Overview

About This Chapter

This chapter is intended to orient you in MetaSynth's sometimes bewildering world. MetaSynth is so good at creating surprising, surreal soundscapes that it is easy to forget that it is also a wonderful tool for accomplishing such "mundane" tasks as sequencing a rhythm groove or rendering orchestral music. The goal of this chapter is to introduce MetaSynth's basic organization and operating principles and to give you an idea of what MetaSynth can do. The following chapter, the **QuickStart**, provides a hands-on tour.

Once you have read this chapter, you may want to jump in and start exploring MetaSynth on your own. In fact, we encourage it. After a bit of exploring, skim through the manual and discover some of the rest of what MetaSynth can do.

What MetaSynth Can Do

MetaSynth can be used to create new sounds from scratch, and it can filter, shape and deconstruct existing sounds. What is more, MetaSynth can be used as a sequencer to make music from these sounds. When using MetaSynth as a sequencer, you can create amazingly realistic dynamics and articulations that would be impossible with other sequencer/sampler combinations. And, of course, you can create music whose very nature defies credulity. How you accomplish these tasks will depend on how you use and set up the various tools MetaSynth provides.

People often ask what they are supposed to do with the sounds created in MetaSynth. Some users will use the sounds in their hardware samplers. Others will create tracks they will import into multi-track mixing applications. Still others will create complex, atonal compositions and explore MetaSynth's custom micro and macro –tonal tunings. It all depends on how you choose to use this tool.

Anatomy of MetaSynth

MetaSynth has several work areas where you accomplish different tasks. Each of these work areas puts quite a range of tools at your disposal. Understanding the relationship between these areas is critical to getting the most out of MetaSynth. Below is a brief description of the primary work areas. A more detailed summary of each area is provided later in this chapter. A complete reference for each area is provided in the reference section of this manual.

Spheres of Influence

MetaSynth has two spheres of influence about which its functionality is structured. The Image Synth, where sounds are created according to the *sound picture* paradigm, lies at the center of one sphere. Its satellites include the Wave Table Palette, the Procedural Synth and Instruments. Its output is sent to the Sample Editor which is served by the Effects Palette, the Filter Palette, the Procedural Synth and five of the application's seven menus. The Sample Editor's output can be played, saved to disk or fed back into the Image Synth where it can be used as an input source for playing pictures or analyzed to create a new sound picture.

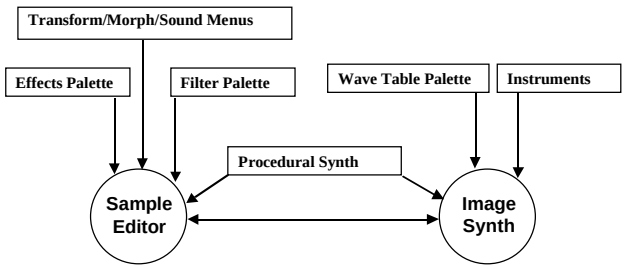
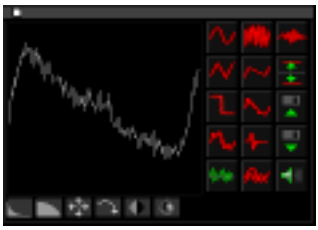


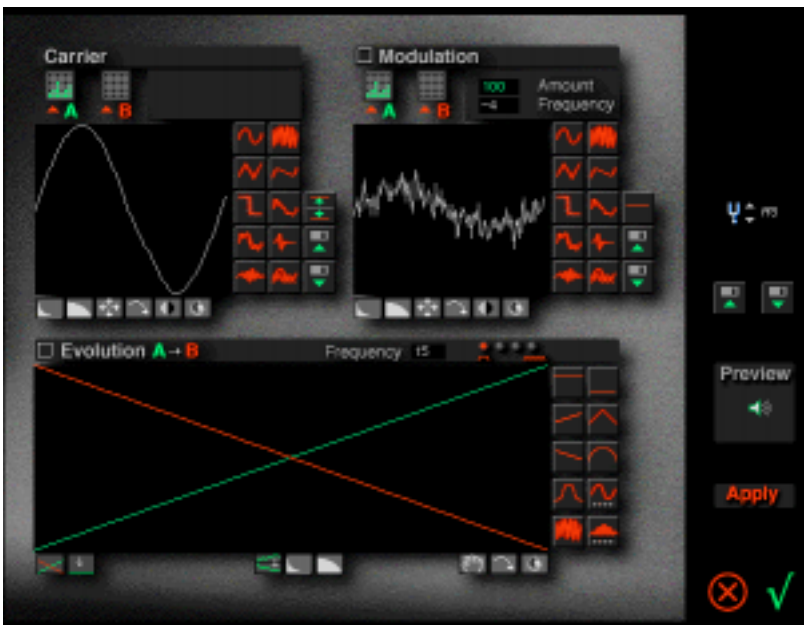
Figure 2. MetaSynth's spheres of influence

