett: This driver uses the passive interface of the driver by roland schwingel contained on this CD. You should use version 1.50 (or greater), this one supplies the pressure range and you must set the threshold only. Since this value varies even between same tablet models, there is no way for the driver to find that out.

Chapter 5

AREXX-Port

In the following chapter the new AREXX commands are explained. Normally all commands operate on the current paint window. There are special commands to lock this picture or to load and save it. At the end of the chapter there is a complete summary of all AREXX command of Ξ -Paint.

- **activatebox boxnr**

boxnr: number of the paintbox 1..255

Activates a particular paint window for manipulating (all following commands work on this paintbox)

- **activatebrush nr activatepen nr**

nr: nummer of the brush to be activated

Selects the brush or pen with the given number

- **boxtofront boxnr**

boxnr: number of the paintbox 1..255

Moves a particular paint window to front

- **closeproject mode**
 mode = 0: no security check desired mode = 1: make security check mode = 2: security check only if changes are made to the picture
 Closes the active paint window
- **findproject name**
 name: name of the paint window to find (filename, project-name)
 The result is returned in the variable RESULT and is in the range from 0 to 255 0 means that an error has occurred (not found).
- **opennewbox w h**
 w: width of the new picture h: height of the new picture
 Opens a new paint window with the dimensions w and h. It is activated automatically.
- **openproject filename**
 filename: path and/or filename of the picture to open
 Opens a new paint window and loads the specified picture
- **paintmode mode**
 mode: 0 to 12
 Sets the paint mode without changing the current pen/brush
- **saveloader**
- **savesaver**
 Saves the current loader/saver in a special variable.
- **loadloader**

Wacom Active-Interface: This one supports the new active interface of the 1.50 driver. Because of its design, it is not possible to use it with those output-drivers, that use Intuition windows. So it is not listed, if you select one of them. This interface is the fastest and allows the most natural handling of the tablet. The only value, you have to supply, is the threshold. eingegeben werden.

Starting with this version, you can use mouse and tablet simultaneously! So you can click buttons with the mouse and use the tablet for painting only.

2.9.2 Switch Tablet-Mode on the Fly

With the shortcut Alt-p you can switch off the pressure sensitivity on the fly. Then the constant pressure of the pressure menu will be used. Pressing Alt-p again will switch on the pressure mode.

2.9.3 Pressure Menu

If you switch off the "Use Tablett?" at the pressure menu, you can adjust the pressure manually by using a slider. You can use this feature even if you have no tablet.

You can do so to print fonts with full intensity while using a tablet (just switch off the "Use Tablett?" and move the slider to full pressure). You can switch on and off more easily by using the shortcut ALT P.

2.9.4 Some Hints

If you paint regularly using the freehand airbrush, you should switch off the Antialias mode in the system settings (notebook, page "Line"). Otherwise the lines will not be smooth.

- **loadsaver**
Restores the loader/saver stored with saveloader/savesaver
- **savetemp fname**
fname: Filename
Saves the current picture to disk in DEEP format including an Anim.mpic
- **setloader name**
name: name of the loadmodule to be set, it must be within the drawer "modules" befinden.
Sets the requested module. The following modules are available now:
Examples:

```
setloader ''Internal DEEP''
setloader ''PPM(Xi)''
setloader ''HHsUniversalLoader''
setloader ''Targa(Xi)''
setloader ''ReproStudio(Xi)''
setloader ''PPM(Xi)''
setloader ''MultipicLoader''
```
- **setsaver name**
name: name of the loadmodule to be set, it must be within the drawer "modules" befinden.
Sets the requested save format/module. The following formats are available now:
Examples:

```
setsaver ''Internal DEEP''
setsaver ''Targa(Xi)''
setsaver ''SGI(Xi)''
setsaver ''PPM(Xi)''
```

TO SPEED UP: Set the Pixel-Current at e. g. 7 (system notebook, page "Line")! After this you can paint more fluent with freehand line 'Shift D'. Basic rule: the Pixel-Current should be a quarter to a third of the diameter of the brush (if possible, an odd number, so circles are painted correctly). With an airbrush of 30 pixel diameter the optimum Pixel-Current would be 9.

2.10 New System-Settings at the Notebook

2.10.1 Brush

Autom. As-It-Is: If switched off, Ξ -Paint keeps the previous paint mode as usual. When activated, Ξ -Paint selects the paint mode "As-it-is" if you pick up a brush (cut out or brush-queue). If you select a pen, the mode is set back to "Solid"

2.10.2 Picture

Magic Fill: Activates the new feature for filling areas as described above. If you switch off this feature, fill only acts on one solid color.

