



Music is the Message

Use algorithmically generated music to place an interpretation upon a film scene

Software: YAV Interactive Media

Concept and Research: **Christopher Yavelow**
(including but not limited to: algorithmic composition,
automatic film synchronization, and psychoacoustic factors)

Programming and Human Factors: **Christopher Yavelow,**
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De Benadering (Approach): a polyvalent filmscene

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Exhibit: newMetropolis

Concept and Research: **Diana Issidorides, Irit Rosen, Peter Slavenburg**
(including but not limited to: visitor experience,
ambiguous film clip, contractors, layout, and furniture)

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Overview

The Music is the Message generates film and video soundtracks. The program continually adapts its internal compositional models according to feedback from its user or users. The software is an example of “adaptive music™,” a term coined by the program’s developer, Christopher Yavelow, who also developed the “YAV Music Engine™”(YME), the core software engine that creates new music.

Operation

The Music is the Message lets you compose music for a short film clip. The program uses the YAV Music Engine™ to generate new music in three moods: Romance, Comedy, and Thriller. The YME kernel uses an expert system (related to artificial intelligence) to simulate musical creativity. Certain musical characteristics are assigned to each mood, for example, those relating to form, tempo, rhythmic patterns, and key. Depending upon the mood, the YME kernel uses different algorithms to transform musical themes, for which you provide the seed material.

After choosing a mood, you use the edit screens to configure the rhythmic world, melody, allowable textures, and volume curve for your music. Here you can also decide which audio-video synchronization points should have music. In addition to other configuration controls, each edit screen provides a “computer choice” button which generates an appropriate configuration for that screen’s parameters, based upon what the software has “learned” about you or the group of people using the software. At this particular juncture and depending upon the degree of “serendipity” configured in the setup process, the software may, from time to time, choose to interject a completely random configuration.

After you are satisfied with the current configuration, you instruct the software to generate a soundtrack for the video. The soundtrack is synchronized to as many of the 28 sync or “hit” points as possible. These include but are not limited to the cuts, zooms, and other camera manipulations or scene changes in the clip. After you view the video with your soundtrack you are asked to rate its effectiveness. Likewise, anyone else recalling your clip from the archives will be requested to provide a rating. The software uses these ratings to determine which soundtracks should be considered the next time it adapts its compositional model.

The YAV Music Engine

The YAV Music Engine is a modular technology incorporating an expert system engine that creates credible music in a variety of styles (expert systems are loosely related to artificial intelligence). For the composer, YME offers a means to realize musical works according to diverse specifications. For the interactive media producer or film and video maker, YME provides unique, original, and copyright-free music in a very flexible manner.

The YAV Music Engine creates new, hitherto unheard music rather than taking the increasingly prevalent approach of re-organizing canned music. Many people confuse interactive audio with interactive music. It is simpler to say 'I am listening to music' than 'I am listening to the sound of music being performed.' Until recently, there has been no reason to make a distinction between music and the sound of music (audio). People use the word 'music' to refer to music as an art form, *and* to the printed symbols representing expressions of this art form, *and* to the audible sounds of these symbols being performed. Now, technology requires that we clarify these terms. True interactive music must actually compose new music and, therefore, such software must "understand" the semantics of music itself, not simply the mechanics required to spit out re-ordered, re-mixed fragments of existing audio-recordings. In adhering to this premise, The Music is the Message models the actual compositional process, which is orders of magnitude beyond automated 'cut, copy, and paste.'

Adaptive Music™

Adaptive Music relies on a continual feedback loop consisting of a user or users evaluating music generated by seed material provided by themselves, so that the software can incorporate their preferences, opinions, and tastes into subsequent compositions by adapting the methods and models it uses to compose in the future.

The process of adapting compositional models includes identifying all soundtracks that have received high ratings and grouping them according to mood. Next, the current version of The Music is the Message analyzes 32 aspects of each soundtrack to construct its compositional model (actually three models, one for each mood). For example, in the pitch domain the software considers the individual notes of each melody according to their position, the frequency of and direction of intervals, the overall contour, and the length of the melody. The software similarly scrutinizes sync-points, rhythms, textures, volume and instrumentation in constructing its models.

The Music is the Message can be configured to adapt ("learn") at a specified time each day or whenever directly requested. Each time the software adapts itself, it creates a new compositional model and this becomes the active model used both by the "computer choice" buttons and by the main engine for generating music. Models can be saved and recalled at any time.

The Exhibit (Kiosk Version)

YAV created The Music is the Message for the newMetropolis Science and Technology Center in Amsterdam, The Netherlands. The kiosk version of the software installed at the museum uses a short video clip produced by Amber Film. The clip is intentionally ambiguous so that its interpretation rests solely upon the soundtrack. The film's creator, Mart van den Busken, refers to this as a "polyvalent" film.

In kiosk mode the adaptive aspect of the software occurs as follows: every morning about an hour before the museum opens, the software analyzes all the soundtracks that have been composed up to that date (thousands of files). Each soundtrack has been rated by the user who provided its seed material, and soundtracks auditioned by other visitors have been rated as well. The software uses these ratings to determine which settings produce the best music, ranks them accordingly, and redefines its internal compositional models to reflect this collective opinion poll.

At the newMetropolis, this learning process allows the software to continually move closer to the ideal soundtrack as delimited by the ever-growing number of exhibit visitors. In contrast to this multicultural melting pot, the personal edition of the software adapts its behaviour to the tastes of a single individual.

Perspective

This is version 1.0 of a technology for which we have great plans.

We started working in The Music is the Message at the end of March 1997. We installed the first version at the newMetropolis Center for Science and Techology on the first of June. We had to develop another CD-ROM for LEGO during the summer of 1997 and were able to return to this work in the middle of September 1997.

According to the specifications of the kiosk version, it was necessary to provide the museum visitor with a meaningful experience within six minutes. That placed strong limitations on what we were able to provide for with respect to user control.

Although we have designed more than 400 compositional algorithms for the YAV Music Engine, time considerations dictated that we could only implement about 40 of these (less than one-tenth) into version 1.0 of The Music is the Message.

At this time, the construction of the compositional models (the "learning process") looks more at the seed material than at the music generated by that seed material. Subsequent versions of The Music is the Message will equalize these two perspectives.

Future versions of this product will also add more compositional algorithms, more user control options (including options to directly enter rhythms rather than create a symbolic "rhythmic world"), a stylistic module capable of emulating another composer's style with generated output, and much more.

Keep watching this space!

Christopher Yavelow
January 1998.

Setup 2

Hardware

To set up your computer for The Music is the Message you need an external General MIDI (GM) sound module and, optionally, some means of amplifying the sound output of your computer.

The soundtracks created by The Music is the Message consist of MIDI data. The sound effects embedded in the video consist of standard audio data that will play back through your computer's speakers.

A very simple configuration is to connect a Korg 05R/W sound module to your modem port (or printer port). Merge the Macintosh's headphone output with the sound module's headphone output by way of two "Y" connectors into which you have plugged a set of headphones. Alternatively, you can use loudspeakers instead of headphones.

If you don't have an external General MIDI sound module, you may be able to route the MIDI data from The Music is the Message to the QuickTime General MIDI synthesizer. This emulates (in software) a Roland GS synth with the same instrument set as a Sound Canvas SC55ST.

The technique for routing the MIDI output of The Music is the Message to the QuickTime software synthesizer is tricky and depends upon too many variables to describe here. We hope that future versions of the software will route the output directly to QuickTime's software synthesizer for those who do not own a sound module.

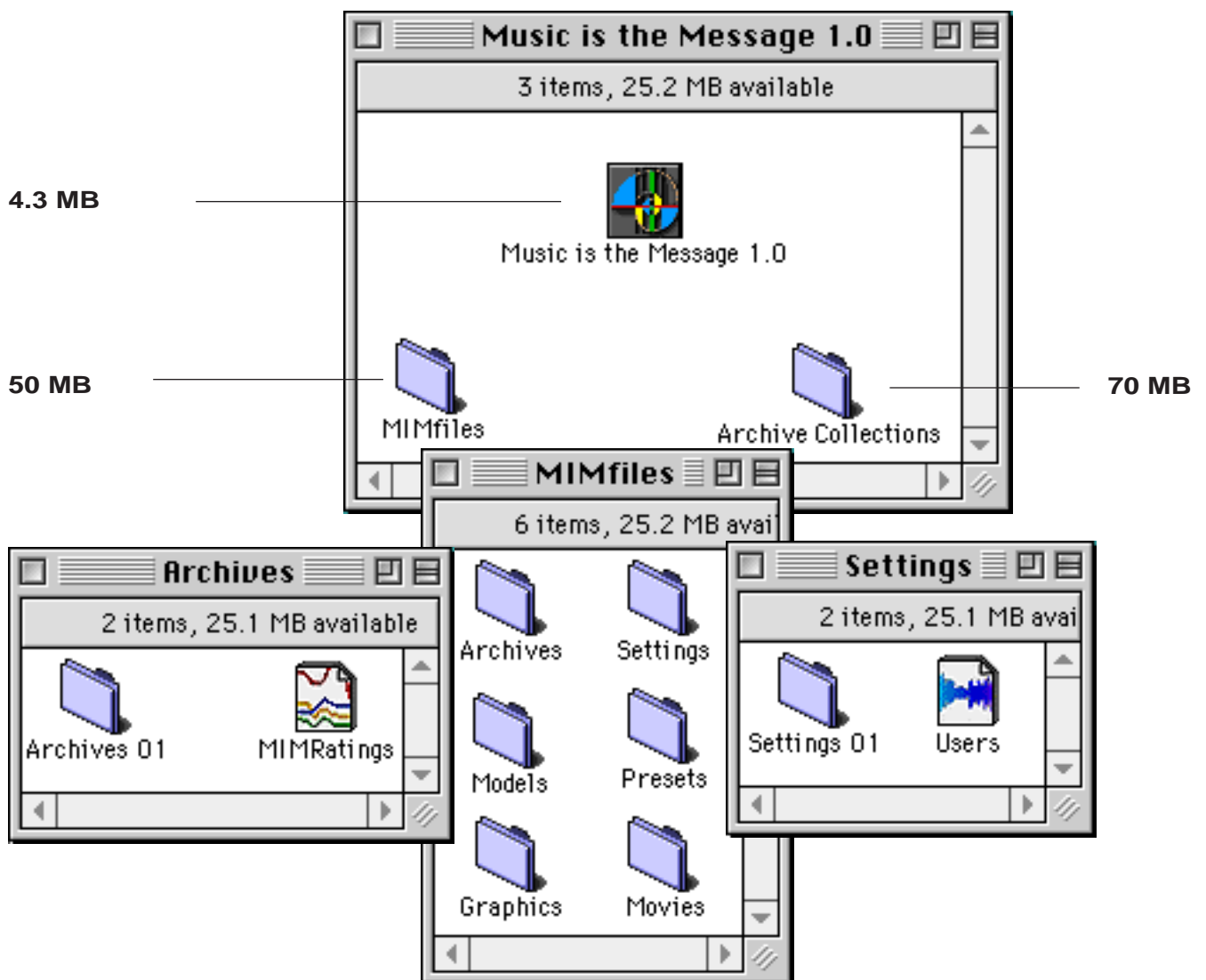
We have included a player called "MIMshow" that demonstrates (using the QuickTime software synthesizer) some of the first 24 sample soundtracks created by The Music is the Message.

Set your monitor to the highest possible color resolution (millions of colors, if possible). You don't need to set a monitor size larger than 640 by 480, although larger monitor sizes are supported.

Software Installation

The installer gives you several choices for installation.

- 1) Recommended installation: This installs the software, without any extra archive collections, and Apple's MIDI Manager for routing the MIDI data generated by The Music is the Message to an external synthesizer. This installation requires 55 MB.
- 2) Custom installation 1: This installs the software with the extra archive collections, and Apple's MIDI Manager. This is the full 126 MB installation.
- 3) Custom installation 2: Software with extra the archive collections, but without MIDI Manager (125 MB).
- 4) Custom installation 3: Minimal software only, without extra archive collections, and without MIDI Manager (55 MB).
- 5) Custom installation 4: Extra archive collections only (70 MB).
- 6) Custom installation 5: MIDI Manager only (in case you change your mind and want to install it at a later date (< 1 MB)).



