

ROCHESTER INSTITUTE OF TECHNOLOGY

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The College of Imaging Arts and Sciences  
In Candidacy for the Degree of  
MASTER OF FINE ARTS

## FILTERS IN *MOTION*

*by*  
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*August, 1995*

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# Acknowledgements

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This thesis and report would not have been possible without a great deal of support. I would like to thank James Ver Hague: my chief adviser, Robert Keough, and Gordon Goodman: my associate advisers, who have lent their time, shared their knowledge and experience, and also generously supported my efforts in bringing this project to its goals.

I would like to also thank my friends, my family, and my classmates in Computer Graphics Design at RIT—who supported me throughout this endeavor.

The “Filters in Motion” interactive project and paper were created entirely on an Apple Macintosh Quadra 660AV configured with 24 MB of RAM, an APS 540 MB Hard Drive, a Wacom Graphics Tablet, a 16” Apple Monitor, and an Apple Personal LaserWriter 320. Software used for this project and paper are:

- Adobe Photoshop 2.5.1
- Macromedia Director 4.0
- SoundEdit Pro
- QuarkXPress 3.3
- HSC Software: Kai’s Power Tools 2.0
- Finder Hider.

All images used in each filter movie and Appendix are scanned from *Tony Stone Images Catalog Volume 6 and 7* and credited to the following photographers: (in alphabetical order)

- Battensby, Simon
- Brierley, Paul
- Ellis, Sean
- Lefkowitz, Lester
- McArthur, Pete
- Mercer, Ralph
- Taplin, Myron
- Walker, Spike.

Fonts used in the interactive project are *Draft Plate* from *TypeCase Volume No.3* and *Helvetica*. Font used for thesis paper is *Futura*.

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# Introduction

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The purpose of this thesis is to create and experiment with new techniques of applying Adobe Photoshop filters—both standard and plug-in—to still images, and arranging them in a sequence of frames in Macromedia Director to create the effect of motion or movement of those still images. This study will be presented as an interactive project which lets the user explore and navigate through the information provided.

Significantly, as Adobe Photoshop is one of the most powerful image-editing applications for designers, photographers, and illustrators, the uses of this program with their standard and compatible plug-in filters are widely expanded in different ways. Additionally, filters offer possibilities to combine their potentially spectacular effects with other techniques.

In the process of experimenting, Adobe Photoshop: a digital image processing program, and Macromedia Director: an authoring tool for interactive multimedia with animation environment, were used as tools along with other applications—such as SoundEdit Pro, and Finder Hider.

As there are almost forty-five standard filters and numerous plug-ins, this project focused on seven selected filters—six standard and one plug-in. The final implementation is an interactive project which lets users experiment with these new techniques while navigating through

the potential information.

These new techniques, which combine the advantages of the two applications, would be very useful to be applied by viewers. A basic understanding of computer technology, as well as basic familiarity about Adobe Photoshop and Macromedia Director, are assumed.

Definition of terms used in this project are:

- Filter— Photoshop's small programs, which could be selected from the Filter menu to run on an entire image or a selection, work by manipulating the bits of data that make up the digital image.
- Motion— The effect of movement which is manipulated by applying some filters on a still image.

# Review of the Related Literature

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Adobe Photoshop is one of the most powerful visual communication tools. The program has expanded the visual vocabulary of designers, photographers, and illustrators to express their creativity. It also provides a laboratory for synthesizing textures, patterns, and special effects that can be applied to photos, graphics, or video.

Photoshop's filters are small programs that can be selected from the Filter menu to run on an entire image or a selection. These filters work by manipulating the bits of data that make up a digital image. This manipulation or "pixel processing" can create an unlimited number of permutations of the original image. Filters can be applied directly or shown in the preview windows that take the user into visual realms of infinite magnification, color, and pattern. The variety and scope of filters seem endless.

Adobe Photoshop, like many other applications such as Adobe Premiere or Fractal Design Painter, has two kinds of filters: built-in and plug-in. Built-in filters—also known as native or standard filters—are an integral part of the program and are always available in Photoshop's Filter menu. Plug-in filters are like special-effects programs—software add-ons—that "plugged into" a special folder. The Preference dialog box allows users to inform Photoshop where the Plug-ins folder is located.

## Filter Categories:<sup>1</sup>

1. Special-effects filters have no precedent in natural-media artwork or photography and produce a unique digital result.
2. Art-effects filters emulate natural media, such as watercolor or colored pencil, or cause an image to take on the appearance of another medium.
3. Distortion filters displace pixels by twisting or twirling them, or by using any technique to shift their shape.
4. Production filters are used by prepress houses to prepare images for print, multimedia, or video output. They emulate darkroom techniques or produce new effects for print or video jobs.
5. Conversion filters include: conversion filters proper, which transform an image from one file format to another; compression filters; format conversion filters; and special types of import transformation filters such as Photo CD.
6. Hardware Plug-Ins: All filters that add modular functionality to Photoshop and other graphics applications are "plug-ins." However, not all plug-ins are "filters" as we define them. Some are no more than interfaces that allow a particular external device (such as a scanner, printer, or digital camera) to interact with Photoshop or with other graphics applications.

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## Photoshop Standard Filters

Photoshop 2.5.1 comes equipped with more than 40 filters. The filters are arranged hierarchically in the Filter menu according to their function.

### 1. Blur Filters:

- 1.1 Blur
- 1.2 Blur More
- 1.3 Gaussian Blur
- 1.4 Motion Blur
- 1.5 Radial Blur

### 2. Distort Filters:

- 2.1 Displace
- 2.2 Pinch
- 2.3 Polar Coordinates
- 2.4 Ripple
- 2.5 Shear
- 2.6 Spherize
- 2.7 Twirl
- 2.8 Wave
- 2.9 Zig Zag

### 3. Noise Filters:

- 3.1 Add Noise
- 3.2 Despeckle
- 3.3 Median

### 4. Sharpen Filters:

- 4.1 Sharpen
- 4.2 Sharpen More
- 4.3 Sharpen Edges
- 4.4 Unsharp Mask

### 5. Stylize Filters:

- 5.1 Color Halftone
- 5.2 Crystallize
- 5.3 Facet
- 5.4 Mosaic
- 5.5 Diffuse
- 5.6 Emboss
- 5.7 Extrude
- 5.8 Find Edges
- 5.9 Trace Contours
- 5.10 Fragment
- 5.11 Lens Flare
- 5.12 Pointillize
- 5.13 Solarize
- 5.14 Tiles
- 5.15 Wind

### 6. Video Filters:

- 6.1 NTSC Colors
- 6.2 De-Interlace

### 7. Special-Purpose Filters:

- 7.1 Custom
- 7.2 High Pass
- 7.3 Maximum
- 7.4 Minimum
- 7.5 Offset

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## Plug-in Filters

(These filter sets are alphabetically listed by the company name.)

- **ALARIS**

1. Apertura

- 1.1 TIFF
- 1.2 HandshakeCT
- 1.3 HandshakeLW
- 1.4 AccessCT
- 1.5 AccessLW

- **ALDUS**

*Gallery Effects: Three separate volumes of plug-in filters (16 filters per volume) apply a variety of dramatic, photographic, and natural-media effects to images.<sup>2</sup>*

2. Gallery Effects; Classic Art, Volume1

- 2.1 Chalk & Charcoal
- 2.2 Charcoal
- 2.3 Chrome
- 2.4 Craquelure
- 2.5 Dark Strokes
- 2.6 Dry Brush
- 2.7 Emboss
- 2.8 Film Grain
- 2.9 Fresco
- 2.10 Graphic Pen
- 2.11 Mosaic
- 2.12 Poster Edges
- 2.13 Ripple
- 2.14 Smudge Stick
- 2.15 Spatter
- 2.16 Watercolor

3. Gallery Effects; Classic Art, Volume2

- 3.1 Accented Edges
- 3.2 Angled Strokes
- 3.3 Bas Relief

- 3.4 Colored Pencil
- 3.5 Diffuse Glow
- 3.6 Glowing Edges
- 3.7 Grain
- 3.8 Note Paper
- 3.9 Palette Knife
- 3.10 Patchwork
- 3.11 Photocopy
- 3.12 Rough Pastels
- 3.13 Sprayed Strokes
- 3.14 Stamp
- 3.15 Texturizer
- 3.16 Underpainting

4. Gallery Effects; Classic Art, Volume3

- 4.1 Conte Crayon
- 4.2 Crosshatch
- 4.3 Cut Out
- 4.4 Glass
- 4.5 Halftone
- 4.6 Ink Outlines
- 4.7 Neon Glow
- 4.8 Paint Daubs
- 4.9 Plaster
- 4.10 Plastic Wrap
- 4.11 Reticulation
- 4.12 Sponge
- 4.13 Stained Glass
- 4.14 Sumi-E
- 4.15 Torn Edges
- 4.16 Water Paper

- **ANDROMEDA FILTERS**

5. Andromeda Series1

- 5.1 cMulti
- 5.2 Designs
- 5.3 Diffract
- 5.4 Halo
- 5.5 Prism
- 5.6 Rainbow
- 5.7 Reflection
- 5.8 sMulti



- 5.9 Star
- 5.10 Velocity
- 6. Andromeda Series2
  - 3D Surface Mapping
- 7. Andromeda Series3
  - Mezzo Filter
- CANDELA
- 8. ColorCrypt
- 9. PrintCal•PI
- 10. ScanCal
- DPA SOFTWARE
- 11. Intellihance GS/RGB/CMYK
- 12. IntellihancePro GS/RGB/CMYK
- HSC SOFTWARE
- 13. Kai's Power Tools 2.0: *A set of over 30 special-effects filters for Photoshop and other programs that use plug-in technology.*
  - 13.1 Blur Submenu:
    - Smudge Darken/Lighten
  - 13.2 Distort Submenu:
    - Glass Lens
    - Page Curl
  - 13.3 KPT Submenu:
    - Fractal Explorer
    - Gradient Designer
    - Gradients on Paths
    - Texture Explorer
    - 3D Stereo Noise
    - Fade Contrast
    - PixelStorm
    - PixelWind
    - PixelBreeze
    - Seamless Welder
    - Selection Info
- 13.4 Noise Submenu:
  - Grime Layer
  - Hue Protected Noise
  - Special Noises; Red, Green, and Blue
- 13.5 Sharpen Submenu:
  - Sharpen Intensity
- 13.6 Stylize Submenu:
  - Diffuse More
  - Find Edges/Invert
  - Find Edges/Charcoal
  - Find Edges/Soft
  - Scatter Horizontal
- 13.7 Video Submenu:
  - Cyclone
- IMAGEXPRESS
- 14. ScanPrep
- N SOFTWARE
- 15. LineWorker
- 16. PlateMaker
- IRONMIKE SOFTWARE
- 17. commThing
  - 17.1 commThing-TTY
  - 17.2 commThing-T
  - 17.3 commThing-DIT
  - 17.4 commThing-R
- 18. IronMike PIK
  - 18.1 JPEG Format
  - 18.2 JPEG Acquire/TIFF Acquire
  - 18.3 JPEG Export/TIFF Export
  - 18.4 Add/Edit Caption
- KNOLL SOFTWARE
- 19. CyberMesh
- KODAK
- 20. Photo CD Acquire
- MICROFRONTIER
- 21. Pattern Workshop
  - 21.1 Pattern Fill
  - 21.2 Pattern Edit
- PERFORMANCE RESOURCES
- 22. Razza Matazz Filters
  - 22.1 Fade
  - 22.2 Tremor
  - 22.3 Sepia
  - 22.4 Split 128
  - 22.5 RGB Swap
  - 22.6 FrameMaker
  - 22.7 Modulus
  - 22.8 Trig
- PREPRESS TECHNOLOGY
- 23. Spectre Filters
  - 23.1 Color Correction
  - 23.2 Unsharp Masking
- RING OF FIRE
- 24. FotoMagic
  - 24.1 Color Expander
  - 24.2 Color Filters
  - 24.3 Color Noise
  - 24.4 Color Ranger
  - 24.5 Color Ranger II
  - 24.6 Color Reversal
  - 24.7 Color Scaler
  - 24.1 Color Shifter
  - 24.1 Color Switcher

- SAVITAR
- 25. ScanMatch
- SECOND GLANCE SOFTWARE
- 26. PhotoSpot
  - 26.1 Acetone
  - 26.2 Chromassage
  - 26.3 Chromapoint
  - 26.4 Laserseps
  - 26.5 Paint Thinner
  - 26.6 PhotoSpot
- SOUTHWEST SOFTWARE
- 27. Color Encore for Scanners
- STORM TECHNOLOGY
- 28. PicturePress
- TOTAL INTEGRATION
- 29. FASTedit/CT and PRO
- 30. FASTedit/DCS
- 31. FASTedit/TIFF
- 32. Handshake/LW
- 33. IRIS/CT
- 34. FASTedit/VUE
- 35. FASTedit/Filmstrip
- 36. FASTedit/2.5
- 37. Epilogue PS
- ULTIMATTE
- 38. PhotoFusion
- XAOS TOOLS
- 39. Paint Alchemy: A user-configurable brush-stroke filter that is furnished with 36 predesigned brushes and 75 preset styles such as Pointillist, Screen Door, Ripple, or Sponge Print. In addition, any grayscale PICT file can be imported as a brush.<sup>3</sup>
- 40. Terrazzo: Plug-in filter that generates kaleidoscopic repeating patterns from any PICT or native Photoshop-formatted image in RGB, CMYK, or Grayscale modes.<sup>4</sup>
- SHAREWARE & FREeware FILTERS
- 41. Adobe/Spectral
- 42. Paul Badger
  - 42.1 Lumpy Noise
  - 42.2 Vector Graph
  - 42.3 Radar
- 43. Jim Bumgardner
  - Expression 3.0
- 44. Jeff Burton
  - Back Swap
- 45. Chris Cox
  - 45.1 Average
  - 45.2 BitShift
  - 45.3 Total Noise
  - 45.4 Fractal Noise
  - 45.5 Plaid
  - 45.6 Psycho
  - 45.7 UnAlias
  - 45.8 Edge 3X3
  - 45.9 Erosion
  - 45.10 Dilation
  - 45.11 Skeleton
  - 45.12 Colorkey
  - 45.13 Chromakey
  - 45.14 Fastkey
- 46. John Knoll
  - Cross-Stitch
- 47. Thomas Knoll
  - Angles
- 48. Sucking Fish Series
  - 48.1 Deko-Boko
  - 48.2 Mr. Sa'Kan
- 49. Kas Thomas
  - Warm Contrast

This project focuses on the motion effects of the filters which are applied to a still image, by experimenting with all standard filters and some plug-ins. Finally, six standard filters and one plug-in are selected and discussed in detail.

Filters selected to be used in this project:

Standard Photoshop filters:

1. Blur: Radial Blur
2. Distort: Ripple
3. Distort: Spherize
4. Distort: Twirl
5. Distort: Wave
6. Stylize: Extrude

Plug-in filter:

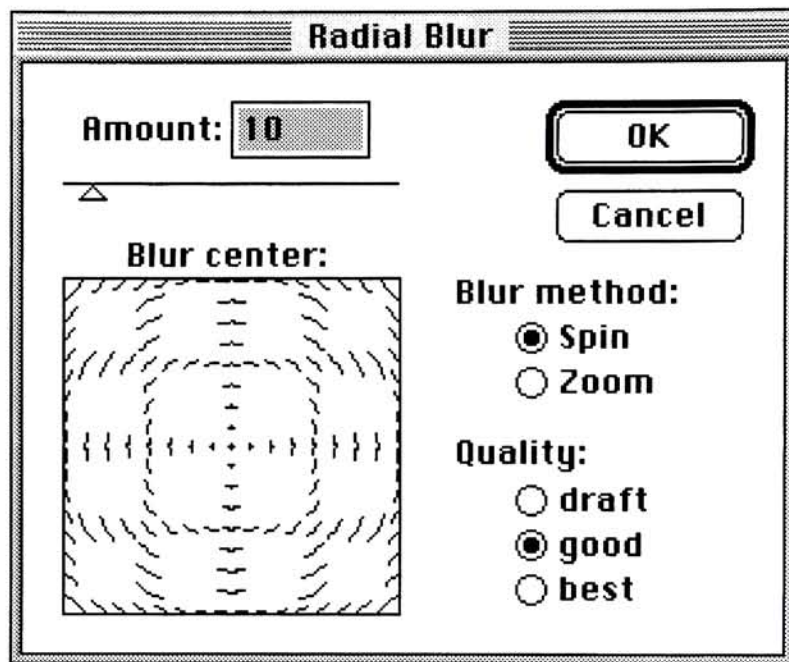
7. Distort: KPT Glass Lens  
Normal/Bright/Soft

## Descriptions of Selected Filters:

### 1. Blur: Radial Blur Filter

*Type:* Special-effects filter

*Description:* Radial Blur shifts and blurs pixels with two different methods of application. The Spin method blurs pixels in a circular fashion, while the Zoom method blurs pixels as if one was moving in or out of the image.