The Image Synth & Its Allies

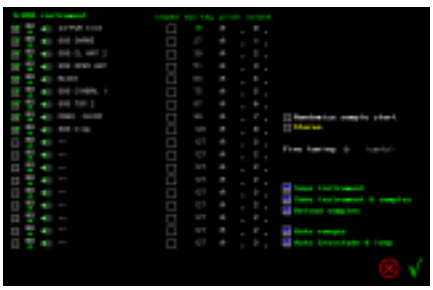
Image Synth—This is the heart of MetaSynth. The Image Synth renders the picture in the display area as sound. The picture it contains can be either rendered (in non-real-time, at full fidelity) or previewed (in real-time at reduced fidelity). When the image is rendered, the output is loaded into MetaSynth's Sample Editor. In addition to being able to render sound pictures, the Image Synth is a sophisticated image processing application.



Wave Table Palette—A wave table/waveform generator that can be used as an input source by the Image Synth.



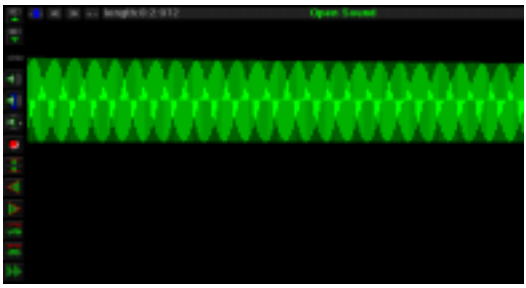
Procedural Synth—The Procedural Synth is a two operator FM-based sound generator accessed from the Sounds menu. It serves double duty. It can be used as an input source by the Image Synth, and it can generate sound directly into the Sample Editor.



Instruments Dialog—The Image Synth's most powerful input source. Instruments are multi-sample collections that are used to map up to 18 different samples to different pitch

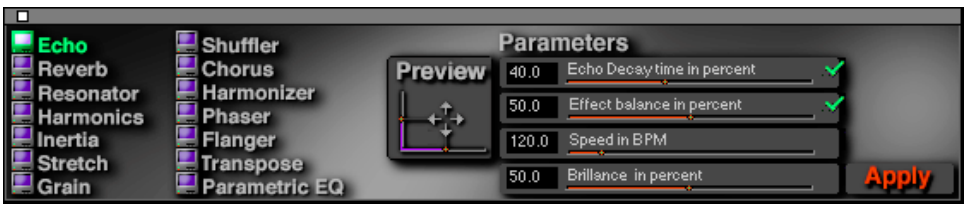
ranges. Instruments turn MetaSynth into a non-real-time sampler with hundreds of voices and incredible, note-by-note envelope control.

The Sample Editor & Its Allies



Sample Editor— The Sample Editor is a full-featured sound editor where sounds are edited and transformed with the various filters, effects and morphing processes provided by the Sample Editor's satellites. Most of the application menus serve the Sample Editor.

Filter Palette—This palette is used to create time-variant, attenuating filters that are applied to the currently loaded sound. The image processing tools available are similar to the tools available in the Image Synth though the images here serve a different function. Rather than generating sound, they filter it. The luminance of the blue pixels in the Filter Palette's filter canvas determine how much of the original signal passes through.



Effects Palette—This palette provides a number of sophisticated digital signal processors. Familiar effects such as delay, chorus and reverb are offered along with spectacular granular synthesis-based effects that are all applied to the currently loaded sound.

Transform/Morph/Sounds menus—These menus provide a number of sophisticated processes for transforming and morphing sounds in the Sample Editor.

User Interface

Tools

The moment you launch MetaSynth you will see that MetaSynth has a look and feel unlike any music application you have ever used. We want the visual experience of using MetaSynth to be as unique and stimulating as the experience of using it. As a result, many of the windows have user interface features that won't be immediately familiar.

Every icon, picture and glyph that you see in MetaSynth's palettes and windows does something. We call these items tools. Many of these tools are commented; as you move the cursor over the tool, its title or some information about it will appear in the **Tips Display** of its window. Some tools are simply meant to be clicked. Others need to be pressed and dragged vertically or horizontally or both. The mouse cursor changes to indicate how the tool is operated (see **Cursors** below).