Magic Delta: Selects the intensity-range for Magic Fill. The bigger the value, the more colors get selectes to be filled.

2.10.3 In/Out

Max Entries/Filereq.: For big directories it is useful to limit the number of files to be listed in the file-requester. You can do this by adjusting the slider "Max. Entries/Filereq.". So you can avoid unnecessary waiting if you've selected the wrong directory.

```
setsaver ''DEEP''
setsaver ''ILBM''
setsaver ''PPM''
setsaver ''SUNRASTER''
setsaver ''JPEG(Xi)''
```

- setoffset x,y

x,y: absolute coordinates

Shifts the offset for the execution of an AREXX macro by x and y.

- workpointer

- waitpointer

Sets the mouse pointer to work/wait mode (busy symbol). If Ξ -Paint is in busy mode, no paint operations can be performed (important for AREXX and anims).

5.1 Table of ARexx-Commands

The following table lists all AREXX commands of Ξ -Paint.

2.10.4 System

A small hint:

If you mangled up your colors by experimenting with your own settings, the only way out is to quit Ξ -Paint and delete the files "ENV:XiPaint_User" und "ENVARC:XiPaint_User" before starting again. All settings will be resetted to their default values. But be aware, that all other changes in the system-settings (except the ones of Xi-Prefs) and your personal palette will be lost!

Command	Param	String	Menu	Key
activatebox	1	no	no	no
activatebrush	1	no	no	no
activatepen	1	no	no	no
arc	6	no	yes	yes
aslreq	1	no	yes	no
beginpoly	0	no	yes	yes
box	4	no	yes	yes
boxtofront	1	no	no	no
brushload	0	yes	yes	yes
brushsave	0	yes	yes	yes
brushturnd	1	no	no	yes
brushturnx	0	no	no	yes
brushturny	0	no	no	yes
brushturnz	0	no	no	yes
brushxhalf	0	no	no	yes
brushyhalf	0	no	no	yes
brushhalf	0	no	no	yes
brushdouble	0	no	no	yes
brushsize	2	no	no	yes
cls	1	no	yes	yes
closeproject	1	no	no	no
color	4	no	yes	yes
cyclemode	5	no	yes	no
dline	2	no	yes	yes
drawpara	7	no	yes	no
edge	1	no	no	no
ellips	4	no	yes	yes
endfpoly	0	no	yes	yes
endpbrush	0	no	yes	yes

Command	Param	String	Menu	Key
endpoly	0	no	yes	yes
endrex	0	no	no	yes
exit	0	no	yes	yes
fbox	4	no	yes	yes
fellips	4	no	yes	yes
fill	4	no	yes	yes
findproject	1	yes	no	no
fontdpi	3	no	yes	no
getbrush	4	no	yes	yes
gradmode	3	no	yes	no
itext	0	no	yes	yes
line	4	no	yes	yes
lighttable	0	no	yes	yes
loadloader	0	no	no	no
loadsaver	0	no	no	no
maskclut	2	no	yes	yes
maskmode	7	no	yes	yes
maxmask	0	no	no	yes
minipic	1	yes	yes	no
openproject	1	yes	no	no
opennewbox	2	no	no	no
paintmode	1	no	no	no
picload	0	yes	yes	yes
picsave	0	yes	yes	yes
pointlayout	3	no	yes	no
polymove	2	no	yes	yes
polydraw	2	no	yes	yes
redo	0	no	yes	yes
saveloader	0	no	no	no

Chapter 3

Animation

In version 4.0 Ξ -Paint offers animation capabilities for the first time. A note ahead: Those animations done in 24 (or 32) bit can't be played back by Ξ -Paint at full speed and resolution! It rather offers the possibility to process or generate single frames that are related to another. But you can look at a preview of the animation.

When using the preview, you must have a minimum amount of RAM: that is 20kB memory per picture. So, if you have a 50 picture animation, that will be 1 MB of RAM.

Some users, that are accustomed to DPaint 4 may be irritated: Ξ -Paint can't use the chip memory of the Amiga, because it allows only a depth up to 8 bit. So a freehand brush animation is not possible.

In the first version with animation, there are still no "animated brushes". But apart of this limitations there are several completely new features.

