User Guide for Logic fun

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English

emagic
Soft- und Hardware GmbH

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User Guide

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Chapter 1

Features

Specifications of any software mentioned in this manual are subject to change without notice.

1.1 Multitrack Recorder

One of the main components of Logic fun is the MIDI multi-track recorder. You record ecord multiple tracks, as though you were in a professional studio, and as you record the next one, listen to the tracks that you just recorded.

Logic fun offers you many ways to alter and refine your recorded material at a later time. You can move the tracks around in the Arrange window, give the MIDI tracks a different sound, or divide them into blocks (sequences). You can cut, copy, move, transpose, or correct (quantize) rhythmically.

The three editor windows give you complete control of your recordings. Whether you are changing the length, or dynamic

strength of a single note in the Event editor, or entering entire scores in the Score editor—it's all easy and fast with Logic fun.

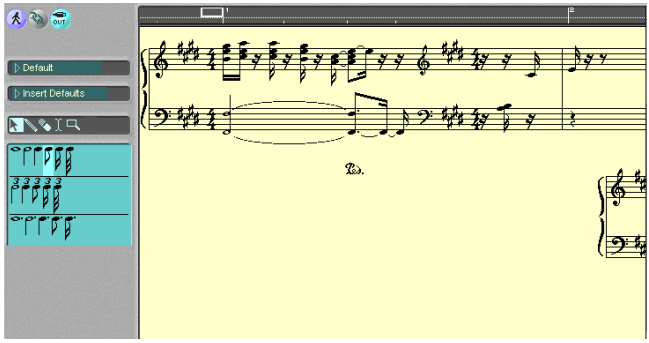
1.2 Flexible Input

There are several ways of entering notes into Logic fun. Everything is available, from real-time recording to manual note entry; the possibilities are endless.

You can use Logic fun simply to record real-time MIDI performances, or as a conventional notation system by inputting your scores on the screen with the mouse.

Logic fun offers you every possibility; you decide which ones to use. You may control the program either with the mouse or the computer keyboard; all functions can be carried out using the mouse, and the majority can be adapted to meet your needs via keyboard commands, which can be programmed as desired.

1.3 Automatic Notation

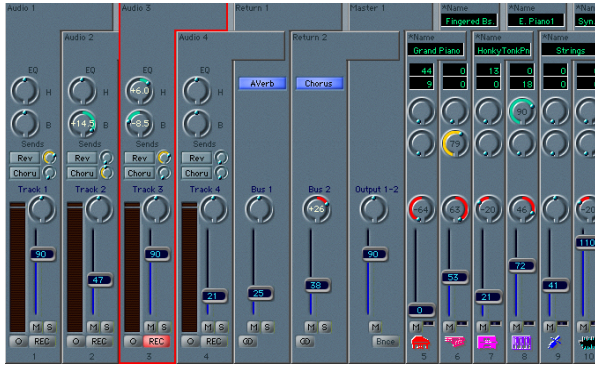


If you prefer working in musical notation to piano roll, or event list editing, you can edit your songs in the Score editor. There, you can view your sequences as conventional musical notation. You can insert, move, or transpose notes easily using the mouse. Logic fun offers a range of functions with which you can adapt

the appearance of the score to your liking, from the notes themselves, to the size of your windows.

Of course you can also print out your songs.You can also create a PostScript file, and continue to edit the scores which were created in Logic fun, with word-processing or layout programs.

1.4 GM Supported



If you use a GM-compatible tone generator connected to your computer, you can control its functions remotely from the Mixer window. Selecting sounds, controlling the volume, or adding chorus or reverb etc. is as easy as can be. Logic fun also supports the GS- (Roland), or the XG standard (Yamaha). With these devices, more sound and effect parameters can be remote-controlled, for example, the filter frequency.

The Mixer thus becomes your virtual mixing console on screen, allowing you to automate your GM device from Logic fun.

1.5 Multimedia

Logic fun can load and play digital videos in FunI format (Windows) or QuickTime format (Macintosh). The picture runs synchronously with Logic fun's song position. You can add

music to commercials, or videos of your vacation, without using a video recorder. Sounds or jingles start concurrently with the frame.

1.6 Graphical Interface

Logic fun features a clearly structured graphical user interface. All operations can be done quickly and directly, using the mouse.

You can open the windows, and place them anywhere on the screen. You can adjust all elements in the windows as you like; the windows can be enlarged or reduced. To make the most of your screen, you can open as many windows simultaneously as you want. Next to the track list in the Arrange window, for example, you can simultaneously open an Event list and Score editor for the same material.

As Logic fun plays the song for you, the notes e.g. are displayed in the Score Window. Whatever you hear, you see at the same time. If there is a wrong note, just fix it, while Logic fun continues to run. It does not get any easier than this.

Logic fun's menus are well organized and make sure that you only see the functions that you may need. This way, the menu lists remain orderly, and you can find whatever function you need faster.

1.7 About this Manual

- The headings in this manual are arranged according to the names of the functions in the program. This way, you can quickly find specific functions in the table of contents.
- Located in the appendix of this manual is an index, in which you can look up keywords.
- The Menu List, found in the appendix, offers an overview of all menu items.

- The glossary explains the meaning of specialized terms. If you do not find a term there, you can look it up in the index, and read about it in the corresponding section of the manual.

Chapter 2

Sound Cards and MIDI

Sound Card

Your sound card must support the *16bit/44.1kHz* standard ("CD quality"). Recording at lower than 16bit resolution is not possible, due to Logic fun's professional audio quality requirements. This also applies to the 44.1kHz sampling rate. Other sampling rates are not supported.

Full duplex or Overdub Mode

Ensure that your chosen sound card supports "full duplex" or "overdub" mode. "Full duplex" means that the soundcard is able to record, while playing back at the same time. This ability is really mandatory, even for the most basic of recording applications.

If you are still undecided on which soundcard to choose for your system, its full duplex ability should be one of the most important considerations.

If your current card does not support full duplex, you may be able to upgrade it using a more recent driver (depending on the hardware, of course). Be sure however, that it meets the 16bit/44.1kHz requirements for both recording and playback.

If your card supports full duplex, but only allows recording at lower than 16bit resolution, your recordings will suffer from poor sound quality. In this case you should disable full duplex operation using the "Logic Audio Device Setup" program (see page 26). This does mean that simultaneous playback is now disabled during recording, but Logic fun will now record at the full 16bit resolution—you really owe it to your ears.

Hard Disk

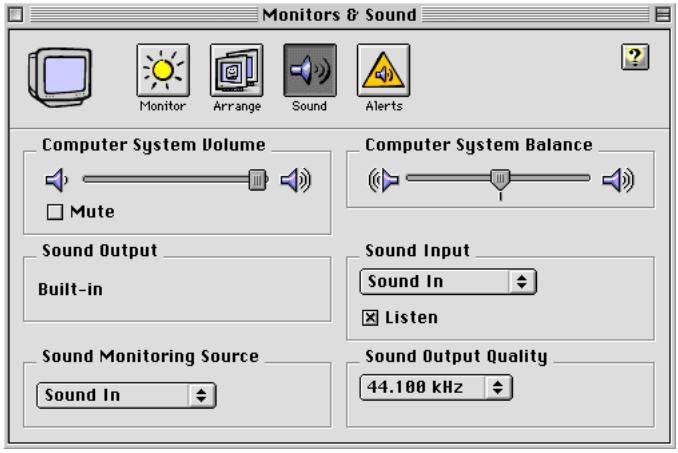
In order to successfully use Logic fun with audio hardware, you need a hard disk with an average access time no greater than 10ms , and a minimum data throughput of 3MB/s.

Modern hard disk drives generally meet these requirements and do not need any further attention in this regard.

Input Source and Level

Monitors & Sound Control Panel

To use the Logic fun AV functions, you need to select an audio input source from the control panel, and set the sample rate to 44.1kHz. If you are using the older control panel “Sound”, you also need to select “16 bit” and “Stereo”, and make sure that the sampling rate of 44.1kHz is selected. You cannot operate the system with 22.5kHz sampling rate or 8 bit depth.



Volume

The Volume sliders in the Monitors & Sound control panel are placed after Logic fun’s output (output object). This means that Logic fun’s output object can only control the full output dynamic range if the Volume slider in the control panel is set to

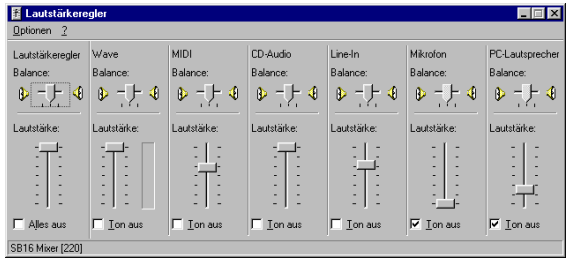
maximum. Please check this setting if you feel Logic fun's input or output is too low.

Volume Control

The Windows Accessory program "Volume Control" provides control of the following:

- Playback Level
- Record (input) Level
- Input source selection

It can be found via the Start menu: **Start** > **Programs** > **Accessories** > **Multimedia** > **Volume Control**, or on Windows 98 via **Start** > **Programs** > **Accessories** > **Entertainment** > **Volume Control**.



As an example, this illustration shows the control panel using the SoundBlaster AWE-32 sound card, by CreativeLabs. You will find similar utilities for hardware from other manufacturers.

The playback level of recordings is controlled via the "Wave" slider.

This control is placed *after* Logic fun's output (output object). This means that Logic fun's output object can only control the full output dynamic range if this slider is set to maximum.

You can also change to an independent mixer control that allows you to set the input level for each input source via **Options** > **Properties** > **Recording**.

Disable each input source that you don't plan to record from (usually everything except the line-in).

Hint

The line-in will usually give the best results. Make sure you avoid the sound card's microphone input, especially with cheaper cards. It is a better idea to use an external mic preamplifier, such as that on a mixing desk, and then record via the line input.

Hint

The Volume control can be accessed more easily if you check the option Show Volume Control on Taskbar in **Control Panel** > **MultiMedia** > **Audio**—this will place a loudspeaker icon on the taskbar, which will reveal a master volume control with a single click, while a double click will open the complete mixer.

Logic Audio Device Setup

The tool "Logic fun Audio Device Setup" (LADS), which can be activated from the *Logic* folder in the Windows *Start* menu, is of essential importance for the best possible setup of your audio hardware in Logic fun. Although Logic fun usually recognizes most of the currently available sound and audio recording cards, it is still better in most cases to optimize Logic fun to your individual audio setup, by using LADS. This is especially true, if several sound cards or a Multi-I/O card are installed in your computer.

Since LADS is automatically run during Logic fun's installation, you only have to start it separately if you encounter problems concerning the communication between Logic fun and your audio hardware, or after you have installed new hardware.

LADS—What It Is

LADS helps you to take care of the following tasks:

- Determining whether the installed audio hardware has been recognized correctly by the system.
- Enabling audio hardware in Logic fun.

- Fine-tuning, to help Logic fun to take full advantage of the performance capabilities of audio hardware and the computer.

Overview

LADS first analyzes which audio drivers are installed in your system, and includes all these in a list which you can choose from. These audio drivers are called *system drivers*. You can now create *Virtual Devices*, using entries from that list.

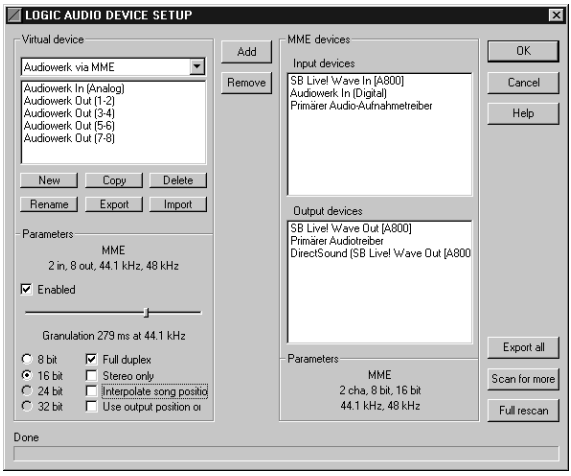
Please note: Only those system drivers which you have assigned to *Virtual Devices* are available for use within Logic fun. The major advantage of this principle is that in the case of most multi-I/O audio cards, each stereo connection pair has its own driver instance. This means that there are separate sytem driver entries for each stereo input and output pair for these cards. With LADS, several of these system drivers can conveniently be "built" into *one* Virtual Device, which can now be integrated into Logic fun's audio setup.

If there are two sound cards in your computer, but you would like to use the second card only for MIDIplayback, using its built-in MIDI synth,you can use LADS to make the audio driver of the first card the only one available for audio purposes in Logic fun. This would prevent the unnecessary display of the audio drivers of the second card (its MIDI driver will still be available).

How to Use LADS

Whenever you start LADS, it will check the computer for installed audio hardware. Depending on the installed devices, this can take some time.

All the control elements of LADS can be found in a single window. Basically, all you do there is to choose and configure those system audio drivers which are to be used in Logic fun.



LADS' user interface is divided into two areas: The "System devices" list contains all system drivers which are currently enabled in Windows' audio setup. In the area *Parameters* of the system devices (directly below the "System Device" area) you can see some of the properties of the driver, such as number of channels, bit depth and sampling rate.

You cannot add a driver containing zero channels to a Virtual Device.

On the left side there is the "Virtual Devices" list, which lists those drivers that are available for use in Logic fun. A double-click on a driver name or choosing "Add" after highlighting it adds this driver to the currently displayed Virtual Device. Clicking on "Remove" will remove any selected driver from the Virtual Device again.

Removing a driver (or any other action in LADS, for that matter) is only affects Logic fun, not Windows itself—the system driver will not be deleted, and is still available for other purposes under Windows.

In the "Parameters" area (lower left), you can define various characteristics of the Virtual Device. These are described below, and also in the online help. It is also possible to save the current LADS setup ("Export" button) and load it again later

("Import" button). A detailed description of all functions and their use can be found in the online-help for LADS, which can be activated by clicking on the "Help" button.

If you happen to make a mistake while using LADS, or if you are not sure if you chose the correct settings, you should click on the *Cancel* button to quit LADS. This way, all changes will be discarded. Clicking on the "OK" button will save the changes and quit LADS.

Also ASIO devices appear in the driver list.

Virtual Device Setup

Setting up a Virtual Device is quite easy:

1. Create a Virtual Device by clicking on "New".
2. Assign it a name by clicking on "Rename", and entering the desired name.
3. One after another, double-click on all system driver names in the *System devices* list which you want to be part of that Virtual Device.
4. Quit LADS with *OK* and start Logic fun. The new Virtual Device can now be selected in the *PC AV* section of Logic fun's dialog window *Audio Hardware & Drivers*.

Optimizing Driver Settings

The combination of operating system, sound card drivers and audio hardware often results in time delays, which can affect Logic fun's response time in a negative way. This delay, also called *latency*, is system-inherent and cannot be fully avoided. However, the "Granulation" parameter in LADS enables Logic fun to take better advantage of a fast computer and of high-quality audio hardware.

The optimization of this parameter is not absolutely necessary to provide full functionality in Logic fun. Only experienced users should use this function, since wrong granulation settings can cause problems during audio playback.

The default settings of this parameter aim at stable and trouble-free system performance. However, if you are using a fast computer and good audio hardware, you can diminish the latency of your system by experimenting with the *Granulation* parameter: A low granulation value will result in better sounding playback of volume changes. But if granulation is set too low, the computer and operating system might not be able to perform all tasks "in time", resulting in short dropouts and unwanted noises. So for proper optimization, it is necessary to find a good balance between low granulation and safe audio playback performance. Proceed as described below:

- Set up LADS as described above. Take your time!
- Lower the granulation value in steps of approximately 50 milliseconds.
- Quit LADS, start Logic fun and test the audio playback.
- If all audio is played backwithout problems, you can try to further diminish the granulation value. Don't forget the previous value.
- If dropouts or other problems occur during audio playback, choose a higher granulation value again.

Up-to-date PCI sound cards, like the Sound Blaster Live! allow a granulation of approximately 200 milliseconds. For professional PCI cards an even shorter value may work. Please note that the Granulation parameter is not available for DirectSound drivers.

Removing Settings from LADS

If you have changed settings in the Logic Audio Device Setup (LADS), you can remove your changes. By clicking on *Remove all* you can remove all settings made. You can restore the system to as it was right after Logic fun's installation by clicking on *Full Rescan*.

2.1 MIDI Installation

Interface Connection

Please consult your soundcard or MIDI interface manual for information on its correct connection. The most common ways to add MIDI functionality to computers are:

- Multiport MIDI interfaces, including separate devices like the Emagic's Unitor 8 / MkII or AMT 8.
- Sound card with MIDI interface (Windows).
- via a General MIDI module or keyboards' integrated interface, usually labeled as "To Host".

MIDI Cabling

MIDI Inputs/Outputs

If your computer has an internal or external MIDI port, or has a MIDI capable soundcard connected, hook the keyboard "MIDI Out" to the computer's "MIDI In" (on the interface, soundcard etc.). If the keyboard can generate its own sounds, connect the computer's "MIDI Out" to the keyboard's "MIDI In". If your computer (or the MIDI device) offers more than one MIDI output, connect any other tone generators to these. If the computer only has one MIDI output, you need to connect the second tone generator's MIDI In to the keyboard's MIDI Thru port. A third device can be connected to the second's MIDI Thru, and so on. The MIDI Thru port always delivers a copy of the signals coming into the device's MIDI In. It is preferable, however, to use a direct connection from a computer's MIDI Out to a device, rather than chaining too many devices, one after another. This is because timing problems may occur in the chain, if many MIDI commands are sent in a short time, due to the slight delays introduced by each MIDI In to MIDI Thru transaction. If your computer also has

several MIDI inputs, you can connect the MIDI outputs of other MIDI expanders there.

When using Editor/Librarian programs like Emagic's SoundDiver, it is important to connect the MIDI Outs from other keyboardless expanders to the multiport interface's MIDI inputs, so that their data can be sent to the computer. For use with Logic fun, however, it will be sufficient to simply connect the keyboard MIDI Out to the computer's MIDI In, and wire the computer's MIDI Output to any tone generating devices.

MIDI Local Off

If your keyboard has an internal sound source, it is important that you stop the keyboard from generating sounds directly from its own keyboard. If you buy a new keyboard that is to be used without a sequencer, and connect it straight to an amplifier, you would expect the device to make a sound when you press its keys—in other words the keyboard is connected to the sound generator. However, you do not want this when using the keyboard with a sequencer. In this scenario, the keyboard is used as the computer's input device, while the computer will play the various connected tone generators, be they the keyboard's own sound generator, or any other connected sound modules. If you wanted to control and record another sound module with your keyboard, its own sounds would get in the way—which is why the keyboard must be separated from its own internal sound generator. This function is known as "Local Off", and can be set directly at your keyboard. The sequencer will speak to your keyboard's tone generator just like any other connected, keyboardless sound module.

If you cannot find the "Local" function under your keyboard's MIDI menu, consult its manual as how best to proceed for sequencer use. Some keyboards allow you to select from among "Local", "MIDI" or "Both" for each of their so-called "Parts"—in this case, the "MIDI" setting is equivalent to "Local Off".

Keyboards and Expanders with "To Host" Interface

A "To Host" interface, which allows a direct connection to the computer, can be found on many of the more cost-effective MIDI sound modules, as well as on many entry-level

keyboards. This in effect is a simple integrated MIDI interface, with one MIDI In, and one MIDI Out for the computer. An instrument with a "To Host" interface is controlled directly; the MIDI In and Out serve as MIDI connections *for the computer*, to allow further instruments, such as another keyboard to be connected. This proves very cost-effective for entry level setups, which may include only one keyboard and another sound module. The expense of a dedicated computer MIDI interface, or card is not initially required.

If you are working with such a module, first install the driver software supplied by the manufacturer.

Connect the keyboard's MIDI Out to the sound module's MIDI In, and the module's MIDI Out to the keyboard's MIDI In (assuming it can generate sounds). Connect the "To Host" interface to the computer, usually to a serial port.

Chapter 3
Getting Started

3.1 Windows

Getting Started With Logic fun

Double-click the Logic fun icon, or select Logic fun from *Start>Programs>Emagic>*Logic fun, in the Start Menu, to launch the program. Your MIDI interfaces and your sound cards are recognized at startup, and all internal connections and settings are automatically established. If you have installed several MIDI cards in your computer, you can use any of them.

Tip

Each time Logic fun starts up, it searches for installed MIDI interfaces so that a new card is automatically available the next time Logic fun starts up.

After a short time, you will see an empty Arrange window, and the main menu bar.

