Contents

Other Topics

The following is a list of unrelated Help topics which usually appear is response to the click of a Help button in a particular SymmeToy menu.

Print Menu

Save Bitmap Menu

Changing the Symmetry of Pictures

Creating Custom Colors

Help With Problems

You should not have many problems in using SymmeToy, but here is a list of common questions.   Click on any of these to get help.

My system hangs!
How do I fix paint leaks?
Where is my printout?
Tell me about dithered colors.

If you have another problem with a **registered** copy of SymmeToy, get in touch with us:

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How to Use SymmeToy
Ombudsman

How to Use SymmeToy

The best way to get started with SymmeToy is to read the first three chapters of the SymmeToy manual.   If you have the Shareware Version of SymmeToy then you cannot do this, and so a brief summary of how to proceed is provided here.

There are three main areas to learn about.   These are listed below and you should probably read them in order, though not necessarily all at once.   It is easiest to learn how to paint before you learn how to draw.   If you like, you can print these articles onto your printer by clicking the File option above, and then Print.   Do this and you will have a hard copy reference as you begin to learn SymmeToy.

> Using the Main Menu
> How to Paint with SymmeToy
> How to Draw with SymmeToy
> Titling, Saving, Loading, Printing

Also do not forget that Control Help is available within the program.   This will help you over any particular trouble that you may be have with a SymmeToy control or menu.

Click on Contents above to see a list of other help topics.

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How to Use SymmeToy
Help with Problems
Limited Warrantee / License
Ombudsman

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How to Use SymmeToy
Help with Problems
What is Shareware
Limited Warrantee / License

Creating Custom Colors

If your computer supports more than 256 colors, you can create brand new custom colors for use with SymmeToy.   Click on the button marked with a **#**, which is just to the right of the Custom Colors Palette.   This causes a Color menu to appear on the screen.

At the left of the Color window are Basic and Custom Colors.   At the right is a large box colored like a rainbow.   Just to the right of the rainbow box is a vertical luminescence bar.   Below the rainbow box is a Color/Solid box.   Together these controls allow you to select from thousands of colors, but the Color window can be a little confusing at first, so use the procedure below until you get the hang of   it.

1.   Click on the Custom Color box that you wish to change.   For example, click on the yellow custom color box.   Notice that the Color/Solid box then changes to match the color you select.   Notice also the positions of the indicator in the rainbow box and the triangle beside the luminescence bar.   These are the settings of the indicator and triangle which give this particular shade of yellow.

2.   Click on the Basic Color which is closest to the color you want to create; for instance, click on the orange Basic Color.   The Color/Solid box changes to match your choice.

3.   Drag the indicator in the rainbow box.   To do this place the mouse pointer on the indicator and then hold the Left Mouse Button down and move the mouse.   Notice how this selects different colors into the Color/Solid box.   You can also just click on any location in the rainbow box to jump the indicator to that point.   The rainbow box adjusts the hue and saturation of the color in the Color/Solid box.

4.   Drag the triangle in the luminescence bar up and down.   This movement adjusts the luminescence of the color in the Color/Solid box.   You can also simply click on the desired luminescence rather than dragging if you prefer.

5.   When the Color/Solid box shows a color you want to keep, click on the **Add to Custom Colors** button at the bottom of the window.   The new custom color replaces the yellow color you originally selected.

6.   Return to step 1 to set up another custom color, or click **OK** to return to the Paint program. Click **Cancel** to abandon your changes and return to the Picture Editor.

Note: you can use the Solid half of the Color/Solid box as a custom color by double clicking on the Solid color to change the whole Color/Solid box to that color.   Now proceed as in step 5 above.

Help with Problems

Acknowledgments

Thanks to my son Pete, to my nieces Erica and Sarah, and to Erika and Kristine Grayson for testing SymmeToy.   Thanks also to Pam and Lee Hufnagel and to Phil Grayson for many an interesting suggestion.