3.1 Basics

Ξ -Paint uses single frames for its animations. They have to be within a directory have the extension .000 to .999. Besides that,

Command	Param	String	Menu	Key
savesaver	0	no	no	no
savetemp	1	yes	no	no
savemode	2	no	yes	no
setfont	1	yes	yes	yes
setgrid	5	no	yes	no
setloader	1	yes	no	no
setsaver	1	yes	no	no
setoffset	2	no	no	no
setmaxmove	1	no	yes	no
setpoint	2	no	yes	yes
setshadow	3	no	yes	yes
text	0	yes	yes	yes
undo	0	no	yes	yes
version	0	no	no	no
vlabdigi	0	no	yes	no
vlabinput	3	no	yes	no
vlabscansize	4	no	yes	no
vlabdeinter	0	no	yes	no
workpointer	0	no	no	no
waitpointer	0	no	no	no
wait	1	no	no	no

they have to be in the format IFF-DEEP, since this Loader/Saver is the only one that is built-in into Ξ -Paint and therefore operating synchronously. But this is not really a limitation - this format is the fastest one, that Ξ -Paint can handle. It also is no compression losses and saves minipics and the alpha channel.

To create an animation you need the description of a process to happen. There are two possibilities to do that: you supply a path a event happens along that path or you supply the difference event between two pictures. Both ways are supported by Ξ -Paint. In addition to that you can work with a static set of pictures, just to do one operation for all of them one time.

3.2 New Animation

The following requester opens:



Please notice: if there is a project window opened, the active (last used) paint window is taken as base picture for the anim. Every single frame is filled with that picture **automatically**.

So in this case the supplied width and height is ignored!

If you want to create an empty new animation, you have to close all project windows (painting windows)! Then the width and height is taken from the requester and a sequence of black frames is generated.

Further you must specify the number of frames to be generated and the path where to store the images.

Watch out for enough free space on your hard drive. To store 50 pictures with a resolution of 200x200 pixels, you'll need 10 MByte: The calculation formula:

$$MByte = \frac{FrameCount * ((Width * Height * 4) + 46496)}{1024 * 1024}$$

$$\frac{50 * ((200 * 200 * 4) + 46496)}{1024 * 1024} = 10 MByte$$

3.3 Load Animation

Here you can load anims created with Ξ -Paint before. You can load every other animation, too. But their single frames must have the file name extensions from .000 to .999 and reside within a directory. Choose the frame with the lowest number you want to work on. All following numbers are loaded automatically.

Take care, that Ξ -Paint can only load anima frames saved in the IFF-DEEP format. Also check the Gadget "Generate Minipic" in the main window for anims to be on. The current load-module has to be one, that supports IFF-DEEP.

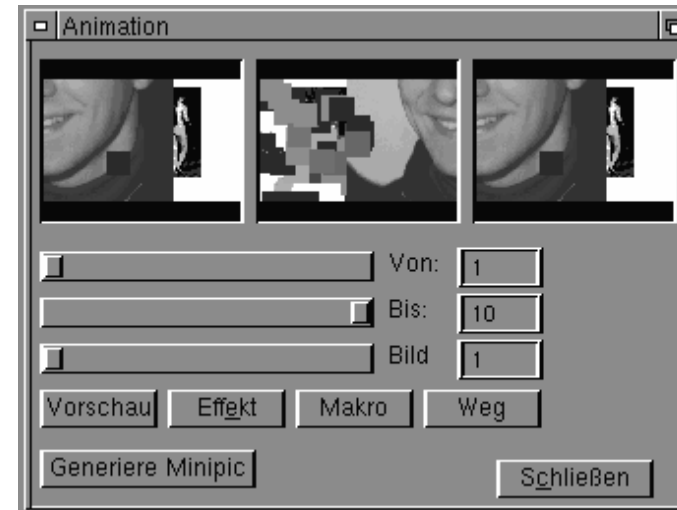
3.4 Main Window

Chapter 6

Bug-Fixes

The following bugs from Ξ -Paint were fixed:

- Module XiMulti had Problems with NOT-alpha-Channel selected while saving in IFF or SUNRASTER or PPM
- Module Xijpg crashed on non-fpu-systems while makeing a minipic. Without minipic it works ..
- Notebook-Alpha: was only activatable with doubleclick
- Crash in Cyclewin on first postion-dropping
- Negated Line in Polygon now corrected
- Bug in Drag&Drop if bank has changed, corrected.
- Bug if Colorbox is closed fixed.
- Clear Picture now with yes,no, cancel
- Cycle-box: Slider - Bug fixed
- Draco: Cursor and help corrected



After you've selected a filename and loaded or created the frames, this window open. It shows three frames of the anim, or if the anim was no created by Ξ -Paint (no minipics) three empty rectangles.