Selecting the MIDI Out Port in the Program

You can select the MIDI port for each track separately. To do so, select the desired track, and go to the Instrument parameter box, located just below the Toolbox, on the left side of the Arrange window. Click-hold in the field just below the "Channel" assignment field. You will see a flip menu listing all the MIDI out ports available on your system. Select the one you want, and release the mouse button.

Testing the MIDI Connection

You should then test to make sure that the connections between Logic fun and your MIDI system are working smoothly.

First, test to see if your MIDI keyboard transmits.

- Open the Transport Window by choosing “Open Transport Window” in the window menu or press “F11”.
- You can see the MIDI monitor in the upper right-hand corner of the Transport window.
- If there is no activity, the display will show “No In/ No Out”.

- Now play a couple of notes on your MIDI keyboard.
- In place of “No In”, the received events should now be displayed.
- If this is not the case, test the following:
- Is the MIDI-Out connection of the keyboard connected correctly with the MIDI-In of your computer?
- Is the cable working properly?

Test the MIDI Out

Now test to see if Logic fun is sending MIDI events to your tone generators.

- Call up **File> Open**, and select the Tutorial Song (TUTORIAL.LSO) from the file selection box.
- Set the MIDI out port for each of the tracks, as described above.
- Click on the PLAY button in the Transport Window or press 0 on the numeric keypad of the computer.
- The Tutorial Song will run, and the second line of the MIDI indicator should show the sent events.
- If this is not the case, test
- whether you are using a good MIDI cable.
- whether you connected the MIDI-In of your tone generator to the MIDI-Out of the interface.

File Extensions

Logic fun can load or save files in both its own native file format, or as Standard MIDI files, for use with other programs. You can recognize the type of file from the following extensions:

Type of File	Extension	Description	Created from
Song	*.LSO	Song File	Logic fun when the menu field "Save" is called up in the file menu
Standard MIDI File	*.MID	Song file in the standard MIDI file format	external sequencers can be imported into Logic fun or from Logic fun with Export

Logic fun and Multitasking

Logic fun can be operated in conjunction with other MIDI programs. If you switch over to another program, Logic fun continues to run in the background. For this to work, your MIDI interface must use a *multi client* driver. If you have any questions about this, contact the manufacturer of your interface for information.

Launching Logic fun

The installation program automatically creates a program group "Logic fun" under **Programs** > **Emagic**, in the Start Menu. Here you will find Logic fun itself, and the de-installation program. You may launch Logic fun by simply highlighting the program icon in this menu.

Launch Logic fun Automatically

If you add Logic fun to the program group "Startup" from the Start Menu, then Logic fun starts up automatically when Windows is launched. Create a shortcut to Logic fun in this

folder. You may also drag the prgram to the Desktop instead, if you prefer to launch from there.

You have now correctly installed Logic funLogic fun, and have set it up to connect with your MIDI system. Everything is now ready for you to work through the tutorial. This series of exercises will help you to become acquainted with Logic fun.

3.2 Macintosh

Launching Logic fun

This is how you usually start up Logic fun:

1. Double-click the program's icon, or
2. Click on the program's icon and choose **File**> **Open**, or press ⌘O.

As long as you are working through the manual, we recommend that you start Logic fun directly with the Tutorial Song.

3. Double-click the Tutorial Song icon.

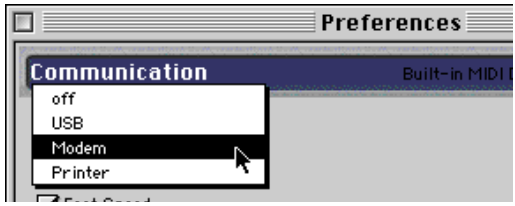
Logic fun will launch with the Tutorial Song loaded.

Choose MIDI Connection

First, let Logic fun know which port of your Macintosh is connected to your MIDI interface.

- In the Option Menu, call up **Settings** > **MIDI Interface Communication...**

The Global Preferences dialog box appears.



Parameter for the MIDI interface ports

You can activate one of three ports here:

- Choose the USB, the modem port or the printer port.

When you have chosen one port, Logic funLogic fun automatically turns off the other ports.

Logic fun tests automatically to see whether a MIDI interface is connected to the specified port and is operable. If no MIDI interface is recognized, a dialog box appears.

Starting up without MIDI interface: If you want to test Logic fun "dry"—that is without MIDI interface and tone generator—simply disable all ports by choosing "off."

MIDI Time Piece

Logic fun directly supports the "MIDI Time Piece" (MTP) interface from the manufacturer "Mark Of The Unicorn", as well as MTP-compatible interfaces:

- Enable the options "Check For MTP" and "Fast Speed" in Global Preferences.

Important!

Unlike LOGIC, Logic fun cannot separately address the different MIDI Outputs of MTP compatible interfaces.

The "Fast Speed" mode can be switched off—for instance with longer SySex transmissions, if you have any problems with MIDI Communications.

Testing the MIDI Connection

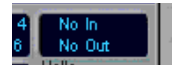
You should now make sure that the connection between Logic fun and your MIDI system is working properly.

1. Launch Logic fun.

First, test to see if your MIDI keyboard transmits.

2. Open the Transport Window by selecting Open Transport in the window menu, or press ⌘7.

You can see the MIDI indicator in the upper right-hand corner of the Transport Window.



If there is no activity, the display will show “No In/ No Out”.

3. Now play a couple of notes on your MIDI keyboard.

In place of “No In”, the received events should now be displayed.

If this is not the case, test the following:

4. Is the MIDI-Out connection of the keyboard connected correctly with the MIDI-In of your computer?

- Is the cable working properly?
- Did you choose the correct port in Global Preferences?

Test the MIDI-Out

Now test to see if Logic fun is sending MIDI events to your tone generators.

1. Choose **File> Open**, and select the tutorial song in the file-selection box.

It is loaded and displayed on the screen.

2. Click on the PLAY button in the Transport Window, or press 0 on the computer’s numeric keypad.

The tutorial will run, and the second line of the MIDI indicator should show the sent events.

If this is not the case, see if you have enabled the modem port or the printer port in Global Preferences. If you have not, enable the port to which your MIDI interface is connected.

Autoload Song

You can select a song with which Logic fun is automatically loaded. This song can contain your own preferred song settings and window layouts.

Proceed as follows:

1. Create a new song.
2. Adjust the song settings according to your preferences.
3. Save the song with the file name “Autoload” (quotes excluded).

Tip

To save the song, select “Save” in the file menu and enter “Autoload” in the dialog box.

You can also create an alias for any song, and start Logic fun directly by double-clicking the alias.

Start Logic fun automatically

You can have Logic fun open automatically every time your Macintosh starts up. If you want, you can also have a song start automatically.

Proceed as follows:

1. Create an alias of Logic fun, or the desired song.
2. Drag the alias with your mouse into the folder “Startup Items”, in the system folder.

Logic fun will be started up automatically the next time you turn your system on.

Logic fun is now properly installed and configured for your system.

3.3 MacOS/Win: Differences

Logic fun for Macintosh and for Windows is basically the same. The controls for both versions are practically identical. However, because of some differences between the operating systems, there are some slight variations in Logic fun between the two platforms.

When you first look at it, you will notice that we have used two symbols to identify the Macintosh and Windows versions:

- This symbol identifies a function that is only on Windows.

- This symbol characterizes a function that is only on Macintosh.

Keyboard and Mouse

Unlike the Macintosh mouse, a Windows mouse has a right mouse button. Also, the position of some special keys is slightly different between the systems.

There is a table with explanations for the symbols used in this book for hot keys. This is located in the section, *Hot Key Symbols*.

Look at the table and note which keys and/or mouse functions for Windows are replaced and how.

Function	Logic fun Windows	Logic fun Macintosh
Multiple selection	⇧ + click	⇧ + click
Mouse copy functions	ctrl hold down	⌥ hold down

Function	Logic fun Windows	Logic fun Macintosh
Using tools	right mouse button	⌘ and mouse
Specific mouse functions	shift + mouse ctrl + mouse alt + mouse	⇧ + mouse ⌘ + mouse ⌥ + mouse

Key Commands

Tip

The predefined function codes for menu items are, as usual, displayed directly behind the menu item. In addition, you can define your own function codes for almost all of the Logic fun functions. These are also displayed in the menus.

Exchanging Songs Between Mac and PC

Unlike Windows, Macintosh does not use file extensions. You can, however, transfer songs back and forth between Macintosh and Windows versions without any problem. When you are transferring a song from a Macintosh to a Windows version, it is important that you add the file extensions, which are discussed above in the section named File Extensions. You can do this either on the Macintosh or on the PC, when you are finished.

Songs created with Logic fun for Windows can be opened in Logic fun for Macintosh under “Import.”

Menu Bars

The menu bars of Logic fun for Windows and Logic fun for Macintosh are similar. While the Macintosh version has local menus in the different windows, the main menu of the Windows version changes accordingly.

Chapter 4
MIDI Tutorial

This chapter introduces you to the features of Logic fun by using examples. It touches upon all of Logic fun's important functions. You will learn, for instance, how to arrange a song, record a sequence, or prepare your arrangement for printing.

In order to follow the examples you should:

- install Logic fun
- have a General MIDI tone generator or an equivalent multi-timbral device connected to your computer's MIDI interface.

4.1 Adapting the Tutorial Song

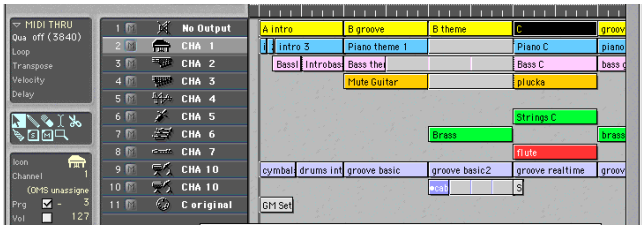
As you work through this chapter and the next, use the provided tutorial song. This song is configured for general MIDI tone generators. Of course, you will not have any problems using the song with tone generators that do not follow the GM specification. The only difference when using a non-GM device, is that you will have to set the sounds and the MIDI channels manually the first time you run the song, and you may have to transpose some tracks. If this is necessary, be sure to save your changes, so that you don't have to redo your edits.

Load the Tutorial Song

You can start the Tutorial Song by

- double-clicking the "Tutorial" song icon in the Logic fun folder, or
- starting Logic fun, call up **File> Open**, and choose the Tutorial Song.

You should now be looking at the following screen:



Arrangement window with tutorial song

General MIDI Tone Generator

The program change, volume, and pan settings for this song are optimized for GM tone generators, and are transmitted to your device via MIDI. This happens automatically, if you play the song from the beginning. These settings are found in a separate sequence at the beginning of the song. Since delays can occur with some synthesizers when they receive program change data, you should then mute this sequence.

To mute the program changes, select the mute tool from the toolbox, and use it to click on the sequence named “GM Set-Up”. The sequence is now shown reversed, and a small circle is now in front of the name.

Non GM, Multi-Timbral Tone Generators

If you do not have a, you need to consider the following points: One prerequisite is, for example, that the sounds listed in the table are available. If necessary, find similar sounds in your own device.In addition, the drum kit’s note assignemt needs to match that of the GM drum map(previously Roland drum map), otherwise, the percussion passages will be reproduced with the wrong drum sounds. Adjust the appropriate reception channels in your multi-timbral synthesizer, and assign the listed sounds specified in the table. If you need to rearrange

your Drum kit, consider the percussion instruments listed in the table, as well.

Sounds and MIDI Channels

MIDI Ch.	Function	Sound	Possible Name	Vol	Pan
1	chord	combination piano/E piano	Electric Grand, LA Grand	110	0
2	bass	normal E bass	Pick Bass, Rock Bass, E Bass	127	0
3	accents	muted E guitar	Mute Guitar, Slap Guitar	127	R
4	melody	long dying away melodic sound	Synthbell	100	0
5	carpet	string section	Slow Strings, Pad	90	0
6	accents	wind section	Brass Section	80	L
7	solo	flute-like solo sound	Stream, div. "Solo"	120	0
10	drums	GM-compatible drum set	GM Kit	110	0

Drum Kit

Here is a list of percussion instruments used by the tutorial song, and their locations. (C3 = No. 60).

Note	Instrument
C1	Kick
D1	Snare (normal)
E1	Snare (hi)
F1	Tom lo
F#1	HHT closed
G1	Tom mid

Note	Instrument
G#1	HHT closed short
A1	Tom hi
A#1	HHT open
C#2	Crash
D#2	Ride
E2	Ride Bell

Tip

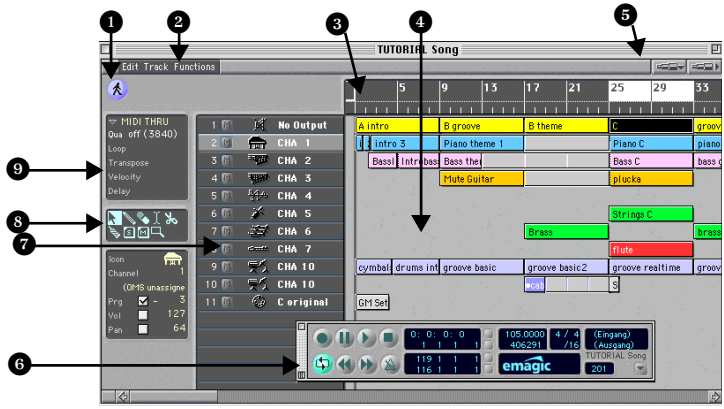
Since transposition and relative volume are only automatically correct with GM sounds, you should let the song run through a couple of times, and see how it sounds with your instrument, after you have assigned compatible sounds. Go ahead and try opening **Window** > **Mixer** and use the faders to set the volume, if needed.

Starting the Song

You probably want to listen to the Tutorial Song first. Just push [=] on the numeric keyboard. To jump back to the beginning of the song, push [enter], on the numeric keypad, twice.

4.2 Overview

After you open the tutorial song, you will see the following components on the screen. This example is on a Macintosh:



❶ **Catch Button** This is where you control the Catch function of Logic fun. With Catch turned on, the screen follows the song position.

❷ **Main menu bar** This is where you find global functions, e.g. for saving and loading songs or for opening various windows.

❸ **Bar ruler** The bar ruler displays MicroLogic's time axis for you; here you can set markers with the mouse, or jump to any desired place in a song.

❹ **Arrange area, with sequences** A track may contain any number of sequences. Sequences contain the actual data, such as notes, controller data, etc. The data can be edited in a variety of ways.

❺ **Zoom buttons** If you click on the telescope buttons, you can alter the magnification factor of the window's contents and thus adapt to your screen.

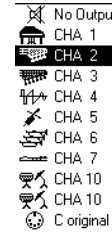
❻ **Transport window** The transport window performs the same functions as the transport field, but can be located at any desired point of the screen and is variable in size. A "slider" permits rapid approach from far removed song positions.

❼ **Track column** It is in the track column that you determine the MIDI channel for each track. It is likewise here that you can swap tracks, insert them or delete them.

❽ **Toolbox** You can select a particular tool from this box in order to be able to edit sequences, notes or other data in a variety of ways.

❾ **Sequence parameter box** The sequence parameter box is where quantization, transposition and other aspects of the playback for a sequence can be non-destructively edited.

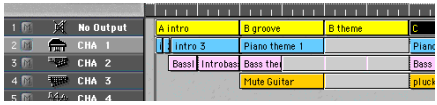
4.3 Tracks and Sequences



To start with, Logic fun offers the usual elements found in a Windows or Macintosh program—the main menu bar, and various windows that you can open and close, move and adjust to size. After you load a song, you should see the Arrange window, as seen above. This is where you record and arrange your songs. Like a multitrack tape machine, Logic fun also works on the

basis of tracks. You can see and access the tracks in the Arrange window.

Narrow objects known as “sequences” are found on the tracks. A sequence represents an individual recording, or “take”. Each time you record, a sequence will be created in the track you recorded to. The sequence is like a container, so to speak, which contains the actual MIDI data. This data can be notes as well as control data, program changes, or even sysex for your MIDI tone generators.



Tracks with sequences

You can see that with Logic fun, there are many more possibilities than with a traditional tape machine.

Information Track and Instruments

Take a closer look at the “track plan”.

On track 1, you can see the sequences “A intro”, “B groove”, and subsequent entries. “No Output” is displayed in the track column of track 1. This is a “dummy track”, which does not contain any notes. The sequences on this track are only markers for the various song parts and, for the time being, are empty. As you continue to work through this section, you will learn about other advantages to using an information track in your own songs..

Instruments for the tutorial song are found on the remainder of the tracks: piano on track 2, bass on track 3, guitar on track 4, and so forth.

The MIDI channel for each track is visible in the track column. In addition, an icon is displayed there for each track. This shows which instrument is in use.

4.4 Transport Functions

The second, smaller window, which Logic fun shows after loading the song, is the Floating Transport window. It is laid out like the control surface of a tape machine, and is used for operating the *Play* and *Record* functions. In addition, you can change the tempo settings and engage *Cycle*.

Let's start the song. Instead of clicking the *Play* button, you can also press [0] on your numeric keypad.

You can hear that the song is not completely arranged, and still contains some inconsistencies. As you continue to work through this chapter, you will finish arranging the song, add a few details, and correct any mistakes.

In this section, you will learn to start and limit passages, and listen to places in the song—in short, to "navigate" in the song.

- Try out the buttons in the upper row of the transport field. You already are familiar with functions from tape machines or cassette recorders.

Start Song Positions

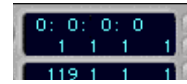
There are several ways to jump to specific song positions.

In the upper field of the Arrange window, you can see the bar ruler.

- Click at various places in the lower field of this ruler; you immediately jump to that position. At the same time, a gray line appears. This is the song position line (SPL)—in the most generalsense, it is comparable with the position of the tape on a traditional recording device.

- Engage Play. Now click on the bar ruler, and hold the left mouse button. You can move to any position, and listen by moving the song position line.

If you know to which location you would like to go, you can enter this position directly with the “locators”. To the right and next to the transport buttons, Logic fun shows the current song position, in both absolute time and as musical measures.



- Click on the song position indicator, and hold the mouse button. Place the song position at “17 1 1 1” and start playback. Logic fun now plays starting at measure 17.

Display Current Song Position

If you manually enter song positions, the window view that you see will not necessarily correspond to what you hear. You can, however, guarantee that these two things will always match.

- Click on the catch button on the upper left in the transport field, and the window excerpt follows the song position line again.

The window viewwill update, as soon as the song position line leaves the visible field, only if the catch function has been enabled:

Zoom a Window Excerpt

You can view the entire song in the window by using the two telescope buttons on the upper right edge of the window:

Click on the left half of the horizontal zoom button until you can see all of the sequences in the window.

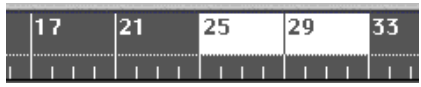
Cycle Mode

In cycle mode, you can cause a section of the song to repeat for as long as Play is engaged, in order to edit a sequence, for instance, or record new tracks in a specific section of the song. Two “locators” can be used for this. These are position markers

that mark the left and right boundary of a loop. They are found directly to the right of the bottom row of transport control buttons.

First, turn on the cycle mode. To do this, click on the cycle button in the Transport window. It is now displayed blue.

Pay attention to the cycle bars in the measure ruler:



You can move this by grabbing it in the middle. The right and left boarders can be changed bygrabbing one of the bottom corners of the bar, and moving it. When Cycle is engaged, pressing Stop twice will take the SPL to the beginning of the cycle zone, rather than the beginning of the song..

Selection

Let's become more familiar with the selection options. In order to edit objects in Logic fun—be it sequences or notes—we have to first select them. All functions and operations are carried out only on those items that are highlighted or "selected".

- Click on a sequence. The sequence will highlight, indicating it is selected. Let's go one step further by selecting several sequences.
- Hold ⇧ down, and click on Anwältin: second sequence. This is additionally selected.
- While pressing the ⇧ button, click on the gray area, keep the mouse button pressed and drag a "lasso" over some other sequences.
- The selection is now reversed—all sequences *except for* those previously selected are now selected.

Try out the selection functions with other sequences. You are now familiar with the most essential Logic funn techniques. In 4.4 *Selecting Objects*, you can learn more about the selection functions.

Quantize

Quantizing is the rhythmic correction of notes, by means of a grid. Logic fun thereby moves all of the notes exactly to their correct grid positions. We will test this by using the "Groove Real-time" sequence as an example. The timing in this sequence is slightly off, so you will use quantization to correct it.

You can hear this most clearly by enabling the Metronome.

- To do this, click on the metronome button in the Transport window. It is on the lower right. This is how to enable the metronome.

Logic fun now sends a metronome note on channel 10 to your GM tone generator. Solo the drum sequence, as described above. You can now hear that the groove is not completely clean.