Icons



Main Program icon



Compositional Model file



Soundtrack (Standard MIDI File)



MIMratings file



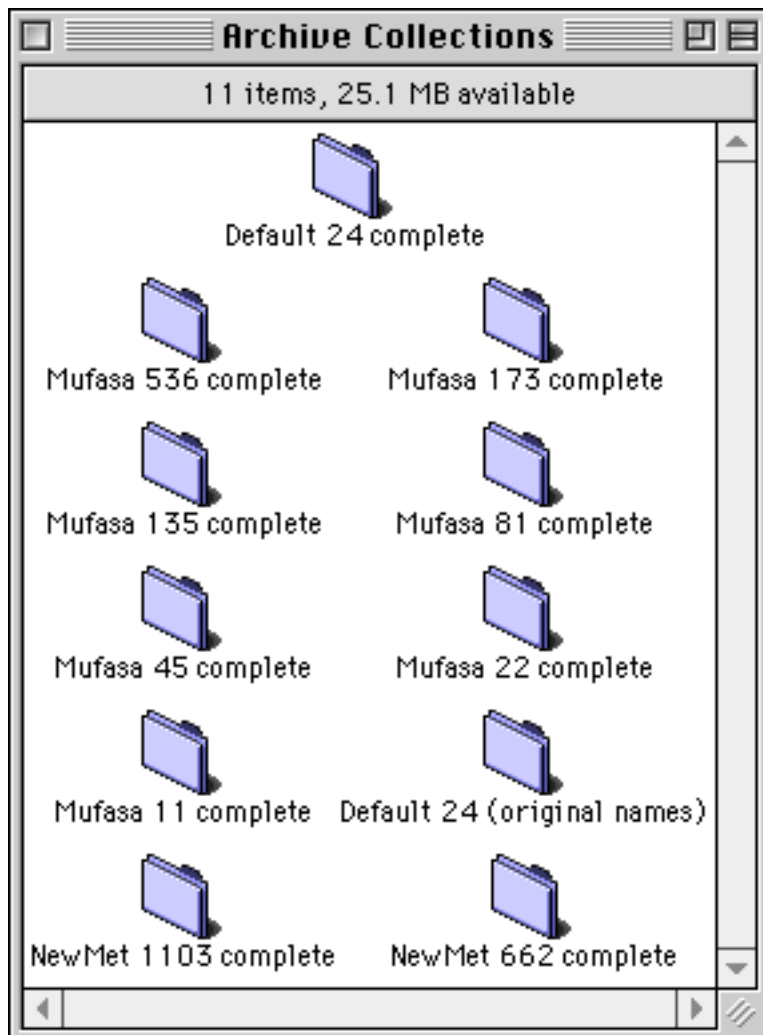
Settings file



User History file



Preset Bundle

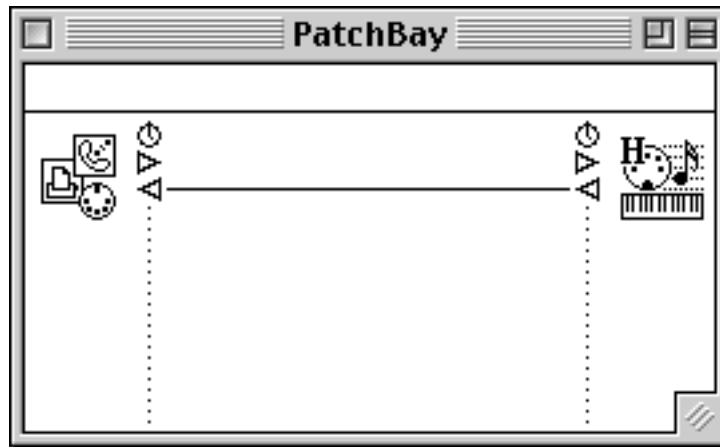


The 70 MB Archive Collections folder is optional. You can leave this on the CD-ROM and pick and choose which collections you want to experiment with (if any). Each folder contains an Archives folder and an associated Settings folder. To experiment with a particular collection, open its folder and copy those folders to your main MIMfiles folder on your hard drive (you may want to back up the Archives and Settings folders that are already in your MIMfiles folder prior to replacing them).

MIDI Manager

Components from Apple's (unsupported) MIDI Manager is installed by many of the installation options. MIDI Manager gets installed in your Extensions folder. The Apple MIDI Driver and PatchBay Help gets installed loose in your System Folder. PatchBay is installed in your Apple Menu Items folder.

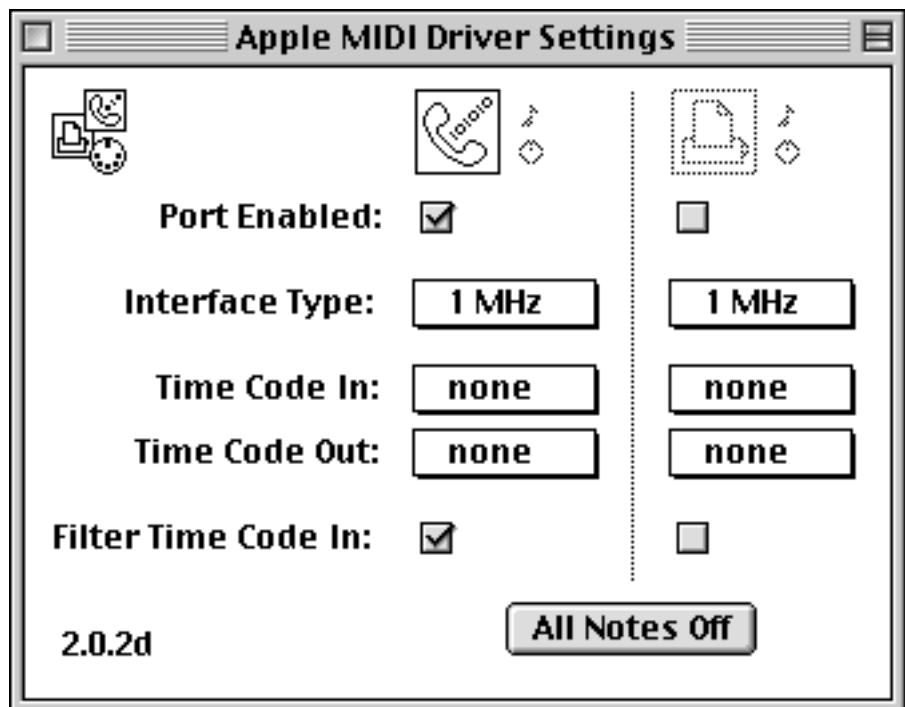
While The Music is the Message is running with MIDI Manager, you should be able to open PatchBay from the Apple Menu and see the following configuration:



If the connections are made as illustrated, you may need to draw a connection between the output ports so that they resemble this diagram.

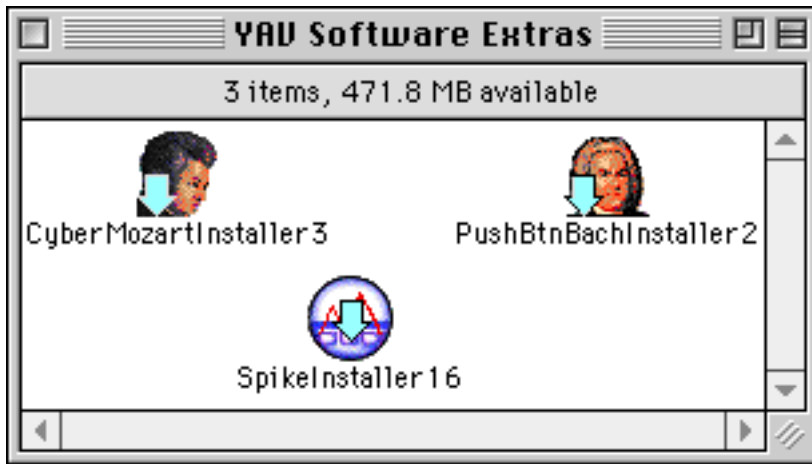
If the ports on the left are not available, you may need to double click on the left-side port icon to call up the Apple MIDI Driver Settings window:

This is a likely configuration of the Apple MIDI Driver Settings window.



YAV Software Extras

There is a folder on the CD-ROM called YAV Software Extras:



You can use the installers in the YAV Software Extras to install three shareware programs by YAV: CyberMozart, PushBtnBach, and Spike.

CyberMozart (version 3.0) re-creates Mozart's Musical Dice Game. Mozart did not have a computer so he threw two dice a total of sixteen times to choose items from his list of 176 measures. You merely have to press the "Compose" button to create a new English Country Dance (there are trillions of possibilities). The program will keep generating new pieces in the style of Mozart as long as you can keep pressing the Compose button. Other features include notation with scrolling playback, printing, saving as Standard MIDI Files, and real-time editing options for tempo, transposition, track volume, and instrumentation.

PushBtnBach (version 2.0) is an example of algorithmic composition software. PushBtnBach keeps generating new minuets in the style of Bach as long as you can keep pressing the Compose button. Version 2.0 introduces a "continuous mode," which keeps generating and playing without intervention. Other features include saving as Standard MIDI Files, real-time instrumentation changes, and a preview of some of the options available with the non-shareware version (check the Options item under the PushBtnBach menu).

Spike (version 1.6) is the first batch-processing data-spike detection and analysis tool for QuickTime movies. Spike solves the stutter and glitch playback problems of CD-ROM and Web-based QuickTime files. Given a batch of QuickTime movies, Spike determines which among them will provide optimal playability from a range of deployment platforms and media. Offering many of the features of Apple's long-discontinued MovieAnalyzer, Spike is compatible with QuickTime 2.5 and beyond. Spike identifies data spikes and offers a suite of options for controlling their detection. Other features include detailed data-rate graphs, "Spike Alerts" and reports in frames-per-second and SMPTE, several preview options, and batch processing.

MIMshow is a small program that allows you to view the Music is the Message video with some of the 24 sample soundtracks that are the default installed collection. You can use the application to view and listen to these soundtracks without having an external synthesizer or sound module. Playback will be routed to the QuickTime software synthesizer described elsewhere in this documentation.

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Quick Tour

This quick tour assumes that you are in kiosk mode. Once you have learned how to operate the program in kiosk mode, operating the program in non-kiosk mode very simple. (Note, but don't do it now: to switch out of kiosk mode, uncheck the "Kiosk" item under the "Options" menu).

Kiosk mode means that the menubar is not visible at the top of the screen. To view the menubar, move the mouse to the top of the screen. If the menubar does not appear then move the mouse to the top of the screen while holding the option (alt) key down. In kiosk mode, the menubar contains a single menu named "Options." In non-kiosk mode the menubar is always visible and contains eight menus that provide quick control of all the software's options.

The layout of most screens you interact with while using The Music is the Message includes a small information field at the lower left. Here you see brief descriptions of the functions of various controls as you roll the mouse over those controls. At the lower right are controls to switch the language (English or Dutch), to start over (circle with a diagonal line through it), and to access "Quick Help" (the button shaped like a question mark).

Important keyboard shortcuts to know before you begin are: you can press the Left arrow key or the Right arrow key to go the previous or next screen, respectively. Command-equals (=) takes you to the Preferences window. On some computers when running in kiosk mode, it is necessary to click the mouse (anywhere) before the keyboard shortcut will provoke a response (this is not the case in non-kiosk mode).

While taking the tour, you may wish to iconize the Help window at the Quick Tour chapter so that you can recall it whenever you want to read the next step. To iconize the Help window, click on the grow box in the upper right corner of the window. This reduces it to a floating icon. Click anywhere on the icon to re-open the Help window.

If you haven't read the Overview and Setup sections of this documentation, you should do that now.

How to Begin

You can start the tour in the Archives window by experimenting with soundtracks that have already been created, or you can start at the Start window and begin creating your own soundtracks immediately.

If you chose to start the tour by listening to soundtracks that have already been created by other users working with The Music is the Message then go to the Archives window by selecting it from the Options menu (in kiosk mode) or the Windows menu (in non-kiosk mode). The keyboard shortcut, command-F, also takes you to the Archives window. Otherwise you can jump directly to the section headed “Start Window” below.

You see a scrolling list of soundtracks in the Archives screen. Clicking on a soundtrack name loads that soundtrack for playback and takes you to the Archives Playback screen where you can view the video with that soundtrack. Alternatively, you can hold the option key down while you click on a soundtrack in the scrolling list of the Archives window; this plays that soundtrack immediately without showing the video.