*Blur: Radial Blur dialog box.*



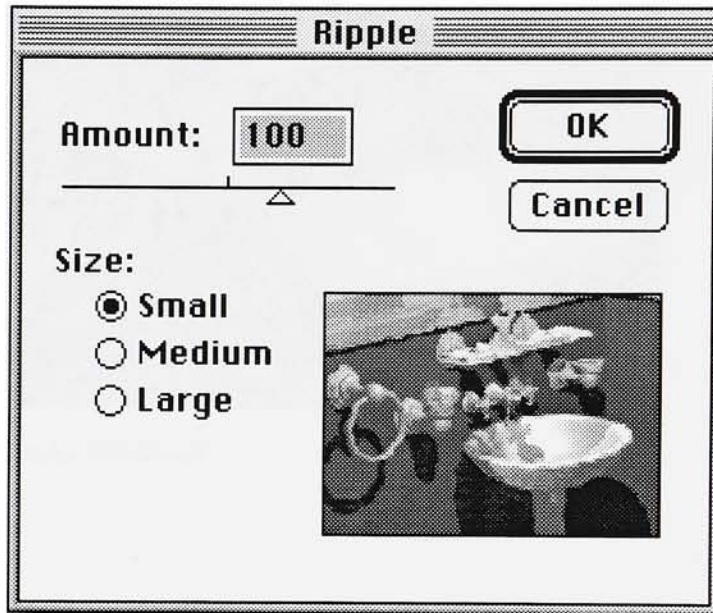
*Radial Blur: 10/Spin/Good*



*Radial Blur: 10/Zoom/Good*

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## 2. Distort: Ripple Filter



*Distort: Ripple dialog box.*

*Type:* Distortion filter

*Description:* The Ripple filter distorts the image in small, medium, or large curves that affect the image horizontally and vertically. The ripple can be set intensively by entering a number from 1 to 999.

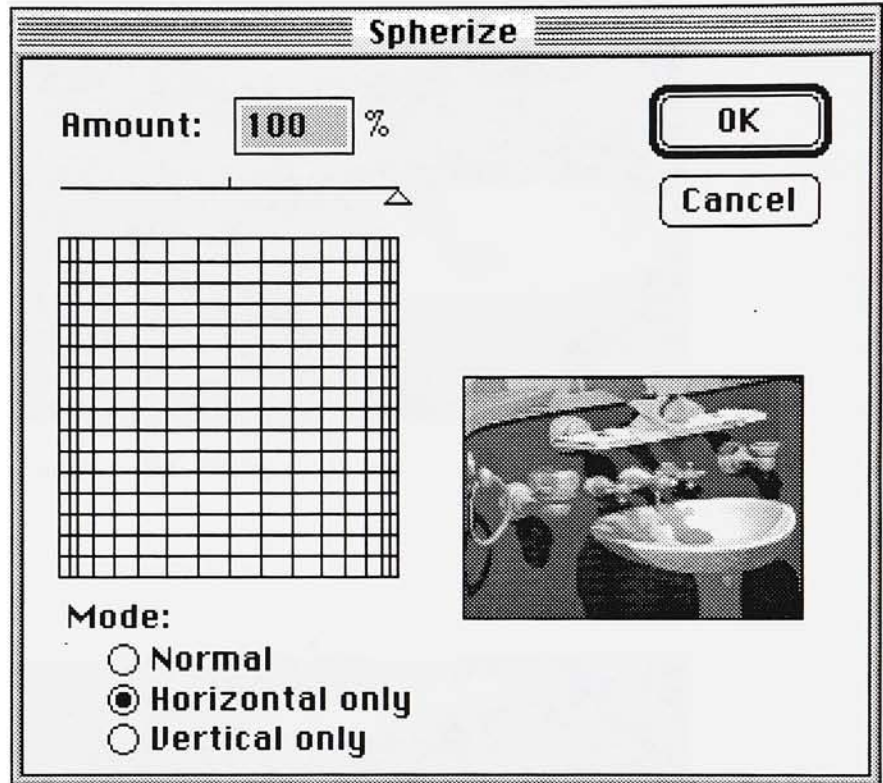


*Ripple: 100/Small*



*Ripple: 210/Medium*

### 3. Distort: Spherize Filter



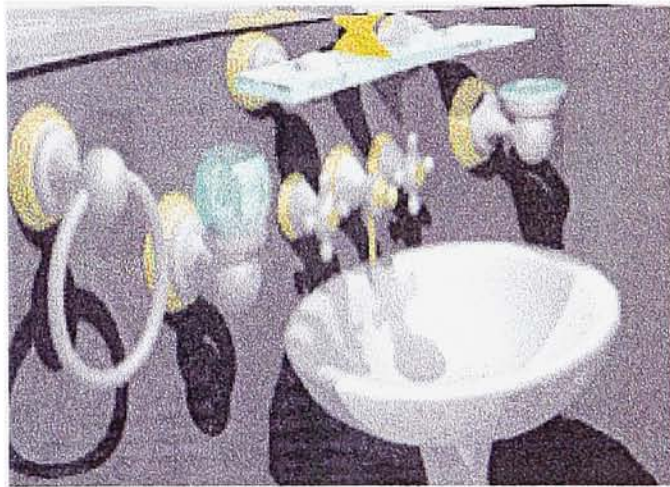
*Distort: Spherize dialog box.*

*Type:* Distortion filter

*Description:* The Spherize filter gives an image the appearance of being bubbled in an outward or inward direction, depending on the positive or negative percentage entered in the dialog box. The selection can be affected on the horizontal or vertical axis only. When the selection is not square, the Spherize filter distorts it in a circular pattern by assigning the shortest dimension as the circular distortion height.



*Spherize: 100/Horizontal Only*

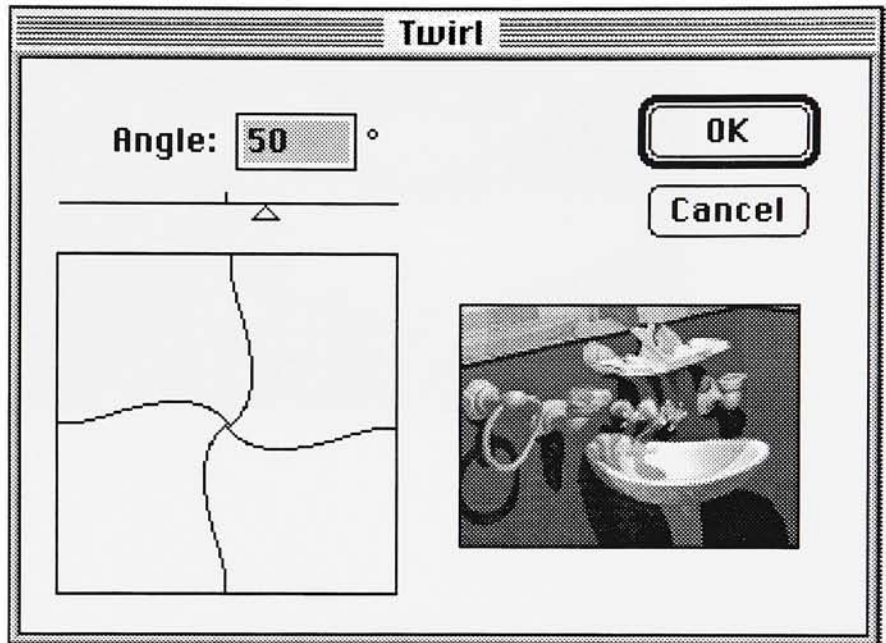


*Spherize: 100/Vertical Only*



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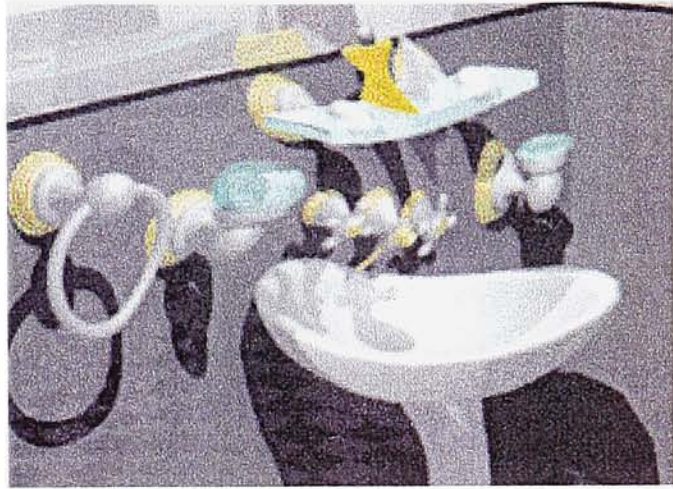
#### 4. Distort: Twirl Filter



*Distort: Twirl dialog box.*

*Type:* Distortion filter

*Description:* The Twirl filter makes a twirling distortion on an image, using the center of the selection as the pivot point.

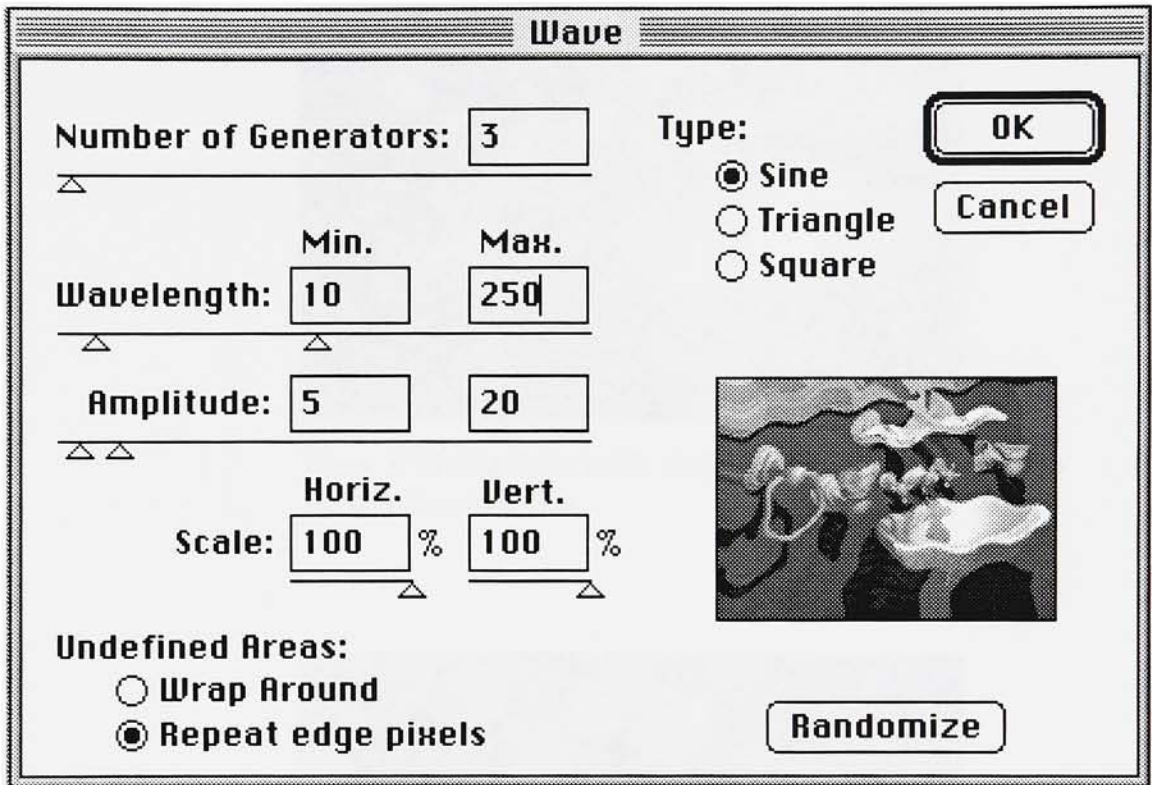


*Twirl: Angle 50°*



*Twirl: Angle 400°*

## 5. Distort: Wave Filter



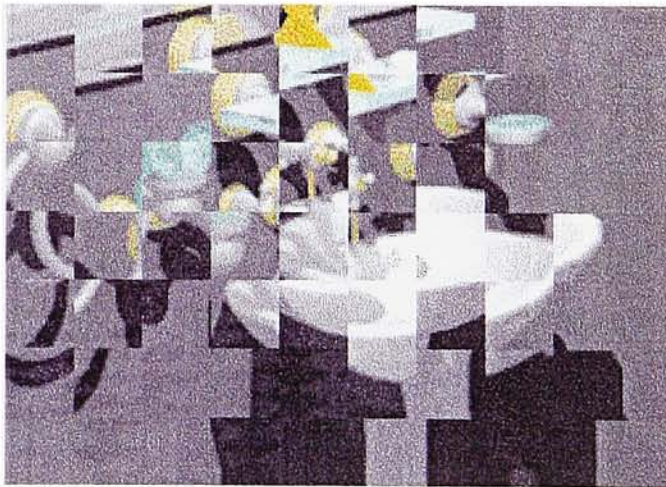
*Distort: Wave dialog box.*

*Type:* Distortion filter

*Description:* The Wave filter distorts an image in different sizes of curves that affect the image horizontally and vertically. The number of wave generators (range: 1 to 999), the minimum and maximum wavelength (range: 1 to 9,999), the height or amplitude of the waves (range: 1 to 9,999), the horizontal and vertical scale (range: -9,999 percent to 9,999 percent), and the wave type (sine, triangle, or square) can all be specified.