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How to Use SymmeToy
Help with Problems

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How to Use SymmeToy
Help with Problems
What is Shareware
Ombudsman

Changing the Symmetry of Pictures

When you click on Setup Symmetry your picture is temporarily erased from the screen and the symmetry diagram associated with your picture is displayed.   You can then change the "b"s in this diagram to affect the symmetry of your picture.   This is done as follows:

The drawing area shows the symmetry diagram for your picture.   Symmetry diagrams are discussed on page 19 of the SymmeToy manual.   A picture's symmetry diagram tell SymmeToy how to reproduce, rotate, translate and reflect the lines you draw to create a symmetric work of art.   On the diagram you will notice colored dots and "b"s which describe the current symmetry of the picture.

The dots are called handles.   The lone black handle inside of one "b" indicates the location of the "base shape" for the symmetry diagram.   The other "b"s show places on the picture where symmetric drawing is to take place.   "d"s indicates places where lines are to be reflected by SymmeToy.   Red handles indicate available places for putting "b"s and "d"s which are not currently in use for generating the symmetric picture.   Clicking on a handle or a "b" or "d" changes its status.   "b"s become "d"s, "d"s become red handles, and red handles become "b"s. Thus you can alter the symmetry of your picture in many different ways.

When you click the OK button at the left of the screen the changes you have made go into effect and your picture will be redrawn using the new symmetry setup.   Click on Clear to reset all of the handles to red.   Click on Cancel to cancel changes you have made to the symmetry diagram.

Click on the DrawLoc button and then on a handle to change the location of the "base shape". Initial is used to indicate if a picture starts off with the Symmetry Selection Buttons set to Off (white) or On (yellow).   Refer to page 10 in the SymmeToy manual for more information on these buttons.

If you enjoy fooling with the symmetry of your pictures, be sure to take the "Symmetric Challenge" on page 27 of the SymmeToy manual.

What is SymmeToy?

Have you ever heard M. C. Escher?   Escher was a Dutch artist who achieved fame in the 1960s for his of wondrous symmetrical art.   Now you too can create symmetric art with SymmeToy.   SymmeToy lets you make amazing Escher-like pictures, glorious kaleidoscopic designs, beautiful geometric mosaics and wondrous 3D models.   SymmeToy is simple enough for a child of 4 to use with a little help from an older friend, but SymmeToy also provides all of the tools that you will need to create your own symmetric masterpieces.

SymmeToy comes with a gallery of 25 pictures which you can display in a continuous art show. Younger children will delight in recoloring these pictures, and in experimenting with a Color Wheel that changes all of the colors in a picture with a single click of the mouse.   Older artists will enjoy creating and coloring their own symmetric art based on the symmetry of the gallery pictures; and SymmeToy art can be easily moved to your favorite Windows illustration program, desktop publisher or word processor.

SymmeToy also prints patterns which you can cut out and assemble to create uniquely decorated boxes and ornaments.   Seven different polyhedron models can be constructed; everything from a simple cube to the beautiful Great Dodecahedron.

SymmeToy comes with a 48 page SymmeToy manual which not only explains how to use the program, but also tells a little something of the history of symmetric art.

How to Use SymmeToy

Click on Contents above to see a list of additional help topics.

The Main Menu

The SymmeToy Main Menu allows you to control the overall operation of the program.

The four Mode Select buttons at the upper left allow you to select from **Show**, **RePaint**, **ReDraw** and **Change** modes of operation.   When you click on any of these buttons the center text changes to indicate the mode you are in.

The four Art Type Select buttons at the upper right allow you to select from the available types of SymmeToy art. The available types of art from left to right are: **Patterns**, **Roses**, **Drawings** and **3D Models**. When you click on any of these buttons the display changes to show the type of art you have selected, and the center text changes to the name of the type of art you have selected.

Having selected the desired mode and art type, next click on the desired picture.   Lets suppose that you have selected **Roses** as the type of art and that you now click on the Snowflake picture.   If you are in:

Show mode   - SymmeToy will display the complete Snowflake painting with a title and a colored border.   This is the most impressive way to view finished pictures.

RePaint mode - the Picture Editor will appear and an unpainted version of the Snowflake painting will be displayed.   You can then repaint this picture in any way you like.