You can navigate the scrolling Archive list using the up and down arrow keys with or without the option key. If you hear a soundtrack that you especially like, you may want to click on its name while holding the shift key down (alternatively, press command-right bracket), which loads the settings for that soundtrack into the edit screens described below. It is sometimes a good idea to have some settings you know you like to start with when you begin creating your soundtrack.

Press the right arrow key or the triangular “Next” button twice to navigate back to the Start window. Alternatively, you can press the “Start Over” button at the lower right corner of the screen to go directly to the Start window.

Pressing the mouse button while the cursor is over the word “Archives” will bring up the Archives Management popup menu if you are operating in non-kiosk mode.



There are many keyboard shortcuts available in the Archives window. You can read about these in the “Keyboard Shortcuts” chapter of the documentation.

Start Window

Start at the main screen (Start window). This is the one with three large buttons on the right labeled Romance, Comedy, and Thriller. Note the colors associated with the three moods: red for romance, greenish-yellow for comedy, blue for thriller.

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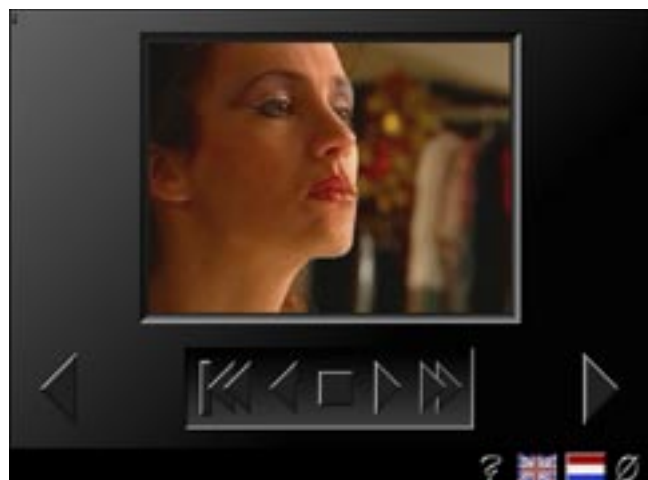
At the bottom of this screen is a “Preview” button. You may wish to preview the video clip without a soundtrack by clicking on this button to go to the Preview screen. There you see VCR-like controls that let you play the film forwards, backwards, fast-forward, pause, and rewind to the beginning. You hear the sound effects but not the soundtrack (because you haven’t composed one yet).

You can disable or adjust the volume of the sound effects (which are output from the computer’s headphone or sound output jack). To do so, select “Preferences” from the “Utilities” menu or select “Preferences” from the “File” menu if you are not in kiosk mode (alternatively, press command-equals). The controls for the sound effects are found at the lower right of the configuration screen. Make the desired changes and click on the Back button to return to the Start window.

The video clip is intentionally ambiguous. It relies upon music to endow it with a Romantic, Comedic, or Thriller character. While you are watching the clip, decide what mood you would like the music to instill in the clip.

The background of the Preview window has not been assigned a color because you haven’t picked a mood yet.

Press the Next or Previous buttons (large triangular buttons at the lower right and lower left of the screen) to return to the Start window from the Preview screen.



Choose one of the three moods (Romance, Comedy, or Thriller) by clicking on its corresponding button at the right side of the screen. Making this choice places certain constraints upon the methods and models that will be used to generate the music. These constraints are described in greater detail in the section entitled “Technical Information.”

While you move from the Start window to the Edit window you may notice a red dot flash momentarily in the upper right corner of the screen. Whenever a red dot flashes up there (or on the Reconfigure button while in the Playback window), this indicates that the software has made a serendipitous choice for one of the parameters. In other words, rather than generating a choice from its composition model, it has introduced some randomness. Usually the software will make decisions based upon the model, but you can change the degree of serendipity by way of the Preferences window (see the section entitled “Configuration Window, Serendipity Setting”).

Edit Window

The edit screens are where you configure the seed material that the YAV Music Engine uses to generate your soundtrack. There are four edit screens: rhythm, melody, texture, and volume. You can disable or enable synchronization points from any of the screens. It does not matter in what order you access these screens. In fact, it is not necessary for you to access these screens at all (in which case, you leave all decisions up to the software).

At any time you can press the Next button (triangular button at the lower right) to go to the Playback screen. Likewise, at any time you can press the Previous button (triangular button at the lower left) to return to the Start window (perhaps, for example, to change the mood while in kiosk mode — you can use the menus or keyboard shortcuts to change the mood when kiosk mode is disabled).

All edit screens have a small button with an icon of a little computer. Pressing this Computer Choice button on any edit screen instructs the computer to generate a suitable configuration for that screen from the current model. A momentary flash of a red dot in the upper right of the screen indicates that the result has not been generated from the current model but that the serendipity factor has kicked in to provide something unexpected.



The Rhythm Edit Screen — Here you define the rhythmic world of your soundtrack. Note the storyboard at the top of the screen.



The Melody Edit Screen — Here you create the melodic “seed” that will be used for all themes and counter-themes in your soundtrack.



The Texture Edit Screen — Here you specify which textures (monophonic, homophonic, polyphonic, heterophonic) your soundtrack will use.



The Volume Edit Screen — Here you design the volume curve for your soundtrack.



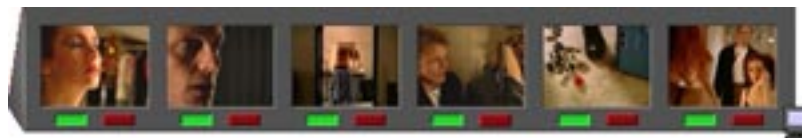
It is a good idea to press the Computer Choice buttons a few times to see what sorts of configurations the software draws from the active compositional model. You can stick with what the computer chooses for you or you can use one of these as a point of departure for your own modification.

Note that when you first arrive at the Edit window, Help Circles briefly appear that suggest an order for progressing through the Edit window. You can disable these help circles by way of the Preferences window.

Edit Window, Storyboard

Running across the top of the Edit window is a storyboard showing the first frames of the six main sections of the video clip. Click on a frame to review the section starting with that frame. These also represent six of the main synchronization points in this film (in Hollywood these are called hitpoints). The program recognizes more than two dozen sync points in this film.

When you first see the storyboard, all the sync points will usually be enabled (the green button under the frame is pressed).



Usually, when you first see the storyboard, all the sync points will be enabled. But if one isn't, click on the green button beneath the frame to cause the YAV Music Engine to synchronize a musical event with that frame. There will be a change of texture, orchestration, theme, rhythm, or key (or a combination thereof) synchronized with each frame that you have selected. You can tell that a frame is selected when it appears in color rather than through a red filter.

Click on the red button beneath a frame to cause the YAV Music Engine to ignore that particular sync point. The particular section will not have music and this is indicated by a red filter placed over the frame and the highlighting of the red button beneath the frame.

Click on the little computer button at the right to let the computer make the choice for you.

Edit Window, Rhythm Screen

You are now at the first of the four edit screens, which is the Rhythm screen. The graph in the middle represents the rhythmic world of the soundtrack.

If you are not at the Rhythm screen, click the Rhythm button (the leftmost square one at the bottom of the screen). If you are at the Rhythm screen, clicking the Rhythm button will reset the rhythm graph in the center of the screen. Click on the little computer at the lower right of the Rhythm button to have the computer choose a rhythmic world for you.



The graph in the center of the Rhythm Edit screen lets you define the rhythmic world of your soundtrack.

The way the rhythm graph relates to the rhythms that are generated can be difficult to understand and using this screen effectively will probably take some practice.

For your convenience, there are vertical lines dividing this space into 12 parts. These roughly line up with the storyboard at the top of the window (two divisions per each of the six main sections). In fact, they do correspond to the sections they line up with so you can tailor the flow of the rhythm to the action. This also means that the twelve divisions do not represent equal time periods, but rather, they represent a period of time equivalent to that of the main scene to which they correspond.

Click inside the red box around the graph to set up to 12 points in the rhythmic world for your music. You can drag the blue handles to adjust the graph. Drag handles outside of the red box to delete them.

Points closer to the center line result in more stable rhythms. As you move toward the upper or lower edges of the graph, the rhythms become progressively more active and forward-moving. There is also a greater variety of rhythmic patterns the further you are from the center. Also, points farther above the center line produce more notes (denser rhythms) while points below the center line produce less notes (depending upon how far you are from the center).

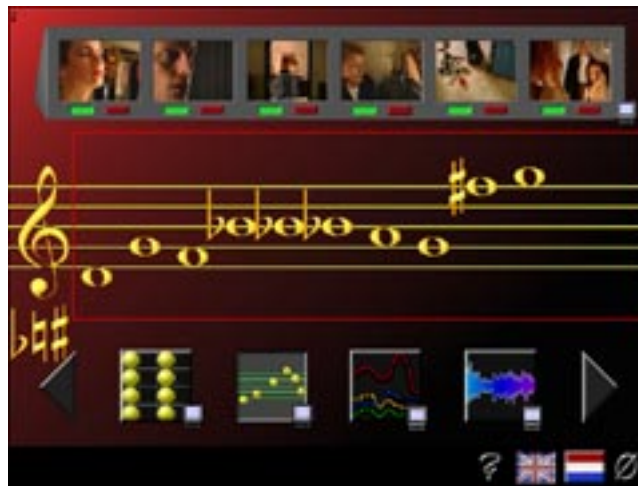
Finally, don't forget that the mood you have selected (Romance, Comedy, or Thriller) will also affect the types of rhythms that are generated. So, in addition to the considerations described in the previous paragraph, keep in mind the fact that the Romance mood favors triple rhythms (e.g., 3/4, 3/2), while the Comedy mood favors duple rhythms (e.g. 4/4, 2/4, 12/8), and the Thriller mood favor nervous quintuple and septuple groupings (e.g., 5/8, 5/4, 7/8). Further, the frequency of specific rhythmic patterns is governed by your choice of mood.



Consider using the Computer Choice button to generate your rhythmic world for the first few soundtracks.

Edit Window, Melody Screen

Press the Melody button (the second to the leftmost square button at the bottom of the screen) to proceed to the Melody screen.



If you are not at the Melody screen, clicking the Melody button takes you to the Melody screen. If you are at the Melody screen, clicking the Melody button erases the melody on the musical staff in the center of the screen.

The Melody screen lets you enter a melody of three to twelve notes to use as a "seed" for your music. Click on or around the musical staff to enter notes. Drag a sharp or a flat to a note to raise it or lower it by a half step. You can also drag notes up or down to adjust them. Drag the natural sign onto a sharped or flatted note to revert the note. Click on the treble clef sign at the left of the staff to audition your melodic seed.

Press on the little computer button at the right of the Melody button to let the computer create a melody for you.

The mood that you have selected on the Start window affects what variation techniques are applied to your melodic seed for the purpose of extending it to create themes, counterthemes, and chordal progressions.

Edit Window, Texture Screen

Press the Texture button (the second from the rightmost square button at the bottom of the screen) to proceed to the Texture screen.

If you are not at the Texture screen, clicking the Texture button takes you to the Texture screen. If you are at the Texture screen, clicking the Texture button resets the texture choices in the red box in the center of the screen.



The Texture screen lets you choose which textures your music will use. Music can be made of solo lines (monophony: a single melody at a time), chords (homophony: several melodies playing in the same rhythm), counterpoint (polyphony: several melodies that retain their independence), or melodies with accompaniment (heterophony: a primary melody with a subordinate accompaniment).

Reading left to right, these four textures are represented by the icons in the center of the red box (solo, chordal, counterpoint, melody with accompaniment). Clicking on any of them lets you specify whether or not that particular texture will be used in your music. Click on the little computer button at the right of the Texture button to let the computer make the choice for you.

A red circle with a line through it indicates that a texture is disabled and will not occur in your soundtrack. Note that at least one texture type is required so you cannot disable all the textures. Having only one texture enabled forces your soundtrack to never deviate from that texture. In such a case, texture will not be used to delineate a hitpoint.

Enabling two or more types of textures causes the software to generate a texture stream from the current compositional model. The structure and order of this texture stream is influenced by the chosen mood.

Edit Window, Volume Screen

The volume button is the rightmost square button at the bottom of the screen. Click on it now to proceed to the Volume screen.



If you are not at the Volume screen, clicking the Volume button takes you to the Volume screen. If you are at the Volume screen, clicking the Volume button will reset the Volume graph in the red box in the center of the screen.

At the center of the Volume screen is the Volume graph representing the overall volume curve of the music for the film. The curve that you describe on this graph is mapped to a non-linear “MIDI volume curve,” which is much less sensitive at the lower part of the range than at the top.