- In the *Sequence parameter box*, click-hold in the line *Qua*. From the resulting flip menu, select the setting *16D Swing,* and release the mouse button. The quantizesetting is now displayed in the *Sequence parameter box*. If you play the sequence now, it sounds rhythmically perfect.

- Go ahead and try out other quantize values, for example *16*, *24*, or *7-tuplet*, in order to hear the effects of quantizing

Look at the quantize settings of the various song parts. You will notice that the swing factors—characterized by the alphabetic character—are chosen differently. The groove factor can therefore be varied so that choruses sound like they have more swing in them than verses do, for example.

Loops

Loops are automatic repetitions of a sequence. The loop function enables you to repeat a passage as many times as you wish, without having to copy it.

Let's add a cabasa to the tutorial song. This cabasa is only in the chorus and in section C, but is no longer in the grove section. A sequence by the name of *cabasa* is already on track 10; however, it is still muted.

- Click on the sequence with the mute tool. The sequence is unmuted, and selected.

Now turn the loop in the *Sequence Parameter box* to *ON*. You should now see the following screen:

This sequence will now be repeated until the end of the song. Of course, we want to stop it before then.

This is how it works: a loop is repeated until it comes across another sequence on this track. To "turn off" the cabasa at the desired place, place an empty sequence at the beginning of section C.

Select the pencil tool, click in the cabasa track at position 25 1 1 1. Logic fun inserts a new, empty sequence. The screen should now look like this:

The cabasa will stop playing at measure 25.

Finally, we will copy the new cabasa part to the groove section.

While pressing the ⌂ key, click on the cabasa sequence, and the "stop" sequence. They have now both been selected.

In the Windows version, press the ctrl key. In the Mac version press the ⌥ key. Click on the cabasa sequence, and drag the

entire section to measure 33, while keeping the modifier key pressed. The entire passage, including the stop sequence, will be copied, and you're done.

The Toolbox

In the toolbox, you may select the desired editing tool, by clicking on it with the mouse. In the Windows version, you may select a second tool with the right mouse button.

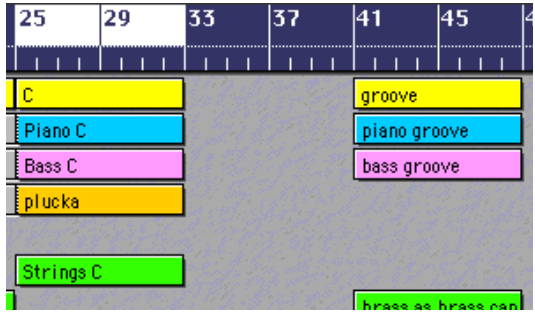
Mouse Arrow

Using the mouse arrow—the standard tool—you can move sequences onto other tracks, or to other positions in the Arrange window.

Let's insert a B part in front of the groove section of the Tutorial song. Half way through the section, we will transpose the B section by a semitone. To do this, the groove part must first be moved back eight measures:

- Press the mouse button and rubber band select all of the groove section sequences. Grab them, and drag them eight measures to the right. The position display in front of the information line serves as a reference point. The information line should read "41 1 1 1" when you release the mouse button.

The arrange area should look something like this:



Undo

Did you make a mistake, like not selecting all of the sequences, or did you move them to the wrong place?

If so, this is a good time to become acquainted with one of the most important functions in Logic fun: “undo”. With the “undo” function, you can always undo the last editing step.

- Select **Edit> Undo**. The sequences will be reset to their original positions. You can now put them where you want.

Copies of Sequences

We will now copy the section “B theme” to the empty area created when we moved the “groove” section..

Rubber band select the sequences of the “B groove” section. Press ctrl (Windows) or ⌥ (MacOS) and click-hold on one of the selected sequences. Move the mouse to the right. A copy of all of the selected sequences is now dragged with the mouse pointer. Set these to measure “33 1 1 1”, where they will fill the space left by moving the “groove” section. The newly created sequences will have the names of the originals, with the text “*copied” appended to the end of the name. You decide whether or not this extension should appear in the sequence’s name by going to the **Options** > **Settings** > **Global Preferences ...** Place an X in fthe checkbox to the left of the line “Add ’Last Edit Function’ to Sequence Name”, if you want a description

of edit operations to edited sequences. If not, remove the X from the box.

Scissors

Now, let's cut the sequence we just copied in half, using the scissors tool. By doing this, we will then be able to transpose the second half of the section, while leaving the first half in the original key.

- Rubber band select the sequences that were just copied.
- Select the Scissors tool by clicking the scissors symbol in the toolbox. The mouse pointer is now displayed as ascissors within the Arrange area.

Click on one of the selected sequences, and hold the mouse button down. If you hold the mouse button down, and move the mouse left or right, you can adjust the exact edit position by means of the information line. Choose the position "37 1 1 1", which is measure number 37. When you release the mouse button, the sequences are cut. Now, you can transpose the second half of the section.

Rubber band select measures 33 to 49, to select the corresponding passages.

Transposition

Look at the parameter *Transpose* in the *Sequence Parameter box*. Itcontains an aserisk (*). This means that the selected sequences already show different transposition values. Don't worry, the sequence parameters always work relatively; therefore, the transposition differences are maintained.

- Grab the asterisk in the transpose line, and move the mouse upward until the value "+ 2" is displayed.
- Release the mouse button. The passage has now been transposed up a whole tone.

Place the song position line to measure 37 and listen to the result.

It does not sound particularly good, we still need to do some fine-tuning.

The percussion sounds somewhat strange at first. This is because you unknowingly transposed the percussion sequences, causing the drum note placement to shift. You will have to undo the transposition for the percussion tracks. To do so, selected the drum sequnces, and drag the "+2" transpose setting down, until the line is empty. This indicates no transposition.

Also, the bass in the copied B-section is only a loop that was not transposed, because it is merely a pointer on the real sequence, which was not affected by the edit. Therefore, we will have to copy the the original bass sequence to that location and transpose it.

Your First Recording

The final exercise in the Arrange window is to make your first recording. To make it fun, you can play a solo over the C-section. There is already a flute solo there, this, however can certainly be replaced by a better solo. Since you may not play the solo perfectly on the first try, we'll set Logic fun so that you can record several "takes" from which you may select your favorite.

Step One: Delete the old solo.

- Select the eraser from the toolbox and click on the sequence "Flute". It will be deleted.

Now you can preset the cycle and record parameters. You will-probably want a bit of lead in, before the solo starts, to get ready to play. You therefore need to extend the cycle to be longer than the actual recording, that is from *23 1 1 1* to *33 1 1 1*. This gives you two extra measures before section C, which starts at measure 25.

If you would like to hear the metronome via MIDI:

- Open the **Options** > **Settings** > **Recording Settings** window.

Enable *MIDI click*. The metronome is sent on channel 10—the drum channel.

- Confirm by clicking *OK*.

Let's Record!

- Click in the track list on track 8—the one with the small flute icon. This selects it as the recording track. You can now play the flute sound from your MIDI keyboard.
- You can select other tracks to try them out—Logic fun automatically addresses the right instrument (MIDITHRU). Finally, switch back to track 8.
- For practice, you can now simply start play by pressing 0 on the numeric keypad, or by clicking on *Play*. If the solo in E major is difficult for you, transpose the "MIDITHRU" simply by *transposing* -4 to C major. "MIDITHRU" always appears in place of a sequence name in the Sequence parameter box, when you click on an empty space in the Arrange window. Any settings you make to the Sequence parameter box now will be applied to any subsequently recorded sequences.

- When you are confident enough to record the solo, begin the recording by clicking * on the numeric keypad, or by pressing *Record*.

The count-in of one measure, starts, then the cycle zone will play repeatedly and Logic fun will record. You can play your solo now.

- Let Logic fun continue running. After reaching the right cycle point (measure 33), the SPL will jump back to the left cycle point (measure 23). At measure 25, the recording continues and you can record some more notes if you like. Press the Stop button when you're done.

Saving the Song

Here's how to save the tutorial song, with your new solo:

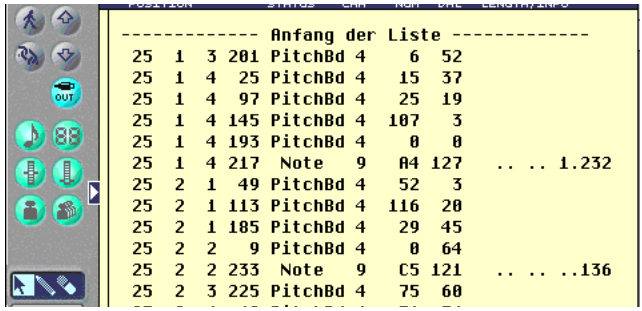
- Choose **File> Save As...**, and enter a new name for the song to be saved as, for instance, "Tutsolo". When using Windows, Logic fun automatically assigns the extension ". LSO".

Load the initial tutorial song for further excercises.

4.5 Event List

In the event list, you can see all MIDI events of a sequence displayed as an alphanumeric list.

- Open the Event List for the sequence, "flute", by double-clicking with the right mouse button (Windows), or by holding ⌥ down (Macintosh), on the sequence.



The *status* column displays what type of event it is. Besides the notes, the sequence contains other types of events. You can view only certain types of events by using the filter buttons for various types of events.

Click on each of the buttons, except for the one showing a slider at the bottom of its range, so that they are displayed in dark gray.

All that is left in the event list is the control change events.

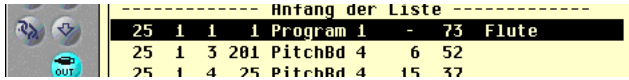
- When finished, enable the view for all of the types of events again. As you click on each button, the events of that type will re-appear in the list.

We will now insert two program changes in the solo, in order to change from a flute sound for the solo in the first half,to a synthesizer sound for the second half..

The solo begins at measure 25. First, we place the program change for the flute at measure 25.

- Set the song position line to 25 1 1 1 in the Arrange window or the transport window. In this way, you determine the position for the event to be inserted.
- Select the Pencil tool, and use it to click on the program change symbol. (In the Windows version, you may simply click with the right mouse button on the Program change button in the Event List).

A program change is inserted at position 25.



The program number is in the *VAL* column. Set this to 73 on a GM tone generator. If you are not using a GM tone generator, find a program change that can choose a flute sound.

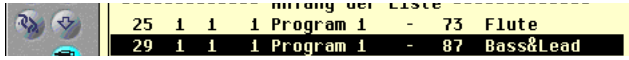
Now, we will inset a second program change:

- Put the song position line to position *29 1 1 1*, and click on the *88* symbol again.

Choose *value* 87 with GM tone generators, or a program change that selects a synthesizer solo sound.

- Switch to the arrow tool again. Filter the view for all event types, except for the program change events.

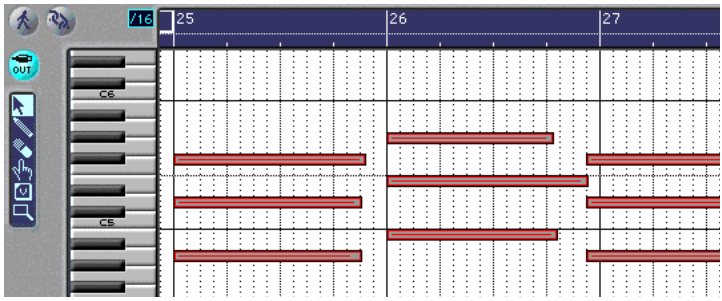
Your event list should look like the following:



If you play the solo now, the second half will have a different sound. The next time it plays through, the program change at the beginning of the solo, switches again to the flute sound.

4.6 Matrix Editor

The Matrix editor can be compared to an Arrange window for notes. Unlike the Arrange w indow, notes in the form of bars are shown, instead of sequences.



This picture shows the Matrix window for the sequence "Strings C".

- Open the Matrix editor by holding the ctrl button (Windows) or the ⌥ button (Macintosh), and double-clicking the sequence "Strings C".

You can see a keyboard along the left edge of the Matrix window. By using this keyboard, you can see the pitch of the notes in the display. A chord is represented by a group of overlapping bars. You can easily recognize that the note lengths of the second chord are unequal. Also, there is a wrong note in the 4th chord.

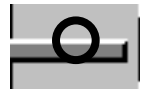
Look at this sequence in the Event List as well, by choosing **Windows > Open Event List**. These inconsistencies are not so easily recognizable. Close the event list window again.

- Selectnotes from the first chord by rubber band selecting it.
- Now, grab the lower right corner one of the selected notes, and drag it to measure *26*, so that the end of the bar connects with the beginning of the next chord.

Any edit to the length of one note, will affect all other selected notes equally in the Matrix editor.

- Repeat the process, to lengthen each chord so that it comes up to the beginning of the next. This will create a *legato* effect on playback. Choose a larger zoom level to better be able to edit the events.

The wrong note should now be deleted.



- Select the eraser from the toolbox, and use it to click the short note at position 28 1 1 1. The note will disappear.

You are now done editing the strings sequence. Practically every sequence in the tutorial song contains slight incongruities, which you can easily repair in the Matrix editor. Select one or two more sequences and edit them as you did with the String part.

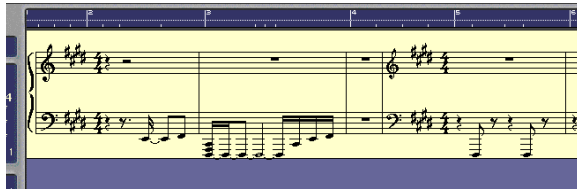
You will probably notice a big difference when optimizing the lengths of bass sequences.

Tip

4.7 Score Editor

Note events can be represented as notation, and can be edited in the Score editor. You can simply use the Score editor, as well as the other editors, to correct MIDI events.

- Open the Score editor for the sequence “Bass theme”, by double-clicking on it.



The representation of notes is indeed “mathematically correct “, however, it’s currently barely readable—transposition, key, and a lot more must be edited. Let’s go ahead and shape this sequence so that it is ready to print.

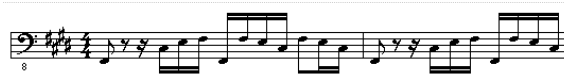
Display Parameter Box

Click the check box in the left parameter area next to the term “Bass theme”. This opens the Display Parameter Box.

Style

The Display Parameter Box contains two functions that you can use effectively to correct the representation of notes. One of these is the style. There are 3 preset styles for the most commonly used transposition of display.

From the Flip menu “Style” select the style “Bass”. The score looks better immediately:



Text

For printing purposes, you may want to name the note system. Of course Logic funLogic fun allows you to input text in the Score editor.

- Select the text tool from the toolbox and click onto the field above the clef. A text input box opens. Type “Bass” here, and press ⏎. The text will appear above the notation system; you can move the text in small increments with the mouse.

Yoiu can change the appearance of the text by using **Options> Score Font**.

Print

If you have connected and installed a printer onto your computer, then you can immediately print the displayed page.

In the File menu, choose the menu option **Print**, and confirm by clicking OK.

In a few minutes, you should be holding a printout of the page in your hands.

Chapter 5
Using Logic fun

This chapter summarizes Logic fun's general operating functions. But first, a quick word about this manual.

5.1 Conventions of this Manual

Menu Functions

Menu functions are written in this font: **Function**.

For functions which can be reached via hierarchical menus, the different menu levels are described as follows: **Menu** > **Menu entry** > **Function**.

Key Commands

When a function can be operated by a key command of the same name, you will see this symbol at the side of the text. If names differ, or if a function is only available as a key command, its name will be printed like this: *Key Command*.

Options and Parameters

The options you can set from the Preferences, and the parameters in dialog boxes are printed like this: *Parameters*.

Different parameter values are printed like this: *Parameter value*.

Detailed Explanations

Sometimes, detailed explanations will be given for things which you don't necessarily need to know about to understand how to use Logic fun. These are printed in this smaller font.

5.2 The Mouse

Basic functions

Unless stated otherwise, the left mouse button is the one you should use whenever “the mouse button” is mentioned.

Clicking

Place the mouse pointer on the object (button, input field, etc.) and press the mouse button once.

Double-clicking

The same as clicking on an object, but you press the mouse button twice, in quick succession. You can set the appropriate time-span for this in the System Controls.

Grabbing or Click-holding

The same as clicking on an object, but you keep the mouse button held down.

Moving or Dragging

Grab the object and move the mouse (click-holding) to the desired position.

Mouse Input

Checkboxes

Checkboxes are square boxes which become “checked” when you click them to activate an option (or function). Click them again to remove the “check” and deactivate the option.

Pull-down Menus

Pull-down menus open when you grab certain input fields or buttons. You make a selection within the menu by highlighting

the desired item and releasing the button. If you want to choose an item which is outside the visible section:

- move the mouse over the top or bottom edge of the menu; the further you move it, the faster you will scroll through the menu.
- on MacOS: hold down the ⇧ key as you do this. You can then let go of the mouse button and use the scroll bar on the right of the pull-down menu to scroll through it. When the highlight reaches the entry you want, release the ⇧ key
- on Windows: click using the right mouse button. You can then let go of both mouse buttons.

Mouse as Slider

You can set practically all the numerical parameters, (even note values or names) by grabbing the parameter value and moving the mouse up or down. If the parameter is made up of several separate numbers (e.g. song position), you can adjust each individually.

Using the Mouse for In/Decrementing

All the parameter values which can be set using the mouse as a slider (and even some of the flip menu parameters) may also be increased or decreased in single units by

- on MacOS: clicking on the top or bottom half of the value while holding down the *ctrl* key.
- on Windows: clicking with the left or right mouse buttons while holding down the *alt* key.

Numerical Input

Double-clicking on a numerical parameter value opens an input field. The previous value will be highlighted, to allow it to be overwritten by a new entry. You can also use the mouse to make a partial selection in an input field so that only the high-

lighted part is overwritten. As long as the input field is open, all the keys may be used for inputting data only, and may not be used for key commands.

... by arithmetic

At any time, you can enter numbers by typing in an arithmetical operation, e.g. “+2” or “-5”, which then simply changes the current value by that amount.

... as ASCII-symbols

You can also input numbers as ASCII symbols: just put a ` or " in front of it, and the ASCII code will be input as a number. For example:

"! gives 33
"a gives 97

This function is particularly useful for entering text in SysEx strings.

Text Input

You input text names in the same way as numbers, but you only have to click the name fields once to allow input.

Numbered Names

As you might expect, you can give any number of selected objects the same name. If the name ends in a number, the number will automatically be incremented by 1 for each object. This allows you to name all the sequences on one track quickly.

Disabling automatic numbering

To turn off the automatic numbering, place a space after the number at the end of the name. All the selected objects will then end in the same number.

Tools and the Toolbox

Logic fun allows recorded data to be handled graphically. This means that you don't have to carry out operations by inputting commands via number tables, but rather by manipulating graphic "objects".

When editing objects graphically, you always have two tools available at the mouse pointer position: one is already active, the other is activated by the right mouse button (Windows) or by holding down the ⌘ key (MacOS).

You change the currently active tool by clicking on the toolbox. The mouse pointer then adopts the shape of the tool you click on, so that you can tell what its function is by looking at the mouse cursor: the Eraser is used for deleting, the Scissors for cutting and the Glue tool for merging objects. To assign a tool to the right mouse button (⌘ key on MacOS), click on the desired tool in the Toolbox, with the right mouse button (⌘ key depressed on MacOS).

Effective Range of the Tools

- Tools are effective only in the working area of the window they were selected from (you can define individual tools for each opened window).
- A tool basically affects the objects you click on. If the clicked object is already selected, the tool operates on all other selected objects as well.

Selecting Tools

You select the tool you want to use by clicking on it in the toolbox, either with the left or the right mouse button.

Info Line

When operating many of the tools, an info line appears in the window for as long as the mouse button is held down. This info

line provides useful feedback about the type of operation you are performing.

During operations involving arrange objects, the line will look something like this:

From left to right, the Infoline displays: operation, mouse (or arrange object) position, arrange object name, track number, and length of the arrange object.

During operations involving events, the line looks something like this:

From left to right, the Infoline displays: operation, mouse (or event) position, event type, event MIDI channel, first data byte (i.e. the pitch for notes), second data byte (i.e. velocity for notes), and for notes: length of the note.

The Tools

Pointer

The Pointer is the default tool. The mouse cursor also takes on this shape outside the working area when you are selecting from a menu or inputting a value. Within the working area the Pointer is used for selecting (by clicking on objects), moving (by grabbing and dragging), copying (by holding down the ⌥ (Mac), or ctrl (Windows) key and dragging) and editing lengths (by grabbing the bottom right corner and dragging). Grabbing and dragging anywhere in the background allows you to "rubber band" multiple objects.

Pencil

The Pencil is used to add new objects. You can also select, drag, and alter the length of objects.

Eraser

The Eraser deletes clicked objects. When you click on a selected object all of the currently selected objects are deleted (as if you had used the ⌫ key).

Text Tool

The Text tool is used to name arrange objects or add text to a musical score.