ReDraw mode - the Picture Editor will appear and the underlying symmetric structure of the Snowflake picture will be displayed.   You can then draw and paint your own work of art that has the same symmetry as this picture.

Change mode - the Picture Editor will appear and the complete Snowflake picture will be displayed.   You can now add lines or change colors to suit your fancy.

Above the body of the Main Menu is the Menu Bar.   The first command on the Menu Bar allows you to start an **ArtShow** of SymmeToy's, or your own saved art.   Clicking the **Edit** command will immediately start the Picture Editor without loading any of the standard symmetric art.   You can then reload any of your masterpieces for further editing.   As to the last three commands on the Menu Bar, **Order** allows you to order additional copies of SymmeToy, **Help** allows you to displays on-line help, and clicking on **Quit** stops SymmeToy and returns you to Windows.

Use Control Help to get more information of any of the controls and menus described above.

How to Paint with SymmeToy
How to Draw with SymmeToy

Print Menu

The Print Menu allows you to produce high quality color, gray shaded and black & white printouts of the art you create with SymmeToy.

Size and Position
At the upper left of the Print Menu is a small preview of the size and placement of your picture on the output page.   The white area in this preview represents the printable area of you printer page.   This is dependent on how you have configured your printer in the Windows Control Panel.   You can click down and drag the picture about on the page.   You can also click down and drag the small boxes at the corners of the picture to adjust the size of the printed version of your picture.   As you resize or reposition you picture you will notice that the information in the Size box changes.   You can also alter size and position by changing the Size box information directly if you prefer.

Quality
You can select the quality of the printout by clicking on the desired Quality setting.   Draft quality simply redraws your picture at its current size in computer memory and then artificially expands this small picture to the size which you specified in the previous section.   This is a relatively quick process and the end result looks like printout from most paint program - crude.   The other three Quality settings seek to improve on this by enlarging your drawing in memory prior to artificially expanding it and sending it to the Program Manager for printing.   The larger this expansion, the better the finished picture will look on your printer.   The drawbacks to this strategy are that it requires more memory to hold an expanded picture and that the process takes considerably longer than draft printing.   If you have less than 8MB of memory on your computer, it will be best to avoid high quality printing as this will take a very long time to complete.

Style
If you select Color then your printout will be in color or shades of gray, depending on if whether or not you have a color printer.   If you select B & W as the style, only the lines of your painting will be printed -- no color or shading.   B & W printing always produces a speedy, high quality result.

Copies, Orientation and Border
Except for the last, these boxes are self explanatory.   Border will cause a simple border to be drawn around your printed picture.

Buttons
The **Print** button will cause the printing operation to begin.

The **Preview** button will redraw your picture in memory and then display it on the screen.   You can use scroll bars to move it around to check for new paint leaks. You can then cancel or proceed with the printing operation.   New leaks sometime occur due to this enlargement of the picture in memory.   To fix these, click Cancel then use the standard leak fixing techniques to fix them.   Setting **Line Width** to a higher value is a particularly painless and effective way to get rid of most leaks that occur at print time.

The **Cancel** button erases the Print menu from the screen and returns you to the Picture Editor.

The **Help** button shows this help.

[How do I fix paint leaks?](#)
[Where is My Printout?](#)

Save Bitmap Menu

The Save Bitmap Menu is a variant of the Print Menu which allows you to save your SymmeToy art in various forms that can be read by other programs.

Size
At the upper left of the Print Menu is a small preview of the size of your picture.   The placement of your picture on the output page is ignored when saving bitmaps of your picture.   Only the picture itself is save, not the rest of the page.   You can click down and drag the small boxes at the corners of the picture to adjust the size of the saved bitmap version of your picture.   As you resize you will notice that the information in the Size box changes.   You can also alter the size by changing the Size box information directly if you prefer.

Format
The Format setting which you select affect the way in which the picture will be saved.   In general the PCX format will result in the smallest file and can be loaded by most Windows programs that are capable of importing graphics.   The other format generally result in increasing large files being saved onto you hard drive.   The last format does not save a file at all, instead placing a bitmap of your picture into the Windows Clipboard, from where it can be loaded by many Windows applications.