Like the Rhythm graph, points on the volume curve do line up with the storyboard at the top of the window. This allows you to tailor the dynamics to the action. Remember that the storyboard sections are not equal in duration, so equidistant points on your volume graph do not necessarily represent equal time periods, but rather, they correspond to a period of time equivalent to that of the main scene under which they are placed.

Click inside the red box around the graph to set up to 12 volume levels for your music. The closer your line is to the top of the box, the louder the music will be at that point in time. You can drag the blue handles to adjust the graph. You can also drag the beginning and end points. Drag handles outside of the red box to delete them.

When you reset the graph to a flat line by clicking the Volume button, that flat line represents a level of 96 on a scale of 0 to 127, which is *mezzo forte* or medium loud.

Click on the little computer button at the right of the Volume button to let the computer create a volume curve for you.

Composing your Soundtrack

To have the YAV Music Engine create a soundtrack from your choices on the edit screens, simply press the triangular Next button at the lower right of the screen. This starts the composition process, which takes between 5 and 10 seconds. You are informed of what is going on at any particular moment by text displayed in the help field at the lower left and beneath the progress bar, which appears to mark the start of the composition process.

If “Skip MIDI Check” is disabled in the Preferences settings, the program verifies every note of your soundtrack for errors. This takes between 5 and 10 seconds; you can watch the progress bar count down the notes as they are being checked. The advantage of using MIDI Check is that, should an error be detected, the program backtracks and makes up to four additional attempts to solve the offending construction before aborting. You may wish to make use of this verification (i.e., disable “Skip MIDI Check”) when doing an unattended Batch compose (Batch compose is an option available in non-kiosk mode that allows you to request any number of soundtracks to be composed in one operation).

The Playback Window

Once your soundtrack is finished you are transported to the Playback window and again, just as when you arrived at the Edit window, “Help circles” appear illustrating the logical order to proceed. You may disable the help circles by way of the Preferences window.



The Playback Window, Orchestration

A likely orchestration for your soundtrack was already suggested with your initial mood choice, and you may have noticed that patch changes were sent to your sound module in preparation for playback. At this point you are advised to visit the Preferences window and click on the “Decrement Patch Numbers by One” checkbox. This will assure you that your sound module is set up correctly and automatically makes the appropriate settings if it requires its patches to be decremented by one.

Upon arrival at the Playback window you can see the “badge” of the current ensemble type in the upper left corner of the screen.

The six default orchestrations categories

1) Keyboard(s) — pianos, electric pianos, harpsichords, etc.

2) Chamber Trio — a wind instrument, bowed stringed instrument(s), and plucked or struck stringed instrument(s).

3) String Ensemble — bowed and plucked stringed instruments with a variety of bowings. Occasionally, a keyboard or harp is part of this ensemble.

4) Chamber Ensemble — strings, keyboard (synth pads), woodwinds, harp, French horn(s), timpani and a number of variations thereof.

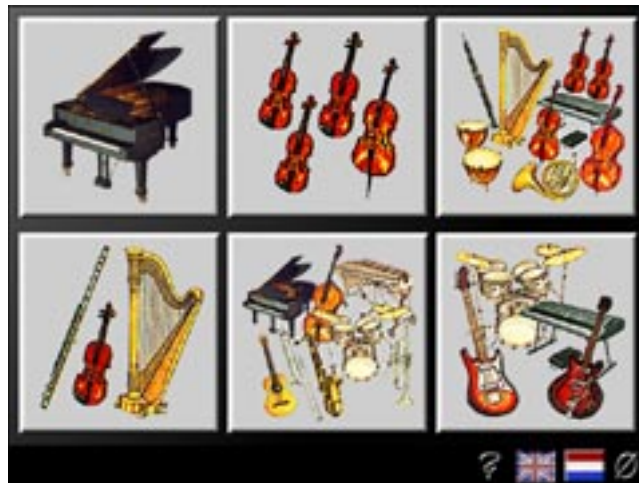
5) Jazz Band — keyboard, acoustic bass, acoustic guitar, mallets (usually vibraphone), saxophone(s), percussion, trumpet, trombone, and other brass as needed.

6) Pop Combo — Electric guitar, electric bass, synthesizer, and drums.

Within each category there are hundreds, sometimes thousands of variations, some subtle and others striking. You have a number of options to change the orchestration.

While at the Playback screen in kiosk mode and even during playback, moving the cursor in and out of the ensemble badge at the upper left (without pressing the mouse button) triggers a new variation on the current ensemble (if you are not in kiosk mode, hold the optionKey down while moving in and out of the badge to trigger a variation on the current orchestration). Clicking the mouse button on the ensemble badge cycles through the six orchestration categories listed above. The badge changes accordingly. You may also use these controls during playback.

Another way to change the ensemble category is to press the Orchestration button (with a French Horn on it) at the bottom of the screen. This brings you to the Ensemble-picker screen which pictures all the ensembles together.



As with all the controls in the Edit window, there is a little computer choice button immediately to the lower right of the Orchestration button (although there is no computer choice button on the Orchestration screen itself). Pressing this instructs the software to generate an ensemble from the current compositional model. This can, from time to time, produce collections of instruments that are not possible to achieve in the ways described so far.

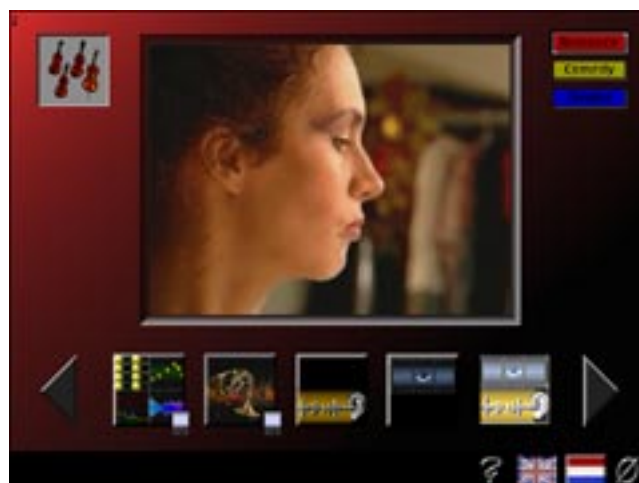
The Playback Window, Playing your Soundtrack

Now that your soundtrack is ready you can audition it with or without the video. The button with the ear on it plays your soundtrack without the video, and the button with the eye on it plays the video without the soundtrack.

Of course, the most interesting thing to do is to press the button with the ear *and* the eye on it because this plays the video with your soundtrack. If you believe that your soundtrack is out of sync with the video, you may wish to open the Preferences window and change the “Delay in Ticks” setting (one tick is 1/60 of a second).

After experiencing the video with your soundtrack there are many options: you can save your soundtrack to the archives, you can generate a new soundtrack with the same settings, you can generate a new soundtrack with the same settings but different mood, you can quickly generate a new soundtrack with all new settings generated by the computer, or you can return to the edit screens and tweak a few parameters here and there (to return to the Edit screens press the triangular “Previous” button at the lower left of the screen).

If you are not in kiosk mode, there are a number of other options (available from the menus) as well: you can export your file to a standard MIDI file outside of the archives, you can save your settings as a settings file, you can save your settings as a preset, or you can change the default settings of The Music is the Message to the settings that generated the current soundtrack.



Generating New Soundtracks from the Playback Window

To generate a new soundtrack using exactly the same settings click on the leftmost square button at the bottom of the screen (the one with miniature versions of the four edit screen buttons).

To generate a new soundtrack using all new settings which, themselves, are generated from the current model, click the small “Computer Choice” button to the lower-right of the leftmost square button at the bottom of the screen.

To generate a new soundtrack with the same settings but a different mood, click on one of the three “Mood Switch” buttons at the upper right of the screen, but make sure you choose a different mood (the current mood is highlighted), otherwise the effect is the same as clicking on the “New Soundtrack, Same Settings” button (the leftmost square button at the bottom of the screen).

Note that when you generate a new soundtrack with the same settings but a different mood (as described in the previous paragraph), often your rhythmic world will have to be re-interpreted. This is because the collection of available rhythms is somewhat different for each mood. Your actual rhythm graph does not change, only the underlying “rhythmic space” to which it is applied.

Saving Your Soundtrack

Press the triangular “Next” button at the lower right of the screen. If you have not already done so, a dialog asks if you would like to save your soundtrack. Confirm this. You are then asked if you felt the soundtrack was low, medium, or high quality. The software uses this rating to decide which files to factor into its compositional model the next time it “learns.”

Note that a soundtrack requires at least one high-quality rating before it is considered worthy of the learning pool. Further, a single low rating for a soundtrack that has a single high rating cancels out the high rating.

If you are not running in kiosk mode and you consider your soundtrack to be extremely good (or extremely poor), you can add extra points by holding down the shift key to double the effect of your rating, the option key to triple it, or the command key to quadruple it.

Your soundtrack is automatically named (sequentially) and saved as a standard MIDI file in the Archives folder inside the MIMfiles folder. A settings file with the same name (prefixed with an S) is saved in the Settings folder inside the MIMfiles folder. The settings file contains all the settings used to generate this soundtrack. The MIDI file is either a type 0 SMF or a type 1 SMF, depending upon your choice in the Preferences window.

If you are in non-kiosk mode, you can “Open” settings to reload them by way of the “File” menu. You can also save settings as one of the sixteen presets. Additionally, you can “Save” settings files and MIDI files with names of your choosing (although this must not be saved in the Settings or Archives folder maintained by the program, meaning those that are in the MIMfiles folder).

The Archives Window

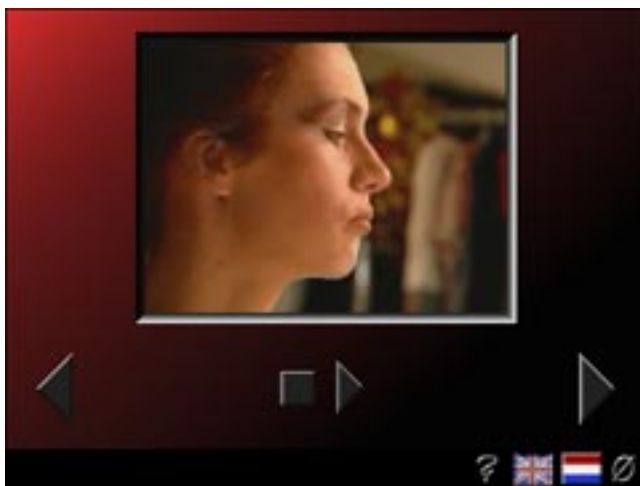
Having saved your soundtrack, you are brought to the Archives window where you find a scrolling list of all soundtracks that have been saved to date. Depending upon your settings in the preferences (Archives Help enabled or disabled), “Help Balloons” may display as you move the cursor around. The soundtrack that you most recently saved is the last one at the bottom of the list. The “R,” “C,” or “T” at the end of the file’s name indicates whether it is a Romance, Comedy, or Thriller soundtrack.

Selecting a soundtrack from the scrolling list brings you to the Archives Playback screen with a play button and stop button. Press Play to hear the selected soundtrack while watching the video. Press Stop to interrupt playback at any time.



Pressing the mouse button while the cursor is over the word “Archives” will bring up the Archives Management popup menu if you are operating in non-kiosk mode.

Press the triangular Previous button in the lower left to return to the Archives list, where you can select another soundtrack or retrace your steps back through the Playback window and edit screens if you like.



Pressing the triangular “Next” button at the lower right of the Archives Playback screen (or on the Archives list screen) takes you to the Credits screen, and a click on the “Next” button from there brings you back to the Start window.

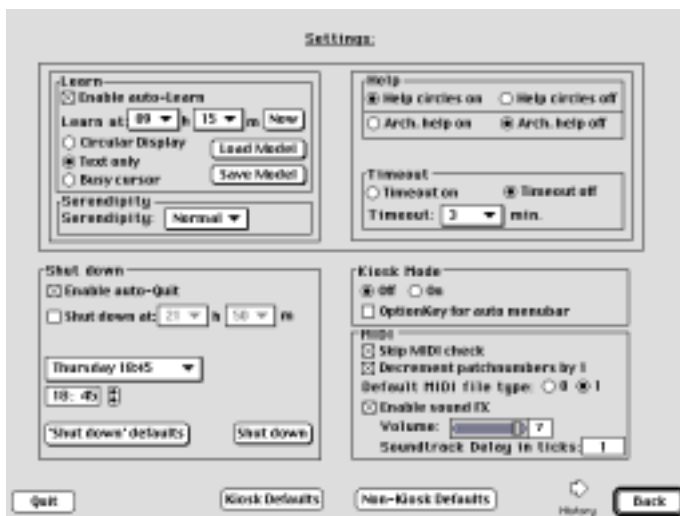
Note: Returning to the Start window (when in kiosk mode) initializes all settings and in some cases re-generates configurations of the edit screens.