Scissors

The Scissors are used to split arrange objects, e.g. before copying or moving individual sections.

Glue Tool

The Glue tool is the opposite of the scissors: all selected objects are merged into a single object, which is given the name and track position of the first of the objects on the time axis.

Solo Tool

Grabbing with the Solo tool allows you to listen to only selected objects during playback. Moving the mouse vertically also triggers any events the cursor touches, even when the sequencer is stopped.

Mute Tool

Clicking on an object with the Mute tool stops it from playing and places a dot in front of its name, to indicate that it is muted. You can unmute it by clicking it again with the tool. If multiple objects are selected, the setting of the object you've clicked on applies to all selected objects.

Zoom Tool

The Zoom tool allows you to zoom in on a section by "rubberbanding" it, right up to the maximum possible window size. To revert to normal size, single-click on the background with the

tool. You can also access this function via other tools by holding down the ctrl (Mac) or alt (Windows) key.

Velocity Tool

In the Matrix editor, you can use the V tool to change the velocity of notes.

5.3 Window Functions

The basic functions of the Logic fun windows are the same as those in other Macintosh, and Windows application programs. However, the display options in Logic fun's windows are far more extensive.

In Logic fun, you can open different combinations of windows (even several of the same type) and adjust each one individually. All open windows in a song are constantly updated. This means that the windows update to follow the song position. Also, any alterations that you make in one window immediately update the display of all the other windows you are working with.

Working with Windows

Opening and closing Windows

All Logic fun windows can be opened via the **Windows** main menu. After each menu item you are given the relevant key command, which allows you to open the window without using the mouse. You can open as many of the same type of window as you like.

Tip

Every time you use the **Windows** menu have a quick look at the key commands—that way you will soon memorize them. You may also define your own personal key commands.

You close windows by clicking on the close symbol in the top left (Mac, key command: ⌘W) or right (Windows, key command: alt F4) of the windows.

If you hold down the ⌥ key as you click, all the windows of the active song will be closed.

Mac OS

Setting Window Size

Mac OS

You adjust window size by pulling the lower right-hand corner of the window, as with any window in the Finder.

As is usual for Windows, you can change window size by positioning the mouse over a Window edge, or corner and pulling.

Maximizing window size

The windows maximize button, in the upper right corner of the window, toggles the window between its maximum size, and the size it was before you clicked on the button (**Windows > Zoom Window**).

Selecting the Working Area

Scroll Bars

The scroll bars are situated along the right and bottom edges of a window, if you can only see one section of the working area in either the vertical or horizontal dimension.

You can move the visible section by clicking the arrows or grabbing and dragging the scroll slider. There are two things to keep in mind:

- The size of the scroll slider in relation to the size of the entire scroll bar corresponds to the size of the visible section in relation to the overall size of the window,
- the visible section changes as you move the scroll slider.

X/Y Element

The X/Y element is situated at the bottom left corner of the window. By grabbing and dragging it you can move the horizontal and vertical window section, as if you were dragging both scroll bars simultaneously.

Page Scrolling

Use the key commands *Page Up*, *-Down*, *-Left* and *-Right* to scroll one page up, down, left or right, as if you had clicked in the grey region above / below the vertical scroll bar, or to the left / right of the horizontal scroll bar.

The key commands *Page Top*, *-Bottom*, *-Left most* and *-Right most* take the visible section of the working area to the top, bottom, left or right, just as if you had grabbed one of the scroll sliders, and moved it to one of its extreme positions.

Zooming

The telescope-shaped zoom symbols in a window are used to zoom in and out of the working area display. Clicking the smaller side of the telescope symbol reduces the size of the objects in the display, allowing you to see more objects in the same space (zoom out). Clicking the larger side enlarges the objects in the display (zoom in). In some windows, only one telescope is available, and this then handles both horizontal and vertical zooming simultaneously.

While “zooming”, the top left selected object is kept in the visible region, whenever possible.

Zooming Selectively

Zooming In On One Section of the Screen

To enlarge a section of the screen to the size of the whole window, use the Zoom tool to “rubber band” the section you want. You can do this more than once.

Reverting to the Previous Zoom Setting

Click on the background with the Zoom tool. This will return the zoom to the previous setting. If you have used the Zoom tool multiple times, then each click on the background will take the zoom back one step, until you reach the original zoom setting for the window.

You can call up the Zoom tool functions with any other tool (other than the pencil) by holding down the ctrl (Mac) or alt (Windows) key. The pointer will display the previous tool, until you press the mouse button. As long as the button is pressed, it will display the Zoom tool.

Adjusting the Size of the Window Elements

If you move the mouse over the top left corner of the Arrange area, the mouse pointer turns into a crosshair. By dragging it, you can now adjust the size of the bar ruler, Arrange area, and Track list. You can also adjust the window elements in the Score and Matrix Editors using the same method.

Menus

On Windows, Logic fun offers many different menu options, depending on which window is currently active. Logic fun follows the standard Windows convention of offering a Main program window that contains any other local windows. All menu items are displayed along the top of the Main window, and the available menu items will change, depending on which local window is currently active.

On Macintosh, most of the functions are not found in the main menus, but appear as local menus. These are always in the menu bars of the Logic fun windows where they are required.

Key Commands

Some menu functions can be accessed via keystrokes or combinations of keystrokes. The keys (or combinations thereof) are shown on-screen next to the menu entries.

Please note that you may assign practically any function to any key you like using the Key Commands window.

Menu Options with "…" in their Title

Three periods, like this: …, next to the menu function title indicate that the entry does not activate a function immediately, but instead opens a dialog box.

Dialog Boxes

In Dialog boxes, you can hit the highlighted button by pressing the ↵ key, or by clicking with the mouse.

As is typical in Windows, you can toggle from button to button with the ←→ cursor keys.

Window Types

You can open as many windows as you want, including several of the same type. Even though the contents of all the windows are constantly updated, only one of the windows ever has the status of being the "top", or "active" window. This is the window which is in the foreground when several normal windows are overlapping.

The active window can be recognized by its fully-shaded title bar. The main distinguishing characteristic of this window is that key commands only affect this window, and not any of the others.

The only "floating" window offered by Logic fun is the Transport window. This window will never be obscured by another window, even if you click on a window behind the floating Transport.

Relationships Between Windows

The two buttons at the top left of a window (shown here), determine its relationship to the song position (Catch), or to other windows (Link).

Catch

The Catch function means that the visible section of a window follows the song position as the song plays.

If the button with the walking man on it is lit (i.e. if it is blue), the window's display follows the song position as the song plays. If the button is not lit, the display does not update, even when the song position line moves past the right edge of the visible portion of the window.

Automatic Catch Disabling

If you move the visible section manually, Catch is automatically switched off, so that the new section you have chosen doesn't then disappear, as the display is updated to the song position line.

Autocatch

The function *Enable Catch when Sequencer starts* (**Options** > **Settings** > **Global Preferences...**) always enables Catch mode whenever you press play or pause.

Link

Clicking on the link button activates Link mode. This means that the window always shows the contents of the object selected. Selecting a different sequence in the Arrange window will cause the display of the linked editor to switch to that sequence.

5.4 Selection Techniques

Whenever you want to carry out a function on one or more objects, you have to select the object(s) first. This applies to arrange objects and individual events alike. Selected objects are either highlighted, or will flash (in the Score editor).

The selection status of an object applies to all windows. An object selected in one window will also be selected in all other windows that display that object. Changing the top window doesn't affect the selection (as long as you don't click on the background, which deselects everything. Be sure to click on the window's title bar).

Selecting Individual Objects

Individual objects may be selected by clicking on them, and deselected by clicking in the background, or by selecting another object.

Selecting Alphabetically

The ⇥ key selects the next alphabetical object. In the Arrange window pressing any letter key selects the first object whose name begins with this letter, providing there is no Key command assigned to this key.

Selecting Several Objects

To select several non-contiguous objects, hold down ⇧ as you click them. As you click on subsequent objects, the previous selections are retained. This also works with horizontal or rubber band selection.

Horizontal Selection

To select all objects in a track, click on the track name in the Track list. In the same way, you can select all notes of a certain pitch in the Matrix editor by clicking the relevant key on the screen keyboard.

In Cycle mode, the above selects only the events within the Cycle zone.

"Rubber-Banding"

To select adjacent objects, click on the background and drag a "rubber band" over them.

All objects touched, or enclosed by the rubber band will be selected.

Toggling the Selection Status

When you make any selection (including by rubber band or horizontal selection), holding down the ⇧ key at the same time will reverse the selection status of the objects *(Toggle Selection)*.

Selecting All Objects

To select all objects, select **Edit** > **Select All**.

Deselecting All Objects

You can deselect all objects by clicking on the background or using the key command *Deselect All*.

5.5 Edit Operations

The edit menus for Logic fun's various windows all take the same form. The first item is Undo. Below Undo are the typical clipboard functions(Cut, Copy, Paste) and at the bottom the selection command **Select All**.

Undo

Undo allows you to reverse the previous edit. In **Options** > **Settings** > **Global Preferences**, you can disable the warning message that normally appears when you activate Undo, by checking the *Disable safety alert for Undo box*.

The key command for Undo is ⌘Z (Mac) or ctrl Z (Windows).

The Clipboard

The clipboard is an invisible area of memory into which you cut or copy selected objects, so that you can paste them to a different position.

The clipboard is independent of any particular song, which means you can use it to exchange objects between songs.

Cut

All selected objects are removed from their current position and placed in the clipboard. The previous contents of the clipboard are overwritten in the process (⌘X (Mac) strg X (Windows)).

Copy

A copy of all selected objects is placed on the clipboard. The selected objects are also left in place. Here too, the previous contents of the clipboard are overwritten (⌘C (Mac) strg C (Windows)).

Paste

All objects from the clipboard are copied to the top window. The clipboard is not erased in the process (⌘V (Mac) strg V (Windows)).

The contents of the clipboard are added at the current song position (if they are events or arrange objects). The song position is incremented by the length of the pasted objects.

In the Arrange window, the contents of the clipboard are pasted to the selected track. If events are pasted in the Arrange window, either a new sequence is created for them, or the events are added to a selected sequence.

Any objects that existed previously are unchanged.

Clear

With **Edit** > **Clear** any selected objects are erased. Clear has no effect on the clipboard and is the same as pressing the ⌫ key.

5.6 General Functions of the Editors

Control Output via MIDI

Switching on the MIDI Out button causes MIDI events to be output when they are added, selected, or edited. This allows you to audibly monitor every edit, whether you are scrolling through the Event List (automatic selection) or transposing a note.

Automatic Scroll Functions

... scrolling to the Song position

The button with the walking man on it activates the Catch function, which means that the window view will always show the current song position.

... scrolling to the selected event

The key command *Scroll to Selection* allows you to automatically move the window, so that the first of the currently-selected events is visible.

Deleting Events

The basic techniques are the same as for deleting sequences:

- the ⌫ (delete) or *del* key deletes all selected events,
- the Eraser also deletes all selected events, and any events that you click with it (whether previously selected or not).

Changing Display Levels in Score

In the Score Editor, double-clicking on the background takes you to a higher display level. Unlike the other editors, in the Score Editor individual events can also be edited in higher display levels. Double-clicking on a staff (at an empty point) takes you back to a lower display level.

Don't worry if all this sounds a bit confusing. In fact, the whole process of changing levels is much easier to grasp if you simply try it yourself. Read first, then experiment with the various editors in one of the Tutorial songs.

5.7 Key Commands

You can activate all Logic fun's functions via key commands. The Key Commands window is where you assign key commands to the keys.

Important!

Whenever this manual mentions a key command, this refers to a command which can be called up by a keystroke. This allows you to completely customize Logic fun to suit your own working style.

If any function described in this manual is also available via a key command with the same name you will see this symbol.

Your personal key assignments are stored (together with the settings of the Preferences pages) in a file called

- "Logic Preferences" in your Macintosh's System folder (in the *Preferences* folder, to be precise).
- "Logic.PRF" in your PC's Windows folder

You should:

- make a backup of this file at another location on your hard disk;
- make a floppy disk backup of it in case you need to use a Logic fun system on another computer.

When you install updates to your version of Logic fun, your personal key commands will remain unaltered.

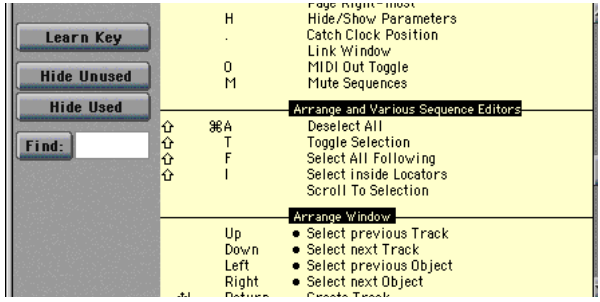
Special Keys

Some keys have special functions:

- The modifier keys ⇧, ctrl, and alt (Windows), or ctrl, ⌥, and ⌘ (Mac) can only be used in conjunction with other keys.
- The backspace key (⌫) has the fixed function “delete selected objects”. It can only be assigned a function in conjunction with the modifier keys.
- The + and − keys increase or decrease any selected parameter value in single units. However, they *can* be assigned different functions which overwrite this function.

Key Commands Window

The Key Commands window can be opened by selecting **Options** > **Settings** > **Key Commands**.



All the available key commands are listed on the right side. They are grouped according to the following categories:

- Global commands
- Functions affecting all windows (various windows)

- Functions affecting Arrange Window and all Editor windows (Arrange various sequence Editors)
- Functions for the Arrange window
- Functions for the Score Editor (Score window)
- Functions for the Event List Editor (Event window)

A symbol in front of the description of the function indicates that the function is only available as a key command. To the left you can see the currently assigned key.

Assigning a Function to a Key

- Click the *Learn Key* button.
- Select the desired function with the mouse.
- Press the desired key, if necessary together with the desired modifier key(s) (⇧, ctrl, and alt, or ctrl, ⌥, and ⌘).
- If you want to make another assignment, repeat steps 2 and 3.
- Deactivate *Learn Key*!

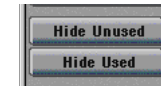
Deleting Assignments

- Click on *Learn Key.*
- Use the mouse to select the function whose keyyou want to delete.
- Press ⌫.
- To erase more assignments, repeat the second and third steps.
- Deactivate the *Learn Key* button.

Checking the Function of a Key

Deactivate *Learn Key*, and press the key whose function you want to check. The function will be automatically selected, and displayed in the middle of the window.

Filtering the Display

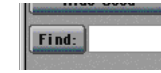


You can use the *Hide Used* and *Hide Unused* buttons to hide all the used, or unused key commands.

All the other Key Commands window functions remain available for you to use.

Finding Key Commands

Due to the large number of possible key commands, it can sometimes be difficult to find a particular one. For this reason, Logic fun offers a *Find* function, which lets you search for a key command by typing in its name (or a part thereof).



Simply click in the white space to the right of the *Find:* button and enter the string of characters you're searching for. The window will display only those key commands containing that character string (plus the selected command, even if it doesn't contain that string) if you then click *find* or return ⏎.

The Key Commands window remains active, even in Find mode; you don't have to leave this mode to continue making assignments.

The Find function is not case-sensitive, it makes no distiction between upper, and lower case characters.

The *Hide Unused* and *Hide Used* buttons work in combination with Find. This means you must switch off both in order to see *all* the commands that fit the search criteria, regardless of the commands' current assignment.

The *Find:* button switches Find mode off and on. The button is automatically activated if a string of characters is entered.

5.8 Song Administration

All events, other objects and settings (apart from the Preferences and key commands) are components of a song. Songs are handled in the **File** menu.

New Song

When you first launch Logic fun, it opens a preset standard song. After just a short time, you will have learned how to make your own adjustments to the song settings, and will no doubt want to keep these settings for use in future songs. The best way to do this is to set up your own "default song", and save it in the same folder as the Logic fun program, calling it "Autoload".

Autoload Song

If there is a song in the Logic fun folder called "Autoload", Logic fun will automatically load it when it is booted up. When you're ready to start work on a new song, simply save the Autoload somewhere else under a new name using **File** > **Save as...** and begin. This file can then form the basis for your new song.

Creating a new Song

If you select **File** > **New**, Logic fun checks to see if an "Autoload" song is available and opens it automatically if it is. If not, a new default song is created. If an "Autoload" song *is* available, you will be asked if another copy of the Autoload song should be made (to avoid accidentally erasing it) or if a completely new default song should be created.

Opening Default Song

If you hold down the ⌥ (Mac) or ctrl key (Windows) while selecting **File** > **New**, a new default song called "Untitled" will be opened.

Loading a Song

You use **File** > **Open** to bring up a typical file selection box.

Checking/Repairing Songs

If you double-click on the display on the Transport which shows the remaining number of free events, the memory will be reconfigured. At the same time, the current song will be checked for any signs of damage, structural problems and unused blocks.

If any unused blocks are found—which normally shouldn't happen—you will be able to remove these, and repair the song.

Saving Songs

When you select **File** > **Save** the current song will be saved with its current name intact.

If you don't wish to overwrite the last version of this song saved under this name (which is what will happen if you just use **File** > **Save**, try using **File** > **Save As...**. Here, you can enter a new name for the song (and select a new directory or even create a new folder). The next time you save using straight **Save**, the new name and file path will be used.

Closing a Song

File > **Close** closes the currently active song. If you have made any changes since the last time you saved, Logic fun will ask you if the song should be re-saved before closing, to preserve the changes you have made.

Quitting the Program...

Choose **File** > **Quit** to leave the program. If you have not yet saved your last changes, you will be asked if you want to do so before quitting (press ↵ to save).

Chapter 6

Transport Functions

6.1 Transport Window

The Transport window is a small, floating window in Logic fun, which contains the controls for operating the playback, cycle, and other transport functions. The Transport window is called a “floating window”, because it cannot be obscured by other windows, it is always on top.

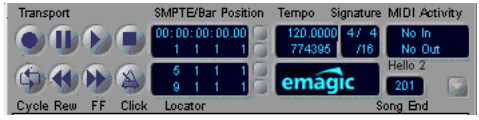
Display Options

You can open the transport window, if it has been closed, by selecting **Windows** > **Open Transport** or ctrl ⌘ 7.

Indicator Options

If you click-hold on the small downward pointing arrow on the lower right-hand side of the Transport window, a flip menu will appear, allowing you to change its layout.

Legend

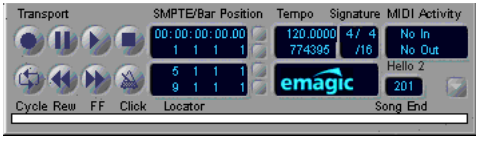


Here, you can switch on a description of the buttons and display fields. We recommend that you take advantage of this,

especially in the beginning. This way, you will be able to learn the ropes more quickly, and avoid errors.

Position Slider

You use this option to activate the “position-slider” on the bottom edge of the transport window.



The position slider represents the entire length of the song. With this you can jump to any position in the song almost immediately, albeit not very accurately. Click on the slider and hold down the mouse button. When you move the mouse horizontally, the slider will move accordingly. The gray bar tells you where you are in the song, relative to the entire song length. The position indicators and the song position line (see below) are also influenced by this.

Smaller/Larger

The Transport window can be displayed in different sizes, which you select using **smaller/larger**. When you start Logic fun, the Transport field will be opened at its smallest display size. The parameter *Size* also allows a direct selection.

Parameter Fields and Indicators

Position Indicators

The position indicators in the Transport window show you the current song position in two different formats.

The lower portion displays *Measure Position*, in measures, beats, diplay format units and clock ticks. How it is divided depends

on the time signature, and the Display Format value, which you can also set in the Transport window (see below). Normally, the four fields would be (from left to right): measure, quarter notes, sixteenth notes, ticks.

Tip

A tick is the smallest possible subdivision of a measure in which a sequencer can divide the time axis. In Logic fun a tick is $1/3840$ of a note.

Clicking the small gray square button to the right of the indicators sets these to zero.

Position Markers (Locators)

Logic fun allows you to define two locator points. This is analogous to the locator points that can be found on some tape recorders. They make it possible to automatically go to, or play certain passages. The locator points, below the position display, are the cycle locators. With these, you can define a part of the song to be continuously repeated by Logic fun in cycle mode.

Skip Cycle

When you are playing the song you can skip a passage, which is useful for trying out the musical effect of various transitions. Drag out the skip cycle region from right to left in the bar ruler.

If there is already a (normal) cycle region just move the left locator after the right locator. The skip region is shown as a very thin strip at the top edge of the bar ruler.

When the SPL reaches the right locator it skips to the left locator (i.e. the “right” and “left” locators swap positions).

Skip cycle is a quick way of leaving out a passage in an Arrangement, without having to physically delete it from all the tracks, make a backup, etc. You can also use it when editing, to leave out those parts of the song which you don’t want to be affected by the edit.