Buttons
The **Save** button will cause the save operation to begin.   This consists of redrawing your picture in computer memory at the size you specified above, and then transferring this image to a file or to the clipboard.   If the destination is a file, you will be asked to enter the desired file name.

The **Preview** button will redraw your picture in memory and then display it on the screen.   You can use scroll bars to move it around to check for new paint leaks. You can then cancel or proceed with the save bitmap operation.   New leaks sometime occur due to this enlargement of the picture in memory.   To fix these, click Cancel then use the standard leak fixing techniques to fix them.   Setting **Line Width** to a higher value is a particularly painless and effective way to get rid of most leaks that occur at save bitmap time.

The **Cancel** button erases the Save Bitmap menu from the screen and returns you to the Picture Editor.

The **Help** button shows this help.

How do I fix paint leaks?

Where is My Printout?

This program passes pictures to be printed to the Windows Print Manager program, where the actual printing to the printer is done.   Print Manager is slow but generally gives good results and you can continue your work while Print Manager chugs away in the background.   Or, if you prefer, you can minimize this program and select the Print Manager icon to monitor the printing process.

If your printout fails or is never printed then Print Manager may need more disk space.   Try printing at a smaller size.

On rare occasions Print Manager may fail and then terminate this program and you will have to try again.   For this reason you should save your work before printing.

Replacing One Color with Another

You can replace one color with another throughout a picture with just three clicks of your mouse.   1. Click on the new color, selecting it from either the Standard Colors Palette or the Custom Colors Palette.   2. Click the Current Paint Color box.   3. Click the old color in the Colors in Use column that you want to replace.   The old color will be replaced by the new color throughout the picture.

Swapping One Color with Another

You can swap two colors throughout a picture with just three clicks of your mouse.   1. Click on any color in the Colors in Use column.   2. Click the Current Paint Color box.   3. Click on any other color in the Colors in Use column.   The two colors will be swapped throughout the picture.

Changing the Custom Colors Palette

You can add any color from the Standard Colors Palette or the Colors in Use column to the Custom Colors Palette with just three clicks of your mouse.   1. Click on the color you want to add, selecting it from either the Standard Colors Palette or the Colors in Use column.   2. Click the Current Paint Color box.   3. Click on a color box in the Custom Colors Palette.   The new color will replace the old color in the Custom Colors Palette.

You can also selects additional colors into the Custom Colors Palette by clicking on the # button just to the left of the Custom Colors Palette.   This brings up a menu that allows you to select colors from among all of the colors available on your machine.

SymmeToy remembers the colors you place in the Custom Colors Palette and displays them whenever you run the program.

Fixing Paint Leaks

Paint leaks are caused by small gaps in the lines that make up your drawing. The painting algorithm finds these small gaps and floods out into unwanted areas. Here is how to deal with leaks:

Avoid Creating Small Gaps in Your Drawings

As you draw each line, SymmeToy symmetrically draws many others based on the symmetry grid. The program does not do this with absolute perfection. For this reason, when you draw one line to meet another, it is a good idea to make the lines cross by a small amount. Crossing the lines slightly will cut down on the number of leaks you will encounter when you start painting your drawings. As you draw and edit your picture, the screen may at times become cluttered with dots and line segments which SymmeToy forgets to erase. Prior to painting, it is a good idea to get rid of these by clicking on the Redraw Button at the upper left of the screen.

Plug Gaps with Fat Dots

When paint leaks out of a area, this means that there is a gap between two lines which should meet. The easiest way to plug such a gap, if you can spot it, by using a fat dot. Just select the circle drawing tool and click twice on the gap to produce a fat dot at that point which will plug the leak.

Use Thicker Lines to Fix Leaks

One very easy method of fixing leaks is to simply click on Options then Line Width and set a value of 2. This doubles the thickness of all of the lines in your picture, often plugging all small gaps in the process.