Congratulations!

You have now completed the first part of the tour. You now explore other functions of the software. These include the Configuration window, the learning process, and the menus available in non-kiosk mode.

4 Configuration

The Configuration window is where you set up preferences for The Music is the Message, including how and when the software “learns” from your collection of soundtracks (in the Archives folder) and settings (in the Settings folder). To open the Configuration window select “Preferences” from the “Utilities” menu (you may need to hold the optionKey down to access the menubar while in kiosk mode) or select “Preferences” from the “File” menu if you are not in kiosk mode. The main options are described in clockwise order around the window.



At the upper right are the settings that allow you to enable or disable the Help Circles and Archive Help. These have been discussed earlier. Below these is a setting for “Time-out.” This refers to the duration of a period of inactivity that will trigger the program to go into Screen Saver mode. You lose all your current settings when this happens, so it may be best to disable this feature unless you are in kiosk mode.

At the lower right are controls for MIDI and the sound effects. These have been discussed earlier in this tour. The “MIDI Check” refers to the note-by-note verification of your soundtrack. You can probably disable this unless you discover that a particular model is producing problems. How-

ever, remember that you are strongly advised to click on the “Decrement Patch Numbers by One,” because this tells you whether or not your General MIDI device requires its patches to be decremented by one. You may need to use the volume slider to adjust the level and mix of the sound effects. Note that this slider has no effect whatsoever upon the volume of your soundtrack, which is all MIDI data and subject to your settings on the Volume screen discussed earlier.

At the lower left are controls that you might need in a kiosk situation to automatically shut down the computer, for example, at a certain period of time prior to the power being shut down for the building. These can be set on a daily basis with a different shutdown time each day or as the same shutdown time for every day of the week.

The Configuration Window, Learning Setup

The most important part of the Configuration window is the Learning setup in the upper left. The learning process enables the software to adapt its compositional models to your particular tastes or, in the case of a multi-user situation, to the tastes of a group of people.

In kiosk mode, it is normal to enable the software to “Auto-Learn” at a certain time each day. Keep in mind that the learning process can be lengthy; up to 20 or 30 minutes. You have a choice of a circular progress display, a text-only progress display, or a spinning (“busy”) cursor without a progress display. Because of the graphics involved in the circular progress display, it adds the most time to the learning process. The busy cursor option is the fastest, although it is not much faster than the text-only progress display.

Before starting the learning process, the software makes a backup of the current model in the Models folder inside the MIMfiles folder.

The button labeled “Now” starts the learning process immediately. Again, recall that this process can take between 5 and 20 minutes and should not be interrupted. If you do need to interrupt the learning process, the software attempts to load the most recent backup model. If it fails to do so, you will be asked to locate a model the next time you launch the software.

Models (folder)

There are other models in the Models folder with which you can experiment. The “Load Model” and “Save Model” buttons let you quickly exchange models.

The models come to play whenever you press one of the little Computer Choice buttons. Then, the current model is consulted to generate a configuration. The current model is also used to generate an orchestration when you first select a mood from the Start window.

You can see that the model plays a large part in the generation of seed material and, in some cases, can be completely responsible for the generation of all seed material. During the composition process the model is consulted to determine the rhythmic structure (down to the durations of individual notes), overall form, texture stream, and tempo. The YAV Music Engine develops other aspects of the composition without consulting the model. Future versions of this software will integrate the music engine more closely with the model, so that the model will also be consulted to determine the methods used to transform the melodic and harmonic material.

The Configuration Window Serendipity Setting

The Serendipity setting is mainly used in conjunction with the “Computer Choice” buttons. When you press a “Computer Choice” button, there is a chance that you will produce a random configuration rather than a configuration generated from the currently active compositional model. The serendipity setting defines the probability that such a random configuration can occur.

At one end of the range, the setting of “None” guarantees that every click on a “Computer Choice” button results in material generated from the current model. At the other end, “Total” guarantees that the model is never consulted when the “Computer Choice” buttons are pressed.

Between “None” and “Total” are “Normal,” “More,” “Less,” and “Random.” The various probabilities for non-generated (random) configurations at these settings are: Normal = 6% to 24%; More = 9% to 39%; and Less = 3% to 15%. A setting of Random simply chooses a random probability from 0 to 100%.

Probabilities of Randomness by Serendipity Setting

Total Serendipity	100 %
None (No Serendipity)	0 %
Normal Serendipity	6 - 24 %
More Serendipity	9 - 36 %
Less Serendipity	3 - 15 %
Random Serendipity	0 - 100 %

History 5

You can get to the History screen by pressing the “History” button at the bottom of the Configuration screen. Alternatively, if you are in non-kiosk mode, you can get here by selecting “History” from the “Windows” menu.

Use the controls in the history window to view either the ratings file or the user history.

First press the Update button to read in the User History file and the MIMratings file.

Once the files have been read in, the upper field displays the entire file (or the most recent 32k of it), while the lower field displays the subset you request via the controls in the middle of the screen.

When viewing the ratings, the only applicable controls are the “R,C,T” filters which let you view only the Romance, Comedy, or Thriller ratings in the lower field.



The History screen can display and filter ratings from the MIMratings file.

User History

When viewing the user history, you can filter by date using the popup menu in the center of the screen. Use the “Active Time” button to display the amount of time spent using the software on the currently selected date. Use the “Total” button to display the total time spent on the software to date.



Note that the user history is mainly intended to monitor use in kiosk mode, as not all user events are logged in non-kiosk mode.

Start time is given at the beginning of each line. The last two items of each line are end time and total elapsed time for session.

Note that the first line of the complete history usually indicates the most recent date of backup (and learning when in constant kiosk-mode).

The abbreviations used in the user history are as follows (the numbers next to the abbreviations indicate how many times that action or control was used):

User History Abbreviations

Hlp = Quick Help

Pre = Preview screen

Syn = Sync buttons on storyboard

Rhy = Points clicked on rhythm graph

Mel = Notes entered into melody staff

Tex = Times clicked on texture buttons

Vol = Points entered on volume graph

Cmp = Compositions (pressed Next button from Edit screen)

Ins = Accessed instrument screen

Aud = Played soundtrack without video from Playback window

Vid = Played video without soundtrack from Playback window

ALL = Played video with soundtrack from Playback window

Rec = Recomposed new soundtrack from Playback window

SmR = Switched mood to Romance and composed new soundtrack

SmC = Switched mood to Comedy and composed new soundtrack

SmT = Switched mood to Thriller and composed new soundtrack

SMF = Saved soundtrack to Archives

Pck = Picked any soundtrack from Archive scrolling list

PMF = Played file chosen from Archives scrolling list

Timeout = Allowed software to time-out.

ERROR = A software error occurred (the object that caused the error is indicated)

6 Menus

In kiosk mode you only have three menus available: the Apple menu (which is also available in non-kiosk mode), the Options menu (which groups together useful functions from several of the non-kiosk mode menus), and the Help menu (which is also available in non-kiosk mode).

Apple Menu



About The Music is the Message...
Help... ⌘H

The first two items under the Apple menu pertain to The Music is the Message.

About The Music is the Message

This takes you to the Credits screen.

Help...

This opens the online Help window. There are other ways to get to this Help window. For example, if you select any menu item with the option key and the command key pressed, you will see the “menu-help” cursor and the item you select will open the Help window to information about that menu item. Alternatively, you can jump to any section of the online help by way of Apple’s Help menu (see following). While you are in the Help window, you can iconize the window (to keep it floating around for instant access) by pressing its zoom box. It will shrink to a floating icon of a question mark.

Options Menu (kiosk mode)

Options

Learn now	
Save Model...	
Load Model...	
Backup all files	
Archives...	⌘F
Rate recent soundtrack...	⌘\
Load recent soundtrack settings	⌘]
Stop Video and Audio	⌘.
Preferences...	⌘=
Quit	⌘Q
✓ Kiosk mode	⌘U

The Options menu is the main menu available in kiosk mode. Depending upon your configuration in the Preferences window, you may need to hold the option key down while moving the mouse to the top of the screen in order to reveal the menubar. Because all the items in the Options menu are drawn from other menus, they are described elsewhere.

Help Menu

The Help menu is available in both the kiosk mode and non-kiosk mode.

About Balloon Help

Show Balloons

These first two items are the standard options provided by Apple under the Help menu. At this time, there are no help balloons in The Music is the Message.

The next sixteen items provide you with instant access to their corresponding pages in the Online Help window.

Overview

Quick Tour

Technical Information

Menus

File

Edit

Windows

Configure

Soundtrack

MIDI

Utility

Not to be confused with the Options menu previously described.

Internet

Configuration

History

About QuickHelp

Shortcuts

QuickHelp

QuickHelp is the on-screen help summary accessible by clicking the question mark button at the bottom of most screens. Its availability by way of this menu is simply a convenience.



Full Menu (non-kiosk mode)

The full menus become available when you switch to non-kiosk mode. To switch to or from kiosk mode, uncheck Kiosk mode from the Options menu (when in kiosk mode) or from the Utility menu (when in non-kiosk mode). Alternatively, press command-U to toggle between the two modes.

File Menu

File	
New	⌘N
Open	⌘O
Save...	⌘S
Page Setup...	
Print	⌘P
Help...	⌘H
Quick Help...	⌘?
Preferences...	⌘=
Quit	⌘Q

New

This brings you to the Start window and lets you begin working on a new soundtrack.

Open

Open lets you open a settings file and configure the edit screens to the settings in that file. If you happen to be in the Playback window when you open a settings file, a new soundtrack using that file's settings will be composed immediately.

Save...

This lets you save a settings file to another folder than the Settings folder and with another name than the ones that are automatically generated by archiving your soundtrack. Note that an R, C, or T is automatically appended to your file name to indicate the current mood.

Page Setup...

This displays the normal Page Setup dialog.

Print

This prints the current window.

Help...

This brings you to the Help window. Note that you can select any menu item with the option and command keys pressed to access help for that item.

Quick Help...

This opens the QuickHelp reference page, a single page of descriptions of the main program functions (move the cursor over an item to read about it and click to exit)

Preferences...

This opens the Configuration window, where you can set preferences for the program and view the user history.

Quit

This quits the program.

Edit Menu

With the exception of Clear, the Edit menu is not currently used by this software.

Undo

Cut

Copy

Paste

Clear

If you happen to be in an Edit Screen (Rhythm, Melody, Texture, or Volume), this will reset the current screen after first asking for confirmation. Contrast this to the options on the Configure menu, which reset the current screen without confirmation.

Select All

Edit	
Undo	⌘Z
Cut	⌘X
Copy	⌘C
Paste	⌘V
Clear	
Select All	⌘A

Windows Menu

Selecting an item in the Windows Menu brings you to a window or screen of the item you selected.

Start

Preview

Rhythm

Pitch

Texture

Volume

Instruments

Playback

Archives

Configure

History

Windows	
✓ Start	
Preview	
Rhythm	⌘D
Pitch	⌘M
Texture	⌘W
Volume	⌘L
Instruments	⌘I
Playback	⌘G
Archives	⌘F
Configure	⌘=
History	

Configure Menu

Configure		
Mood		
✓	Romance	⌘R
	Comedy	⌘K
	Thriller	⌘T
Sync Points		
	All On	
	SyncList	▶
Rhythm		
	Clear Rhythm	
	Generate Rhythm	⌘1
	Random Rhythm	⌘2
Melody		
	Clear Melody	
	Generate Melody	⌘3
	Random Melody	⌘4
	Preview Melody	⌘5
Texture		
	Allow All	
	Generate Texture Set	⌘6
	Random Texture Set	⌘7
	TextureList	▶
Volume		
	Clear Volume	
	Generate Volume Curve	⌘8
	Random Volume Curve	⌘9
Instrumentation		
	Random (generated) Ensemble	⌘0
	New Variation on Ensemble	⌘-
	EnsembleList	▶
Serendipity		
	SerendipityList	▶

Mood

Select from one of the following three moods to impose the constraints associated with that mood upon your soundtrack (see the Technical Information in the Help for the nine parameters that are affected by changing the mood). The background changes color to indicate which mood the software is in.