Tools that are influenced by both vertical and lateral motion can be constrained to the influence of one or the other using modifier keys: shift for horizontal-only control, shift-option for vertical-only control. Detailed description of each tool is provided in the reference section of this manual.

Menus

MetaSynth's menus work somewhat differently from those found in other applications. With the exception of the **Instruments** and **Windows** menus, the menus found in the menubar apply to the Sample Editor. This enables you to execute independent editing operations (cut, copy and paste) in both the Sample Editor and the active graphics display area (the Image Synth or Filter palette) without disturbing the selection or clipboard of the other. MetaSynth maintains separate sound and pict clipboards.

Command keys, therefore, apply to the Sample Editor. The equivalent commands in the graphics display areas (the Image Synth and Filter Palette) are executed by pressing a key *without using* the command key. For example, to select all of the waveform displayed in the Sample Editor, press command-a. To select all of a displayed picture, you simply press the 'a' key by itself.

Cursors

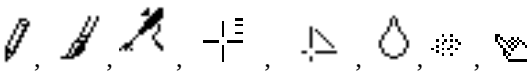
For all tools, the cursor provides important feedback about how to operate the tool.

The standard arrow cursor indicates that clicking on the tool does one of the following: instructs MetaSynth to perform a specific action, toggles the tool's state or pops up a palette or menu.

These cursors indicate that dragging the mouse in the indicated directions changes the tool's settings. Many tools are capable of changing two different but related parameters, such as Brightness and Contrast simultaneously via gestural control where the entire screen acts as a control surface.

The crosshair cursor belongs to MetaSynth's selection tool. It allows you to draw a selection rectangle in the graphics display areas.

The hand cursor lets you scroll a picture. There are no scroll bars in MetaSynth. Press the spacebar to invoke this cursor when the mouse is over a drawing area.



These cursors are associated with brush tools and are discussed in detail in the Image Synth chapter of this manual.

Numeric Fields

In a number of dialog boxes and some of the palettes, you will encounter fields for entering numbers. Numbers can be entered two ways, clicking on the field and dragging the mouse up and down to increment and decrement the value or by clicking on the field and typing a number.

When entering numbers by typing, you can usually type the return key to complete entry of the value. (This does not work in the Image Synth where pressing return is the shortcut for the Preview tool). Values can also be confirmed by pressing the tab key which completes the entry and activates the next numerical field. The delete and backspace keys do not function in these fields. To correct an entry, press the return or tab key then click on the field and enter the desired value.

Tips Display

In the Image Synth, Sample Editor and the Filter Palette, there is a region of the window where helpful information is displayed as you roll the mouse over a tool or display area. This information might be the name of the tool or the pitch associated with a particular pixel or some other helpful text.

Launching MetaSynth

When MetaSynth is launched by double-clicking its icon, it opens the files **MetaSynth.presets** and **MetaSynth.filters** located in its home folder and loads a simple waveform into the Sample Editor. You can replace the default preset and filter libraries

with your own, but they must be named **MetaSynth.presets** and **MetaSynth.filters** to be loaded automatically.

Drag and Drop

MetaSynth can also be launched using the Macintosh Drag & Drop mechanism. A preset library dropped on the MetaSynth application icon will become the active library. Sound files and Instrument files dropped on the icon are loaded and added to the **Sounds** and **Instruments** menus respectively. The last sound file dropped on the application icon will be the current sample when MetaSynth finishes loading.

Since filter libraries have the same format as preset libraries, dropping a '.filters' file on MetaSynth opens it as a preset, not filter, library. Filter libraries must be loaded using the Open Filters File command of the Image Synth's File submenu.

Files can also be dropped onto the MetaSynth application icon while it is open.

Open/Save Dialogs

New in 2.5! MetaSynth now features custom **Open** and **Save** dialogs with a couple of handy features: a **Preview** display area and **Favorites** and **Recent Files** pop-up menus.

Preview Area

The **Open File** dialog box has a new **Preview** area. This area is active when opening sounds, preset and filter libraries, and custom scales files. When opening sounds, a **Play** button appears if the highlighted file is a SoundDesigner II file. AIFF files are not currently supported for previewing. When opening preset and filter libraries, the preview area displays the first three presets of the highlighted library. When opening custom scale files, the first 4 lines of the file are displayed.

Favorites and Recent Files

Both dialogs now feature **Favorites** and **Recent Files** pop-up lists which are persistent between sessions.