Fix the Problem

The best strategy for handling leaks is to find the source of the problem and fix it. This does require more time, however. Proceed by turning symmetry off and painting individual areas of the picture until you find the one causing the problem. Often, the next step is to Zoom in on this area, spot the source of the problem, and the fix it by adjusting the position of a line using Line Edit button. Sometimes the leak will be in an area of the picture which was automatically drawn by SymmeToy. In such case it is usually easiest to add a small line to the picture to plug the leak. This is most easily done if you Zoom in on the problem area.

Dithered Colors

If your computer supports 256 or more simultaneous colors, then colors will appear solid on your screen solid on the screen in SymmeToy.

If your machine supports only supports 2, 16 or 20 colors, most SymmeToy colors will be made up of dots of various of these base colors, a process called dithering.   If you are getting dithered colors and want solid colors, you will need to figure out how to set Windows to a color mode with more available colors.   This may be as simple as altering a setting in the Windows Control Panel, or may require that you purchase a more colorful video adapter for your machine.

SymmeToy can work with dithered colors; but the results do not look nearly as nice as what you would get if dithering were not required.

Drawing With SymmeToy

Once you have learned how to paint with SymmeToy, the last step is to learn how to draw with the program.   Get to the Main Menu and select ReDraw as the mode and Roses as the art type.   Now click on the Snowflake picture.   The Picture Editor will start, the symmetry grid for the Snowflake picture will be displayed and you are now ready to begin drawing.

When you select a picture while in ReDraw mode the SymmeToy Picture Editor is started with the Drawing Buttons displayed.   These buttons allow you to draw symmetrically or non-symmetrically.   Just as with painting, you control the mode of operation with the two small button in the Symmetry / NoSym box at the lower left of the Picture Editor screen.   Line and color editing buttons are also displayed below the drawing buttons.   These allow you to adjust or delete the lines and colors in your pictures.

When the symmetry grid loaded, one portion of it is shaded yellow.   This is the Base Shape. SymmeToy uses the Base Shape as a point of reference as it does symmetrical operations. For this reason, it is a generally a good idea to draw on or near the base shape of a symmetry grid, although you can ignore this rule for the purely circular grids of the Snowflake, Circus and Twelve pictures.

Now you can begin to draw your first picture based upon the symmetry of the Snowflake grid. If you have any trouble using the various drawing buttons, refer to Control Help for some assistance.   You may want to turn symmetry off until you get comfortable with the drawing commands.   Once you are comfortable with the drawing buttons, the fun can begin.   Click on **File** in the Menu Bar, then on **New Picture**.   This erases your practice drawing and displays the symmetry grid and yellow shaded base shape once again, with Symmetry turned on.   Now begin your experiments with symmetric drawing by making some straight lines, circles and arcs.

Usually you will want to hide the symmetry grid and yellow base shape once your picture gets underway.   Do this by clicking on **Color** / **Yellow Base Shape** and on **Symmetry** / **Grid Color** / **Hide** in the menu bar.   Even when the symmetry grid is hidden it still works to create symmetric art.

Good Advice
As you draw each line, SymmeToy symmetrically   draws many others based on the symmetry grid.   The program does not do this with absolute perfection.   For this reason, when you draw one line to meet another, it is a good idea to make the lines cross by a small amount.   Crossing the lines slightly will cut down on the number of leaks you will encounter when you start painting your drawings.

As you draw and edit your picture, the screen may at times become cluttered with dots and line segments which SymmeToy forgets to erase.   Get rid of these at any time they start to bother you by clicking on the Redraw Button.

Painting Your Drawings
SymmeToy always does all drawing before it does any painting when a picture is redrawn.   For this reason it is usually easiest to finish drawing a picture before you begin to paint it.   Paint your pictures just as you have already learned to do.

Many less used features of SymmeToy have not been covered in this short introduction to the

program.   Information on these can be found by exploring the program, by using the Control Help, and by reading the SymmeToy manual.   I hope you have a lot of fun using the program.

How to Paint with SymmeToy
Symmetric Painting
How do I fix paint leaks?
Help with Problems

Painting with SymmeToy

Once you have had a first look at SymmeToy, the next step is to learn how to paint.   Get to the Main Menu and select RePaint as the mode and Patterns as the art type.   Now click on the Quilt picture.   The Picture Editor will start, the Quilt picture will be loaded with its colors removed and you are then ready to repaint this picture.