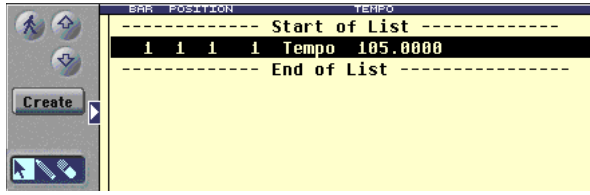
Tempo

The song tempo is shown in beats per minute (bpm). You can set the tempo in increments of 1/10000th of a beat, anywhere from 0.5 to 9999 bpm. The song tempo is then set for the entire song.

You can make changes to the tempo during the song (ritardando, accelerando), using the tempo list.

Tempo List

In the tempo list, you can insert and edit changes in tempo.



You can enter a tempo event at anyposition. The tempo list controls the song tempo, and the current tempo is always displayed in the transport window.

Here's how to open the tempo list:

- Select **Options> Tempo > Tempo List** from the menu.

Here's how you insert a new tempo event:

1. Set the song position (SPL or transport window) at which you want to insert the event.
2. Click on the *Create* button in the tempo list window, or click on an existing tempo event with the pencil.

Tempo events in the tempo list can be edited or deleted, just as they would in the event list (see chapter 6.)

Free Memory

This indicator informs you of remaining available memory, measured in events. If Logic fun warns that there is too little

memory for a certain operation, you can optimize the memory automatically.

Double-click the Free Memory Field. A dialog box will appear asking if you want to reorganize the memory. If you confirm this, your computer's RAM will be reconfigured, creating additional space for data.

Time Signature and Display Format

Here you can set the time signature for your song, by grabbing the numerator or denominator, and sliding the mouse to set the desired value. The time signature change will take effect at the current song position. This way, you can insert time signature changes in your songs, by simply moving the SPL to the desired position, and changing the time signatire display in the Transport. The new time signature will appear in the bar ruler, and will remain in effect until you insert another at a later point.

Beneath the time signature field, you will find another subdivision, which gives the Display Format value for the song.

Logic fun uses this Display Format value:

- as the third field in the position display for the locators and the event list.
- for subdividing the bar ruler (see below).
- as a MIDI-metronome division value.
- as step size for the moving of notes in the Score editor.

MIDI Indicator

The MIDI indicator field gives you a real time diaplay of MIDI events Logic fun is currently receiving or sending. This is useful to test the connections between Logic fun and your MIDI equipment.

This field also allows you to send a MIDI reset command.

MIDI Reset

With the MIDI Reset, you can switch off stuck notes.

- Click in the MIDI indicator field in the Transport window.
- Logic fun will send a simple MIDI Reset. If this does not help, try a "Full Panic":
- Double-click the MIDI Indicator.

The field will display"Full Panic," and Logic fun will send a Note-Off event for every single note on each of the sixteen MIDI channels.

End of Song

The small field on the lower right-hand edge of the Transport field shows the End of Song position. Among other things, the scale of the vertical scroll bar, and that of the song bar size themselves by this. In order to change the End of Song position, click-hold on the current value, and scrub the mouse up or down. You can also set the End of Song marker in the bar ruler with the mouse (see below).

Transport Functions

The following functions serve to control Logic fun's movement and status, and are similar to the transport functions of a tape machine. In this sense, you can operate Logic fun exactly as you would a cassette deck, or a studio tape machine—but more easily, of course, and without waiting for the tape to rewind.

Instead of using the buttons, you can also use the keys of the numeric keypad, described below. This is especially practical if you want to playa MIDI keyboard at the same time.

Record

Click this button to start recording from the current position. The recording will begin after the count-in (see the section: *Song Settings*, pp. 4–92 ff.)xref.

Default key: *

Pause/Continue

stops the recording or playback until you click on the button again.

Default key: ,

Play

starts playback at the current song position.

Default key: enter

Stop

stops the playback. To continue from the same place, use the play function again.

Default key: 0

Fast Forward and Rewind

With these two buttons you can move forward or backwards in the song. You can influence the shuttle speed with the mouse. Click on the fast-forward button, and hold down the mouse button, and Logic fun shuttles at a faster speed. The further you move the mouse to the right, the faster the Logic fun will shuttle. The rewind function works in a similar manner, except, of course that you would move the mouse to the left, to increase the shuttle speed.

Mode-Buttons

The mode-buttons, unlike the transport buttons, do not trigger any actions, but rather put Logic fun into a certain mode. Clicking on one of these activates it, and it remains activated until you click on it again.

Cycle (Repeat Mode)

You can repeat a section of your song by using the cycle function (repeat mode). This is discussed in more detail in the section: *Cycle Mode*, pp. 5–113 ff. xref

Metronome

This button allows you to turn the metronome on and off separately for playback and record. The play or record status is remembered when you activate the metronome.

1. Click briefly on the button to turn the metronome on or off.

You can also access the recording and metronome settings directly from the metronome button:

2. Click-hold on the metronome button.

A flip menu will open.

3. Select the option you want.

Setting the MIDI Metronome

You can select which note numbers and MIDI channels the MIDI metronome will use.

Here's how you set the MIDI Click:

Select **Options** > **Settings** > **Metronome Settings**, and activate the option *MIDI Click*.

The MIDI Click window will open up.

Select the *Port* you wish the metronime to send to. Click-hold the *Port* parameter, to open a flip menu. Under *Bar*, set the parameters for the note that the metronome will send on beat one of each measure. You may also set a velocity for the note. Under *Beat*, set the note and velocity you want for the other beats in each measure.

1. Click on the *bar* and *beat* buttons to activate them.
2. Click on the record button in the transport window or press [*] on the numeric keypad.

Logic fun will begin recording. You will hear the metronome clicks from your MIDI sound module.

3. Here is a review of the parameters that you can set for the MIDI Metronome:.

Cha	MIDI channel.
Note	Note and, with it, the drum instrument (e.g. Cowbell, Woodblock).
Vel	Velocity value. Usually, you will set the velocity for the *Bar* a bit higher than the *Beat*, to accent the downbeat of each measure.

6.2 Bar Ruler

You will find the bar ruler in all Logic fun windows, except for the Event list. The bar ruler helps you visually locate the position of sequences (Arrange window), note bars (Matrix editor) and notes (Score editor).

The bar ruler is not just a visual display. You can carry out the following functions on it with the mouse:

- Song—Set the start and end measures;

- Move to different positions in the Song (Song Position Line);
- Set start and end points for Cycle Locators.

The subdivision of the ruler is displayed according to the time signature values in the Transport window. When you change these, Logic fun reacts immediately by changing the settings in the bar ruler.

EXAMPLE: Set the time signature in the Tutorial-Song to $^{2}/_{4}$ or $^{8}/_{4}$, and note the changes in the bar ruler. When finished, set the value back to what it was.

As with other displayed elements, the bar ruler is influenced by the horizontal zoom factor. If you set locators, or want to change the song beginning or end, you can set the scale of the ruler as needed.

Setting the Song Beginning and End

As with sequences, a song has defined beginning and end points. These two markers are represented in the bar ruler by two rectangles, which can be moved with the mouse.

Beginning of Song

Normally the song will begin at position “1 1 1 1.” You can, however, alter this, perhaps to insert a program change, or an upbeat before the beginning of the song.

Grab the start of song marker with your mouse, and drag it to the left. The bar ruler will move correspondingly to the right, and the information line will show you the new beginning of the song. Release the mouse button at the desired position.

End of Song

A Logic fun song can be practically limitless in length. Normally Logic fun sets the song length to 200 measures. This

is automaticallyextended, however, as soon as an object goes past this position. You can manually set the end of song to any position you like. Bring the end marker into view, by either moving the horizontal scroll bar to the right, or making the horizontal zoom factor smaller, until the marker is visible. Grab the marker, and drag it to the desired position.

If possible, set the song end marker to the actual end of the song. That way the horizontal scroll bar will be scaled accordingly, and its range limited to the length of the song.

Song-Position Line

The song position line is a vertical line inside the window (Arrange window, Matrix and Score editors), which displays the current position of the song. You can move to any position in the song with the song position line.

The song position line in Logic fun is somewhat similar to the recording head of a tape machine.

Jump to a Certain Position

Click on the position you want in the lower third of the bar ruler, to move the song position line to that point.

Shuttling

Holding down the mouse button in the lower third portion of the measure ruler allows you to move the song position line back and forth in the song. If, in doing so, you move the song position line past the visible section of the window, the view will shift.

Start and Stop

By double-clicking in the lower third of the bar ruler, you can start or stop the playback from that position.

Tip

You can also choose between a thin or wide song position line.

6.3 Cycle Mode

In the cycle mode, you can isolate a passage of the song to be repeated.

You may want to have a passage played repeatedly so that you can:

- edit events within the cycle zone
- practice a section for recording
- Record multiple takes

You can activate the cycle mode (repeat function) by:

- clicking on the cycle button in the Transport
- configuring a cycle bar in the bar ruler, by clicking in the upper portion of the bar ruler

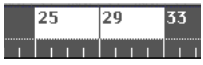
Setting Cycle Locators

The area to be played in cycle mode is defined by the cycle locators.

Their values are shown in the Transport window, and can be set there. See the section *Position Indicators*, pg 5-101.

Cycle Bars

When the cycle button is activated, you will see not only the cycle locators in the Transport window, but also a white bar in the bar ruler, that encompasses the cycle zone.



You can move the bar by grabbing it in the middle. To change the bar's start or end position, grab the bar on the lower left or right corner, and drag the edge to the desired spot. This way, the left position can even overlap the right, or vice versa. By holding down the ⇧ key, you can set both borders as you like

by clicking. This way you can also move the visible window section to set particularly long cylce zones.

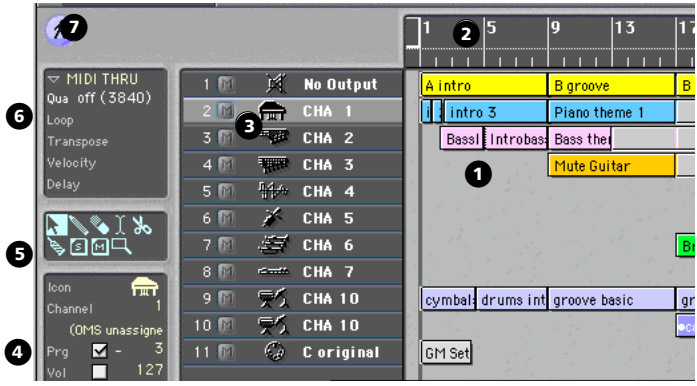
You can delete the cycle bar by moving one of the bar's borders to meet the other. This will deactivate cycle mode.

Chapter 7

Arrange Window

This chapter deals with the MIDI tracks of the Arrange window. See section *Audio Basics from page 127 onwards* and section *Working with Audio in the Arrange Window from page 137 onwards* for the audio tracks.

7.1 Structure of the Arrange Window



The Arrange window is the heart of Logic fun. Study it closely because it is the view of the program that you will see most often when you're working with the program.

It appears in the first screenset whenever you start Logic fun. You can also open it with **Windows** > **Open Arrange**.

The arrange area ❶ is where all MIDI information is recorded on horizontal "tracks". Individual MIDI or audio recordings are called "sequences", and are displayed as beams. Above the

arrange area is the bar ruler which displays position information ❷.

To the left of the arrange area is the Track list ❸. This is where you determine which "instrument" should play the MIDI information on each track. You can make various settings for the instruments in the instrument parameter box ❹ in the lower left corner.

Because the sequences are arranged graphically, you can also use specialized mouse tools from the tool box ❺ to help you perform different operations.

The sequence parameter box ❻ is where you set the playback parameters for the individual sequences such as transposition and quantization.

In the upper left corner ❼ is the Catch button.

Tools

Like other windows the Arrange window also provides a toolbox for you to use.

Please refer to chapter 4.

7.2 Tracks

As a reminder: A song is composed of any number of tracks, to each of which one of the available MIDI channels can be assigned. On every track there can be any number of sequences, which are played on the track's MIDI channel.

Track List

In the Track list each track is numbered from top to bottom. During playback a small "level indicator" appears over the track number. This indicates the velocity of the recorded notes, and beocomes red when a maximum velocity value is played. The little "c" stands for Controller command.

You can move the sequences, delete them, or move them to another track. Tracks, and sequences on tracks can be freely moved around, making this, which is much more flexible than working with a tape recorder.

Tracks can also be created, deleted or rearranged.

These functions will be described in more detail, in the following sections.

Assigning a MIDI Channel

For every track you can set whichever of the 16 MIDI channels you want. All of the sequences (and their contents) on the track will be sent on the set channel. The track setting for channel will override the individual channel settings for the MIDI events within the track. MIDI port and channel can be set here:

In addition to the sixteen MIDI channels, there is a special setting:

All — In this case, the track does not have a particular MIDI channel setting. Instead, each event is sent on its recorded MIDI channel. Use this possibility when, for example, events with different MIDI channels (such as drums, piano, bass) are combined on one track.

Tip

You can easily change the MIDI channel of an event in the event list.

With *All* selected, click on the channel column of the track and hold down the mouse button. A flip menu will appear from

which you can select any of the other track instruments or *No Output*.

No Output The MIDI events of the track in question are not sent; the entire track is muted. You can use the "No Output" option to temporarily put a track on the back burner.

Adjusting the Sound of a Track

The *Prg*, *Vol* and *Pan* parameters transmit program changes, volume controllers (#7) and pan controllers (#10) respectively.

If there is no check in the respective box the default value is used. The corresponding value is only transmitted if you place a check in the box (by clicking it). If there is already a check in the box, any value alterations you make are transmitted immediately.

A program change may be selected on the right, via a flip menu; volume and panning are set using the mouse as a slider.

To the left of the program number, there is an extra parameter which is used for Bank Select. If your sound source can receive Bank Select messages (MIDI controller #0 or #32—check in your synth manual for format details), you can switch between different banks, each containing a maximum of 128 sounds.

As many devices cannot receive these messages, you can deactivate this parameter.

Recording Program Changes, Volume or Pan controllers

Any of the types of events that can be transmitted by checking the right square in the instrument parameter box can also be stored when in record mode. For example, in record-pause mode, you can store program changes at specific positions in the following way:

- Remove the "x" in the box next to Prg (or Vol, or Pan);
- Click on Pause, then Record;
- Move the Song Position line to the place you want;

- Choose the sound (program) you want (or the volume/pan setting you want);
- Click on the box next to Prg (or Vol, or Pan). Each selected event will be sent and recorded.

Click on Stop to exit Record mode.

Selecting an Icon

Every MIDI channel can be assigned an icon of your choice. Normally you will call up a particular sound for each MIDI channel. In this case, use an icon that represents the sound or the "instrument". Although the icon has no direct effect on what you will hear, it will help you keep track of the sounds you are using for each track of your song.

EXAMPLE: If you assign a drum icon to MIDI channel 10, then you can tell at a glance which tracks have drum sounds.

To select an icon, click-hold on the current one. A flip menu will appear, from which you may select another icon.

Most of the icons represent particular musical instruments. You can see how the appropriate icons have been used in the Tutorial-Song.

Creating a track

To create a new track, click on the track number you want and, choose **Track** > **Create MIDI Track** in the menu. Logic fun produces an empty track at the position you have selected and pushes the following tracks down accordingly.

Appending a New Track

You can append a new track to the end of the track list by double clicking on the free space directly below the track list.

Moving a Track

A track can be moved to any other position in the track column. Just grab the track number, and drag it to the position you want. Logic fun will automatically reorganize the tracks, and move the following tracks accordingly.

Two neighboring tracks can be switched in this way. Tip

Deleting a Track

To delete a track, select the track in the track column and choose **Track** > **Delete Track** in the local menu of the Arrange window. If there are sequences on this track, Logic fun will ask you via dialogue box if these should be deleted, as well.

Selecting all Sequences in a Track

If the cycle mode is not active, then click on the track you want in the track column. All sequences of this track will be selected, and are available for further operations.

Selecting Sequences within the Cycle Locator

Use the cycle function if you want to select sequences which are only within a certain span of time. To do this, mark the appropriate cycle area in the bar ruler, and click on the track you want in the track column. Now, only those sequences within the cycle area on the track are selected.

Deleting the Contentsof a Track

If you choose a track and press *del* (Windows) or ← (Macintosh), all the sequences on this track will be deleted. The track itself, however, will remain.

You can also delete sequences within a certain section of time by marking it off with the cycle locators (see above).

Muting Tracks

In Logic fun you can mute tracks completely, without first having to select all of the objects in the track.The *Mute Button* can be found, just to the right of the track number. Press this button, and the track will be muted. Click the button again, to unmute the track.

7.3 Arranging Sequences

What is a Sequence?

A sequence is basically a container that holds MIDI data, such as note events or controller messages. A segment of music contained in a sequence can be manipulated as a whole. In the Arrange window, a sequence is represented as a horizontal bar in a track.

Creating an Empty Sequence

To create an empty sequence—perhaps to manually insert notes in the Score or Event List editors with the mouse, click on the position you want, in the Arrange window with the pencil tool(see below).

Shifting Sequences in Time

To shift a sequence or sequences in time, grab it somewhere in the middle, and drag it to the position you want. If you go past the currently visible section of the Arrange window, Logic fun will automatically scroll to the window section you want.

Instead of this, you can also move sequences to the clipboard using **Edit** > **Cut**, and then move them to another position with **Edit** > **Paste**.

The paste position is determined by the placement of the song position line.

Copying Sequences

To copy a sequence, move it (see above) while holding down the ctrl (Windows) or the ⌥ (Macintosh) key. This will create a copy at the new location, while leaving the original at its starting position.

Instead of this, you can also copy sequences to the clipboard using **Edit** > **Copy**, and then move them into another position with **Edit** > **Paste**.

Make sure you set the song position line to the target position first, and then highlight the target track. The sequences will be inserted into the track, starting at the song position.

Moving/Copying onto another Track

Sequences cannot just be moved in time, but also to other tracks. Grab the sequence, and move it onto the track you want. To do this, use the help line that appears in the local menu bar while moving, to make sure that the position in time does not change. Of course, you can use the described cut, copy and paste functions to move or copy sequences to another track.

Changing the Length of a Sequence

You can adjust the start and end points of a sequence, thereby also changing its length. To do this, grab the lower right-hand or left-hand corner with the mouse, and move the mouse in the direction you want.

Be aware that the start point of a sequence can't be later than the first MIDI event of the sequence. If you do not need certain events at the beginning of the sequence anymore, then remove this piece with the scissors.

The end point can be moved as far as you want to the left, as long as it is not before the song start and the first MIDI event.

... of Multiple Selection ...

You can change the length of multiple objects in the same way. The length will be changed by the same absolute value.

... to the same absolute length

If you want to make all selected sequences the same absolute length—even if they had different original lengths—simply hold ⌥⇧ (Mac) or ctrl⇧ (Windows) while changing the length (just as in the Matrix editor or the Event List).

...Using a Finer Grid

All these operations (moving/copying, lengthening/shortening) snap to the bar or beat grid (depending on the current resolution of the bar ruler and the setting of the zoom function). However, there are two ways of reducing the grid:

Touch an object first.

Display Format values as grid scale:
ctrl (Mac) or alt (Windows) + operation.

No grid (ticks as grid scale):
ctrl⇧ (Mac) or alt⇧ (Windows) + operation.

Hold these keys during the particular operation.

Example

Let's say you want to shorten a sequence in a 4/4 bar so that the "4" is played but not the "4 and" of the last bar. Enlarge the screen display until you can see quarter notes in the bar ruler. Now grab the bottom right corner of the object and move the mouse to the left until the sequence is shortened by one quarter note. Then press (and hold) ctrl or alt and move the mouse carefully to the right until the sequence has become one division longer. While you are doing this, the info line shows the track number followed by the current length of the object in bars, beats, divisions and ticks. The three right-hand numbers should be "3 1 0".

Dividing Sequences

Select the scissors. Now click the desired sequence(s) and keep the mouse button held down. The info line shows the current position of the mouse. When you release the mouse button, all selected objects are cut at the relevant position. The grid is based on the Display Format value. This value is displayed and may be altered on the Transport window, just below the Time Signature indicator.

If any notes overlap other notes by more than a 1/16 note, a dialog will appear on-screen:

KEEP (default) leaves all notes unaltered. The sequence is cut as usual, but when you do this, you can end up with notes in the left-hand half that are much longer than the sequence now is.

SHORTEN truncates all overlapping notes, so that they end at the point where the sequence was divided.

SPLIT divides overlapping notes across the two sequences created when a cut is made; two separate notes are created, with the same pitch and velocity, and the same total length as the original note.