There are three sliders below corresponding with theese three pictures. The first slider specifies the first picture of the anim to be processed, the second one the last.

Notice, that theese values have a different meaning than those supplied at load time. So you can load the anim starting from picture 10, but after that you can limit processing e. g. between the 14th and 34th picture.

The third slider represents the current frame, that is used as a marker in the path requester.

A click on "Generate Minipic" converts an alien anim into Ξ -Paint format and creates the minipics.

- If XiPaint ends, now there is a delay which prevents from disk-validating if it crashes (not tested)
- Bug in Mask if painted with solid fixed
- Lighttable with background-shifting now with mosaic
- jpg-saver corrected: smoothing was on the same value as quality
- All paint-functions with output speeded up to 30
- Fixed bug in endrexx
- No Bug: filerequester filters *.c *.h *.info *.mpic *.o. So Names like bulb.compose are not shown!
- Many Bugs in AREXX fixed (koordinates etc.)
- Filerequester now speeded up to 50
- New Help - System: now only one File- and many help-files are now added.

3.4.1 Preview



In the preview window you get an approximate impression of you anim. You have the possibility to start playback with "Start" and stop it with "Stop".

On most systems the frame rate will be too fast, then you should set a delay value of 1 or 2. Then every picture is stopped for 1/50 or 2/50 seconds.

With the switch PingPong enabled the anim is played continuously from start to end to start.

3.4.2 Macro

If you want to do a constant operation on a number of frames, you can do this with AREXX and the Macro function. Record an AREXX macro with Ξ -Paint and save it. Adjust the start and end of the frame sequence with the sliders and press the "Macro" button. A filerequester opens, where you can specify the name of the macro created before.

This macro is applied to all frames of the sequence - always at the same position.

Chapter 7

Common User-Errors

Only the error "Couldn't open Screen" is shown

To Fix: Start XiPrefs and select graphic board and resolution and start XiPaint again.

The error "Old or Demoversion, etc." is shown. Sometimes XiPaint starts - but nothing happens. The menus are empty (no text) and so on...

To Fix: Some configurations are able to load libraries from the current directory (I don't know why). Copy all Xi#?.library nach LIBS:. After that make a reset and start XiPrefs first, then XiPaint.

At start there is only a grey screen - nothing else

To Fix: Press right mousebutton and select item from menubar (like menus-tools or project-new, etc.).

There are no images shown at the browser.

To Fix: You have no minipics for the images in the selected directory. You can generate them by using the normal filerequester.

3.4.3 Effect

This item is designed to do fading effects. It is not very sophisticated right now — this will improve in the next versions of Ξ -Paint.

After selecting start- and end-picture you may press this button. Notice, that all frames in the sequence may be manipulated or replaced completely at some operations.

A window opens, where you can select the effect. After that all new frames in between are calculated.

3.4.4 Path

With this switch you get into the menu for brush anims. Before doing that you should select start and end of the frame range you want to process.

Click into the empty preview area (while the filename of a picture is selected).

There are no images or frames within the browser, no picture can be loaded

To Fix: You've set a wrong loader at the system notebook, section "Load". If you use InternalDEEP and try to load an IFF or JPEG you'll get the effect above. Therefore try to use the XiMulti loader.

Other programs are unable to load XiPaint images

To Fix: Set the saver (at the system notebook) to IFF or another well known format.

Can't choose resolution of display (screen) I like

To Fix: Look at the Retina-Workbench-Emulation's **Ξ-Paint** entry, whether the selected group is capable of doing your resolution. In doubt of that, choose the biggest group listed (e. g. Group 30-38kHz 50-91 Hz).