Notice that there are two color palettes displayed above the picture area of the screen.   You can choose colors from either of these.   The left palette is called the Standard Colors Palette, and the right one is called the Custom Colors Palette.   Just to the right of the Standard Colors Palette is a scroll bar.   Click on the top and bottom of the scroll bar to see the available standard colors.   There are three kinds of colors in the Standard Colors Palette.   Wheel Colors are displayed four rows at a time.   There is a total of 12 rows of Wheel Colors, and you can scroll the Standard Colors Palette down to see all of these.   You will use Wheel Colors for most of your painting.   If you scroll the Standard Colors Palette up enough, you will come to the Base Colors and the Grays/Browns.   These are shown two rows at a time and so are easy to distinguish from the Wheel Colors.

Selecting Colors   - Adjust the Standard Colors Palette to display shades of red and purple, then click on one of the tiny boxes containing a shade of red that you like.   A dot will appear in this box, and the Current Paint Color box near the top right of the screen will change to show the shade of red which you have selected.

Painting - To paint with this color, move the mouse pointer to a hexagon in the picture   and then click with the Left Mouse Button.   Each time you do this the hexagon you are pointing at will be painted red.   SymmeToy will not let you click on the black lines in the Picture Area, just on the spaces between the lines.

Correcting Mistakes - If you make a mistake, click the Right Mouse Button and the last paint that you applied will be removed from the picture. You can press the right mouse button repeatedly to remove all of the paint from the drawing, if you wish.   You can also paint with the color white to erase mistakes.

Changing Colors - To change colors, just click on the new color in either palette or in the Colors in Use column at the left of the screen.   This column shows all of the colors currently in use in your painting.   The Current Paint Color box always shows the color currently in use.   Select and paint with a shade of green now (use the scroll bar to display shades of blue and green, and then click on the desired color.)   Notice that you can click on areas of the painting which are red and these will be repainted green.   After repainting a number of hexagons green, click the Repaint Button, just to the left of the Standard Palette.   This button repaints all of the colors that have been added to a picture including those which are later covered up by other colors.

Brushing Colors - Now "brush" on the green paint.   To do this move the mouse pointer to a white area and then hold the Left Mouse Button down and drag the mouse pointer about on the painting.   If you do this correctly (hold the Left Mouse Button down or it won't work), each white area that the pointer encounters as it is moved about will immediately be painted green.   This saves a lot of clicking.   Already-colored portions of the pattern will not be affected by the brushing operation; only white areas will be painted.

Using the Color Wheel

When you are in RePaint mode, the left side of the Picture Editor shows a Color Wheel.   A small circle on the inside of the wheel indicates where the Current Paint Color falls on the Color Wheel.

If you click on another segment of the Color Wheel, the Current Paint Color will be rotated around the wheel so that it falls on the segment which you select.   Every other Wheel or Base Color in your picture will also be rotated around the Color Wheel by that same amount.

Rotating the Wheel Colors gives a different coloring to a picture with just one click of the mouse. Some color schemes are bizarre but you may find others that are just as appealing as your original coloring.

Clicking on the Reset button below the Color Wheel resets the colors to their original values.

Symmetric Painting

You can paint one area at a time in SymmeToy or you can paint many areas at once based on the underlying symmetry of the picture.   The **Symmetry** / **No Sym** box at the lower left of the Picture Editor screen controls symmetric painting and drawing within the program.   Click on the yellow button to the right of within this box to turn symmetric painting/drawing on.   Click on the white button to the left to turn symmetric painting off.

If you click and hold down the yellow "symmetry on" button, a display appears showing where the base shape and symmetry points for the picture are located.   This is useful because SymmeToy performs symmetrical operations best if they are done within or close to the base shape of a picture.   Release the mouse button and the symmetry information will disappear from the screen.   (You can also display this information by double clicking on the symmetry button, and remove it by double clicking again.   It is also possible to highlight the base shape in yellow with the Yellow Base Shape option in the Color menu.)