Romance

The background turns red.

Comedy

The background turns yellow.

Thriller

The background turns blue.

Sync Points**All On**

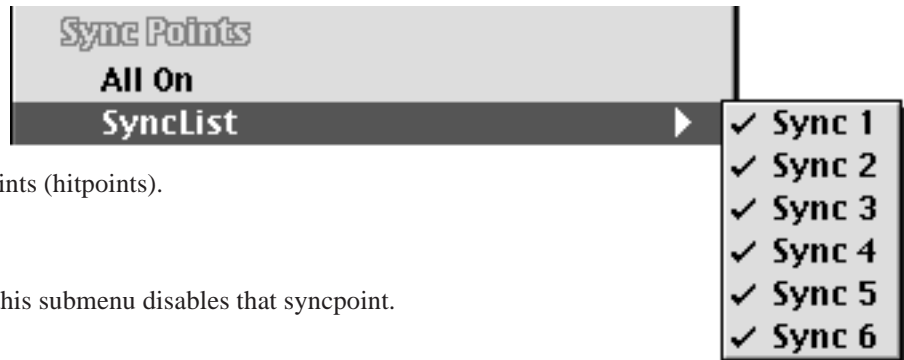
This enables all syncpoints (hitpoints).

SyncList

Selecting a point from this submenu disables that syncpoint.

> Sync 1

> etc.

**Rhythm****Clear Rhythm**

This resets the rhythm graph to a flat line.

Generate Rhythm

This generates a new rhythm graph from the current model.

Random Rhythm

This generates a random rhythm graph.

Melody**Clear Melody**

This erases the current melodic seed.

Generate Melody

This generates a new melodic seed from the current model. The melody will be played if you are not at the Melody Screen (press the option key if you are).

Random Melody

This generates a random melodic seed. The melody will be played if you are not at the Melody Screen (press the option key if you are).

Preview Melody

Previews the melodic seed (if there is none, one will be generated). This is the same as clicking on the treble clef.

(Configure menu — continued)

Texture

Allow All

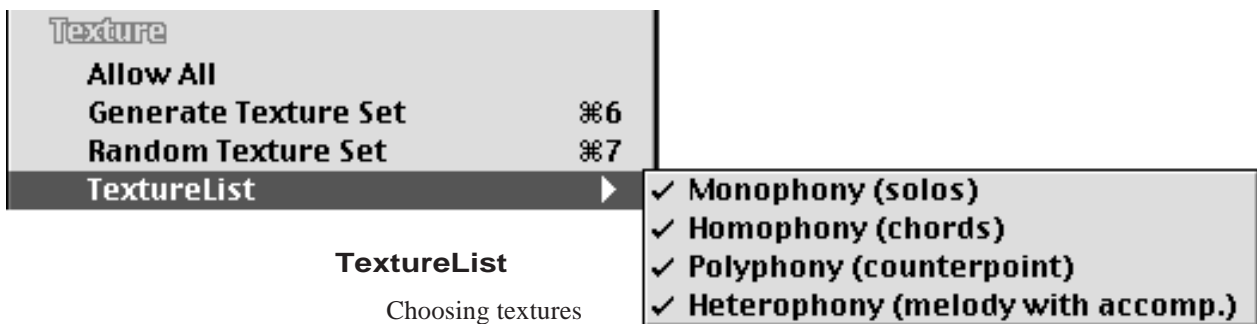
Allows all four texture types to participate in the texture stream.

Generate Texture Set

This generates a collection of textures from the current model.

Random Texture Set

This creates a random collection of textures.



TextureList

Choosing textures from this list toggles their presence.

> **Monophony (solos)**

> **Homophony (chords)**

> **Polyphony (counterpoint)**

> **Heterophony (melody with accomp.)**

Volume

Clear Volume

This levels the volume to a flat value of 96 (= mezzo forte) out of a possible 127.

Generate Volume Curve

This generates a volume curve from the current model.

Random Volume Curve

This creates a random volume curve.

Instrumentation

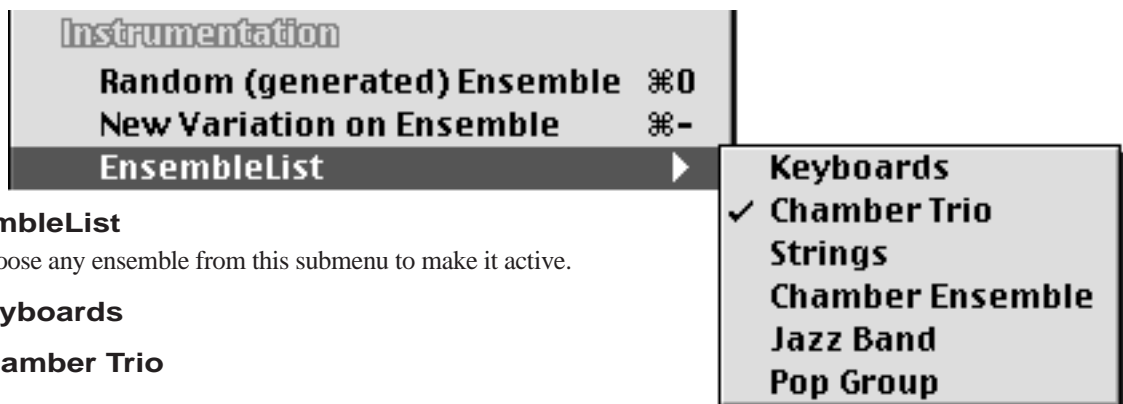
In all cases, choosing an ensemble generates a collection of patches from the current model and sends those patches to your sound module.

Random (generated) Ensemble

This chooses a random ensemble based upon the current model.

New Variation on Ensemble

This creates a variation within the current ensemble category.



EnsembleList

Choose any ensemble from this submenu to make it active.

- > Keyboards
- > Chamber Trio
- > Strings
- > Chamber Ensemble
- > Jazz Band
- > Pop Group

Serendipity

This setting defines the probability of the software creating a brand new configuration from an edit screen or otherwise generated parameter that is not generated from the currently active model.

SerendipityList

Choose a setting to specify serendipity within the indicated range.

- > Normal
6% to 24%
- > More
9% to 39%
- > Less
3% to 15%
- > Total
100% (No settings generated from the model)
- > None
0% (All settings generated from the model)
- > Random
0 to 100%



Soundtrack Menu

Soundtrack	
Play Video	
Play Audio	
Play Video with Audio	⌘J
Stop Video and/or Audio	⌘.
New Soundtrack	
Same Settings, Same Mood	⌘Y
Random Settings, Same Mood	
Generated Settings, Same Mood	

Random Romance	
Generated Romance	
Random Comedy	
Generated Comedy	
Random Thriller	
Generated Thriller	
Save Soundtrack to Archives	⌘B

Play Video

This plays the video track without the soundtrack.

Play Audio

This plays the soundtrack without the video.

Play Video with Audio

This plays the video with the soundtrack.

Stop Video and/or Audio

This stops the video and/or the soundtrack.

New Soundtrack

These options all provide shortcuts to generating new soundtracks without having to return to the edit screens. They are, for the most part, self-explanatory. Remember that the word “Generated” in this context means that the currently active model is used as a basis to generate all settings for the new soundtrack. The word “Random” in these options, applies to all settings as well.

Same Settings, Same Mood

Random Settings, Same Mood

Generated Settings, Same Mood

Random Romance

Generated Romance

Random Comedy

Generated Comedy

Random Thriller

Generated Thriller

Save Soundtrack to Archives

This saves your soundtrack to the Archives (provided a soundtrack has been created). You will be asked to evaluate your soundtrack before saving it.

MIDI Menu

Export MIDI File...

This provides a way to export your soundtrack as a MIDI file without having to save it to the “official” Archives (or after having saved it to the Archives). Note that this will be a type 0 or type 1 Standard MIDI file, depending upon your settings in the Preferences.

Play MIDI File...

This is a convenience item that lets you quickly play any Standard MIDI file.

Channel 1 Sound

This and the following seven items let you change patches on the designated channels. Note that you may need to select “Decrement Patches by One” in the Preferences if you hear unexpected results.

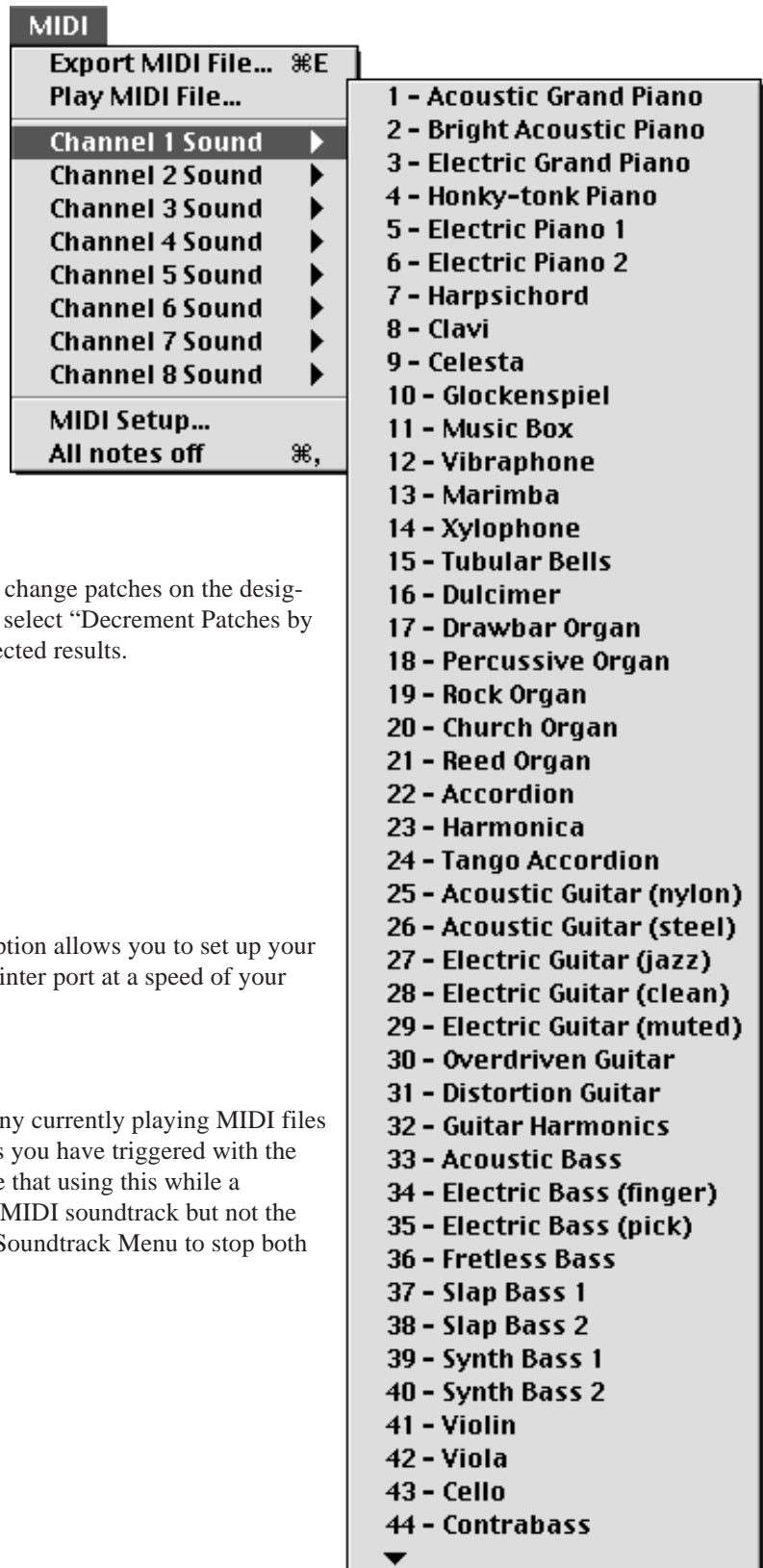
etc.

MIDI Setup...

If you are not using MIDI Manager, this option allows you to set up your MIDI output (assign it to the Modem or Printer port at a speed of your choosing).

All notes off

This stops any stuck notes and also stops any currently playing MIDI files whether they are soundtracks or MIDI files you have triggered with the Play MIDI File... option in this menu. Note that using this while a soundtrack is playing with video stops the MIDI soundtrack but not the video. Use the appropriate item under the Soundtrack Menu to stop both the video and the audio.