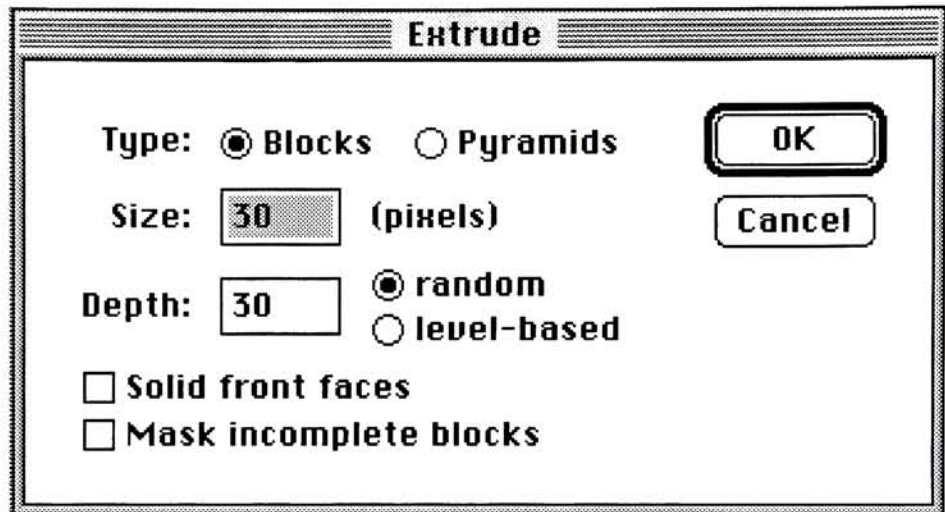


Wave: 3/10-250/5-20/100%-100%/  
Repeat edge pixels/Sine



Wave: 3/10-999/5-15/100%-100%/  
Repeat edge pixels/Square

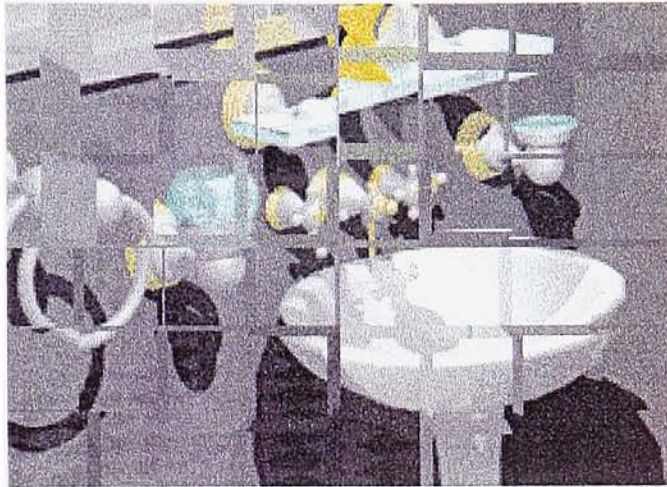
## 6. Stylize: Extrude Filter



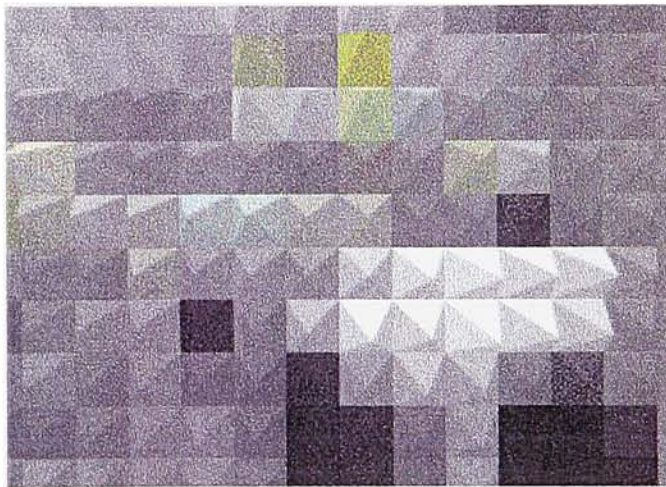
*Stylize: Extrude dialog box.*

*Type:* Special-effects filter

*Description:* The Extrude filter cuts a selection into a series of gridded, three-dimensional chips. Either block-shaped sections that use the predominant color of each block as the front face, or blocks that use image areas as the front face of each block may be specified. Alternatively, a pyramid shape may be selected as the grid block. The size of the grid block and the depth or length of the extrusion can be controlled. The extrusion depth may be defined to correspond to the light and dark areas of the image. Light areas appear to extrude farther than dark areas.



*Extrude: Blocks/30/30/Random*



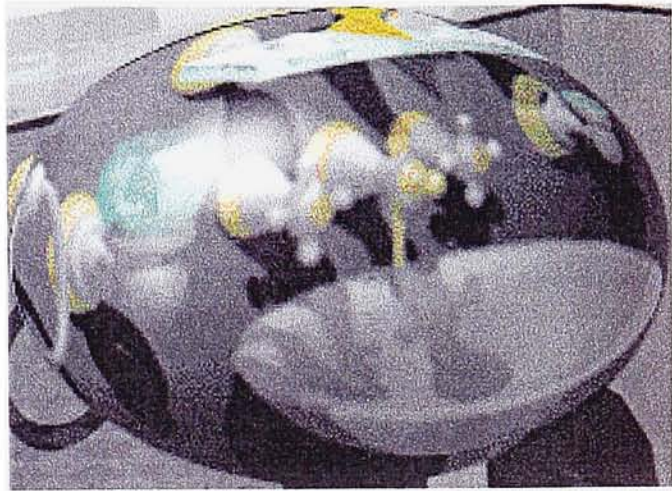
*Extrude: Pyramids/20/40/Level-based*

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7. Distort: Glass Lens Filter  
(HSC Software-Kai's Power  
Tools 2.0)

*Type:* Special-effects filter

*Description:* The Glass Lens filter produces an actual ray-traced 3-D sphere within a selection, complete with highlight, an ambient light source, and a cast shadow. The user can set the position of the highlight on the sphere and choose one of three light source intensities—Bright, Medium, or Soft.



*Glass Lens: Bright*



*Glass Lens: Soft*



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## Interface Design

Multimedia—such as CD-ROMs, kiosks, presentations, and training programs—should provide good information and help users learn, use, and navigate their contents. To design an interface, understanding the users and designing an appropriate interface for the audience and the contents are important.<sup>5</sup> Additionally, interactive content presents two design challenges: making the material interesting and making it easy to locate.<sup>6</sup>

The more familiar and appealing an interface, the easier it will be to learn and use. This applies to the design controls, typography, symbols, icons, charts, maps, diagrams, illustrations, photos, videos, any underlying grid structure, and color relationship.

### Metaphor

Consistency and clarity are two of the most important concerns in developing metaphors or the interface design. All data and functions should be appropriately organized and presented in a way that users can easily navigate through the contents.

- Use concrete metaphors so that users have a set of expectations to apply to computer environments.
- Whenever appropriate, use audio and visual effects that support the metaphor.<sup>7</sup>

### Tools

The tools for navigation—such as menus, dialog boxes, and control panels—should make data and functions appear simple.

Appropriate organization of content and layout help users to navigate and interact in an effective way.

The appearance, the caption, and the size of the buttons are all aspects that tell users how to control movement within the project.

### Planning

The planning process for an interactive project is significantly different from that of the more traditional, linear model. The way in which one topic is accessed from another reveals new challenges for users more comfortable with a model where a second topic follows the first. Planning these topical relationships can be done using several methods, such as:

- building a flow chart
- creating an outline
- using an alphabetical index to make topics more accessible.<sup>8</sup>

The appropriate method should both match the ability to organize and complement the complexity of the content.

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### Visual Appeal

Visual design within an interactive environment not only helps support the content, but supports how users will find and access the content.

Consider the ways in which one moves forward and backward (previous and next), jumps to a related topic or views a table of contents/index page. These are all critical aspects of good interface design.

### Simplicity

Using a simple organizational strategy, the project will be easier to produce and will be easier for viewers to use. Nothing is more distracting to the content of an application than getting lost in a web of instructions. Including an index or other master topic list will effectively hide the complexity and confusion introduced by facing too many choices at once, yet provides the functionality when it is needed.<sup>9</sup>

### Testing

An important process between design and production is testing. The finished project should be tested without the guidance of the author. It's the last chance to find any hidden problems. Testing may be partially done by the author, but will be most effective if done by other people. Check the project on all configurations of memory and machines on which the author intends the stack to run.

"Have someone else test every button, command, and dialog box option. Check animation for speed and smoothness, for visual impact, and for synchronization with sound. Evaluate visual effects for consistency. Check sound for volume, pace, and smoothness. Edit writing for flow, typographical or grammatical errors, and consistent font usage. Check button, field, and graphic placement."<sup>10</sup>

## Working with Adobe Photoshop

In Adobe Photoshop, images were manipulated and experimented with by applying seven selected filters—both standard and plug-in.

Filters selected to be used in this project:

Standard Photoshop filters:

1. Blur: Radial Blur
2. Distort: Ripple
3. Distort: Spherize
4. Distort: Twirl
5. Distort: Wave
6. Stylize: Extrude

Plug-in filter:

7. Distort: KPT Glass Lens  
Normal/Bright/Soft

All images were scanned from *Tony Stone Images Catalog, Volumes 6 and 7* at 72 dpi. (RGB mode). After manipulated, they were saved as PICT files and numbered sequentially (ex. Ripple1, Ripple2, Ripple3, etc.). Also they were put in the same folder in order to be easily arranged in the correct sequence when imported as cast members in Macromedia Director.

The following images are shown in order with the caption below. Numerical settings are listed in the order they appear in the filter's dialog box. If the default settings were used, no settings are shown. (Images are shown smaller than the actual size.)

### 1. Distort: Radial Blur Filter

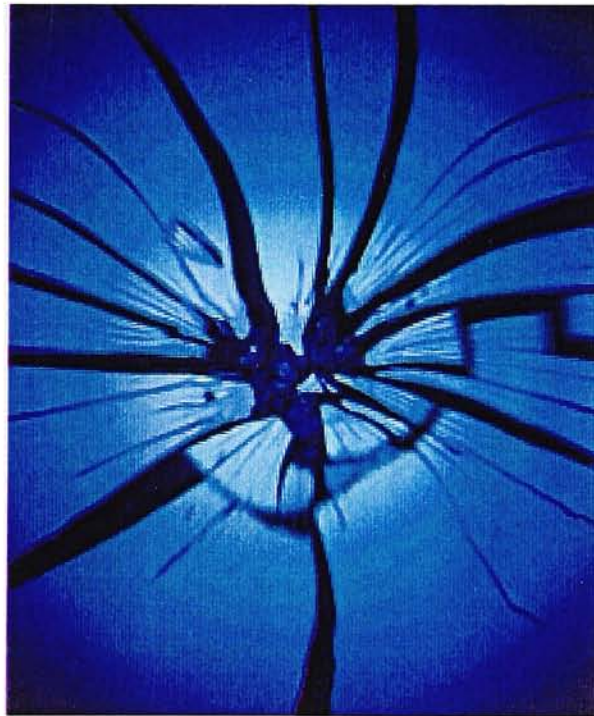
Actual Size: 319 x 380 pixels

Resolution: 72 dpi.

Actual File Size: 356k

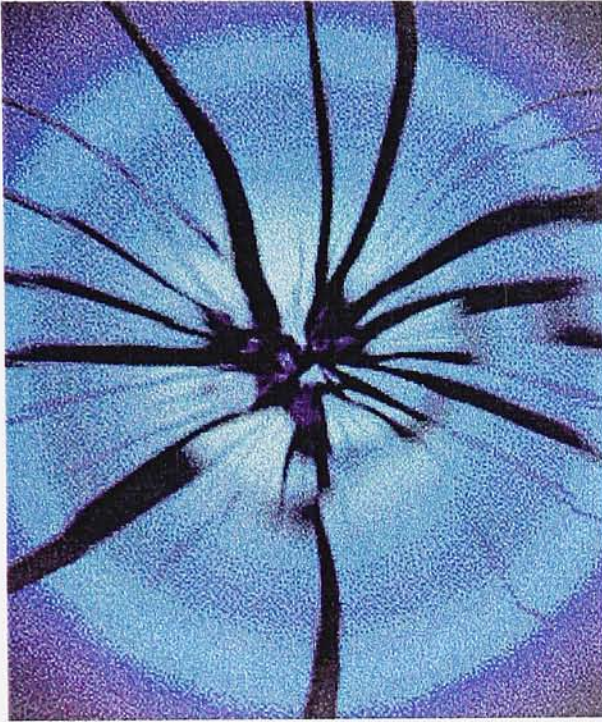
Mode: RGB

- Circle selection: Size 360 x 360 pixels with feather 10 pixels

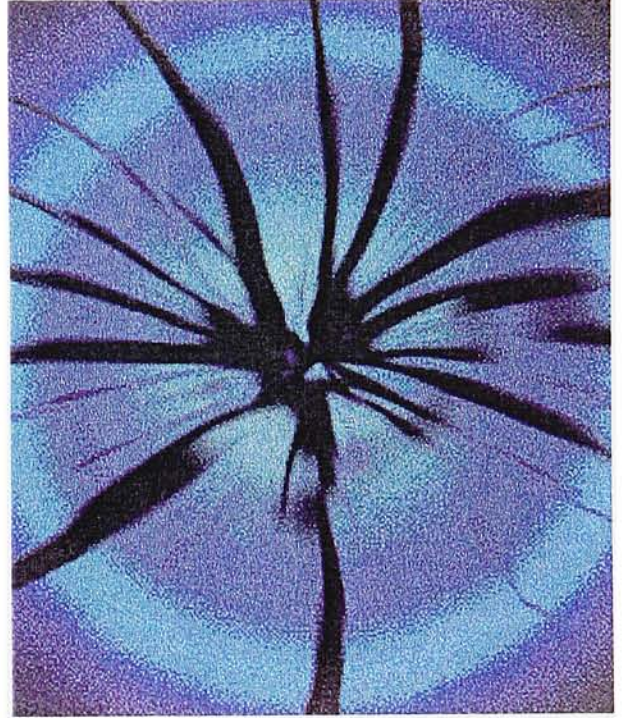


#### Radial Blur1

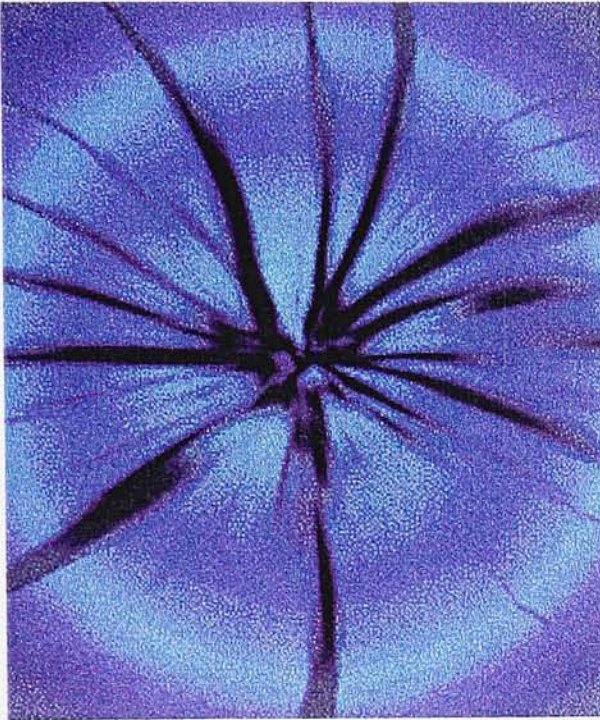
Circle selection with Brightness -33,  
Radial Blur amount 26/  
Zoom/Good



Radial Blur2  
Circle selection with Brightness -31,  
Radial Blur amount 41/  
Zoom/Good

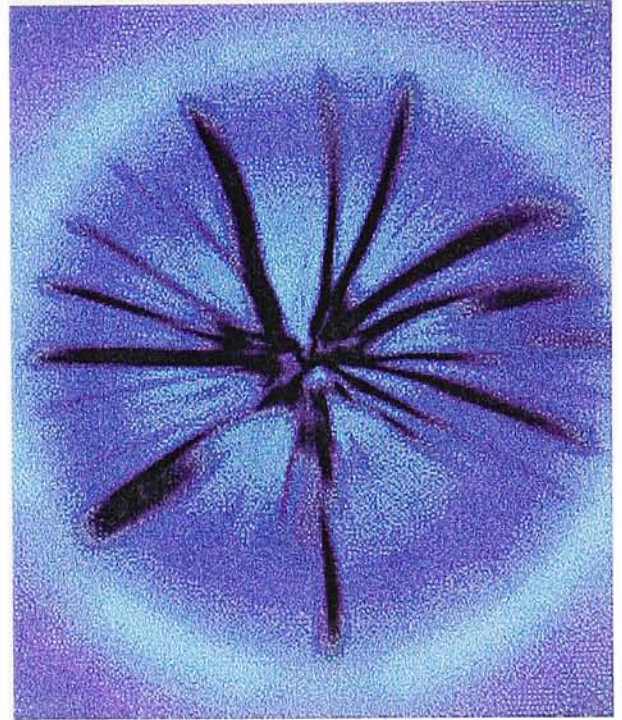


Radial Blur3  
Circle selection with Brightness -34,  
Radial Blur amount +56/  
Zoom/Good