With symmetry on, you are now ready to paint symmetrically.   Paint just as you have done thus far, except now when you paint one area, many other areas will be painted as well.   When painting symmetrically, it is not uncommon for the program to forget to paint some of the areas around the border of the picture.   To overcome this problem, switch to No Sym (symmetry painting off) and paint these areas individually.

Do your symmetric painting on or near the base shape to get the best automatic result from SymmeToy.

Titling, Saving, Loading, Printing

Background and Title

When your picture is complete, you can see what it looks like in SymmeToy's Show Mode by clicking on **Options,** then **Switch to Show Mode**.   The Picture Editor controls will disappear and be replaced by a wide border.

From this point you can set the color of the Show Mode border by clicking on **Edit** then **Set Background Color**.   You can also add a   title to your work of art in a similar fashion by clicking on **Edit** then **Title this Picture**.

Saving Pictures

The final step in creating a picture with SymmeToy is to save your work so that you can see it again later.   To save a picture, click on **File** in the Menu Bar and then on **Save Picture As...**   This tells SymmeToy that you want to save the current picture under a new name.   In the menu that then appears, enter the name of the file where you want to save your picture at the upper left where it says **File Name:**   Next click **OK** and your picture will be saved. Pictures that you save will be added to your Art Show, which can be displayed from the SymmeToy Main Menu.

Loading Pictures

To reload your pictures, get to either the Picture Show or Picture Editor screen.   Both of these have **File** as one of the commands listed on the Menu Bar.   Click on **File** and then **Load Picture...**   A **Load Picture** menu will appear.   To load a picture simply click on its name and then on **OK**.

Another way to load a picture is to click its name near the bottom of the **File** commands list. The names of your most recent creations are displayed here.

Printing Pictures

To print any picture, click on **File** in the Menu Bar, and then on **Print Picture**.   When you do this, a **Print Picture** menu will appear on the screen.   Here you can select from a variety of printing methods.   Click on the Help button in this menu to get more information on how to print.

On black and white printers, color printing results in gray shaded printouts.   A fast, high quality B&W option is also available in the Print menu.   This allows you to print drawings without any coloring (shading) added.   This option is useful when you want to hand color a picture.

You may find it useful to load the COLORS painting supplied with SymmeToy.   This boring picture contains all of the SymmeToy colors, and by printing it you will have a reference so that you can confidently predict what each color will look like when printed on your particular printer.

Building 3D Models

Full instructions for building SymmeToys 3D models are presented in Chapter 7 of the manual. This is the best place to go for information.   If you have the Shareware Version of SymmeToy you will not have the manual as yet, so here are brief instuctions of how to build the two models included with the Shareware Version.

For either model, begin by drawing and coloring the decorations on its facets.   This is done in exactly the same way that you use to create the other types of symmetric art in SymmeToy. Once your picture is complete, print out 2 copies of the picture.   Now cut out the two parts (one from each page printed).   Next score and bend on the edges and tabs, and glue the two parts together in the correct way as shown below.   Finally glue or tape together adjacent edges until the model is complete.   Look at the picture of my version of the model occasionally in the 3D Models art type menu as you assemble your 3D model.   This will help you avoid confusion.

Assemble the two Tetrahedron (Fire) parts as above.
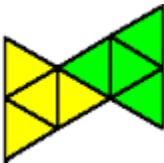
Assemble the two Octahedron (Air) parts as above.

How to Use SymmeToy

The Story of SymmeToy

Twenty-five years ago I bought a small book called *Altair Designs*.   This import from England consisted of page after page of black symmetric designs on white paper.   The idea was that you were to take colored markers and fill in the spaces between the lines to reveal any picture you saw in the patterns.   This turned out to be much like the game where you lie on your back and stare at clouds in the sky, in hopes of seeing an elephant or a castle in the clouds.   *Altair Designs* sparked my interest in symmetry, and from then on I collected spirographs, kaleidoscopes, symmetric puzzles and books on the subject.