 The **Favorites** pop-up menu has a command which adds the highlighted file or folder to the menu. Choosing an item from the list navigates the dialog to the appropriate location and highlights the item. If you choose a file of a different type than appropriate for the dialog (if you choose a sound file's name when you are in the Open Preset Library dialog, for example), the dialog box still navigates to the item's directory. An item named **Metasynth.prefs** will be listed at the top of the menu. Selecting it takes you to MetaSynth's home folder.

To remove an item from the **Favorites** list, hold down the option key, and select it in the list.

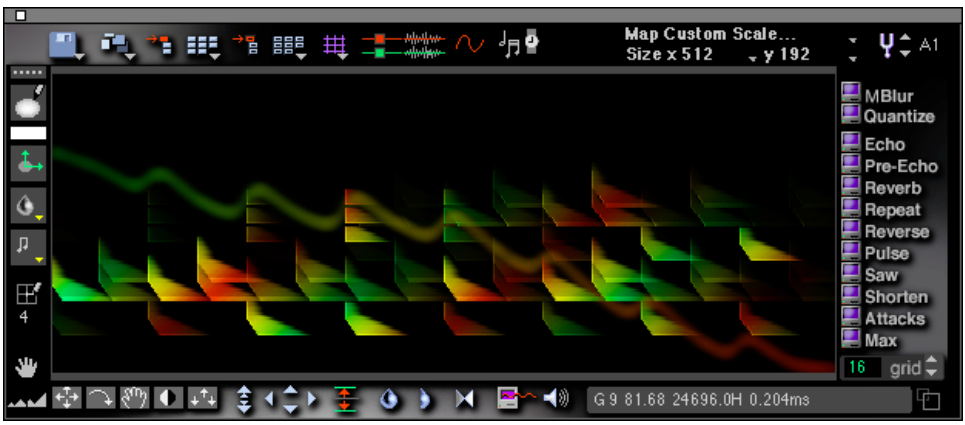
The **Recent Files** pop-up menu lists the ten most recently opened files. The most recently opened file is always at the top of the list. As with the Favorites list, you can select a file of a different type than the dialog is asking for, and it will navigate to the item's directory. This is especially handy if you store Instrument files in the same folder as the samples from which they were built. Let's say you have opened an Instrument file and decide to edit one of its sample files. Choose Open Sound then choose the Instrument's name in the Recent Files list. The dialog box locates the directory where the Instrument and samples are stored.

Canceling/Interrupting Time-Consuming Processes

Some MetaSynth processes are time-consuming: rendering complex pictures that use **Sample** or **Instrument** input sources, **Morph** operations with long sounds and some others. To cancel such processes/computations, click in the application's menubar.

Note! Unlike other Macintosh applications, MetaSynth doesn't ask you to save your changes when you quit. Remember to save your sounds or add your presets to a library if you want them saved.

Image Synth Overview



About the Image Synth

The Image Synth lies at MetaSynth's heart. The central area of the palette, the canvas, is where sound pictures are edited and created. The canvas area is surrounded by the Image Synth's tools which are described in the reference section of this manual. These tools provide a broad range of functions and are designed to manipulate graphics in a musical way. You can create pictures from scratch or work with pictures imported from other applications. MetaSynth's **Custom Scales** feature enables you to explore non-standard and microtonal tunings in ways never before possible.

The Image Synth is used for both sound design and music composition–sometimes both at the same time. It all depends on what the picture is and how you set up the Image Synth. In certain respects, the Image Synth resembles the piano roll type display found in conventional MIDI sequencers. In other respects, the Image Synth resembles a super sonogram.

The displayed picture can be heard by previewing the sound picture or by synthesizing/computing it. Computing the sound generates a CD-quality 16-bit 44.1 kHz sound. When computed, the sound is automatically loaded into the Sample Editor and played back. Previews are performed in real-time in mono at reduced fidelity. Previewing will give you a rough idea of what the picture will sound like and is convenient for checking your work as you go when working with pictures that take a while to compute. In some cases, if the picture is simple enough, MetaSynth will preview the sound at full-fidelity. When previewing, the sound is not routed to the Sample Editor.

How MetaSynth Plays a Picture

Pictures are converted to sound using a few simple rules (though the effects are not so simple!) The vertical axis represents pitch. The higher up the picture you go, the higher the pitch. The horizontal axis represents time. The color of the pixels represents stereo placement. The time it takes to play the picture is defined by the user. Pictures play back from left to right.