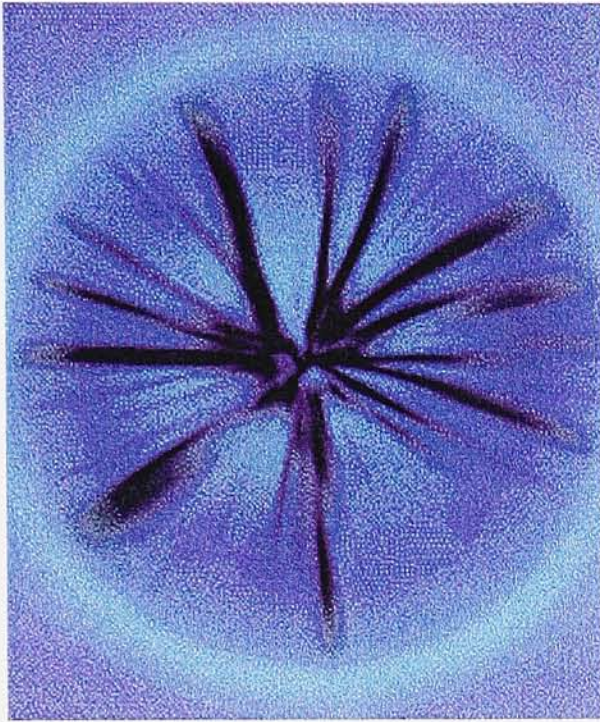
Radial Blur4

Select All, Color Balance: Cyan  
-100/Blue +100, Radial Blur  
amount 74/Zoom/Good

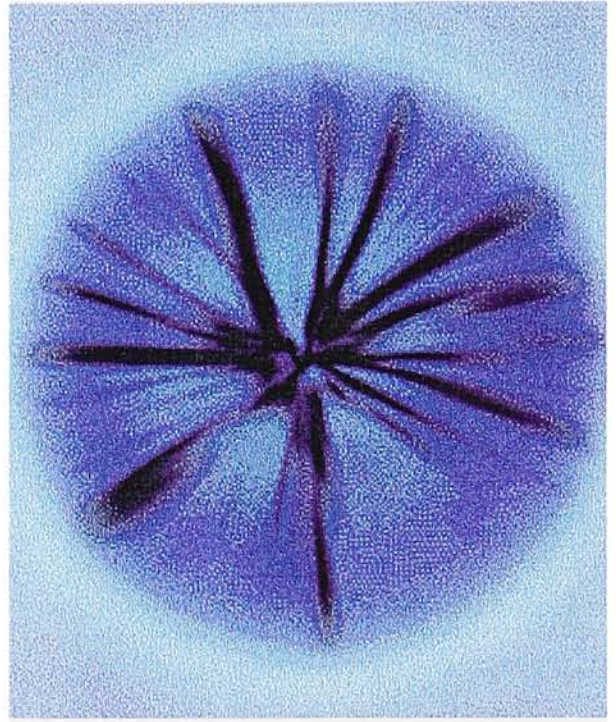


Radial Blur5

Load circle selection, Inverse,  
Radial Blur amount 21/Spin/Good,  
Brightness +30



Radial Blur6  
Inverse selection, Radial Blur  
amount 66/Spin/Good  
Circle selection, Radial Blur  
amount 92/Zoom/Good



Radial Blur7  
Inverse selection,  
Brightness +60

---

## 2. Distort: Ripple Filter

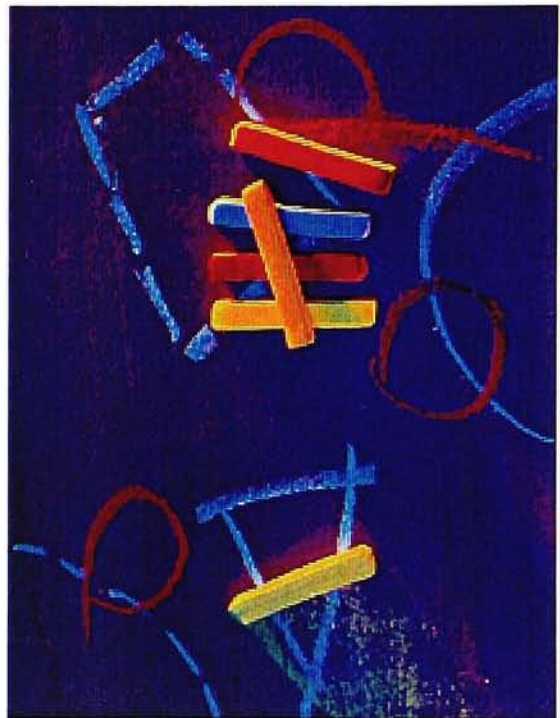
Actual Size: 299 x 385 pixels

Resolution: 72 dpi.

Actual File Size: 338k

Mode: RGB

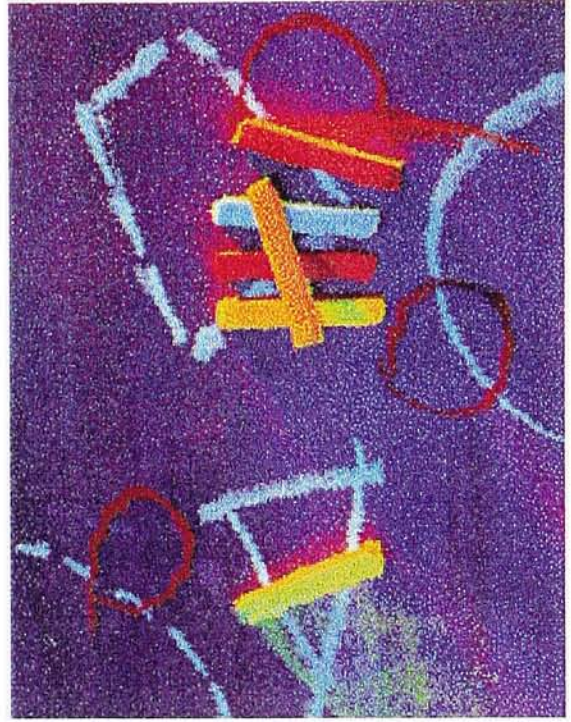
- Chalk selection with feather 1 pixel



Ripple1  
Original image



Ripple2  
Chalk selection then inverse,  
Ripple amount -56

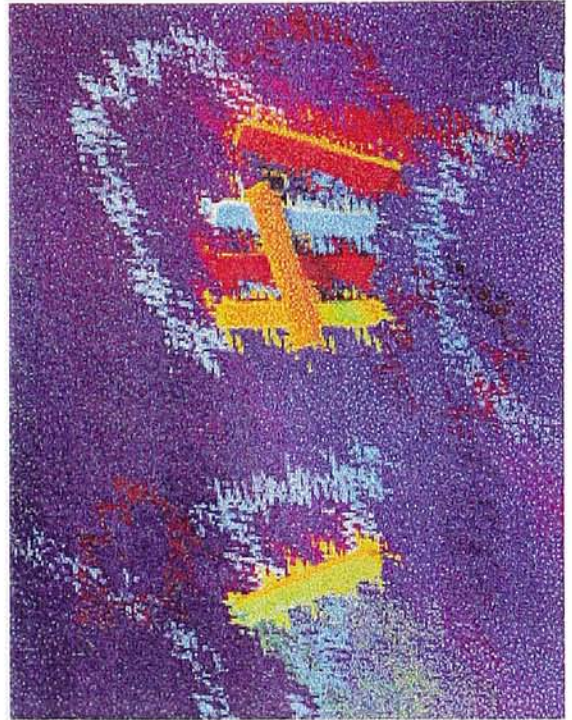


Ripple3  
Chalk selection then inverse,  
Ripple amount -156





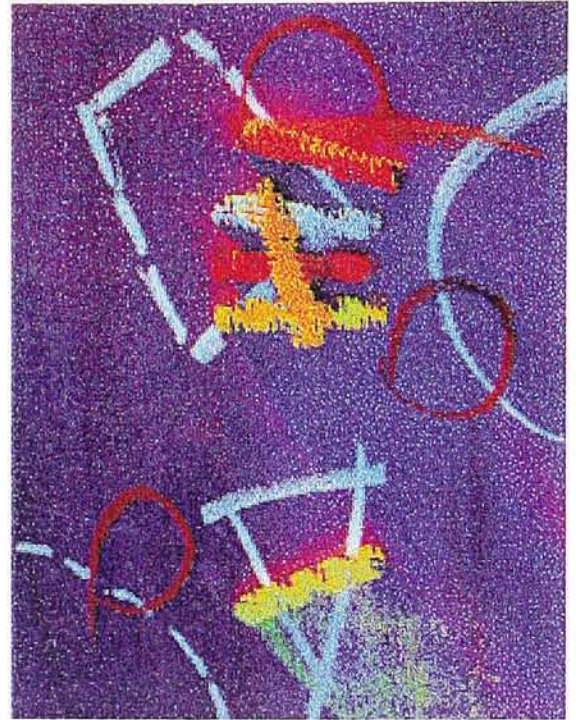
Ripple4  
Chalk selection then inverse,  
Ripple amount -484



Ripple5  
Chalk selection then inverse,  
Ripple amount -999



Ripple6  
Chalk selection,  
Ripple amount -225



Ripple7  
Chalk selection,  
Ripple amount -650

---

### 3. Distort: Spherize Filter

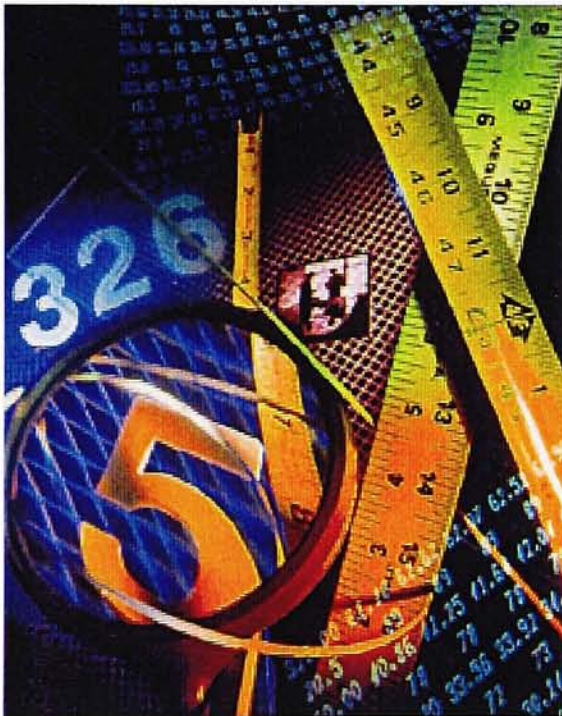
Actual Size: 298 x 380 pixels

Resolution: 72 dpi.

Actual File Size: 332k

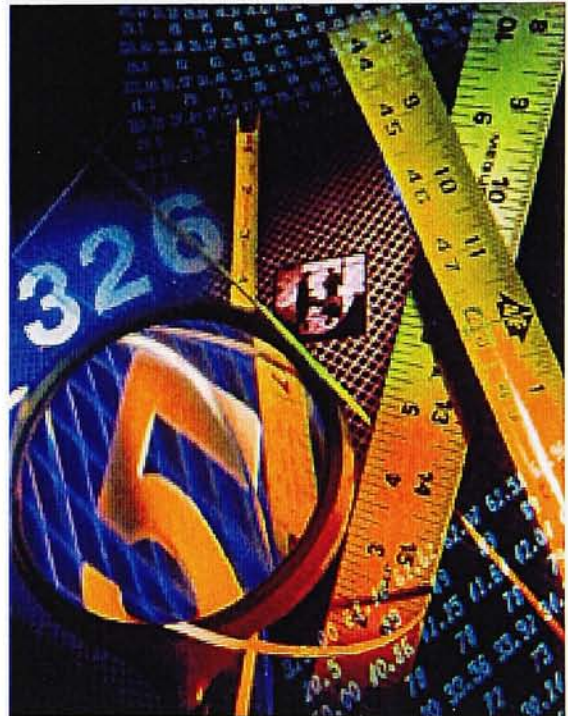
Mode: RGB

- Circle selection (inside the magnifying glass) with feather 2 pixels



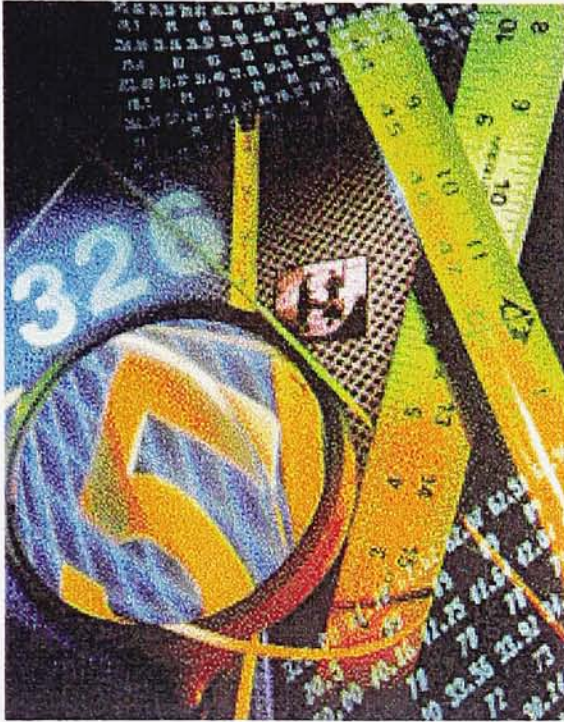
Spherize1

Selection, Spherize amount 54%,  
Vertical Only

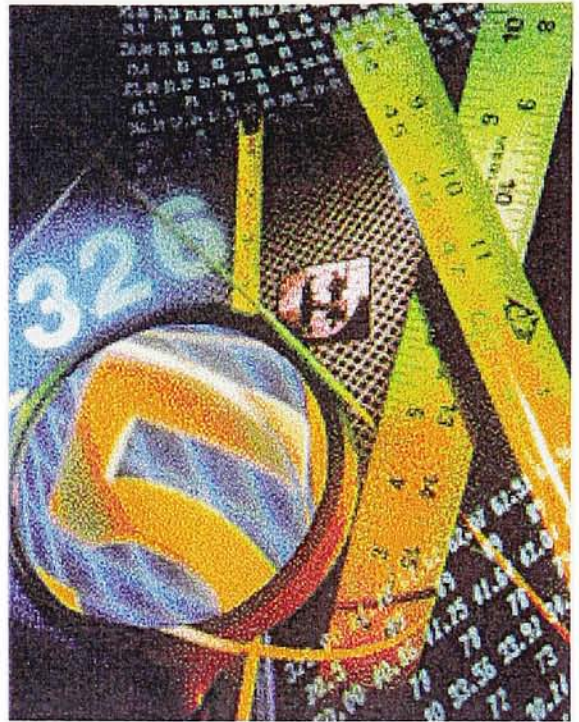


Spherize2

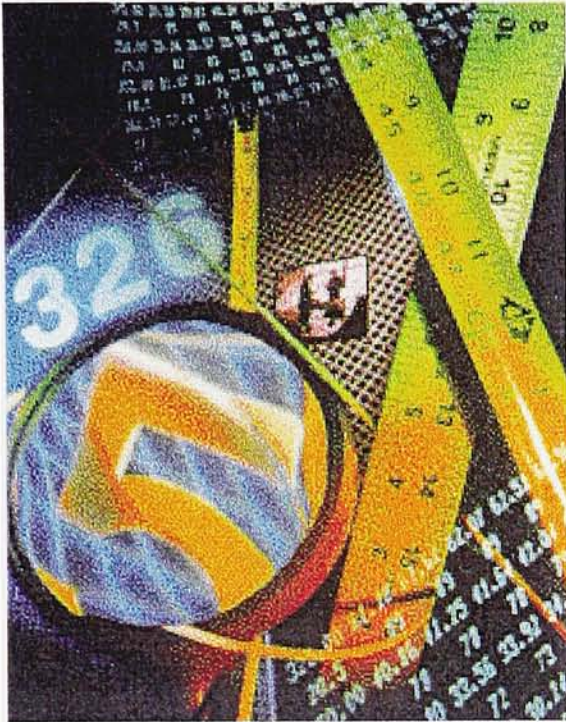
Selection, Spherize amount 100%,  
Vertical Only