A decade later, I discovered the joys of polyhedron model building.   Using computer cards and scotch tape as my building materials, I made tetrahedrons, cubes, dodecahedrons and cuboctahedrons.   Later I switched to window-glass and silicon caulk for my materials, and eventually had over 20 models of various kinds decorating my bookshelf.   Shortly after that, I started working on large mainframe computers for a living, and gradually my interest switched to using computers to create symmetric art.   A friend of mine wrote a program about that time, called Escher, that allowed you to create art in the style of M.C. Escher, the famous Dutch graphical artist.   I though this was marvelous.

After that, I got busy with other things for a number of years, but I always promised myself that, some year, I would write my own computer program for creating symmetric art.   1993 was the year and SymmeToy was the program.

In the two years that SymmeToy has been tested by my friends and acquaintances, it has proved to be especially popular with artists and young people.   Artists like the ability to produce symmetric art without the drudgery of redrawing the same picture over and over again.   Kids, especially girls, like to color the pictures in various ways, and to experiment with the color wheel to change their color schemes with the click of a button.   My bet is that working with the program also improves their abilities at spatial visualization.   Personally, I like SymmeToy because it gives me the power to control up to 20 drawing pens going every which way on my computer screen all at once.   I also like the program because it fulfills a promise that I made to myself long, long ago.

So, now its time for you to try the program.   If you create any interesting art, I would be pleased if you would send me a copy.   Perhaps, if I get enough exhibits, I can make a little book of them.   Whether you create a masterpiece or not, I hope you enjoy fooling around with SymmeToy.

Hank Hufnagel, 1995

What is SymmeToy
How to Use SymmeToy

Adventures in Symmetry

Excerpt from *Adventures in Symmetry* …

The whole thing started 25 years ago.   I was a student at Penn State and just as I finished my last exams before Christmas, a tremendous snow storm dumped two feet of snow on my part of the world.   I was sick to death of study and ready for a vacation, but the storm made travel impossible, so I cast about for something to do with my afternoon.   I trudged through the still-blowing storm to the HUB, which is a place for students to relax on campus.   My friends had left for home just before the storm started, so I found myself poking around in the HUB book store, more for something to do than with any real hope of finding anything that would interest me.   As I wandered around in my damp snow gear, I noticed a book which was to change my life in a minor sort of a way.   Called *Altair Design*, this import from England was nothing more than page after page of black symmetrical patterns on white paper.   The idea was that you were to take colored markers and fill in the spaces between the lines to reveal any picture or design which you saw in the patterns.   I paid my $1.95 for the book, and also bought some cheap markers; and settled down in the nearly empty student lounge to see what I could do with my purchases.

* * * * *

As I set out to write the manual on how to use SymmeToy, I quickly realized that this could not cover many, many aspects of my interest in the subject of symmetry.   Where would my exploration of various symmetrical Disney attractions fit into such a book?   How could I include the strange story of how a chance footnote in a paperback novel led me to dig for treasure in a heap of rubble on the outskirts of London?   Or how, after 20 years of trying, I brought a dead man back to life?   Or, how I finally discovered the secret of time travel?

After many a false start, I finally made two little books.   The first tells how to use SymmeToy and is included with the registered version of the program.   The second tells of my other explorations in symmetry and is called *Adventures in Symmetry.*

The excerpt above is how *Adventures in Symmetry* begins.   The book is 60 pages long and profusely illustrated with symmetric art.   The text of the book is a series of autobiographical tales about places I have found to be wonderfully symmetrical, places like a cathedral in Quebec, a museum in France and a rug show right here in my own small Pennsylvania town.   I think you will find the stories to be interesting, and hope that they will nudge you toward pursuing your own adventures in symmetry.

Hank Hufnagel

My System Hangs

SymmeToy works well on almost all systems, but during testing we did find some problems with certain Windows video driver versions running in certain color resolutions.   Although the ultimate fix to this sort of problem is to install the latest, hopefully improved, drivers from your video card manufacturer; a quicker way around the problem seems to be to just experiment with a different number of colors.   Thus, if you are running your video drivers with more that 256 colors, often switching to a 256 color mode will fix a hanging problem.   You can generally change the color resolution of Windows from the Control Panel, or from a special program group that was installed when your video drivers were originally loaded by Windows.