The brightness of the pixels (the dots which make up a picture) determine the amplitude, or volume, of the sound at that moment. Complex amplitude envelopes can be created by varying the brightness of the pixels. Specialized tools have been provided to perform tasks such as smoothing and sharpening attacks and decays and more.

Sound pictures can be mono or stereo. A mono sound picture is grayscale and results in a mono sound. Stereo sound pictures are color and result in stereo sounds.

The color of a stereo sound picture's pixels determines the stereo placement of the sound. MetaSynth uses an RGB (red, green, blue) color model. Green represents the right channel. Red represents the left channel. In RGB, yellow is the combination of red and green and plays back in the center of the stereo field.

Blue is ignored by the Image Synth which allows you to set up silent blue rhythmic and harmonic grids over which you paint with other colors.

The sound triggered by the pixels is determined by the input source for the picture. The input sources can be: sine waves or other simple waveform defined in the Wave Table palette, the currently loaded sound, the Procedural Synth or any of the currently loaded multi-sample instruments.

A picture rendered with sine waves will yield a very different result from the same picture rendered with a piano or drum instrument.

Pictures can be created from scratch or imported into MetaSynth. Sound pictures are typically saved into preset libraries which store a number of sound pictures. Each picture in the open library is immediately available from the Select Preset pop-up menu.

Getting Started

If you can't wait to jump in, launch MetaSynth now. There are a few tools with which you'll need to be familiar in order to start exploring:

-  the **File** submenu—use it to open preset and filter libraries
-  the **Preset Selector** (Select Preset tool)—hold down the mouse button to display a pop-up menu of sound pictures (presets)
-  the **Synthesize** tool—click on this tool to compute full-fidelity, stereo sound
-  the **Preview** tool—click on the icon to hear a mono preview of the sound

Use the **Select Preset** tool to try out some of the presets in the default preset library. Use the <**return**> key as a shortcut to preview the picture. Press the mouse button to halt the preview. Don't forget to listen to the full-quality rendered sounds, too, by pressing the **Synthesize** icon.

Notice the **Tips Display** at the lower-right corner of the palette where helpful information is displayed as you mouse around.

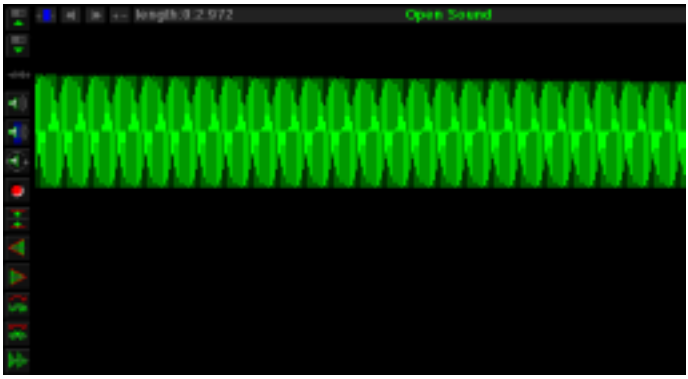
See the **QuickStart** chapter which follows for a hands-on tour.

Other Features

The Image Synth provides a host of specialized tools for creating sound pictures. There are a number of brush types for painting and filtering. There are filter presets which filter the displayed image. There are Hot Filters which apply musically useful graphic processes such as Echo, Pre-Echo, and Quantize. The image size is customizable as are the reference pitch and tuning of the picture.

See the **Image Synth** chapter in the reference section for a full description of the Image Synth and its tools.

Sample Editor Overview



MetaSynth's streamlined sample editor is non-modal and always available. Here is where you modify the sounds created with the Image Synth or transform any SoundDesigner II or AIFF sound files. It provides standard editing tools and some not-so-standard effects and filtering tools. Edits are automatically crossfaded to ensure seamless, clickless edits. No need to worry about zero crossings! (If that means nothing to you, be glad). It is RAM-based to make it very responsive. The **Tips Display** is found in the upper-right portion of the Sample Editor (just below the menubar) and displays helpful information.

Only one sound can be open at a time though any sounds opened during a session are available from the **Sounds** menu. The Sample Editor's tools are displayed on the left and top edges of the screen.

The Sample Editor can be hidden by typing command-w or choosing **Hide Sample Editor** from the **Windows** menu. This action merely hides the Sample Editor; the open sound file is not closed. Typing command-w shows the Sample Editor if it was previously hidden.