...multiple Division with the Scissors

If you hold down the ⌥ key (Mac) or ctrl key (Windows) while cutting an object with the scissor tool, the selected sequence will be cut into several pieces, whose lengths are determined by the length of the first segment.

For example: To divide a 16-bar sequence into 8 2-bar sequences, cut the sequence at the start of bar 3 while holding down the ⌥ or ctrl key.

Merging Sequences

You can merge two or more selected sequences in a track into a single sequence by clicking on one of them with the glue tool.

Muting Sequences

Often when you are arranging, you will want to test musical ideas out by muting certain objects. This is what the Mute tool is for.

You can mute individual or selected objects by clicking on them with the Mute tool. They are then displayed with a dot before the object name. Clicking a muted object reverses this state (unmuting).

You can perform the same function using the *Mute Sequences* key command.

Soloing Sequences

The Solo tool enables you to solo individual or selected objects by clicking them, and holding down the mouse button. You can also scrub the object by horizontally moving the mouse. If Logic fun is in play mode, solo playback starts as soon as you stop scrubbing. Release the mouse button to end solo listening.

Naming a Sequence

One sequence: click the sequence with the Text tool, and a text input box appears. Enter the name and press ↵, or click another object, or the background.

The same applies if you are entering the name in the sequence parameter box.

Multiple Naming...

Select a group of sequences (e.g. with the rubber band) and click one of them with the text tool. A text input box appears

where you can name the sequence. All sequences are given the same name.

...with incrementing Numbers

If you end the name of the sequence with a number, then all selected sequences are given the same name, with increasing numbers. They are numbered according to the time position of the sequences. If you want to give all the sequences the same number at the end, just add a space after the number.

The above also applies if you enter the name via the top line in the sequence parameter box, instead of using the text tool.

Inserting Events

MIDI events can be added directly to the selected track on the Arrange window, at the current song position, from one of the edit windows via the clipboard.

This function allows you to insert MIDI events—e. g. from the Matrix editor—directly into the Arrange window. Logic fun checks as it does this that you have selected a sequence, and then adds the data to that sequence. If you have *not* selected any sequences, Logic fun will create a new sequence on the selected track.

7.4 Sequence Parameters

The *Sequence Parameter* box displays the parameters *Quantize*, *Loop*, *Transposie*, *Velocity* and *Delay* for the currently selected sequences.

If you select several sequences which have different play parameters, then the corresponding parameter(s) will be marked with a *****

You can preset parameters for newly recorded sequences, by clicking on the background of the Arrange window. The Sequence parameter box will display the label *MIDI THRU*, instead of a sequence name. Any settings now made in the parameter box will affect incoming data in real time, and will be applied to all subsequent recordings.

An example: Let's assume you want to play in the entire rhythm accompaniment, including: drums, bass, piano, and guitar for a refrain. You already know that all the sequences you will record will have the quantize value "16C Swing", and the transpose value "+3". Also, the velocity will be raised by a value of 10. Click on a free space in the arrangement field, so that no more sequences are selected.

In the Sequence Parameter box, you will now find the entry *MIDI THRU*, instead of a sequence name. Now set the values and record something. All of the newly recorded sequences will have these settings, and the settings will be heard in real time, as you record.

Quantize

Here you can select a quantization grid for individual sequences, and use it to correct the timing of your MIDI recordings.

More on this can be found in the section *Quantization*, pp. 6 – 136.xref

Loop

With the loop function, a sequence can be continuously repeated. The frequency of the repetition corresponds to the sequence length, so a sequence that is two measures long, will repeat every two measures.

You can activate the loop function for selected sequences by setting the parameter for *Loop to On*.

The repetitions are graphically shown as gray boxes.

Use the loop function when certain passages are to be repeated exactly. Loops do not require any memory.

Another advantage is that any changes made to the original sequence automatically affecrt all its loops.

Important!

Please be careful not to confuse "Loop" with "Cycle". "Cycle" repeats an entire piece of a song, including corresponding jumps in position. "Loop", on the other hand, continuously repeats individual sequences. The song plays from beginning to end.

Stopping Loops

Normally the loop will repeat until the end of the song. However, you can stop the loop at any time by placing another sequence in the track at the position where you wish to stop the loop.

To do this, simply insert an empty sequence at the spot where the loop should be stopped. You may also copy or record a sequence at the point where the loop is to be stopped.

Transpose

With the *Transpose* sequence parameter, you can transpose sequences in half tone increments. The possible range is ± *99*.

The value-12 corresponds to a transposition of one octave lower. If you want to transpose an entire section of song, select all of the sequences for the section, and transpose these to the desired value. This procedure is very practical, if you want to

try out different pitches in order to match the vocal range of a singer.

Tip

You can transpose the entire song by selecting **Edit** > **Select All,** and then changing the transposition value for every sequence in one operation.

If no sequence has been selected, then **Transpose** will influence the parwert

settings, which will affect all subsequent recordings, and what you hear when you play into Logic fun.

Tip

With drum tracks, transposing influences the triggered drum notes, usually causing the wrong sounds to be triggered. For this reason, you should leave out the drum tracks when transposing an entire section of a song.

Velocity

With the *Velocity* paramete,r you can increase or decrease the velocity value of selected sequences. The value range goes from *-99* to *+99*.

Please note that you cannot go above or below the possible values of 0-127, as defined in MIDI. If, for example, the notes in a sequence have velocity values between 100 and 120, then the setting +60 will only have the effect of raising everything to the possible maximum of 127.

If no sequence is selected, *Velocity* will influence the *-MIDI THRU*-setting.

Delay

With the *Delay* parameter, you can move selected sequences by small increments, forward or backward in time. The measuring units here are clock ticks, which represent a 3840th fraction of a measure in Logic fun. If you set a negative value, the affected

sequence will be moved ahead, a positive value will cause the sequence to play later.

You can use the Delay parameter to correct the timing of sounds that have a slow attack, such as string sounds. A negative delay will move the sequence forward, so that the peak of the sound occurs at the correct position.

Tip

It is recommended you avoid larger values for delay. Remember that the sequences can also be directly moved in smaller increments (ex. sixteenth).

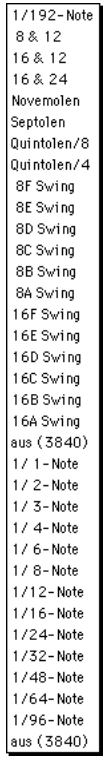
7.5 Quantization

Quantization is the automatic correction of rhythmic positions, using a grid. Quantizing realigns the normal variations in real-time recordings into perfectly aligned note positions. Quantizing is especially important when playing several tracks together, because otherwise, the variations can conflict with one another, and make the feel of the song unsteady, or ragged.

Quantizing pushes every note to the next closest grid value.

EXAMPLE: You are playing a passage, with which the eighth notes are the smallest note values. If you choose the setting "1/8-Note " as the quantize value, all of the notes will be moved to precise eighth note positions.

Even with quantization, a certain level of precision while recording is necessary. The maximum rhythmic error for a note cannot be greater than half the quantize value chosen. Otherwise, the note will be moved to the wrong position. This means, for example, that with a quantization of 1/16, the variance must be smaller than 1/32.



Setting the Quantization Value

To select the quantization factor you want, click-hold the sequence parameter *Qua*. A flip menu will open, with the vari-

ous quantization values. Select the desired value, and release the mouse.The value will be displayed in the parameter box.

Quantization: Operation

Any quantization value can be replaced with another, at any time. To switch off quantization altogether, select the **off** (*3840*) setting.

Your original data will remain as you recorded it, even after you quantize, as long as you do not use the *Fix Quantize* function(see below). Because, like all the other sequence parameters, quantization is a non destructive, real time parameter, you can experiment as much as you like, without any fear of losing the feel of your original performance.

Logic fun quantizes notes exclusively. Controller events like sustain pedal, mod wheel, etc will remain unquantized.

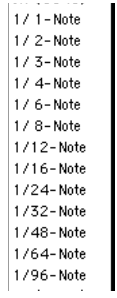
As with the other sequence parameters, quantizing only affects the selected sequences. If you want different quantization values for a sequence,perhaps because even and triplet note values occur equally—cut the sequence into different pieces, which you can quantize separately.

The Different Types of Quantization

Logic fun provides various types of quantization. These will be described in greater detail in the next section.

No Quantizing

With the setting *off* (*3840*), you choose the finest degree of timing resolution in Logic fun. Your sequences will be played back exactly as you performed them.



Standard Quantization

With the settings $\frac{1}{1}$-*note* to $\frac{1}{96}$-*note* you select quantization with a regular grid. The denominator of the fraction describes the

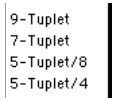
value as the number of notes in a 4/4 measure. If this value is divisible by 3, then it is triplet quantization. A few examples of this:

1/4-Note divides the measure into four parts; this is quarter note quantization.

1/12-Note divides the measure into twelve parts; these are three notes per quarter, so eighth note triplets.

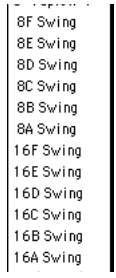
1/32-Note divides the measure into thirty-two parts; eight per quarter note which is thrty-second note quantization.

Quantization to Odd Tuplets



This type of quantization subdivides the note value into an odd number of parts. Strictly speaking, a triplet is already such an uneven subdivision. The additional settings of *5*, *7*, and *9 are available*. These settings are seldom needed for conventional music.

Swing Quantization



A swing feel is produced when the even numbered sub divisions of the beat are played a little bit late. Logic funLogic fun provides quantization options that will produce a swing feel.

With an even eight-part rhythm every second beat is on 50% of the range of a quarter, a triplet at 66%, a sixteenth at 75%. With swing rhythms, these borders are fluid; all values between 50% and 75% are possible. This is commonly known as the swing factor.

Logic fun offers six swing gradations, which experience shows are optimal, for both eight and sixteen part grooves. The settings are *8A* to *8F* or *16A* to *16F*.

PRACTICE: Select all of the sequences in the “B groove” part in the Tutorial-Song. These are currently quantized with *16C swing*. Now choose the settings *16A*, *16B*, *16C*, *16D*, *16E*, and *16F* one after the other. Each subsequent setting will make the

sequnce play with an increasingly stronger swing factor. The higher settings, like *16F*, may be too strong. You will learn through experience.

Mixed Quantization

Logic fun has three different mixed quantizing settings. These contain a combination of even and triplet values.

8 & 12
16 & 12
16 & 24

16 & 24 Sixteenths with sixteen-note triplets

16 & 12 Sixteenths with eight-note triplets

8 & 12 Eighths with eight-note triplets

These quantization settings require a much higher degree of accuracy in the original performance.

7.6 Reset Functions

To switch off stuck notes, click on the MIDI monitor in the Transport window, or hit “STOP” twice in rapid succession.

For Hanging notes—Panic Function

If the notes continue to sound, then your sound sources may not be able to respond to “All Notes Off” messages. If this happens, try the following:

Double-click on the MIDI Monitor in the Transport window. Separate Note Off messages will now be sent for every note on all channels of every MIDI port. That should do the trick.

Maximum Volume

If you select **Options** > **Send to MIDI**>**Maximum Volume**, Logic fun will send a controller 7 message, with a maximum value of 127, on all MIDI channels. This function is useful for switching all MIDI instruments back to their maximum volume at any time.

Regulating the volume with the Controller 7 should not be confused with a conventional volume change. Here—independent from your amplifier and mixer—the internal volume, controlled through MIDI is set to its maximum value.

Resetting the Controllers

Tip

With **Options > Send to MIDI> Reset Controllers**, "neutral" controller data is sent to all sound modules. Use this when a controller is stuck, or left in the wrong state, causing the tone generator to sound differently than it should..

This can happen when, for example, you push *pause* in the middle of a song and then start up again at another spot, or when you make the song position line jump to another position by clicking on it in the bar ruler.

Chapter 8
Audio Basics

In this chapter you will get to know the basic structure of Logic fun's audio functions.

What You Need to Know

For newcomers to Logic fun, it is recommended that you get familiar with the MIDI features of the program. After all, the main advantage of working with an integrated MIDI/audio recording system like Logic fun, is that you can manipulate MIDI and audio recordings in the same way. After you become familiar with operating the MIDI sequences, you will be prepared to intuitively handle most of the steps involved with working with regions in the Arrange window.

In this section, when we speak of recordings, we are referring to audio recordings (not MIDI recordings).

8.1 Basic Principles and Terminology

Audio File

When you record any kind of audio signal with Logic fun, this recording is saved on the hard disk as an audio file

Because standard audio file types are used, you can also import already existing audio files into Logic fun, or edit Logic fun recordings in other programs.

An audio file usually remains unchanged on the hard disk, even if you choose to edit small excerpts from the file for playback in Logic fun. This is non destructive, "region based" editing.

As a recording medium the hard disk has an advantage over magnetic tape, because you never have to rewind or fast-forward it. As a result, you are able to move from one area of work on the hard disk to another, almost instantly. You can simultaneously use audio files which are located at different places on the recording medium. Most edits of audio recordings only affect the way in which Logic fun plays back the files, without actually affecting the stored data on the disk(s)—an actual cut or deletion does not take place. Thus, every edit of any audio recording performed in the Arrange window can be undone at anytime later. This is what is known as non-destructive editing. Programmable CD players operate on a similar principle. If you want to listen to the songs on your CD in the reverse order from the way they appear on the CD, your CD player does not actually change the data on the CD. That would be *destructive*. The program only plays the songs in the reverse order—*non-destructively*.

Regions

With non-destructive editing you do not change the audio file itself, but rather the so-called "regions". By regions, we mean excerpts of the audio file. The audio file itself is unaffected when the regions are defined.

When you record an audio file with Logic fun, a region is automatically created which encompasses the entire length of the audio file.

Regions can be defined in the Sample editor. They are also created, when you edit recordings in the Arrange window.

As many regions as you like can be defined from each audio file.

Anchor

Besides the start and end points of a region, there is one more important feature: the anchor.

The anchor is a fixed point in a region, with which you can mark a certain musical beat or a characteristic noise in a recording. This point serves as a reference point,so regions can be musically arranged, or synchronized within a song.

When positioning a region in the Arrange window, it is always the anchor (and not the beginning of a region) that is aligned with the start position displayed for the region. For example, if you are placing a sound with a long attack, you might wish to move the anchor for that region to the peak of the waveform, so that as you place the region on a beat, the peak lines up, rather than the very beginning of the region.

In the Sample editor, the anchor is shown as a triangle under the waveform. You can change the position of the anchor by moving the triangle. To begin with, the starting point of a region is always set as the anchor point.

The position indicator of a region in the Event list (or when moving in the info line of the Arrange window) always shows the position of the anchor.

Audio Track

MIDI sequences are played by means of an instrument, which has been set in the Track list in the Arrange window.

You can play back the regions in the Arrange window in almost the same way. You just choose an audio object as the “track instrument” or create a new audio track with **Track** > **Create Audio Track**.

Audio Object

An audio object represents a single playback track for Logic fun.

Imagine an audio playback track, also known as a physical track, as being similar to a single track on a multi-track tape recorder.

Sample Editor

In the Sample editor you can precisely set the boundaries and the anchor position for each region. Also, you can select areas of the audio files to form new regions, or perfrom destructive edits of selected portions of regions.

8.2 Production

This section will explain the basic steps for making an audio recording in Logic fun.

Starting a Recording

First, connect the sound source (a mixer, CD player, or microphone, for example) to the audio input(s) of your system.

Setting a Path

Click-hold on the record button of the Transport window, and select the menu option **Set Audio Record Path...** Click on *Set*, and in the dialogue box that appears, set the name and path for your recording (audio files).

You do not need to repeat this procedure before every recording. Subsequent recordings will be given the same name, with a number appended to the end of the file name.

The record path will be saved in the Preferences, and will still be active at the next program start. It is recommended, however, that you desciptively name each of your audio files. When you start a new song, create a folder on your hard drive for it, and set the path to that folder when working on the song.

This will help you manage the many audio files that you will no doubt create, as you work with Logic fun.

Selecting the Audio Track

Select an audio track in the Arrange window by clicking on it.

To create a new audio track, select **Track>Create Audio Track** from the menu bar. A new audio track will be inserted in the track list, just below the currently highlighted track.

Arming Tracks

Unlike MIDI tracks, audio tracks must be “armed” before they can be recorded to, just as the tracks on a tape recorder must be first armed.

There is a switch marked with an *R*. to the left of the icon for each audio track in the track list. Simply clicking on this *R* prepares the audio object for recording. The *R* button will light red, indicating that the track is armed.

You can also click on the *REC* button on an audio channel in the Track mixer, in order to arm the appropriate audio object.

Stereo Recording

In order to make a stereo recording, you must configure the selected track as stereo in the Logic fun mixer. Go to an audio object, and click on the symbol to the left of the record switch. This will toggle the track between stereo and mono. The symbol on the button will indicate the current setting. A simple circle indicates mono, a pair of interlocked circles indicates stereo.

Levels

As soon as you arm an audio track, you will hear any signal being sent to the audio inputs of your system.

With the audio object's fader on the mixer you can control the level of the monitored signal. The fader always controls the playback level, and not the recording level.

You have to set the recording levels externally, for example on the sub group fader of your mixer, or at the original sound source.

Starting to Record

Start recording using the record button in the transport window, or by using the appropriate keyboard command (*).

You will notice during the recording, how the waveform is drawn in real time in the Arrange window.

Keep an eye on the level meter in the audio objects. In the event that the clip indicator (top, red LED) lights up, you will need to record again, using a lower level. So you do not have to watch the level meter constantly; the overload indicator remains lit until you click on it.

Please do not forget to disarm the track(s) after you are done recording. Do this by clicking on the red R button which will then unlight. If you do not first disarm, you will not be able to listen to the audio recorded on this track.

Basic Operation

You can work with the recorded regions in the Arrange window almost as you would MIDI-sequences:

- they can be moved around by click-holding and dragging them
- they can be edited with the editing tools
- they can be copied in exactly the same way as MIDI sequences
- delay and loop parameters are available in the sequence parameter box.

By copying a region in the Arrange window normally, you are automatically creating a new region. You can then change the borders of the new region in the Arrange window, without affecting the original region.

Sample Editor

If you want to edit the regions precisely, it is recommended that you use the Sample editor, which is opened by double-clicking a region in the Arrange window.

Edits in the Samle editor always affect the selected area of the audio file. When you open this editor by double-clicking on a region, the area of the file deined by the selected region is automatically highlighted.

Selections are made by clicking and dragging the mouse. Existing selection parameters can be moved by using ⌂-click and dragging.

Automation of Audio

To automate the volume or pan settings for audio tracks, open the Track Mixer, and put the sequencer into record. As you move the faders or knobs of the audio objects, corresponding MIDI controllers will be recorded to the audio tracks. Upon playback,the MIDI data will be sent back to the faders, thereby automating them.

Summary

Here is a short summary of operation:

- set the path and name for the audio file. A long click on the record button in the Transport window opens the dialog box.
- Select an audio track in the Arrange window; if one is not already available, create an audio track.

- Arm the track. Click *R* next to the audio object in the track column, or on the *REC* button of the audio object in the Logic fun mixer.
- Start the recording with RECORD, as with MIDI recordings.

Audio regions are displayed and can be edited non-destructively in the Arrange window. More precise non-destructive edits, and destructive edits are possible in the Sample editor.

8.3 In General

Tempo and Timeline

Digital audio recordings differ from MIDI sequences in a very important respect. Changing the tempo of your song will not change the rate of playback of an audio recording, as it would a MIDI sequence. If you do change the tempo of the song after recording audio, the starting bar positions of the regions will change, but they will play for exactly the same amount of time as they did when originally recorded. This is because the rate of playback is determined by the sample rate of the audio hardware, not the internal clock in the computer.

For this reason, you should carefully choose the tempo when you start to make an audio recording. A change is not easy to make after the fact.

Data Formats

Audio files and their Formats

Audio files are saved on the Macintosh in the SDII format (SDII stands for SoundDesigner II, a standard format from Digidesign for digital audio files). For PCs the standard WAV

format is used. Both platforms support AIFF files (Audio Interchange File Format).

Sample Rate

As with all comparable multi-track HD systems, Logic fun can only play back audio files with a single sampling rate. If you want to integrate files with different sample rates into a project, you can make the changes in the sample editor with **Factory > Sample Rate Convert**.

Stereo File Formats

Any of Logic fun's 16 available tracks may be set to mono or stereo, but there are some things you need to be aware of before you start working with audio files in the stereo format:

- Logic fun can import stereo files that are made up of two phase locked mono files (split stereo), or files in which both channels of the stereo recording are contained in one file (interleaved stereo).
- In Logic fun, the stereo files are indicated by two interlocking rings after the region name. You will see the same symbol on the mono/stereo button of a mixer channel.