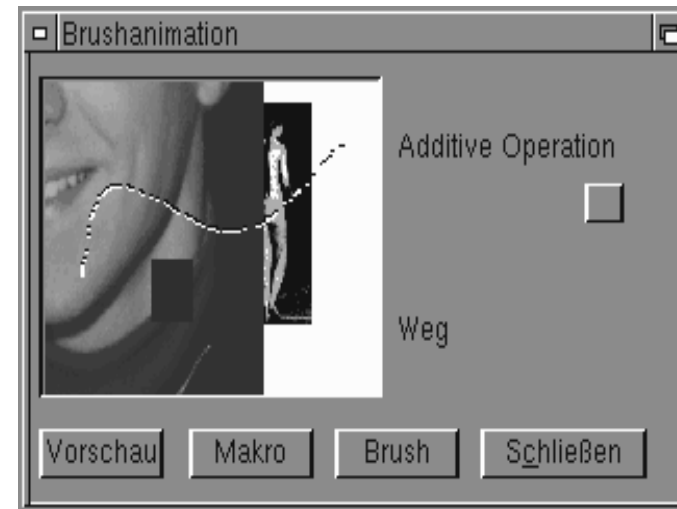
It's better to switch off the emulation for the retina direct version, since its Intuition screen is only for input purposes and therefore may stay at the Amiga display hardware. So it uses only few (Retina-)memory.

Ξ-Paint-screen doesn't pop to front

To Fix: Activate a window on Workbench, then change the screens by pressing Amiga-M or clicking the screen-cycle-gadget.

To Fix 2: Install the FKey program of your original Amiga OS (>= 2.0) disks. Map the program "xsend" to any key you like. This program is supplied with **Ξ-Paint** in the drawer "User". A press on the selected key will pop the **Ξ-Paint** screen to front.

3.5 Path



This window shows you an area, where you can paint the path a brush or macro should take. Fast painting is acceleration, slow painting is deceleration. If you'd like to get constant speed you have to paint your curve smooth.

If the switch "Additive Operation" is on, every single frame shows the changes to their predecessor. This way the move leaves a trace on the previous images.

Freehand airbrush lines suffer from irregularities in thickness

To Fix: Switch off the Antialias function in the system notebook (page "Line").

Ξ-Paint can't load my pictures

To Fix: The default loader after installation is "Internal DEEP". It is only capable of loading IFF DEEP pictures. So you should change this setting to "Multipic.Loader" and try again.

If you know the exakt format of your pictures, you can choose another loader carrying this name as well.

3.5.1 Preview



In the preview window you get an approximate impression of you anim. You have the possibility to start playback with "Start" and stop it with "Stop".

On most systems the frame rate will be too fast, then you should set a delay value of 1 or 2. Then every picture is stopped for 1/50 or 2/50 seconds.

With the switch PingPong enabled the anim is played continously from start to end to start.

3.5.2 Macro

If you want to do a constant operation on a number of frames, you can do this with AREXX and the Macro function. Record an AREXX macro with Ξ-Paint an save it. Take care of the position, where you draw the macro. This position (relative to the upper left corner) will be the relative postion of the macro operations to the path.

After you've fixed the frame range press the "Macro" button. A filerequester opens, where you can select the recorded macro. As with the brush, if you switch on "Additive Operation", the macro leaves a trace on the previous frames.

The selected macro is applied to all frames within the range - always at the macro's position relative to the path.

3.5.3 Brush

With "Brush" the current brush with the current paintmode and color is applied to all selected frames. The position is specified by the path. With this operation the current loader-module is used. So for fastest speed you should select "Internal DEEP".

The pictures are saved as IFF-DEEP with minipics anyway.

3.6 An Example

We open a small procet with a size around 200 x 200 pixels. A small flower or the St. Stephens Cathedral for example.

Choose "Animation - New" from the menu. Enter the path, where you have enough space for the animation (see formula above), including the filename for the pictures (without extension).

Open the brush queue and click on a small brush. At the anim requester click at path and draw a curve (like in the figure above). After that click on "Brush". Now all single frames get manipulated. With "Preview" we can look at the completed anim with the brush moving along our path.

Chapter 8

The Future

The release 4.0 contains news like animation and raytracing. Nevertheless development never stops and new features become possible. Though I tried hard, it was not possible to add "Natural Paint" features in this release: this will be a feature of 4.1. There is a "MagicFill" in 4.0, but the "Lasso" selector for brushes has to wait till 4.1.

Some other items are delayed until 4.1, too. If there are any features you need, but **Ξ-Paint** lacks them (yet): mail me - let's see what I can do for you!

The queue concept for pens and brushes will be improved by libraries. So you can have an own brush library for each of your projects.

A very important aspect of the release 4.1 is the hierarchical and object oriented handling of all data within **Ξ-Paint**. It will contain an own database! With that you can store different versions from your pictures or manage additional data (text, date, author, etc.). This database will be open to all Amiga programs. The sourcecode will be free and compiled to a shared library, open for all users. So maybe you can collect your private addresses with it ...