Note *Currently, MetaSynth only works with 16 bit, 44.1 kHz sound files.*

User Interface Note

The default tool in the Sample Editor is the scroll tool. Click on the waveform and drag left or right to scroll it. Scrolling has a unique inertial throw behavior. You can throw the waveform to the left or the right with the mouse. Clicking on the moving waveform stops its scrolling.

Several important functions are handled by pressing a keyboard modifier while using the mouse.

- **Selecting**–Selection within the waveform is performed by command-dragging the mouse. (There is no separate selection tool).

- **Extending selections–**Extending a selection is performed by pressing the shift and option keys while dragging.

- **Zooming**–Zooming in and out is performed by option-dragging the mouse.

See the **Sample Editor** chapter in the reference section for a full description of the Sample Editor and its tools.

Filter Palette

The Filter Palette is a 128-band time-varying filter with a pictorial interface. The filter modifies the sound currently loaded in the Sample Editor.

The Filter Palette allows you to create a variety of unique filter effects in addition to providing standard EQ and filter operations. You can use it do analog synthesizer-like filter sweeps. Because you can see the sound to be filtered in the palette's background, you can create high-pass, low-pass, band-pass or other filters custom tailored to the frequency content of the underlying sound. As you mouse around in the Filter Palette, helpful information is displayed in the Tips Display in the upper-right portion of the palette.

How The Filter Palette Works

Like the Image Synth, the Filter Palette has a canvas upon which you paint the filter. The vertical axis represents frequency and the horizontal axis represents time. The duration of the picture is equal to the duration of the current sound (not the current sound picture).

The filter is drawn with blue pixels. The brightness of the pixels determines how much sound passes through the filter. Where the filter is black, no sound passes through.

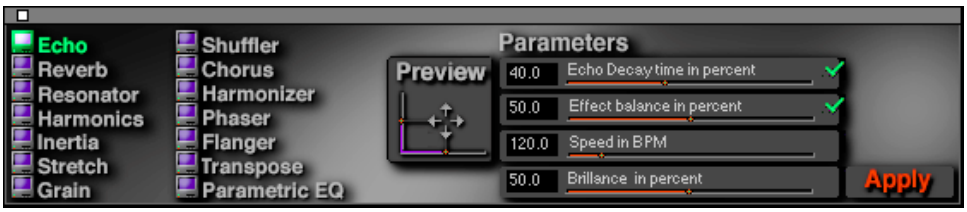
Orange pixels have no effect on the filter. They are like the Image Synth's blue channel. You can do a frequency analysis of the current sound to the 'orange channel' by clicking on the **Analyze Sound** tool. This gives you a template of the current sound over which you can draw your filter. Where the blue and orange pictures intersect, sound passes through the filter.

The Filter Palette can open preset libraries so that you can save and re-use your favorite filters. Also, any picture can be pasted into the palette and used as a filter.

A full complement of tools similar to the Image Synth's are available in the Filter Palette.

See the **Filter Palette** chapter in the reference section for a complete description of the Filter Palette.

Effects Palette



The Effects Palette provides high-quality effects with which you can modify the Sample Editor's current sound. It includes a full complement of standard effects (**Echo**, **Reverb**, **Flanging** and the like) as well as unique granular-synthesis based effects such as **Inertia**, **Stretch**, **Grain**, and **Shuffler**.

All of these processes provide real-time previewing with x-y mouse control where the entire screen serves as a virtual control surface with which you can dial in your settings. When you are happy with the effect, you apply it permanently to the currently loaded sample (which can be restored to its previous state by choosing **Undo** from the **File** menu).

See the chapter *Effects Palette* in the Reference section for a complete description.

Sound Advice…

It can be helpful to remember that MetaSynth can serve a variety of functions. As you explore MetaSynth, we have found it useful to mix free exploration and more focused exploration.

Spend some sessions which focus on particular areas:

- the Image Synth as a sound design/sound sculpting tool
- the Image Synth as a composition tool/sequencer for creating note-based music
- the Image Synth as a multi-sample player/renderer (using Instrument input sources)
- the Effects Palette as a granular synthesis tool
- the Morph Menu sound convolution functions

You will find that using MetaSynth iteratively provides a limitless terrain for exploration. Generate samples from the Image Synth that you use the Filter and Effects Palettes and Morph functions to modify. Then, use those sounds as input sources for the Image Synth, and on, and on, and…?

Check the MetaSynth web site from time to time. New tutorials and ‘tips and tricks’ are posted frequently. The site also features a lively users forum where MetaSynth users from around the world share their ideas. The site’s address is found on the information page which follows the title page.