Spherize3  
Selection, Spherize amount 54%,  
Horizontal Only

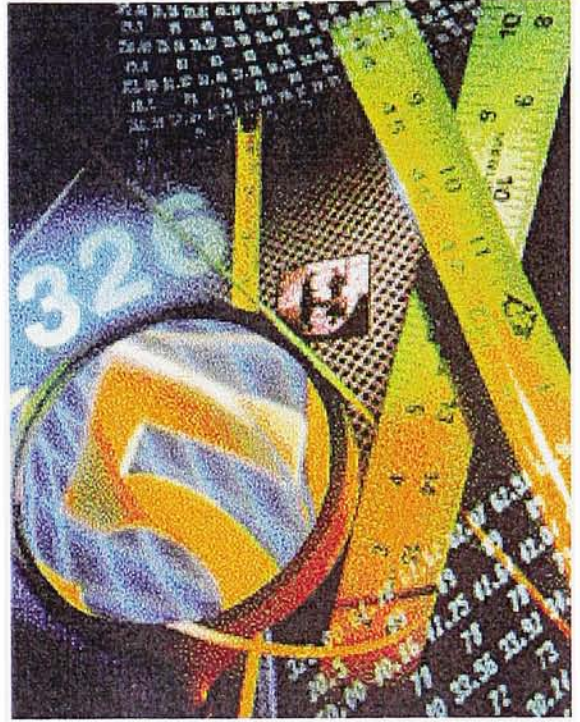


Spherize4  
Selection, Spherize amount 100%,  
Horizontal Only



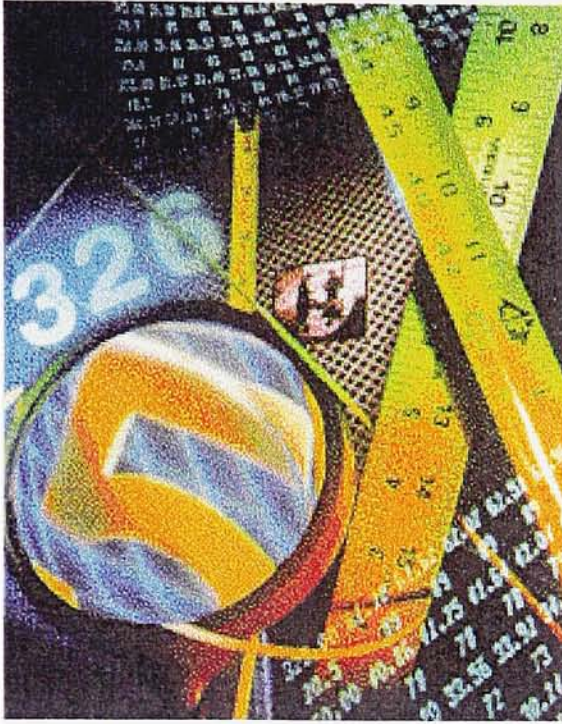
Spherize5

Selection, Spherize amount -43%,  
Normal

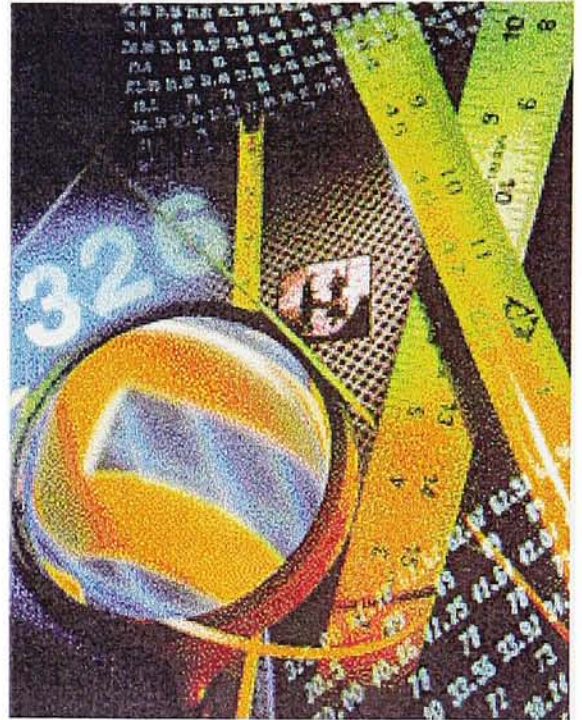


Spherize6

Selection, Spherize amount 1%,  
Normal



Spherize7  
Selection, Spherize amount 48%,  
Normal



Spherize8  
Selection, Spherize amount 92%,  
Normal

### 3. Distort: Twirl Filter

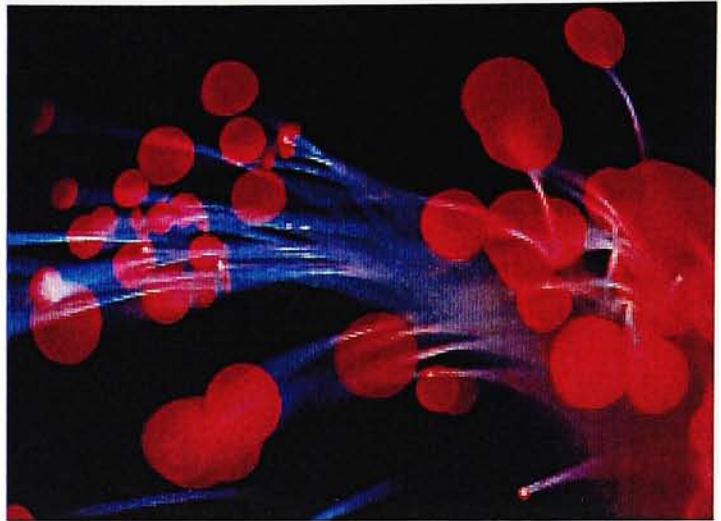
Actual Size: 344 x 248 pixels

Resolution: 72 dpi.

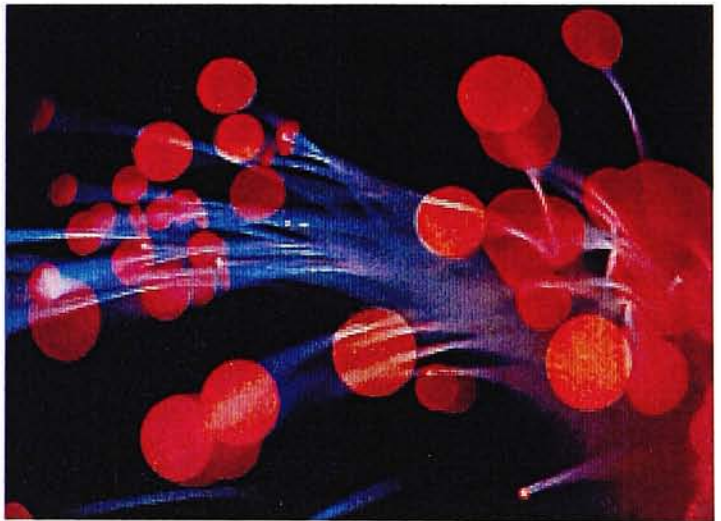
Actual File Size: 250k

Mode: RGB

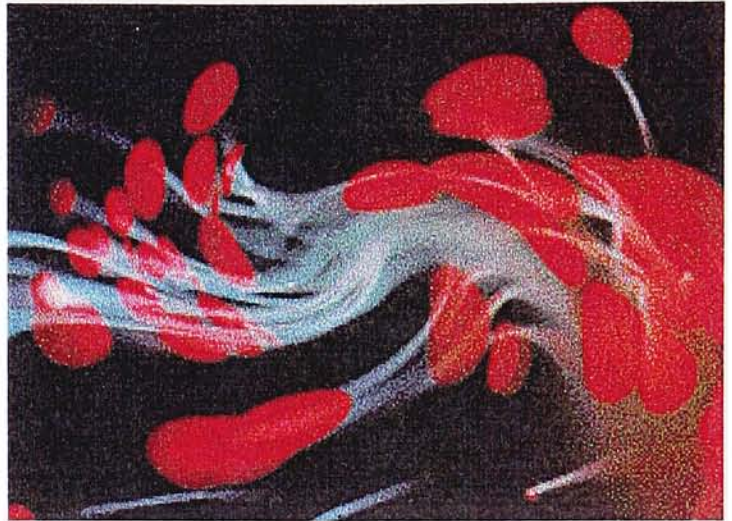
- Image1: Original image
- Image2: Some areas were changed into orange color



Twirl1  
Image1  
Original image (No filter)



Twirl2  
Image2  
Original image (No filter)



Twirl3  
Image1  
Twirl Angle -100°



Twirl4  
Image2  
Twirl Angle -100°





Twirl5  
Image1  
Twirl Angle -210°



Twirl6  
Image2  
Twirl Angle -210°



TwirlZ  
Image1  
Twirl Angle -462°



Twirl8  
Image2  
Twirl Angle -462°



Twirl9  
Image2  
Twirl Angle -729°

---

## 5. Distort: Wave Filter

Actual Size: 284 x 385 pixels

Resolution: 72 dpi.

Actual File Size: 321k

Mode: RGB

- Distort: Wave filter details:

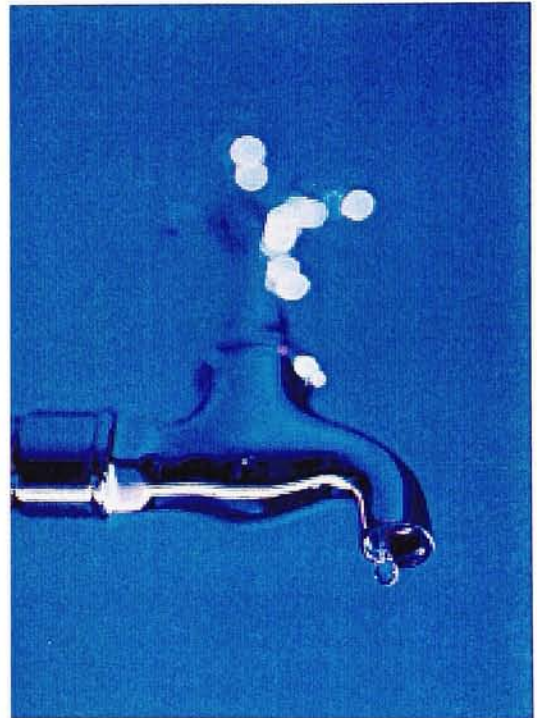
Number of Generators: 5

Type: Sine

Wavelength Min.: 5, Max.: 20

Amplitude Min.: 5, Max.: 16

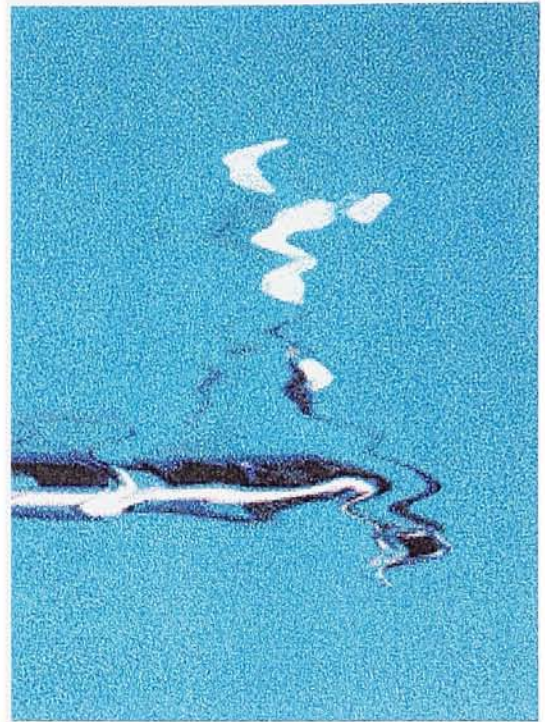
Undefined Areas: Repeat edge  
pixels



Wave1  
Original image



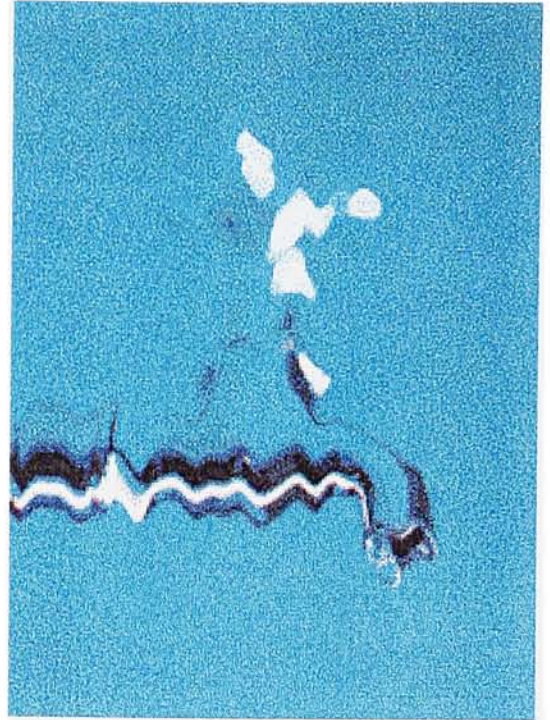
Wave2  
Wave: Scale Horizontal 0%,  
Vertical 26%



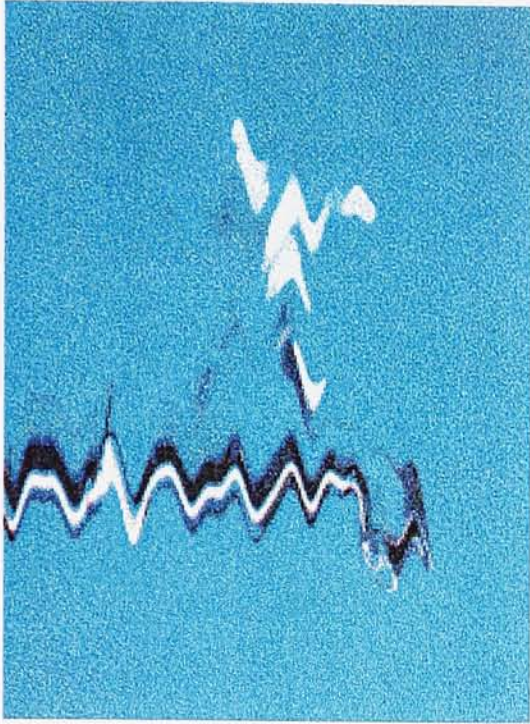
Wave3  
Wave: Scale Horizontal 0%,  
Vertical 54%



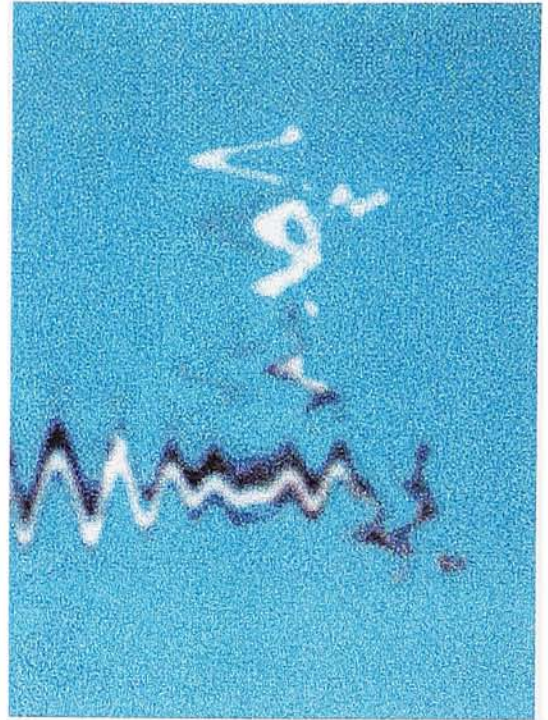
Wave4  
Wave: Scale Horizontal 0%,  
Vertical 100%



Wave5  
Wave: Scale Horizontal 21%,  
Vertical 0%



Wave6  
Wave: Scale Horizontal 56%,  
Vertical 0%



Wave7  
Wave: Scale Horizontal 89%,  
Vertical 89%,  
Blur: Gaussian Blur 2 pixels

## 6. Stylize: Extrude Filter

Actual Size: 344 x 263 pixels

Resolution: 72 dpi.