Utility Menu

Utility	
Batch compose	▶
Presets	▶
Learn now	
Save Model...	
Load Model...	
Set Default Model...	
Backup all files	
Rate recent soundtrack...	⌘\
Load recent soundtrack settings	⌘]
Clear Ratings File...	
Kiosk mode	⌘U
✓ Hide Finder	

Same Settings, Same Mood
Random Settings, Same Mood
Generated Settings, Same Mood

Batch compose

This allows you to create a batch of soundtracks (as many as you like) with a single menu selection (you will be asked how many soundtracks to compose and whether or not to vary the instrumentation for each one).

Your new soundtracks are saved to the archives, so after running a Batch Compose you should count back from the bottom of the scrolling archives field the number of files requested and start

auditioning the soundtracks from that point. Alternatively, you could simply make a note of the number of the last soundtrack immediately prior to running a batch compose. Note that none of the batch-composed files have any ratings assigned to them.

Because you will be composing quite a few soundtracks, it will take some time. This option is the sort of thing you may want to start running right before you take a break. Batch composition makes heavy demands of your computer's processor and memory. Because of this, requesting large numbers of soundtracks (25 or more) may cause a crash. It is best to work up to the large numbers gradually to see how much your computer can handle. Otherwise, give as much memory as possible to this software.

The options are self-explanatory. Remember that "Generated" in this context refers to generating all settings from the current model and "Random" in this context refers to using random settings for all parameters.

- > **Same Settings, Same Mood**
- > **Random Settings, Same Mood**
- > **Generated Settings, Same Mood**

Presets	
<p>Presets</p> <p>You can save the current setting as a “Preset” by selecting one of the 16 preset subMenu options with the option key down. Note that the program comes with presets already installed, so you may want to experiment with these first. You can select a preset with the command key down to make it the default startup setting for the entire program.</p> <p>> Select with OptionKey to Save Preset</p> <p>> Select with CommandKey to Set Default</p> <p>> Preset-1</p> <p>> etc.</p> <p>> Export All Presets...</p>	<p>Select with OptionKey to Save Preset</p> <p>Select with CommandKey to Set Default</p> <p>Preset-1</p> <p>Preset-2</p> <p>Preset-3</p> <p>Preset-4</p> <p>Preset-5</p> <p>Preset-6</p> <p>Preset-7</p> <p>Preset-8</p> <p>Preset-9</p> <p>Preset-10</p> <p>Preset-11</p> <p>Preset-12</p> <p>Preset-13</p> <p>Preset-14</p> <p>Preset-15</p> <p>Preset-16</p> <hr/> <p>Export All Presets...</p> <p>Load Preset Bundle...</p>

> Export All Presets...

This exports all 16 presets (or less, if you haven’t used all 16) to a “Preset Bundle” file. You can name this file whatever you like and save it wherever you desire, however, the software does maintain a “Presets” folder inside the “MIMfiles” folder for this purpose.

> Load Preset Bundle...

This asks you to locate a preset bundle file and replaces all your existing presets with the presets in that file.

(Utility menu — continued)

Utility	
Batch compose	▶
Presets	▶
Learn now	
Save Model...	
Load Model...	
Set Default Model...	
Backup all files	
Rate recent soundtrack...	⌘\
Load recent soundtrack settings	⌘]
Clear Ratings File...	
Kiosk mode	⌘U
✓ Hide Finder	

Learn now

This will immediately commence the learning process to construct a new compositional model. Note that this can take up to 20 minutes, so consider this decision carefully. Also, the amount of time required for “learning” is dependent upon the number of files you have saved to the archives and also which of the three learning feedback options you have selected in the Preferences. The circular progress indicator is the slowest. The text-only progress indicator is almost as fast as the busy cursor progress indicator.

Save Model...

This allows you to name and save a file representing the current model. Note that the software maintains a “Models” folder inside the “MIMfiles” folder, but you are not required to store your models there.

Load Model...

This lets you select a model file to load and make current.

Set Default Model

This lets you select the current model or another file as the default model for the software. If you have set a default model for the program, this model will be loaded every time you start up the program (as long as the model file can be located... i.e., don’t move it).

Backup all files

When “Auto-learn” is enabled in the Preferences, the software maintains a backup of all the Settings, Archives, Ratings, and User History files. This Backup is kept in a folder named “MIMBU” inside your Preferences folder. Selecting this item from the menu makes a backup immediately.

Rate recent soundtrack

This lets you rate or re-rate the most recent soundtrack. The advantage to this is that you do not have to return to the Archives Playback screen to re-rate a soundtrack. You might want to use this option to adjust or otherwise manipulate your overall ratings file. You can quickly review all your soundtracks by option-clicking their names in the Archives list (option-clicking plays the soundtrack without the video) and then selecting this option to rate the soundtrack. Note that there are several menu options that remove the most recent soundtrack from memory and that if there is no soundtrack in memory, this option will not have any effect.

Load recent soundtrack settings

This is primarily for use in conjunction with the Archives. If you hear something you like in the archives, you can use this option to load the settings for that file immediately, without having to remember the name of the most recent soundtrack you auditioned.

Clear Ratings File

This clears all the ratings inside your ratings file (with double confirmation). Use this with care, because the software requires your soundtracks to be rated in order for it to construct its model files. At least one file of each mood must have at least a rating of 1 in order for a model to be constructed (therefore you must have a minimum of three files).

Kiosk mode

When checked, the menubar and menus are not visible at the top of the screen unless you move the mouse up to that region while holding the option key down (you can remove the option key requirement using Preferences). When the software is in kiosk mode, the menubar (when exposed) only contains two menus. Uncheck “Kiosk mode” to reveal all the menus available to the software and use the program to its fullest potential.

Hide Finder

This allows you to hide the Finder behind a backdrop. If your screen is 640 by 480, this has no effect, because all the windows are that size and will naturally cover up the Finder.

Internet Menu

The items on this menu takes you to various Music is the Message sites on the world wide web. You must either be using Internet Config or have Netscape running in the background for these options to work.

Music is The Message homepage

Online documentation

Online tutorial

Latest version

www.yav.com



Archive Management Popup Menu

Play or Stop current file Play soundtrack with video
Show current file rating Rate current file Set current rating... Load settings of current file Delete current file
<ul style="list-style-type: none"> • Show All
Show only highest Show high range... Show only ratings above... Show soundtracks with ratings of...
Delete below range... Delete below value... Re-number...
Sort by name Sort by mood Sort by rating
Zero all ratings...

While in the Archives window in non-kiosk mode, pressing the mouse button down on the word “Archives” at the upper left reveals the “Archive Management” popup menu.

The options available from the Archive Management menu are self-explanatory. It may be practical to think of many of these options as if they were a filtering mechanism for what is displayed in the scrolling soundtrack list.

Play or Stop current file

If the currently selected soundtrack is not playing, this initiates playback (without the video), otherwise it stops any current playback. This is the same as clicking on a file name with the option key pressed (to start playback), or pressing the enter key during playback (to stop playback)

Play soundtrack with video

This takes you to the Archives Playback screen with the currently selected soundtrack loaded for playback. This is the same as pressing the enter key (when no file is playing).

Show current file rating

This displays a small field containing the rating of the current soundtrack below the scrolling soundtrack list. This is the same as clicking on a soundtrack name with the shift and command keys pressed.

Rate current file

This brings up the program’s standard soundtrack rating dialog allowing you to specify a “Low,” “Medium,” or “High” rating to a file. This is the same dialog you get using the keyboard shortcut: command-backslash (\). Remember that holding the shift key down while pressing “Low” or “High” doubles your rating, holding the option key down triples it, and holding the command key down quadruples it.

Set current rating...

This brings up the alternate rating dialog which asks you to specify an exact rating for the file (this can be a positive or negative number). Rather than being added or subtracted from the current rating, this value replaces the current rating.

Load settings of current file

This loads the settings of the currently selected soundtrack. This is the same as pressing command-right bracket (]) or clicking on the soundtrack name with the shift key pressed.

Delete current file

This deletes the currently selected soundtrack file, its associated settings file, and its entries in the ratings file. You will be asked for confirmation before proceeding. This is the same as clicking on the soundtrack name with the command key pressed.

Show All

This restores the scrolling soundtrack list to display all soundtracks currently archived in the Archives folder. Select this option while pressing the option key to force a (slightly longer) complete examination of the ratings file if you suspect that repeated deletions and reorderings may have corrupted the resulting list.

Show only highest

This shows only the highest rated soundtracks in the Romance, Comedy, and Thriller moods. If several soundtracks have the same rating, those with identical ratings are displayed.

Show high range...

This asks for a number (good choices are within the range of 2 to 4) and then displays only the soundtracks for that many of the top ratings. For example, if you requested the top 2 ratings, you would see files that are within the highest two ratings of Romance, Comedy, and Thriller soundtracks in the scrolling soundtrack list. Note that if several soundtracks have the same rating, those with identical ratings are also displayed. Consider this scenario: 10 is the highest soundtrack rating; multiple soundtracks might have a rating of 10 and multiple soundtracks might have a rating of 9. All soundtracks rated 10 or 9 will be displayed. Because different moods typically have different high ratings, the absolute value of the top two rating categories usually varies from mood to mood.

Show only ratings above...

This allows you to specify a cut-off rating value for the soundtracks that are displayed in the scrolling soundtrack list. Unlike "Show high range," the numbers entered here are absolute rather than relative to the mood.

Show soundtracks with ratings of...

This option lets you single out soundtracks of a specific rating.

(Archive Management — continued)

Delete below range...

This is similar to “Show high range...” (see above) except that all files below the indicated value are deleted. Note that this deletes the actual MIDI files (in the Archives folder), the associated settings files (Settings folder), and all entries for that file in the “MIMratings” file. You will be asked to confirm this action. After using this option it is often a good idea to use the “Renumber...” option.

Delete below value...

This asks you for a rating and deletes all soundtracks with ratings below that value. Note that this deletes the actual MIDI files (in the Archives folder), the associated settings files (Settings folder), and all entries for that file in the “MIMratings” file. You will be asked to confirm this action. After using this option it is often a good idea to use the “Renumber...” option.

Renumber...

After having performed a “Delete below...” (see above), you probably have many gaps in the numbering of your archive files. Renumber will renumber all your files, so that they are consecutive again. The soundtrack (MIDI) files are renumbered along with their associated settings files and also their entries in the MIMratings file. It’s a good way to “clean house.” The next soundtrack you create will start with the next number beyond the highest renumbered soundtrack.

Sort by name

This sorts the scrolling list of soundtracks by name. It does not reorganize the list of files in the actual MIMratings file.

Sort by mood

This sorts the scrolling list of soundtracks by mood. It does not reorganize the list of files in the actual MIMratings file.

Sort by rating

This sorts the scrolling list of soundtracks by rating. It does not reorganize the list of files in the actual MIMratings file.

Zero all ratings...

This equalizes all ratings. It doesn’t actually “zero” the ratings because the learning process (described elsewhere in this document) requires at least one file of each mood to have a minimum rating of 1. So this menu options sets all the ratings of all the files to 1, which is effectively the same as zero-ing them. Use this with caution, particularly if you have carefully rated hundreds (or thousands) of soundtracks. Remember, the ratings are crucial to the construction of the compositional models.

Important note: see “Keyboard Shortcuts” for other tips on managing your Archives.

Using Archive Management

The sample files in the “Archive Collections” folder were all created using the Archive Management popup menu.

We started with 536 soundtracks. These included soundtracks created on two of our development machines as well as soundtracks created by the first two months of users of the kiosk version at the newMetropolis Center for Science and Technology.

Some of the soundtracks had been rated by museum goers and some of them had been rated by people working in or passing through our office.

We made another pass through all the soundtracks, examining their ratings (using shift-command up- or down-arrow) and re-rated those that required it (using command-backslash).

Finally, we created the Mufasa 536 model. Examining the model (using tools that are not provided with the release version of the software), we noted that only the top seven ratings were included for each mood. Armed with that information, we used the “Delete below range...” option (with a value of 6) to filter out all but the top six ratings. This left 173 files which we then renumbered the files to produce the Mufasa 173 soundtrack set and model.

Next we used the “Delete below range...” option (with a value of 5) to filter out all but the top 5 ratings and created the Mufasa 135 soundtrack set and model. We continued this procedure to derive the Mufasa 81, 45, 22, and 11 sets.