- Stereo files recorded directly into Logic fun are automatically written as interleaved stereo files.
- When importing stereo files (regardless of whether split stereo or interleaved), you should make sure that the track object in the mixer that is playing them is also set to stereo. If you play back the stereo file over a mono channel on the mixer, the information from both stereo sides will be summed together, and played back as mono. This can lead to unwanted dropouts or clipping.

Chapter 9

Working with Audio in the Arrange Window

This chapter deals with the audio tracks of the arrange window. See section *Arrange Window from page 107 onwards* for the MIDI tracks.

9.1 Regions

Generating Regions

A region is to an audio track what a sequence is to a MIDI track, so a region could be referred to as an "Audio Sequence." The Logic fun concept allows regions to be manipulated in the Arrange window in the same way as MIDI sequences. Nonetheless, there are unavoidable differences between the two, by their very nature. A sequence contains MIDI data, and a region refers to audio data on the hard drive.

When you record audio, a region based on the recording is automatically created in the Arrange window.

Audio files from other songs or other programs can be imported into a Logic fun song. Simply click at the desired location for the imported file in the audio track, with the pencil tool, while holding down the ⇧ key. Select the desired audio file from the File Selector dialog box, and the process is complete.

To play an audio file at a specific Song Position,it must be set as a region in the Arrange window and placed on an audio track.

Important: Remember that the tracks that contain regions should be assigned as audio tracks. More information can be found in the section entitled "*Arming Tracks*" Chapter 8, p. 163 ff.

Dividing Regions

The Scissors tool used to divide MIDI sequences can also be used for regions. When a region is cut, two new regions will be generated. The new regions will then be numbered consecutively.

Important: When you click on a region with the Scissors tool, you can precisely position the Scissors while click-holding the mouse button. If a finer resolution is needed, click-hold the region with the Scissors tool and press ctrl (Mac) or alt (PC). To obtain maximum resolution (ticks), hold down ⇧ while holding down the modifier key. The cut will be made when you release the mouse button.

Deleting Regions

Regions can be deleted the same way as MIDI sequences. Select the region, and press the ⌫ key, or click on the region with the Eraser tool.

Deleting a Recording

If a region from a new recording is deleted, (any recording made since the song was opened for the current session), Logic fun will ask if the corresponding audio file should also be deleted. By allowing you to completely delete unwanted takes, space on the hard drive is saved.

If you delete regions from files recorded in previous sessions, then this question will not be asked. This prevents any valuable recorded material from being accidentally deleted. If you want to delete any of these older files from the drive, first remove the regions from Logic fun Song, and go through the computer's operating system to delete the files.

Copying Regions

Creating A New Region

Regions can be copied and moved in the same way as MIDI sequences. To move a region, simply grab and drag it. To copy a region, press the ⌥ key (Mac) or the ctrl key (PC), while dragging the original. The new region will have the same name as the original region, and will be numbered consecutively.

The booundaries of the copied region can be changed, independent of the original. This can be compared to a real copy of a MIDI sequence, created in the same way.

Looping Regions

As with MIDI sequences, the *loop* parameter causes the region to play repeatedly within the track (see *Loop*, Chapter 8, p. 162). It is important to note that the repetitions are guided by the region's precise length. This means that even if the song tempo matches exactly, after a time, the repetitions may drift out of sync.

Moving Regions

Just like MIDI sequences, regions can be moved with the mouse in the Arrange window. When dragging a region, it will move in quarter note steps.

By pressing ctrl (Mac) or alt (PC), regions can be moved in display format steps (e.g., sixteenths).

By pressing ctrl ⇧ (Mac) or alt ⇧ (PC), the regions can be moved by single clock ticks.

The delay parameter in the sequencer parameter dialog box can also be used (see *Delay*, Chapter 8, p. 162).

Fine Movements

Usually, a resolution of one tick will be enough. If not, you can edit audio regions even more precisely in the Sample edit window.

Edits accurate to a resoultion of a single sample word can be achieved by moving the anchor in in the Sample Edit window.

Changing Borders

Regions can be lengthened or shortened by dragging the lower right corner. However, it is impossible to lengthen a region beyond the limits of the underlying audio file.

The same process, dragging the lower left corner, is used to adjust the start point of a region.

Tip

The Sample Editor can change the region boundaries more precisely. The Sample Editor can be opened by double clicking on a region.

Region Parameter Box

Name

The name of the region is displayed in the top line of the parameter box, (as with MIDI sequences). Several selected regions can be named at the same time, and a number at the end of the name will be appended to the sequences, to discriminate between them.

Loop

The Loop Parameter causes a region to repeat within the track, (as can MIDI sequences). The region will continue to repeat until it encounters another region in the same track, or the end of the song.

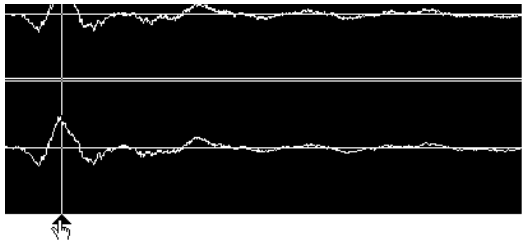
Delay

Regions can be advanced or delayed with the Delay parameter. The delay is calibrated in increments of clock ticks.

Region Anchor

The anchor is a positioning reference point in the region. When a region is moved, the display will show the anchor point in the information line, instead of the start point, as with MIDI sequences.

To guarantee perfect synchronisation with the sequencer, the anchor may need to be positioned within the region, and this position should be a peak, in most cases. Especially with drun recordings, this will allow you to move sections in the Arrange window so that the peaks fall on rhythmically logical points.



Some functions and parameters that are used for MIDI events, can not be used for audio recordings.

Adjusting the anchor and destructive processing of audiofiles can only be done in the Sample Edit window.

Many important functions are the same for both audio and MIDI, such as automatic naming of sequences, ability to change position and length, mute, solo playback, delay, loop etc.

9.2 Recording

Setting Tracks to Record Audio

1. In the Arrange window:

Click on the round "Record Enable" button (*R*) in the track list in the Arrange window. This shows the status of the *REC* button on the audio track.

2. In the Mixer:

- Open the mixer with the audio objects by selecting **Windows >Open Mixer**.
- Click on the *REC* button of the audio object you wish to record to.

Audio will be recorded only on tracks that are armed, regardless of which track the cursor happens to be on in the Arrange window.

- If a MIDI track is selected, MIDI will be recorded.
- If an audio track is selected, audio will be recorded on the track that is activated as Record Enabled (armed).
- A MIDI track and up tp two audio tracks can be recorded simultaneously by clicking on the MIDI track, and then the audio track with the right mouse button (Windows), or while pressing ⌂ (Mac).

If more tracks in the Arrange window are assigned the same armed audio instrument (e.g., "Audio 1"), then the new audio file (or audio region) is recorded to the selected track.

Recording Modes

Logic fun offers several ways to start audio recording at a particular song position.

Standard Recording with Count-in

Recording can be started at any song position. Place the Song Position line to the desired spot, arm the audio track, set your input level, and click on Record.

Depending on the number of tracks that must be played back, there may be a small pause between clicking on the record button, and the start of audio recording.

Logic fun automatically creates a region, based on the new recording. As audio is recorded, the waveform will be drawn into the Arrrange window in real time. You can also get an idea of the input levels in meters to the left of the track icon.

Manual Drop Recording

During playback, it is possible to jump into record mode. Start playback, and at the desired point, press the * key (this is the pre-set Key Command for *Record*). Audio recording then will start, and can be stopped by pressing or clicking Play or Stop. Keep in mind that an audio track must be armed, for audio recording to take place.

After Recording, Please Note…

After audio has been recorded, it is not a good idea to change the tempo. The Tempo should be determined before the first audio recording. Audio recordings have a constant playback rate, and it is very difficult to adapt them to a new tempo. Time Compression or Expansion Algorithms in other programs may affect the sound quality of the audio files negatively.

Tip

It is not generally recommended to move the anchors of regions recorded into a pre-existing MIDI arrangement. (The *Delay* parameter can be used for fine movements of regions.)

Bounce to Disk

In many cases, the Bounce to Disk function is better for accomplishing digital mixdowns. Automation, and effects are reflected in the audio material resulting from a bounce.

A *Bounce* button on the Output object of the Mixer (Master) will execute this function. A window will open, where you may name the bounced file, and set a destination for it on the hard drive.

Tip: When only dealing with a few regions or tracks (or only a certain area), the regions or tracks affected should be switched to solo, or the locators should be set to the respective area. This will limit the bounce to just the part ofd the song yopu wish to mix.

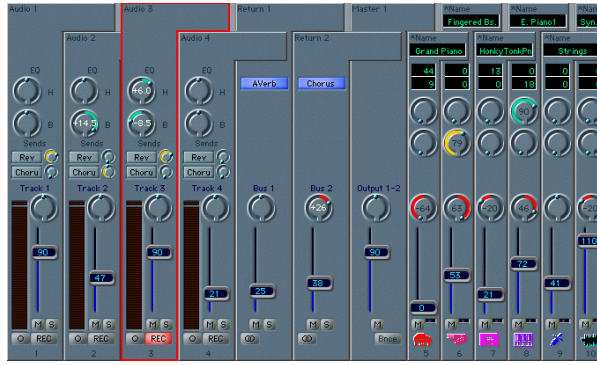
You may save bounced files in either interleaved or split stereo format.

Chapter 10

Mixer and Effects

10.1 An Adaptive Track Mixer

Logic fun creates a mixer based on all tracks which are assigned to the track list of the Arrange window. It contains as many channels as there are tracks. These are laid out in the same order as in the Arrange window. To open the adaptive mixer select **Windows** > **Open Mixer**.



On the left is the parameter display which tells you (among other things) which effects are assigned to the aux sends. Selected tracks are outlined in red. The operation and parameters of the audio tracks and the MIDI tracks are nearly the same. The number at the bottom of the channel is the track number. The graphic layout of the program names and bank select commands is labeled clearly. You can adjust the size of the display vertically and horizontally.

The MIDI channel strips of the Mixer behave as a remote control for the mixing functions of your MIDI sound module. The audio channel strips control the mixing functions of Logic fun.

Resetting Parameters

Clicking a parameter while holding ⌥ (Mac) or ctrl (PC) resets the parameter to a standard value. This is *100* with MIDI volume faders and *90* with audio faders, or *64* (center) with pan and balance. The standard value for the Sends is 0dB (90).

10.2 The MIDI Channel Strips

These are the parameters of the MIDI channel strips used to remotely control the mixing functions of your MIDI sound modules, for any MIDI modules that support these functions. This is the case with all sound modules or sound cards that show the General MIDI, GS- or XG-logos, as well as with the vast majority of more recent multi-timbral MIDI sound generators with integrated effect processors.

- 2 effect sends or
- 2 other types of Controller- or NRPN-messages;
- 128 pre-set patch locations for GM standard sounds
- Bank select commands
- pan
- volume (with the fader).

The MIDI channel strips have "LEDs" that will light up green when note messages are being sent, and yellow, when controller messages are sent.

Try the following:

- Open the Tutorial Song and start playback.

A piano can be heard on Channel 1.

- Move Fader 1 (click and drag the mouse).

The piano will become either softer or louder as the Fader is moved.

- Click on one of the buttons for Channel 1, and move the mouse back and forth.

The value changes according to the vertical position of the mouse.

Technically, “Control Change” produces MIDI events. These are processed by all MIDI tone generators, but only GM tone generators are *guaranteed* to react to these MIDI events in the way intended, if at all.

Tip

How a tone generator (not supported by the GM standard) responds to the GM mixer will depend on the MIDI tone-generator. Most MIDI devices, whether GM or not, use standard controller assignments, such as CC#7 for volume, etc. The main discrepancy with most non GM devices is in program sounds. Non GM devices will not store sounds in the same order. For example, a non GM device may store an Organ sound in the first program location, rather than a Piano sound, as defined by GM.

Switching Sound Programs

Bank Select Messages

If your sound source “understands” bank select events, you can choose the bank number for each of the 16 MIDI channels. Please remember that not all synthesizers support bank select events.

The GM/GS/XG mixer sends bank select events in the standard format. A bank is a group of up to 128 sound programs. You can call up a specific sound program inside a bank via the Program flip menu. For GS and XG sound modules there is an inverted viewing method: within a sound program (reached via a MIDI program change command) you can use the bank select command to select among *several versions* of the sound program (though not 128 versions).

Program

The Program flip menu is where you can choose a sound in the GM sound module by name. Each channel has its own flip menu. The top row is for choosing programs for odd-numbered MIDI channels (1, 3, 5 … 15) and the bottom row is for even-numbered channels (2, 4 … 16).

To choose the sound for a MIDI channel:

- Click the sound name, keeping the mouse button held down.

A flip menu opens containing all the GM sound names.

- Choose a sound from the menu and release the mouse button.

Logic fun selects the sound in the GM sound module.

Controller

You can send any controller data to control different parameters of your sound source, with each of the upper two rows of knobs. First, here's a description of the predefined functions:

Reverb

This knob controls the reverb. The further you turn the knob, the louder the effect signal becomes (in other words, more signal from the channel is fed into the effect processor).

Chorus Depth

This knob controls the depth of the chorus effect. The further you turn the knob, the stronger the effect becomes.

Choosing Other Controllers

If you click-hold the text box at the left edge of the mixer the controller list opens.
Here you can choose the controller that you want to send with the adjacent row of knobs.

In the controller list, all controllers are listed by name, if the MIDI standard provides a certain function for that controller number. All controllers between 1 and 120 are accessible. Also accessible: Some so-called “NRPN“ messages (Non Registered Parameter Numbers), with functions for certain synthesizers as described by their name.

Controller Numbers of the Mixer Controls

These functions are always available:

Name	Symbol	Description	MIDI Event	Ctrl.No.
Program	Flip menu	Sound in GM modules	Program Change	–
Bank	Value box	Sound Bank selection	depending on Bank Select message	
Volume	Fader	Volume	Volume	7
Mute	Button	Volume: Mute: button in Fader: button out	Volume 0 Fader value	9
Pan	Fader	Stereo panning	Pan	10

Note

Before a sound module can react to the events in the GM Mixer, it must be configured to receive the relevant controllers (see “Ctrl. no.” column). For details refer to the sound module’s manual.

Sometimes a module’s response to controllers can be disabled globally (e.g. MIDI-Menu, “Receive Control Change”. Switch this to “Enable”).

These functions can be controlled in GS and XG synthesizers:

Name	Description	MIDI Event	Ctrl.No.
Resonance	Filter resonance (Q)	Resonance	71
Cutoff	Filter frequency (Fc)	Cutoff	74
Attack	Attack time of the envelope generator	Attack Time	73

Name	Description	MIDI Event	Ctrl.No.
Release	Release time of the envelope generator	Release Time	72
Reverb	Reverb depth	Effect Depth	91
Chorus	Chorus effect depth	Chorus Depth	93
Phaser	Phasing effect depth	Phaser	95
Modulation	like Modulation Wheel (often Vibrato)	Modulation	1
Breath	like Breath Controller	Breath Controller	2
Foot Control	like Foot Control Pedal	Foot Controller	4
Portamento	Portamento time (pitch glide between notes)	Porta Time	5
Tremolo	Tremolo effect (volume modulation)	Tremolo Depth	92
Detune	Pitch deviation between the oscillators	Detune	94

Please remember: Many synthesizers cannot react to these controllers. Please refer to their manuals for confirmation.

Extended GM, GS and XG Functions

In addition to the GM Standard, there are extended standards set up by Roland (GS) and Yamaha (XG). In GS and XG mode you can choose different effect programs, as well as controlling the level of the reverb and chorus effects.

- Click-hold “GM” on the right side of the Mixer window. A flip menu appears.
- Choose the extended standard (GS or XG).

Depending on your choice, the controllers for the extended effect then appear.

- Choose the desired reverb or chorus effect from the flip menu.

- Program the desired reverb or delay time under “Time” by holding down the mouse button, and setting the value.

10.3 The Audio Channel Strips

Display Features

The audio channel strips offer several display features, to help you keep track of the recording process.

The Level Meter

Audio objects have a Level Meter that depicts the input, or monitor level.

When a track armed, the Level Meter displays the input level.

The input level is also displayed less precisely, in the Arrange Window, to the left of the track number.

Peak Hold

The meter holds the peak level for a few seconds, in order to guarantee a better reading.

Clip Detector

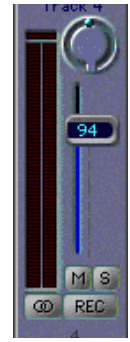
When an input signal is strong enough to cause clipping, the top element will remain lit (“LED” lights up red). This Clip Detector can be reset, by clicking anywhere on the Level Meter.

Volume Level Control

The fader on an audio object determines the playback level. If the track is armed, the fader controls monitor level.

MIDI controller #7 is used to control the fader, for instance when automating. Moving the fader will generate CC#7 messages, as well.

Mute



An Audio object can be muted with the *M*-switch. Clicking on the button again will return it to the original level.

Solo for Audio Tracks

The Solo button allows you to solo any audio track. This is the **S** button on each audio channel strip. When engaged, any other audio objects will be muted, but MIDI tracks can still be heard.

The Solo function in the Arrange window affects both audio and MIDI sequences, and should be used when you want to solo an audio track so that other MIDI and audio tracks are muted.

Pan/Balance

Mono objects are controlled by a pan knob, and this sets the position of the track in the stereo field.

Stereo objects have a balance knob, instead. The difference between a balance control and a pan control is this: Pan sets the position of a single channel in the stereo field, whereas Balance controls the relative levels of two channels with respect to one another. When you move a mono track's pan control all the way to the left, all of the signal is sent to the left channel. When you do the same with a balance control, only the left side of the stereo file is heard, while the right side will be silent.

Equalizer (EQ)

Logic fun provides a two-band equalizer to shape the sound of audio files played on the track. This raises or lowers the frequency of the signal. The three bands can regulate bass (B) and high frequencies(H).

Bus Sends

For each track object, there are two Bus Sends, which send signal to the bus effcts Reverb (Averb) and Chorus. The effect objects function as auxiliary returns.

Arming Tracks

The *REC* button arms a track for recording. As soon as the track is armed, the button begins blinking red. During the actual recording, the button remains lit.

The *REC* button is only found on track objects, not on the two bus objects or the output (Out 1-2).

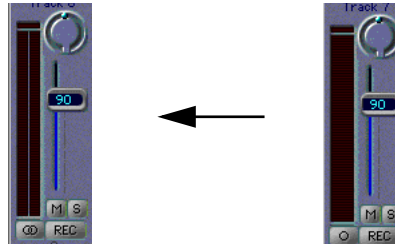
Stereo Objects

Any of the 16 available track objects can be configured as mono, or stereo. All tracks can play simultaneously. It is possible to configure 16 mono tracks, 16 stereo tracks, or any combination; but no more than 16 audio objects are available.

Both channels of a stereo recording are always dealt with together. If a Sample editor is opened for a stereo recording, then both sides will be displayed and processed at the same time.

Configuring a Stereo Object

To do this, click on the mono symbol to the left of the *REC* button.



Track 1 then becomes a stereo object.

One click on the stereo symbol, to the left of the *REC* button changes the stereo object back into an independent mono object.

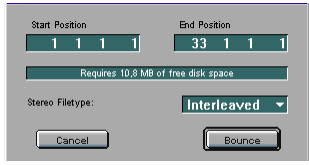
10.4 Bouncing

The output object has a bounce switch ("BNCE"). This allows you to create an audio file based on the all the audio tracks, including volume, pan, and effects. Bouncing takes place in real-time, so that the signals from any plug-ins, or MIDI devices routed into an input used can be recorded in the bounced file:

- Press the bounce switch on the output object
- Set the parameters in the Bounce dialog window (see below).
- Press the bounce switch in the Bounce dialog window.

A file selector appears where you enter a destination folder and name for the bounced file.

Options in the Bounce Dialog Window



Start and End Position

This is where you define the passage which you want to be written into the bounce file. The preset is the whole song, from the beginning of the first audio region to the end of the last. However, if the cycle function is switched on, the preset will be the locator positions. In any case you can adjust the start and end positions manually. For example, if you want to take

account of a MIDI sound module mixed via an audio input object outside the preset region.

Beneath this you are shown the memory requirement for the bounced file.

Stereo File Type

Here you can choose between split stereo, or interleaved stereo.

10.5 The Effects

AVerb

Although the Emagic AVerb is based on a simple reverb algorithm, it delivers remarkably good results. Regarding both, sound quality and performance it is the better choice compared to “3.0 Reverb”.

The actual reverb algorithm is controlled by just three parameters: As its name implies, *Reflectivity* defines how reflective the imaginary walls, ceiling and floor will be. *Room Size* challenges your architectural skills—use it define the dimensions of simulated rooms. *Densitiy/Time* determines both, density and duration of the reverb.