Actual File Size: 266k

Mode: RGB

- Clock selection with feather 1 pixel

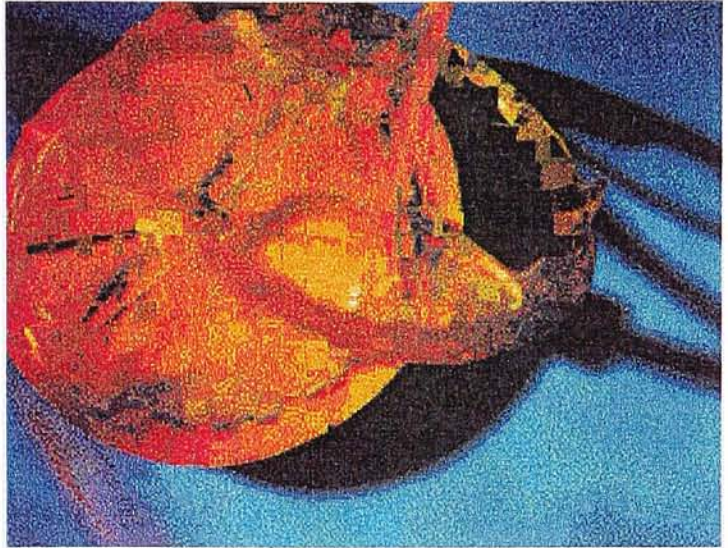


Extrude1  
Original image

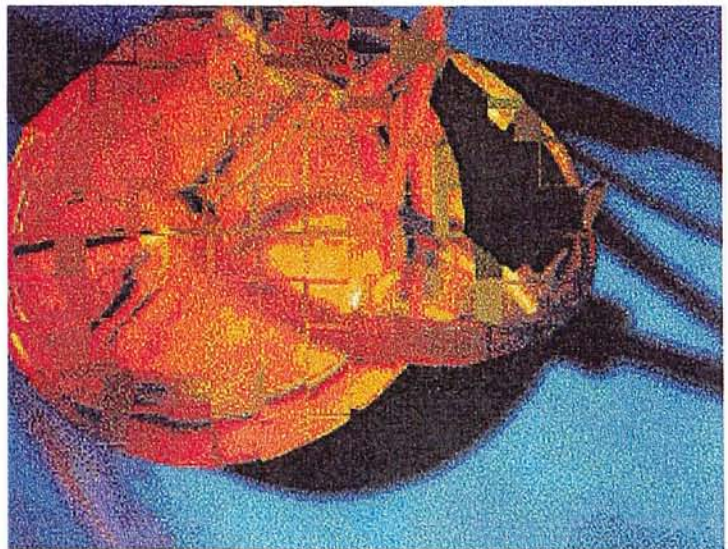


Extrude2  
Clock selection, Extrude(Blocks)  
Size 10/Depth 10,  
Random

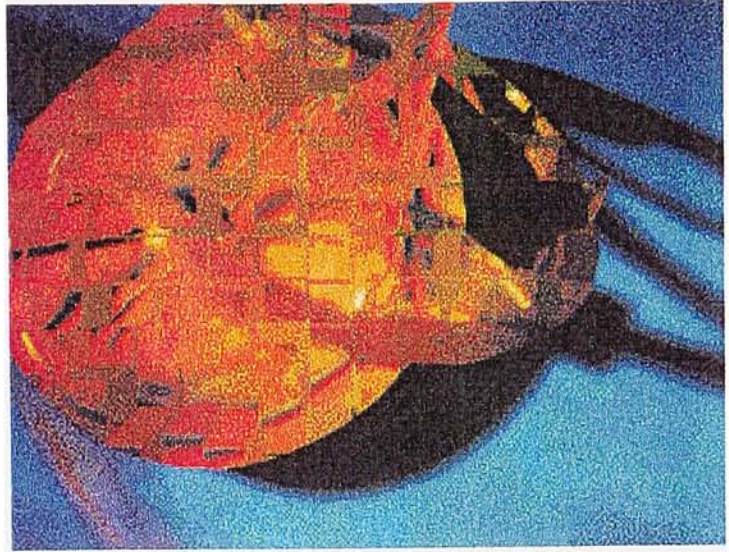




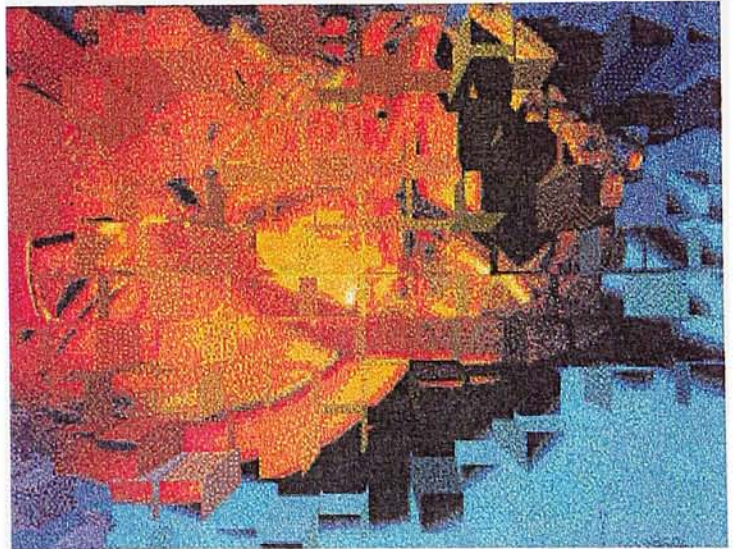
Extrude3  
Clock selection, Extrude(Blocks)  
Size 10/Depth 30,  
Random



Extrude4  
Clock selection, Extrude(Blocks)  
Size 20/Depth 30,  
Random



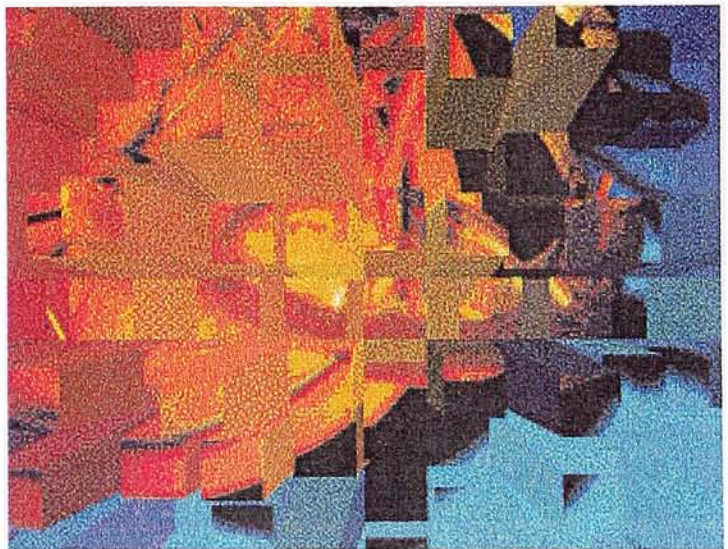
Extrude5  
Clock selection, Extrude(Blocks)  
Size 20/Depth 50, Random



Extrude6  
Select All, Extrude(Blocks)  
Size 20/Depth 50,  
Random



Extrude7  
Select All, Extrude(Blocks)  
Size 20/Depth 80, Random



Extrude8  
Select All, Extrude(Blocks)  
Size 30/Depth 100,  
Random

---

## 7. Distort: Glass Lens Filter

Actual Size: 294 x 385 pixels

Resolution: 72 dpi.

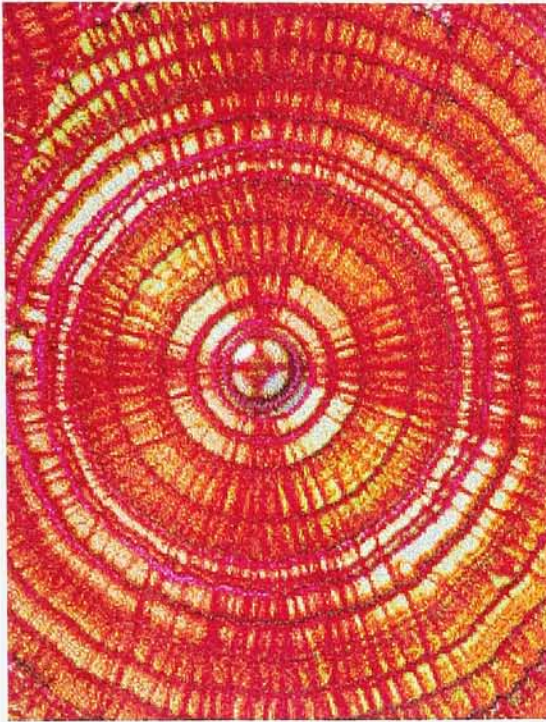
Actual File Size: 332k

Mode: RGB

- Using different sizes of circle selections (from small to large)



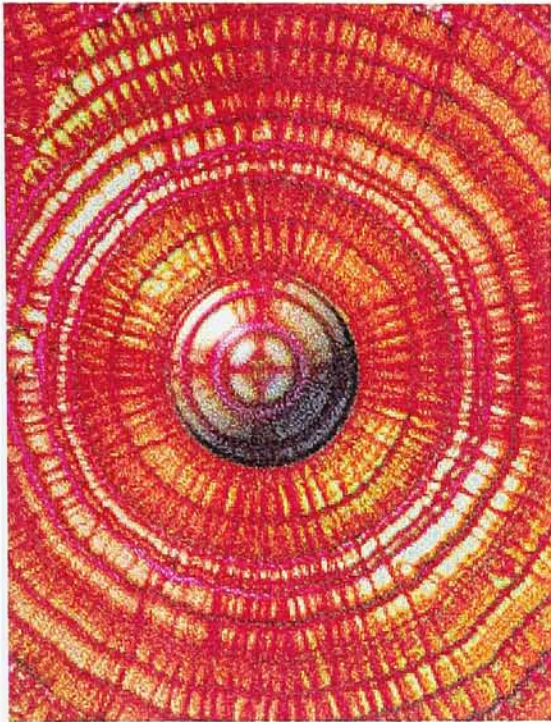
Glass Lens1  
Original image,  
Color balance: Blue +100



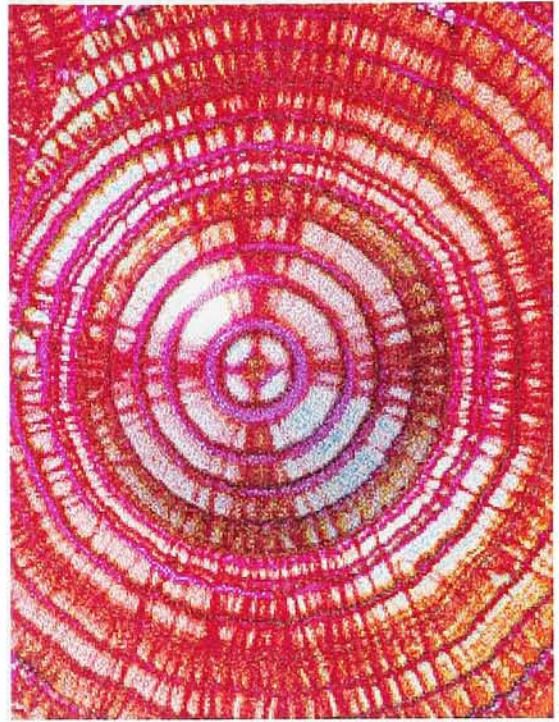
Glass Lens2  
Glass Lens: Soft



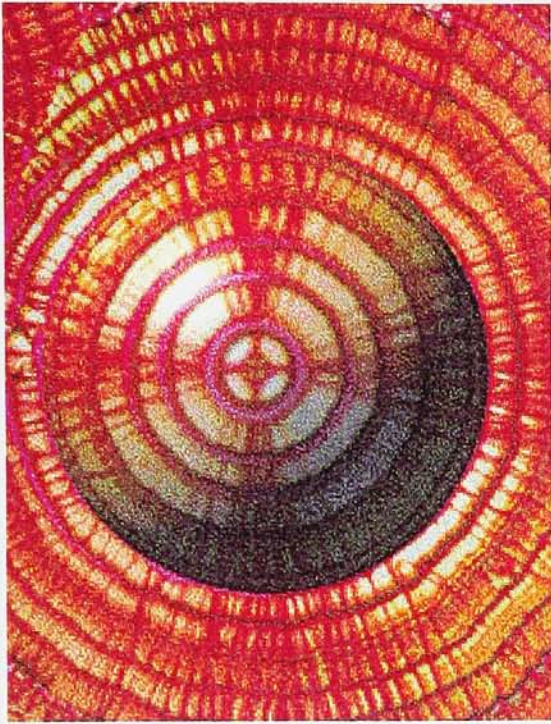
Glass Lens3  
Glass Lens: Bright,  
Color balance: Blue +100



Glass Lens4  
Glass Lens: Normal,  
Brightness: +18



Glass Lens5  
Glass Lens: Soft,  
Color balance: Blue +100



Glass Lens6  
Glass Lens: Normal,  
Brightness: +18



Glass Lens7  
Glass Lens: Soft,  
Color balance: Blue +100

---

## Working with Macromedia Director

For each filter, a Director file was separately constructed by sharing some cast members, background, sound, and interactive graphic elements. All graphics and texts were created in Adobe Photoshop and saved as PICT files. Each filter movie was saved as a Director file, except the introduction which was saved as a projector.

In each Director file, the images manipulated with filters were imported and arranged on the stage in a sequence of frames. Repeating or reversing frames performed a loop of motion. An appropriate frame rate (frames per second) effectively brought up the visual effect of motion for each filter.

For each filter, the following information provides the frame rate, the number of total frames, the number of total images, and the sequence of frames in a loop.