Having decided to include only 24 sample soundtracks with the default installation of the software, we loaded the Mufasa 45 set (to do this, we simply replaced the Archives and Settings folders in the MIMfiles folder with the Archives and Settings folders in the “Mufasa 45 complete” folder which is inside of the “Archive Collections” folder).

Next we scrutinized these soundtracks more closely and re-rated them. We used the “Sort by rating” option to place them in descending order of “quality.” This made it easy to start from the bottom of the list and delete the soundtracks of lower ratings (by clicking on the soundtrack’s name with the command key pressed or selecting “Delete soundtrack” from the popup menu) until we were left with only 24 soundtracks (eight in each mood).

We then created a new model using the “Learn now” option from the Utility menu and created one, completely generated, soundtrack using that model. This became the 25th soundtrack in the scrolling list of sample soundtracks.

7

Technical Information

More about moods and models

When first starting The Music is the Message, people sometimes wonder why the music doesn't always sound romantic, comedic, or thrilling. This is because it needs to gather data from its user or users for the purpose of constructing composition models, and that is also why it asks users to rate the quality of their soundtracks and the quality of other soundtracks that may have been loaded from the Archives screen.

The software needs to collect a representative sample before it starts taking action on what it has learned. This is a continual process, but it is essential that a "critical mass" be reached before dramatic effects are perceived. Actually, this process is not unlike what takes place in the popular music industry. Musical styles are driven and pressured to evolve in certain directions through the constant "opinion polls" that the publishers and record industry conduct in the form of sales reports and top-40 charts. With The Music is the Message, a lengthy learning process can be circumvented by loading in a pre-existing model.

The learning process goes on behind the scenes — in kiosk mode, this can be set to occur automatically once per day — so that the users are only aware of the results of the process and not what is actually going on.

This means that, as the software learns more and more about the public opinion of its user or users, it begins to move closer and closer to the collective (majority) opinion of what the words "romantic," "comedic," and "thrilling" mean to the actual users. The more the software is used, the more it learns. It's an ongoing process... For example, if the users are, for a certain period of time, predominantly professional drummers, this will definitely tip certain balances for a while until the cross-section of the users stabilizes.

The greatest effect of this analysis-feedback-loop will be heard by people who opt to leave choices up to the software (including impatient people who skip over everything and go right to Playback). Choices that are made by the software become increasingly more "intelligent" as the software learns more about what produces the best results (to the ears of the humans and as expressed by the data collected in the "opinion polls" the software conducts).

Initially, the software's compositional model will have a somewhat lesser impact upon those users who choose to exercise a greater degree of control when configuring the six parameters (sync-points, rhythmic-world, melody-seed, texture-constraints, volume-curve, and instrument ensemble) to actually influence the outcome and shape it to their own personal vision of how that particular music should sound. Such experimentation, when successful, can have an extremely beneficial effect upon the model — just remember to give such successful soundtracks an appropriate rating when asked.

More about built-in constraints

Certain constraints are automatically invoked by choosing a specific mood. Whenever a user chooses romance, comedy, or thriller, the software applies the most common characteristics of film music in that mood to the following ten (10) parameters:

Mood-dependent Constraints

Meter: Romance tends toward triple meters, Comedy favors duple meters, Thriller uses more polyrhythms (uncommon meters like 5 and 7).

Tempo: Romance is the slowest, Comedy is the fastest, Thriller runs the gamut from slow to fast.

Key and mode: Romance tends toward harmonic-minor, Comedy toward major, Thriller favors atonality.

Harmonic progression (chordal relationships between sections): As would be expected from the differing keys and modes of the various moods, the pool of harmonic progressions is tailored to each mood.

Perceptual “distance” between the seed melody and the generated counter-melodies: (the user will perceive a wider variety of variations for the Comedy... that is, the variation techniques are more complex for the Comedy mood than for the Romance mood, and these create variations that are more difficult to immediately perceive as related to the seed material.

Form: Grouping of the 24 sub-scenes (delimited by film cuts and action) into a perceivable musical form. How many formal “chunks” do we perceive is mood-dependent. Romance favors a recapitulatory “sonata-rondo”-like form. Comedy favors an arch-like form. Thriller favors a non-recapitulatory, progressively forward-moving form.

Structural (leitmotif) relationships between the 24 sub-scenes. Most leitmotif associations with characters are upheld regardless of the mood (Romance, Comedy, Thriller), however, the relationship between scenes without characters and the focus motif of some character shots changes dependent upon the mood.

Texture placement (whether from the user-chosen or computer-generated set of textures): The final texture stream may consist of up to 24 changes of texture depending upon the mood.

Thresholds for interpreting the user’s (or the computer-generated) “rhythmic world:” Each point represents a distance closer to or farther from stability (the flat line in the center) and invoking a different mode will invoke a different rate of change (which can be visualized as a curve) as applied to the interpretation of the rhythmic world. Additionally, that graph represents note-density, which itself is similarly affected by mood choice. Likewise, the frequency of sustained notes is directly related to mood.

The default instrumental category is mood dependent: Romance uses the chamber trio as its default, Comedy defaults to the jazz band, and Thriller chooses between chamber ensemble and string ensemble. Following this choice, the actual instrumental makeup of the particular ensemble is determined by way of the currently active model.

Beyond these ten fixed constraints (regarding which the user has little or no control), the other factors of making the music lean toward their personal view of “romance,” “comedy,” and “thriller” are left to their experimentation with the controls provided for them. That’s why it becomes important to give the software time to “learn” and continually adapt to the (collective) user’s taste.

Observations:

The Music is the Message demonstrates that music can force an interpretation upon a scene that has an inherently polyvalent dramaturgy. The Music is the Message is not attempting to disprove one of the film industry's strongest laws: that "music cannot save a scene which has inherent dramatic faults." In this case, the scene does *not* need to be "saved."

It is a common misconception that "music can save a scene." Young directors are often deluded with the idea that they can hire a great composer to repair an otherwise defective scene. In the film industry, it is well known that no matter what music is behind a scene, no matter who wrote it, and no matter how good it is, it cannot compensate for a scene that has cinematic or dramatic problems (the rule is "you can never fix it with the music").

It is best not to approach the software with a too heavily preconceived notion of what type of music is associated with the concepts of Romance, Comedy, and Thriller. Consider romance for a moment. For some people this has happy associations, for others it has tragic associations.

Approaching any film with too strong feelings about the music often leads to disaster in the real world too. The most famous case of this phenomenon is Kubrick's "2001." Kubrick watched the film with a temp-track made of existing records pulled at random by the music-editor, and in the end he couldn't get the sound of the temp-track out of his head. Subsequently, he was forced to license all that pre-recorded music and pay off the already contracted composer (Alex North) for what would have been a much more suitable soundtrack.

This has happened many times in the film industry (Alien, Breaking Away, The Exorcist, The Graduate, Platoon, The Sting). Note that this is not related to what transpired with The Shining, where the decision to use Bartok's music was made in advance and the film was cut (edited) to the music rather than the other way around (which is the normal case).

When we think about this in the context of a polyvalent scene like the one used by this program (which is extremely well suited for the types of experiments that the software makes possible), one shouldn't forget that there is a good deal known about what film music can and cannot do and that, particularly with respect to comedy, music cannot make a scene any funnier than it inherently is and this is a fact of life. The program has generated some soundtracks that do make this scene seem comedic, but nothing is going to make it into the "Charlie Chaplin farce" that might be a requirement for some people's comedic ideal.

On the other hand, because we have heard the software create truly comedic soundtracks for this clip, as well as truly romantic and thriller soundtracks, we are confident that as the software responds to its user or users and learns both from the users' choices and also from their feelings about music generated by choices left up to the software it will gradually approach the ideal model for these moods with respect to this particular clip.

Don't expect the software to already know what your favorite romantic music is. Remember, you must teach it what you like and it will learn from you.

8

Keyboard Shortcuts

General

← or → Pressing the left or right arrow key is equivalent to pressing the “Previous” or “Next” button. When you are in the “Start” window (which does not have a “Previous” or “Next” button), pressing the right arrow key activates one of the Mood Choice buttons chosen at random and takes you to the Edit window.

↵ or ↵ Pressing the return or enter key starts or stops playback of a soundtrack in appropriate windows (Play, Archives, Archives Play). Note that this does not stop playback of a Standard MIDI File you may have selected from the “MIDI” menu. To stop playback initiated from the “MIDI” menu, press command-period, or command-comma.

⌘ ⌘ plus menu item: Select any menu item with the option and command keys pressed to access help about that menu item (the cursor will change to the Help cursor to remind you of this fact).

Help Window

⌘ Zoom Box: To put the Help window in “Standby” mode, click the zoom box at the upper right corner of the Help window.

Edit Window



⌘ plus Next button: Going from the Edit window to Play window only. Normally, using the “Next” button on an Edit screen to go to the Play window creates a new soundtrack. Hold the command key down while you click the Next button to go from the Edit window to Play window *without* creating a new soundtrack.



Archives Playback Window



⌘ plus Previous button: Going from the Archives Playback window to the main Archives window with the command key pressed will avoid the request to rate the most recently experienced soundtrack.




While in the Archives Playback window in non-kiosk mode, click the current file name (at the top of the screen) for more information about that file. Hold the option key down while clicking for even more information.



Archive Window



  To play an Archived soundtrack immediately, without viewing the video, click on the list of soundtracks with the option key down.

  To load or reload a soundtrack's settings from the Archive list, click on the file name with the shift key down.

  To delete a file from the archives (which also deletes its associated "Settings" file and entries in the "MIMratings" file), click on a file name with the command key down (confirmation is required).

   To display the current rating for a file, click on the file name with the shift and command keys down.

 or  To select the next or previous soundtrack, press the up or down arrow keys. Use the up or down arrow keys in conjunction with any of the above options.

 or  Pressing the return or enter key while in the Archive window with a soundtrack selected (highlighted) in the scrolling list sends a mouse-click to the selected soundtrack. It is as if you clicked upon the soundtrack name in the scrolling list. The following tip clarifies why this behavior can be useful.

Tip: To change the keys held down for the current file, hold the new keys down and press the return or enter key. For example, hold the shift and command keys down (to display the ratings) and progress down the list using the down arrow key. When you arrive at a file that you are curious about, release the shift and command keys and press, for example, the option key followed by the enter key to audition the file just as if you had clicked upon it with the option key held down. If you want to view the soundtrack with the video, release the option key and press the enter key again. If you feel the file needs a higher or lower rating, press command and backslash (\). If you want to load the settings of that soundtrack, press command and right bracket (]) or, if you are still on the screen with the scrolling list of soundtracks, hold the shift key down (assuming your soundtrack is still selected) and press the enter or return key.

While in the Archives window in non-kiosk mode, pressing the mouse button down on the word "Archives" at the upper left will reveal the "Archive-management" popup menu. This is discussed elsewhere in the documentation.

Menu Shortcuts

Apple Menu

⌘ H Help....

File Menu

⌘ N New
⌘ O Open
⌘ S Save....
⌘ P Print
⌘ H Help....
⌘ ? Quick Help....
⌘ = Preferences...
⌘ Q Quit

Edit Menu

⌘ Z Undo
⌘ H Cut
⌘ C Copy
⌘ U Paste
⌘ A Clear

Windows Menu

⌘ D Rhythm
⌘ M Pitch
⌘ W Texture
⌘ L Volume
⌘ I Instruments
⌘ G Playback
⌘ F Archives
⌘ = Configure

Configure Menu

⌘ R	Romance
⌘ K	Comedy
⌘ T	Thriller
⌘ 1	Generate Rhythm
⌘ 2	Random Rhythm
⌘ 3	Generate Melody
⌘ 4	Random Melody
⌘ 5	Preview Melody
⌘ 6	Generate Texture Set
⌘ 7	Random Texture Set
⌘ 8	Generate Volume Curve
⌘ 9	Random Volume Curve
⌘ 0	Random (generated) Ensemble
⌘ -	New Variation on Ensemble

Soundtrack Menu

⌘ J	Play Audio with Video
⌘ .	Stop Audio and/or Video
⌘ B	Save Soundtrack to Archives

MIDI Menu

⌘ E	Export MIDI File...
⌘ ,	All notes off

Utility Menu

⌘ \	Rate recent soundtrack...
⌘]	Load recent soundtrack settings
⌘ U	Kiosk mode

Preset Menu

⌘ plus menu item:	Saves preset to selected preset number
⌘ plus menu item:	Sets selected preset to default setting for program