### 1. Distort: Radial Blur Filter

- Frame rate: 8 frames per second
- Total frames: 14 frames
- Total images: 7 images

1	2	3	4	5	6	7	8	9	10	11	12	13	14	Frame number
1	2	3	4	5	6	7	1	2	3	4	5	6	7	Image number

*The sequence of frames and images in 1 loop*



---

## 2. Distort: Ripple Filter

- Frame rate: 6 frames per second
- Total frames: 15 frames
- Total images: 7 images

Loop															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Frame number
1	2	3	4	5	5	4	3	2	1	1	6	7	6	1	Image number

*The sequence of frames and images in 1 loop*

## 3. Distort: Spherize Filter

- Frame rate: 8 frames per second
- Total frames: 16 frames
- Total images: 8 images

Loop																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Frame number
1	2	3	4	5	6	7	8	7	6	5	6	7	8	7	6	Image number

*The sequence of frames and images in 1 loop*

---

#### 4. Distort: Twirl Filter

- Frame rate: 10 frames per second
- Total frames: 16 frames
- Total images: 9 images

Loop																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Frame number
1	2	3	4	5	6	7	8	9	7	8	5	6	3	4	1	Image number

*The sequence of frames and images in 1 loop*

#### 5. Distort: Wave Filter

- Frame rate: 8 frames per second
- Total frames: 15 frames
- Total images: 7 images

Loop															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Frame number
1	2	3	4	3	2	1	1	5	6	7	7	6	5	1	Image number

*The sequence of frames and images in 1 loop*

---

## 6. Stylize: Extrude Filter

- Frame rate: 8 frames per second
- Total frames: 16 frames
- Total images: 8 images

Loop																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Frame number
1	2	3	4	5	6	7	8	8	7	6	5	4	3	2	1	Image number

*The sequence of frames and images in 1 loop*

## 7. Distort: Glass Lens Filter

- Frame rate: 10 frames per second
- Total frames: 14 frames
- Total images: 7 images

Loop														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	Frame number
1	2	3	4	5	6	7	7	6	5	4	3	2	1	Image number

*The sequence of frames and images in 1 loop*

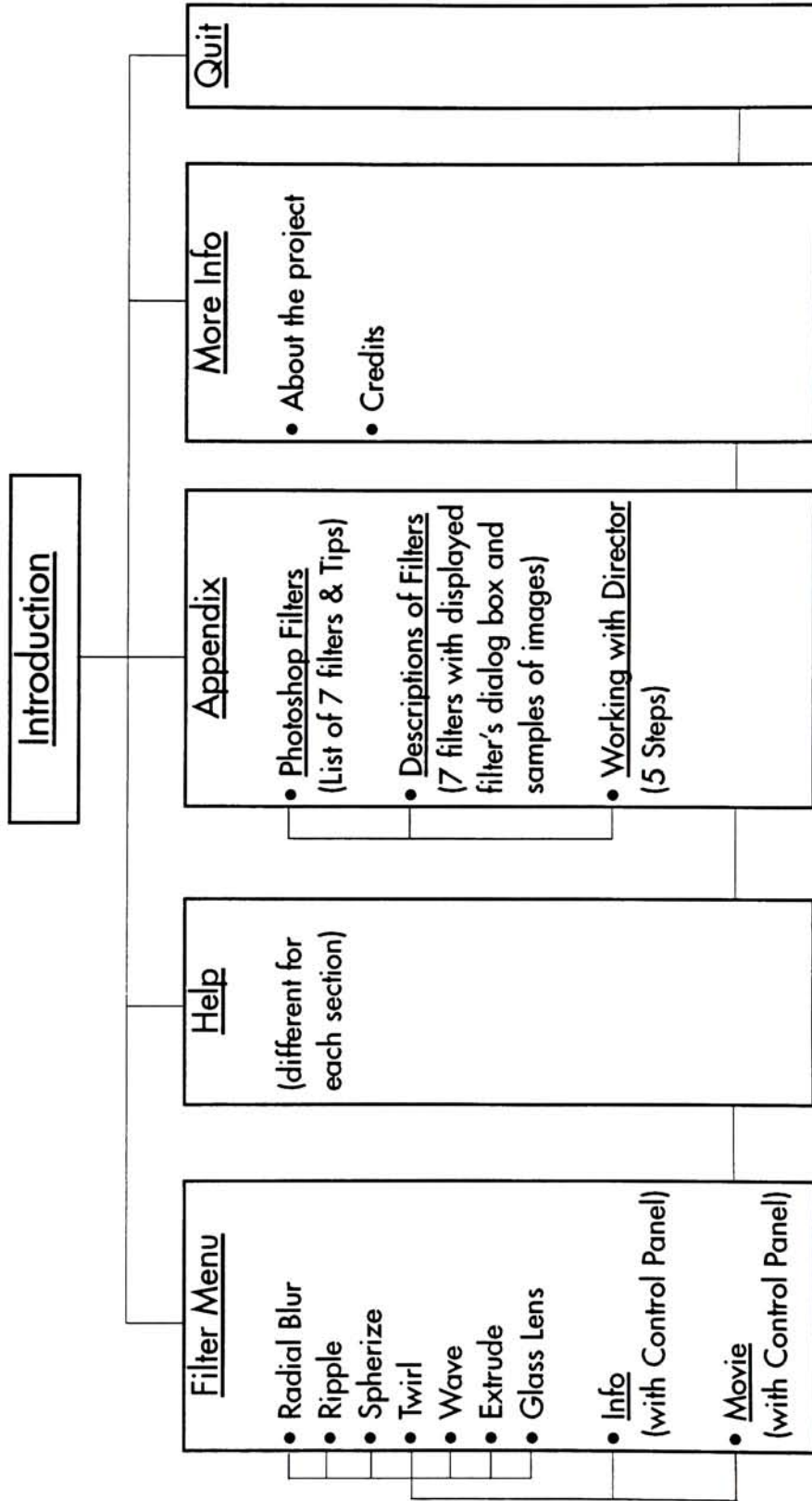
---

Sounds were copied from *A Zillion Sounds CD-ROM* (Ebook, Inc., 1993) and edited in SoundEdit Pro. These sounds were added to the buttons as feedback when users clicked on them.

At last, the Introduction was saved as a projector—a play-only version of a Director movie. So anyone—even someone who does not own a copy of Director—can play it.

Each section provided buttons for accessing "Help", "Appendix", and "Quit" sections. Finally, all "Filter Movies", "Introduction", "Appendix", and "More Info" sections were linked together by Lingo script. The navigation structure is shown by the chart on the next page.

# Chart of Navigation Structure



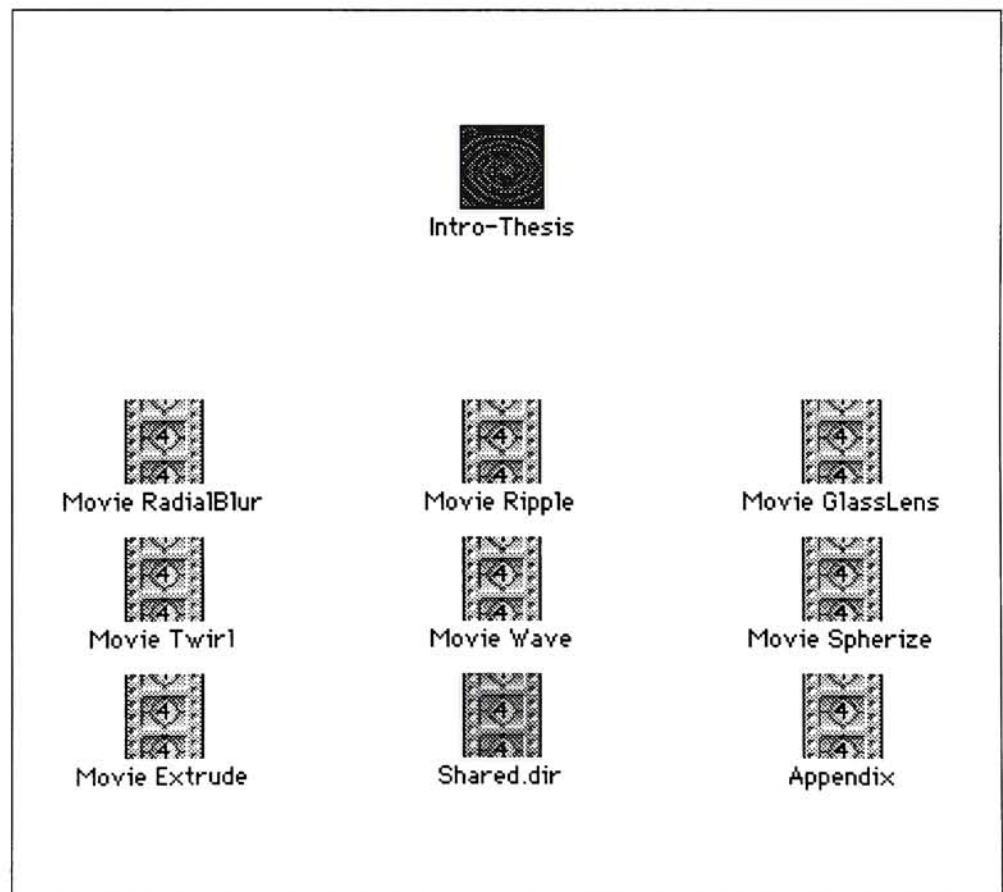
# Results

This "Filters in Motion" project consists of 10 Director files—one projector and nine Director movies.

The Introduction is a projector file which also includes the "More Info" section. Other Director files are:

- Movie Radial Blur
- Movie Ripple
- Movie Spherize
- Movie Twirl
- Movie Wave
- Movie Extrude
- Movie Glass Lens
- Appendix
- Shared.dir

All texts, backgrounds, and graphic elements, which were totally created in Adobe Photoshop 2.5.1, combined in harmony. Both geometric and organic shapes and patterns made a perfect contrast, even emphasized each other. On some screens, faded backgrounds made the texts more dominant and easier to read.



---

## Introduction

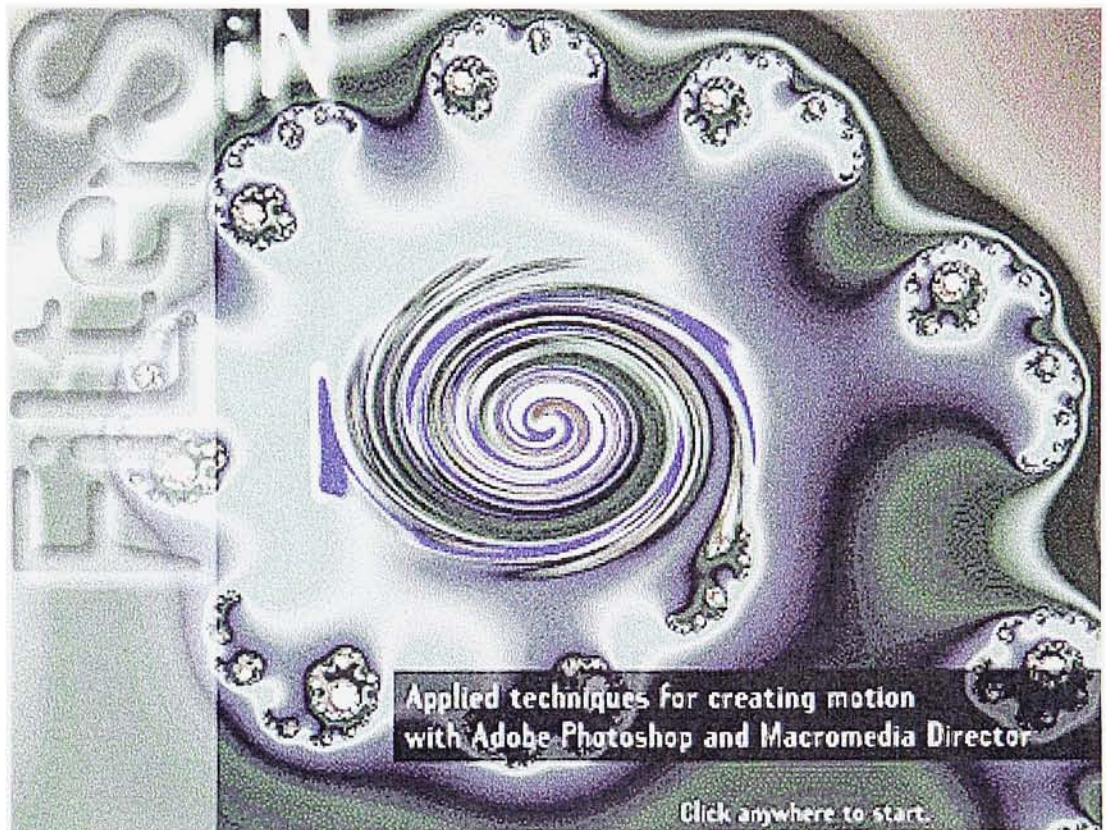
This background was created in Fractal Explorer 2.0. It also was used throughout the project by fading or cropping some areas. A brief explanation about the project was placed at the bottom of the screen. The word "Motion" was centered on the screen and was twisted by applying the Twirl filter in two directions—inward and outward.

Sound was also incorporated with the motion of the filter.

Users had to click on the invisible button behind the screen to continue.



*Introduction on the background created in Fractal Explorer 2.0.*



*Introduction section manipulated by using Twirl filter.*



## Filter Menu

The same background used in the Introduction was faded to emphasize the Filter buttons, which were aligned with the pattern of the background behind. The buttons and the sample image at the center were both in circular shapes.

When a user rolled over the buttons, the text was highlighted, and the sample image of each filter was accordingly shown at the center. The user selected a filter by clicking on the button.

From this screen, access to the "Help", "Appendix", "More Info", and "Quit" sections was provided.



*Filter Menu with seven buttons and sample image at the center.*

## Filter Movies

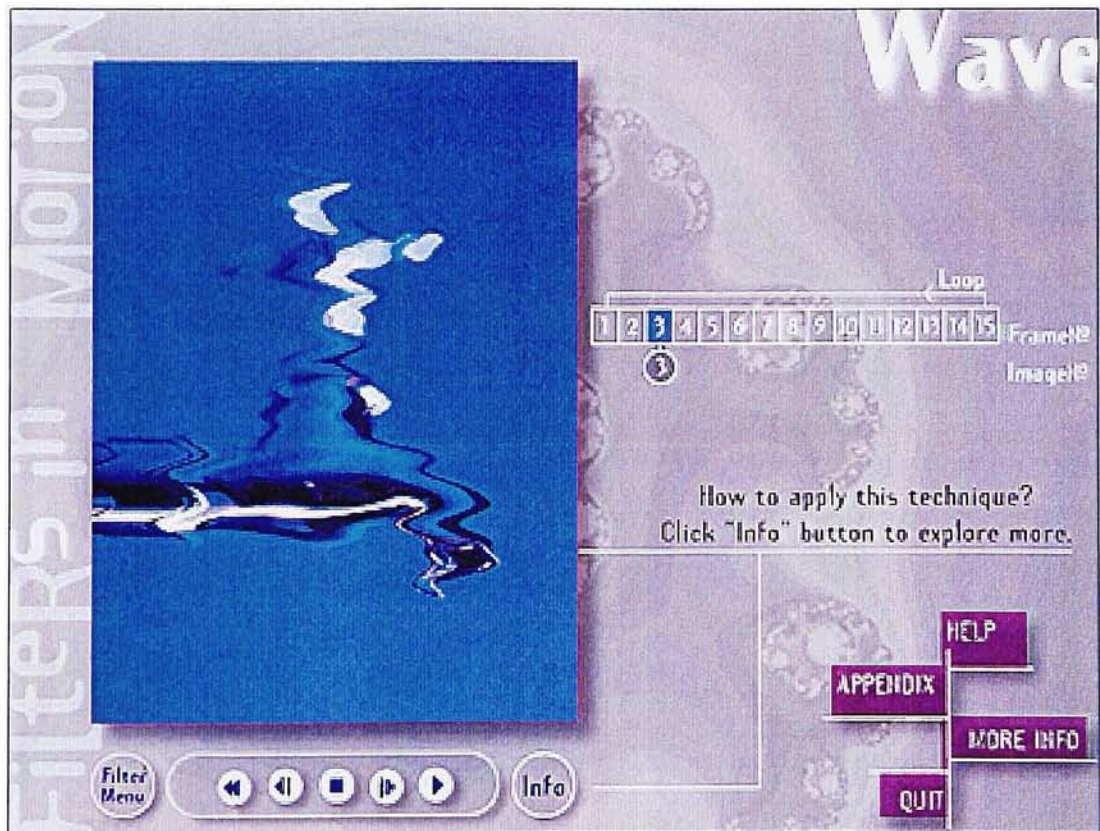
After loading the movie file, the circular sample image transformed into a full image, which showed the motion of the filter in loops. At right, the frame and image numbers were accordingly displayed along with the images.

Beneath the image, a user could control the movie by clicking on the control panel. These buttons were indicated by the icons of "Rewind",

"Forward", "Stop", "Backward", and "Play" functions.

For more information about the frames and images, the "Info" button was provided near the control panel. The user could go back to the menu by clicking on the "Filter Menu" button.

From this screen, access to the "Help", "Appendix", "More Info", and "Quit" sections was provided.



*Each Filter movie provided the buttons to control the looping movie.*



When clicking on the "Info" button, filter and image information showed on the screen frame by frame.

Each Filter movie used the same background, graphics, and layout, except the changing of color in the squares which showed the number of the frames.

## Help Screen

When clicking on the "Help" button, the dialog box explaining the different functions of the buttons and how to navigate through the project appeared on the screen. The user had to click again on the button to exit "Help".



*"Help" dialog box provided information about the buttons for different functions and navigation.*

---

## Appendix

The Appendix provided information about three topics:

1. Photoshop Filters
2. Descriptions of Filters
3. Working with Director.

The user could browse through these topics by clicking on the three buttons at the bottom of the screen.

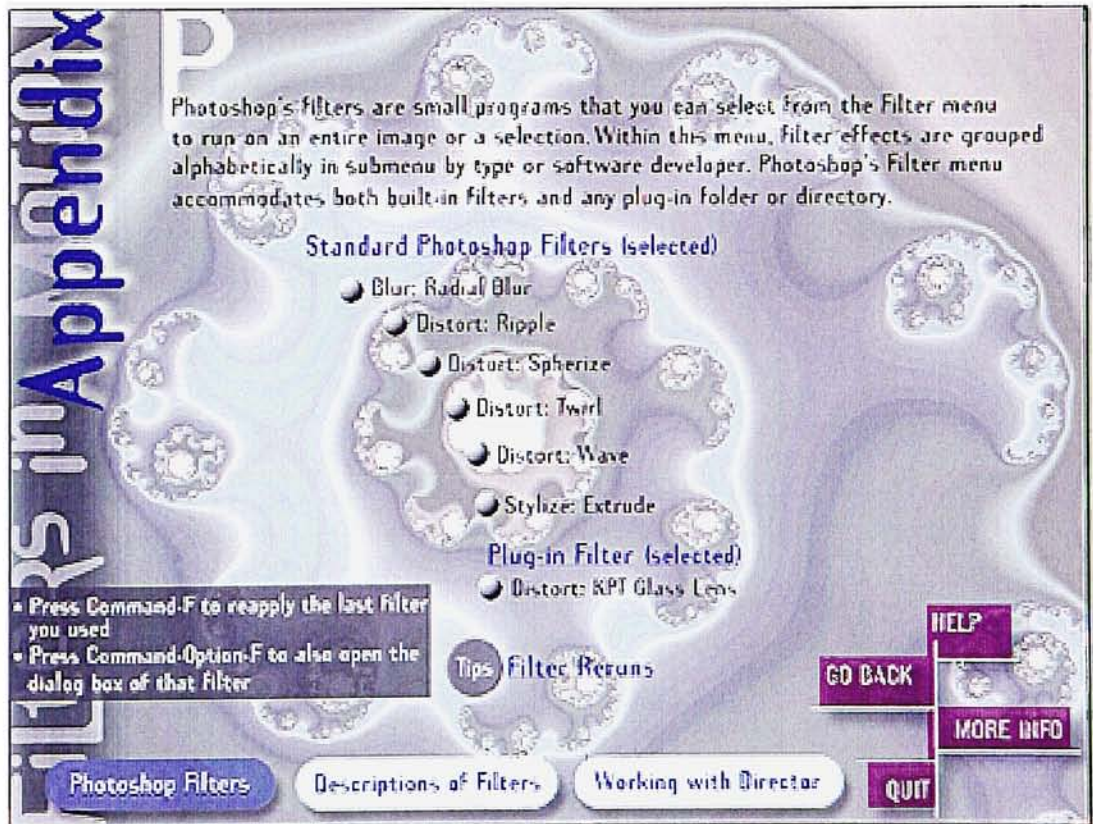


*Title screen of Appendix with three topic buttons at the bottom of the screen.*

## 1. Photoshop Filters

This screen provided a list of seven selected filters with the buttons linked to the appendix. Tips for rerunning the filters were also shown by clicking on the "Tips" button.

The user could go back to the "Filter Menu", or access "Help", "More Info", or "Quit" sections from this screen.



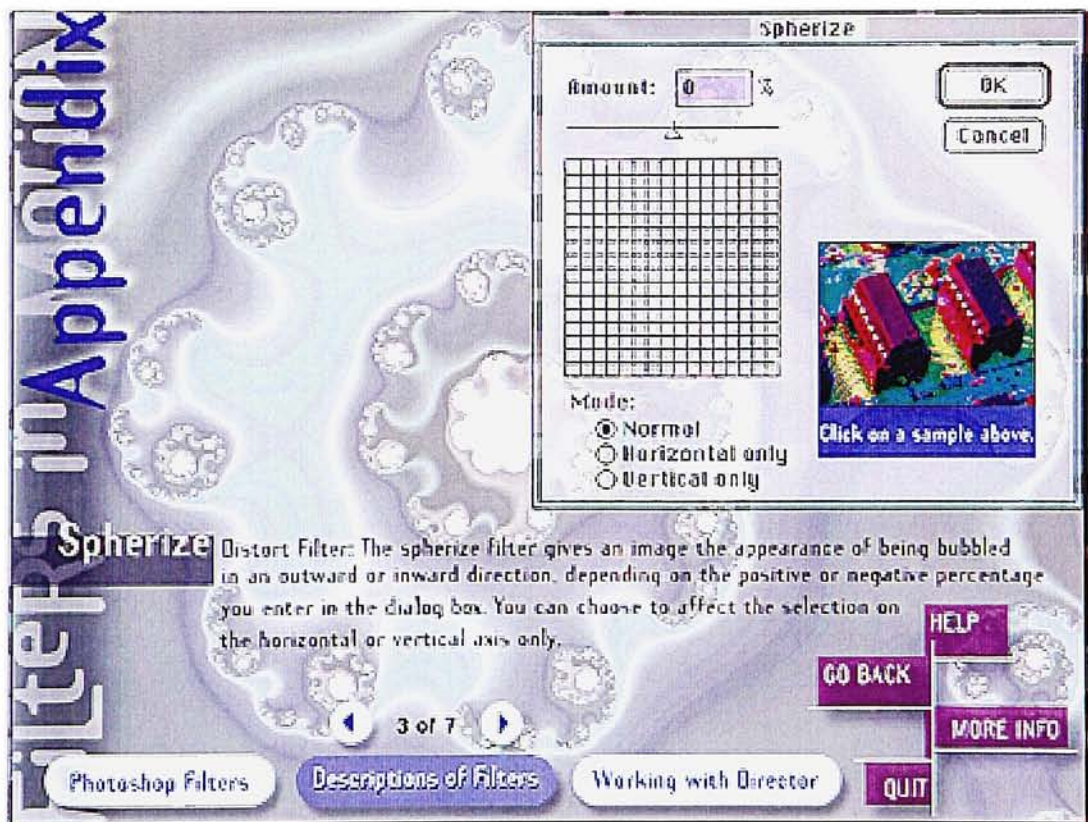
*Photoshop Filters, one of three topics in the Appendix section.*

## 2. Descriptions of Filters

This topic provided the descriptions of each filter with a sample image manipulated by that filter. A user could click on the forward or backward buttons to browse through the seven selected filters. After clicking on the sample image, the number in the dialog box changed in accor-

dance with the image before or after applying the filter.

The user could go back to the "Filter Menu", or access "Help", "More Info", or "Quit" sections from this screen.

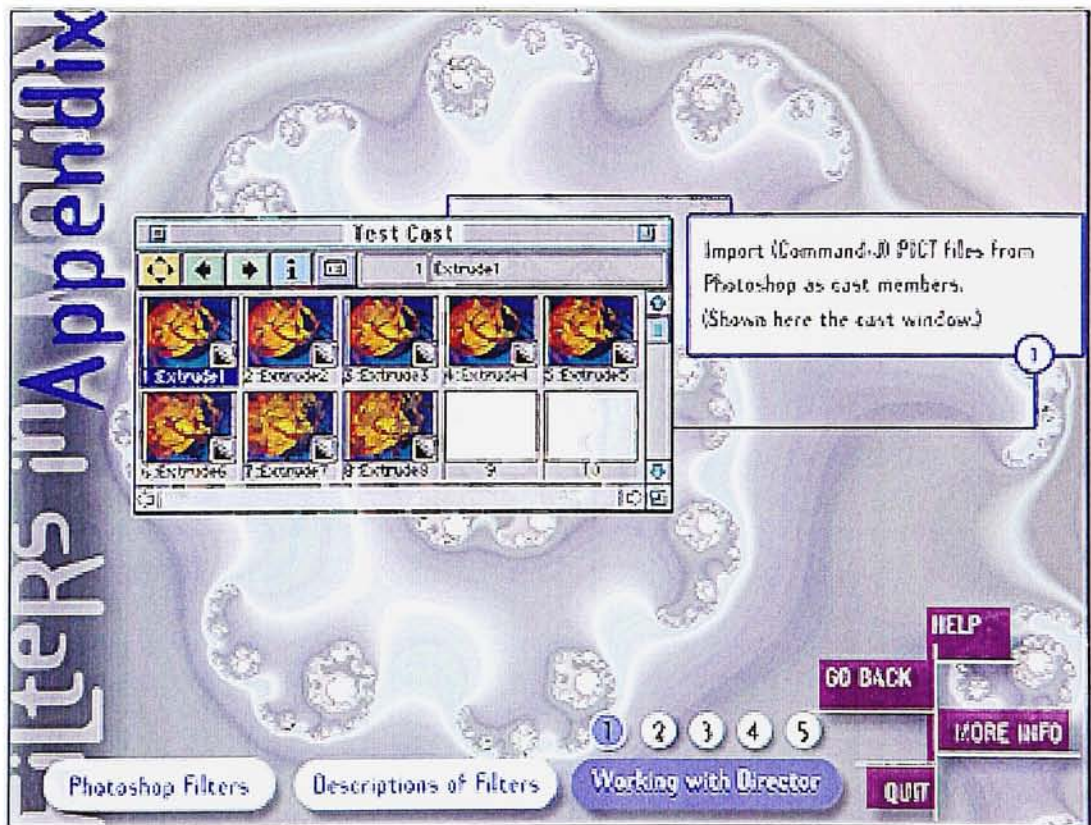


*Descriptions of Filters with filter's dialog box and sample image.*

### 3. Working with Director

This section briefly explained how to import and arrange PICT files from Photoshop in Director in five steps. The user could navigate by clicking on the five buttons with numbers at the bottom of the screen.

The user could go back to the "Filter Menu", or access "Help", "More Info", or "Quit" sections from this screen.



*"Working with Director" briefly explained how to import and arrange PICT files in Director.*



## More Info

The More Info part explained the development of this interactive project, listed credits for the support and inspiration of my advisors, along with the hardware and software used.

The user could access the "Filter Menu" and "Quit" sections from this screen.

**Filters in Motion**

### About "Filters in Motion" interactive project

This "Filters in Motion" interactive project was originally the final project for the Electronic Photography course I took in summer 1994 at RIT. Then it was developed to be my thesis for an MFA candidate in Computer Graphics Design major. On April 28, 1995, it was shown as part of the Graduate Thesis Exhibition for School of Art and Design at RIT.

### Credits

I'd like to thank the followings for their help, support and inspiration in the development of this project.

- James Ver Hague: Professor at RIT, thesis advisor
- Robert Keough: Professor at RIT, thesis advisor
- Gordon Goodman: Professor at RIT, thesis advisor
- Tom Zigon: Professor at RIT
- My family, my friends and people who gave me very useful comments

This project was created entirely on an Apple Macintosh Quadra 660AV configured with 24 MB of RAM, an APS 540 MB External HD, a Wacom Graphics Tablet and a 16" Apple monitor.

Software used in this project are:

- Macromedia Director
- Adobe Photoshop
- SoundEdit Pro
- HSC Software-Kai's Power Tools
- FinderSlider

HELP  
APPENDIX  
FILTER MENU  
QUIT

*"More Info" section explained about the development of this project and the credits.*

# Summary

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## Conclusion

The purposes of this thesis were to create and experiment with new techniques of applying Adobe Photoshop filters to still images, then arranging them in a sequence of frames in Macromedia Director to create the effect of motion, and also to present this information as an interactive project. This study had succeeded in these goals.

Technically, it suggested the idea of applying the useful features of standard and plug-in Photoshop filters and combining them with the advantages of animation features of the Director program. This experimentation furthered the usage of filter manipulation—from still to motion effects—and presented these recommended results with information as parts of the interactive project. Aesthetically, the appropriate conjunction of selecting and combining the image with the visual effects of selected filters was shown in each filter movie. Moreover, all texts, graphics, and navigation tools were designed in consistency and clarity for the users.

## Recommendations

After the study of this project, hopefully these recommendations would be helpful for others to apply these techniques or further their studies.

- Appropriate sound effects could be added to emphasize the effect of “Filters in Motion”.
- The series of images which were manipulated with filters could be put in a video-editing program such as Adobe Premiere or the arranged frames in Macromedia Director could be exported as a QuickTime movie.
- Filter combinations could make the movie more complex and create more stunning effects.
- These effects of “Filters in Motion” could be applied as computer arts project, story animation, or transition effects which transform one image to another.
- Adobe Photoshop 3.0 (or newer) provides more filters—such as Clouds, Dust & Scratches, and Mezzotint. The “Filter Factory” on the included CD-ROM allows the users to create their own filters and preview effects in a preview box. The Lighting filter brings 3-D lighting effects to 2-D images. Additionally, the multiple layers allow the users to work on isolated elements without affecting the rest of the image.<sup>11</sup> These new features should increase the ability to create more striking effects.

# Endnotes

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- <sup>1</sup>Bill Niffenegger, Photoshop Filter Finesse (New York: Random House, 1994), 22.
- <sup>2</sup>Cathy Abes, Photoshop f/x (Chapel Hill: Ventana Press, 1994), 44.
- <sup>3</sup>David D. Busch, MacIntosh FX (New York: MIS:Press, 1994), 155.
- <sup>4</sup>Abes, 45.
- <sup>5</sup>Aaron Marcus, "Making Multimedia Usable: User Interface Design," New Media, February 1995, 98.
- <sup>6</sup>Eric Dawes, "Increase Your Presentation Power With Interactivity," Presentation, March 1995, 25.
- <sup>7</sup>Apple Computer, Inc., HyperCard Stack Design Guidelines (Cupertino: Addison-Wesley, 1989), 177.
- <sup>8</sup>Dawes, 25.
- <sup>9</sup>Ibid., 26.
- <sup>10</sup>Apple Computer, 166.
- <sup>11</sup>Jeff Burger, "Layers and Lighting Perfect a Standard," New Media, January 1995, 89.

# Bibliography

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- Abes, Cathy. Photoshop f/x. Chapel Hill: Ventana Press, 1994.
- Apple Computer, Inc. HyperCard Stack Design Guidelines. Cupertino: Addison-Wesley, 1989.
- Burger, Jeff. "Layers and Lighting Perfect a Standard." New Media, January 1995.
- Busch, David D. MacIntosh FX. New York: MIS:Press, 1994.
- Dawes, Eric. "Increase Your Presentation Power with Interactivity." Presentation, March 1995.
- Dayton, Linnea, Jack Davis. The Photoshop WOW! Book. Berkeley: Peachpit Press, 1993.
- Foster, Robin, Jeff Schwamberger. Using Director for MacIntosh Version4. San Francisco: Macromedia, 1994.
- Marcus, Aaron. "Making Multimedia Usable: User Interface Design." New Media, February 1995.
- McClelland, Deke. "Making the Most of Photoshop Filters." MacWorld, April 1994.
- Niffenegger, Bill. Photoshop Filter Finesse. New York: Random House, 1994.
- O'Day, Kate, Judith Walters von Alten. Adobe Photoshop Classroom in a Book. Indianapolis: Shepard Poorman Communications, 1993.
- Sampson, Marcia. "The World of Desktop Special Effects." National Association of Desktop Publishers Journal, May 1994.
- Skipton, Celia. "2-D Graphics Software." New Media 1995 Multimedia Tool Guide, March 1995.
- Wood, Colin. "Designing a Cover for Design Graphics." Analogue & Digital Design Graphics, April 1994.
- \_\_\_\_\_. "Kai's Power Tools Version2." Analogue & Digital Design Graphics, April 1994.