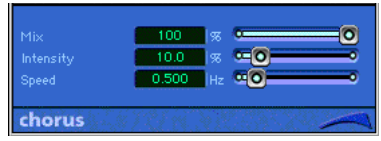
Pre-delay determines the delay between the original signal and the reverb tail.

Whereas high *Pre-delay* settings tend to generate something similar to an echo, low values often muddy the original signal. Ideally, you should go for as a high a setting as possible before the plug-in begins generating something that sounds like a delay

tap. With appropriate pre-delay settings, you can apply relatively generous amounts of reverb to percussive parts, while allowing the attacks to remain intelligible.

Chorus

The Chorus effect can be used to make a signal “wider”.



Intensity

The modulation width of the chorus effect.

Speed

The modulating frequency of the chorus effect.

10.6 Mixer Automation

The term “Mixer Automation” implies the capability of recording and playing back movements of the faders, knobs, and buttons.

Fader movements– just as with MIDI events—are recorded on a track. This track will consist of a sequence with corresponding MIDI events from the respective fader or knob. After being recorded, these events can be edited, just like any other MIDI sequence.

The different channel tracks in the mixer create events with different MIDI channels. When automation data is recorded—from the adaptive mixer, the automation data is recorded to the corresponding track in the Arrange window.

Example: Let’s say you have three tracks: a bass track, a piano track (both MIDI tracks), and an audio drum loop on an audio track in the Arrange window. Click on the *Record* button in the

Transport window, and then move any fader or knob on the mixer, and automation data will be recorded. If the fader for the piano channel on the mixer is moved, Logic fun automatically creates a new sequence on the piano track in the Arrange window. Move the volume fader for the drum loop, and a new sequence is written to the corresponding track in the Arrange window. During the recording process, it is possible to jump back and forth between the mixer channels. The mixer assigns automation data to the correct track automatically.

Mixer Automation:

- Select **Windows>Open Mixer** in the main menu bar.
- Click on "*Record*" in the Transport window.

Move the the faders, knobs, or buttons on the mixer.

Chapter 11

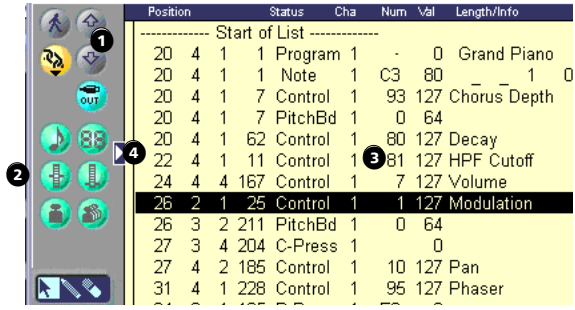
The Event List

The Event List displays MIDI data in the form of a “list”, combining all the data-editing functions of the other editors, (except for graphic operations, and the expressive options offered by the Score Editor).

The Event List is used whenever you need to make precise alterations to recorded MIDI data, and the graphic display of the other editors is not suited to the task. It is the only editor which gives you access to all recorded event data. You can also filter the view, allowing you to edit only specific event types.

Opening the Event List

To open the Event List and view the contents of the selected sequence, select **Windows** > **Open Event List**, or use a key command (*Open Event Editor*…).



Structure

The standard buttons are supplemented by two scroll arrows ❶ to help you move through the list. The event type buttons below them ❷ allow you to filter specific event types from the

display, and access or add them (by clicking on them with the right mouse button (Windows), or while holding down the ⌘ key (Mac)). The structure of the actual list display ❸ is described on page 164. If the Catch function is switched on, the arrow-shaped position marker ❹ will always point to the current event.

Display

The event type buttons allow you to "filter" the display to remove individual event types from the Event List, so that you can view only the specific types of events you are interested in. Click the desired button with any tool (except the pencil).

If a button is grayed out, that event type will not be displayed.

Important!

All the functions affect only the events displayed, so non-displayed events are protected from any alterations you make.

Here is a short overview. For more detailed information on the individual event types see page 166.

The note symbol stands for *note events*.

The symbol with the two digit, seven-segment display stands for *program change events*.

The control wheel symbol with a marker in the center (pitch bend wheel) stands for *pitch bend events*.

The control wheel symbol with a marker at the bottom (modulation wheel) stands for all *control change events*.

The single weight symbol stands for *aftertouch events* (channel pressure).

The multiple weights symbol stands for *polyphonic key pressure events* (polyphonic aftertouch).

11.1 Operation

Scrolling

Clicking either of the scroll arrows moves the display up or down by one event. The event at the position marker is always selected (so the existing selection changes as you scroll). The scrolling speed can be varied as you scroll, by vertically moving the mouse. The key command *Scroll to Next/Previous Event* is also available from the Event window, and has the same end result.

Remember that if the MIDI Out button is switched on, every newly selected event will be played. This means you can scroll through the list and audibly monitor the events as you go.

If you want to keep the selected event where it is, use the usual scroll bar functions.

Selection Techniques

When selecting events with the mouse, you should click near the status column to avoid any unintentional parameter alterations.

You can use any of the standard selection techniques here: individual selection by clicking on objects, multiple selection by rubber banding, or both of these (without altering the previous selection), in conjunction with the ⇧ key.

Any events which you remove from the display by clicking on the event type buttons are immediately deselected. This ensures that all the functions affect only the displayed (and selected) events.

Special Selection Functions

Some selection commands can also be utilized in the Event List by selecting an item with the mouse while holding down additional modifier keys.

1. If you click on an event while holding down the ⌥ (Mac) or ctrl (Windows) key, you select all events between the last event that was selected and the current one.
2. If you hold down the ctrl (Mac) or alt (Windows) key and select an event, all *similar* events will also be selected.
3. If you select an event while holding down the ctrl ⌥ (Mac) or alt ctrl (Windows) keys, all *identical* events will be selected.

The table shows what counts as similar or equal:

Object	Similar	Identical
Controller Event	Controller# equal, any data byte	Controller# and data byte (control value) equal
Note Event	Note equal, any octave	Note and octave equal

11.2 Event Editing

Adding Events

To add an event, click on the desired event type button with the pencil (or with any other tool while holding down the right mouse button (Windows) or the ⌘ key (Mac)). The event is then added at the current song position, and is automatically selected.

Duplicating Events

To duplicate an existing event (for example, so you can alter the parameter value of the copy) click on the original event with the pencil. An input box appears—this is where you enter the position for the newly-duplicated event. If you just hit ↵, the duplicate will appear at the same place as the original.

Pasting from the Clipboard

When adding events using the clipboard's **Paste** function, a position input box will appear, allowing you to type in the position of the first event. Once again, if you confirm by just pressing ↵, the original position of the event is retained. The relative positions are also always maintained.

This means that the events are *not* added at the song position, as in the graphical editors.

Moving Events

To move an event in time, alter its position indicator. As soon as you alter its position, the list is automatically sorted, even though the currently selected event remains the same.

Altering Values

Event positions or parameter values can be altered in the usual way by using the mouse like a slider (grabbing and dragging), or via text input (just double-click on the parameter value).

You cannot alter the *type* of events using this method, however. To alter the event type, you must either open a transform window or add an event of the desired type, and then delete the original event.

Altering the Values of Several Events

If a parameter of a selected event is altered, it will affect the same parameter in all selected events.

Relative Value Alteration

When you alter parameter values in a multiple selection, the relative differences between the parameter values remain unchanged. The parameter values that you grab or double-click on can therefore only be altered until the value of one of the selected events has reached its maximum or minimum value.

Flexible Relative Value Alteration

If you want to continue altering a parameter value in a multiple selection (even if one of the values in the selection has reached its maximum or minimum), hold down the ⌥ (Mac) or ctrl (Windows) key while you move the mouse, or press ↵ to confirm a numerical input.

Absolute Value Alteration

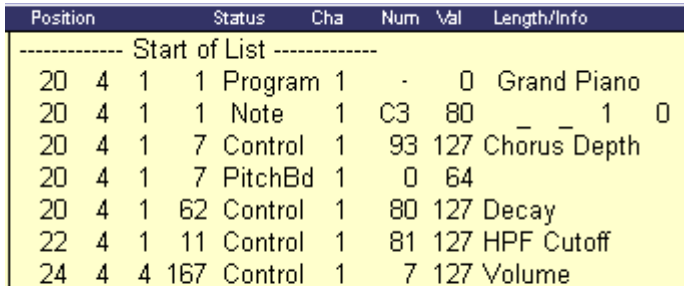
If you want to set a parameter to the same value for all selected events, hold down the ⇧ *and* ⌥ (Mac) or ⇧ *and* ctrl (Windows) keys while you use the mouse as a slider, or press ↵ to confirm a numerical input.

Numerical Value Input

If you want to directly input a number, double-click the relevant parameter.

11.3 Event List Structure

The individual columns in the list have the following meanings:



Position

The position of the events in the song; for note events this means the beginning of the note. The units represent *bars*, *beats*, *divisions*, and *ticks*.

Counting begins at 1 for each unit (first bar, first beat, first division, first tick: 1 1 1 1), and continues until it is carried over to the next largest unit.

Hint

Numerical inputs start from the left (which means you can enter just the bar number if you want). The units can be separated by either spaces, dots, or commas.

Status

This is where you can see the event type, as specified by the status byte of a MIDI message. You cannot directly edit this parameter.

Cha

The MIDI channel used to record an event.

Remember that during playback this MIDI channel will be replaced by the *Cha* parameter of the playback instrument. The event is only output to the recorded MIDI channel when the *Cha* parameter is set to *All*.

Num, Val

These columns contain event data bytes. Their meaning depends on the event type:

Status	Num	Val
Note	Pitch	Velocity
Control	Controller number	Value
Pitch	LSB	MSB
C-Press	(not used)	Value
P-Press	Pitch	Value
Program	Bank Select	Program number

Length/Info

With controller events, this column shows the controller name.

With pitch bend events, a 14-bit value is displayed here, which is composed of the first (Num) and second (Val) Data bytes combined. This value can be edited directly from here.

With notes, the length is displayed here.

Here too, the units are bars, beats, divisions, and ticks. For the sake of clarity, when the length begins with one or more zeros, the "_" symbol is used instead. The minimum length is 1 tick (_ _ _ 1) not 0 ticks, because it makes no sense to simultaneously switch a note on and off.

Numerical input starts on the right, working to the left—and you can enter just ticks if you want. The units can be separated by either spaces, dots, or commas.

11.4 Event Type Structure

Note Events

Num

MIDI note number (note #). The range is from C-2 (note #: 0) to G8 (note #: 127). Middle C is note # 60 and in MIDI terminology is called C3.

On some keyboards/synth modules (notably those made by Korg and Roland), the note range is C-1 (#0) to G9 (#127). In these cases middle C is called C4.

Val

Velocity of a note from 1-127. The value 0 carries the *note off* message, and thus is not available.

Length/Info

Length of the note. Although MIDI can only transfer *note on* or *note off* messages, LOGIC actually stores the position and length of all the notes which makes them easier to access musi-

cally. The *note off* message is generated automatically during playback.

Program Change Events

Program change events can be transmitted to connected MIDI devices to call up different patches. These may be sounds in a synthesizer, programs in an effect unit, or snapshots in an automated mixing desk.

Val

A program number between 0 and 127.

Some manufacturers (e.g. Yamaha) number the programs in their devices from 1 to 128, not 0 to 127. In this case, you have to subtract 1 from the program number given in the device itself.

Other manufacturers use various methods of dividing into groups (or banks) and sounds. The most common is dividing into 8 groups of 8 sounds, each numbered 1 to 8. These devices respond to program numbers 0—63 by calling up storage locations 11-88. The instruction manuals for these devices should contain conversion tables to assist you.

Num

Bank select. Normally you will see this symbol, which means no bank select will be sent. If you assign a number between 0 and 62, a bank select event is sent before the program change event. This allows you to address different sound banks (e.g. preset, internal, card) inside your synthesizer. The synthesizer must be able to recognize controller 32 as bank select, but unfortunately this standard is not yet widely used. If you have any problems with bank select, check your synthesizer's manual to see whether, and how it responds to bank select commands.

Pitch Bend Events

Pitch bend events are used to continuously vary the pitch. They are usually generated by a self-centering pitchbend wheel, or a joystick on your keyboard.

Num

Fine pitch bend division (LSB). Many keyboards just transmit the value 0. If the pitch bend wheel has an 8-bit resolution, you will see the value 0 or 64 here.

Val

The effective pitch value (MSB) of 0-127. The value 64 corresponds to the center (no pitch bend) position of the wheel.

Length/Info

The 14-bit value is displayed in this column as a decimal figure ranging from -8192 to 8191. The value in this column may be edited in the usual way.

Control Change Events

These event types are used to transfer MIDI controllers (e.g. modulation, sustain, volume and pan).

Num

The number of the controller. All the various MIDI controllers (such as the modulation wheel or sustain pedal) have their own numbers (#1 or #6,4 respectively). Some other operations are also defined, such as volume (#7) or pan (#10).

Controllers that are defined in the MIDI Standard are described in the *Length/Info* field.

Val

Value of the controller. Continuous controllers have a range of 0-127. Switch controllers (#64—#90), transfer only two states; *off* (val=0) and *on* (val anything between 1 and 127).

Aftertouch Events

Aftertouch (or channel pressure) events are generated by a mechanical pressure sensor beneath the keyboard. The resulting sound modulation affects all the notes on that particular MIDI channel.

Num

This column is empty with aftertouch events, since they have only one data byte.

Val

Strength of the pressure on the keyboard (0-127).

Poly Pressure Events

Poly pressure events are generated by mechanical pressure sensors beneath each individual key. The resulting sound modulation affects only that particular note.

Only a few keyboards currently support this capability.

Num

MIDI note.

Val

Strength of the pressure on the key.

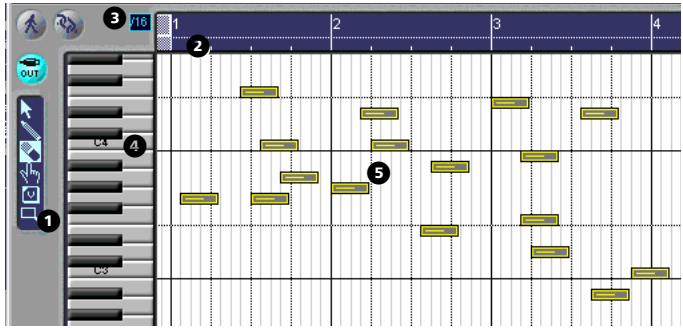
Chapter 12

The Matrix Editor

The Matrix editor is used to graphically edit note events. Its advantage over the other editors is its ability to provide a more precise display of the length, position and velocity of the notes. The Matrix editor is ideal for fine-tuning the positions and lengths of notes.

Opening the Matrix Editor

To open a Matrix editor window showing the contents of the selected sequence, double-click the sequence, select **Windows > Open Matrix Edit** or a custom key command (*Open Matrix Editor*).



The parameter field ❶ contains the standard buttons and the toolbox. As in the Arrange window, there is a bar ruler along the top edge ❷. To the left of this (just as with the Transport window), you can define the sub-division ❸. The vertical keyboard display❹ indicates the pitch of the notes which are depicted as horizontal beams ❺.

12.1 Display

Only notes are shown in the Matrix editor. The beams (and the ways they can be edited) are very similar to the sequences in the Arrange window.

Position

You can see the position of a note in the bar ruler. The background is marked by vertical lines to assist with positioning:

- A straight line at every bar,
- A dashed line at every beat, and
- A dotted line at every division (you can alter the division value in the Transport window, or to the left in the parameter area).

Velocity

The velocity of a note is shown by a horizontal line in the note. The length of the line in relation to the total length of the note corresponds to the velocity value of the note (in proportion to the maximum value of 127).

In addition, the Matrix editor shows the velocity range of notes by using different colors.

This makes it very easy to see at a glance what spread of velocities are contained in a sequence.

If you change the velocity of MIDI notes with the V tool, you will notice that the color of the notes change as you do so.

Note

It may seem obvious, but… please note that this function only works with a color monitor.

12.2 Editing Notes

Creating Notes

To create a note, click with the pencil at the desired point in the background.

Duplicating Notes

To copy an existing note to another position or pitch, first click the original note with the pencil (near the middle).

Now, any notes which you create by clicking the background will have exactly the same length and velocity as the original note.

Moving Notes

You can move selected notes by grabbing them (near the middle) and dragging them. If you move notes vertically they will be transposed, and if you move them horizontally they will be moved in time. While you keep the mouse button held down, the target position and pitch are shown in the info line.

When you move notes horizontally, they snap to the division positions (you can alter the division setting whenever you want).

Setting a finer Grid

When moving notes in the Matrix window, you can make fine adjustments at a high resolution by holding down the ctrl (Mac) or alt (Windows) key as you drag. The exact resolution you will achieve depends on the current Zoom setting of the window.

If you hold down the ctrl+⇧ (Mac) or alt+⇧ (Windows) keys, you can move the notes by single ticks (which is the finest time resolution possible in a sequencer), completely independently of the Zoom setting and the time grid.

Copying Notes

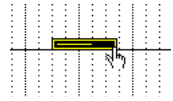
Hold down the ⌥ (Mac) or ctrl (Windows) key as you move the notes.

This allows you to copy or move notes between two Matrix Editor windows, even if the windows belong to different songs.

Of course, you can also copy (**Edit** > **Copy**) or move (**Edit** > **Cut**) the notes onto the clipboard, and then add them at the current song position with the original pitch (choose **Edit** > **Paste**).

Altering Lengths

To alter the length of a note, grab it by its bottom right-hand corner and drag it to the required length. While you are altering the length, the info line will keep you informed of the precise length of the note.



Altering the Lengths of Several Notes Simultaneously

You can adjust the lengths of several selected notes at once (e.g. a chord) simply by altering the length of one of them. This will alter the lengths relatively among the selected notes.

Making Notes the Same Length

If you want to make several selected notes the same length hold down ⌥⇧ (Mac) or ctrl⇧ (Windows).

What Tools to Use

When altering note lengths, you can use either the mouse pointer or the pencil. However, it is better to use the pointer, because you might accidentally draw new notes with the pencil.

With very short or small notes it can sometimes be difficult to grab the bottom right corner. In this case, you should use the index finger tool which allows you to grab notes anywhere, and alter their length.

Altering the Velocity

To alter the velocity value, click on the note with the V tool. The info line will then indicate the velocity value of the note you have clicked on.

If you hold down the mouse button, you can alter the velocity by vertically moving the mouse. If the MIDI Out function is switched on, the note will be output every time you alter the velocity.

Altering the Velocity of Several Notes

All selected notes can be altered simultaneously; the differences in the velocity values will be retained. If the velocity value of one of the selected notes reaches an extreme value (0 or 127) you can't go any further. However, by simultaneously pressing the ⌥ (Mac) or alt (Windows) key you can carry on altering the velocity values until the clicked note reaches an extreme value.

To give all the notes the same velocity value, hold down the ⌥+⇧ (Mac) or alt+⇧ (Windows) keys as you alter the value.

Deleting

You can delete selected notes by pressing the ⌫ key, or clicking on them with the eraser.

Selection Techniques

In addition to the usual selection options, you can select all notes of the same pitch throughout the whole sequence by clicking the corresponding key on the vertical screen keyboard.

If you hold down the mouse button, you can also draw (rubber-band) a pitch range over the screen keyboard and select all the notes within it.

Quick selection of Event Editor

By double-clicking a note you can open the Event Editor with this note selected.

Chapter 13

The Score Editor

The Score Edit window basically serves two purposes:

- As a MIDI editor for users who prefer to work with traditional music notation as an interface for MIDI sequencing. Input, editing, copying or deleting of MIDI events and changing their musical position can be done directly in the Score window. One can also change between different display levels. (i.e., view single or multiple parts at once)
- To create score printouts. AlthoughLogic fun Logic fun does not offer as many score layout options as the Gold and Platinum versions, it can still be used to create printouts for basic purposes. In addition to notes, text can be inserted.

MIDI sequencing and preparing music for printout are closely related in Logic fun. Recorded MIDI notes immediately are displayed in the score. Similarly, notes which are inserted with the mouse into the score, or changes to existing notes are immediately reflected in the playback of MIDI.

Please keep in mind that all parts of Logic fun work together. Many functions are available in more than one window.

Important!

Opening the Score Edit Window

There are several ways to open the Score window:

- Menu **Windows** > **Open Score** (default key command ⌘ 3 (Mac), or ctrl 3 (Windows).
- To recall an already opened window (which is hidden behind other windows), select that window's name in the main **Windows** menu, where all currently opened windows are listed.

Several Score windows can be open at once. This can be used for example, to display different instruments in separate windows, or to have one window with the full score and one with a single instrument, or to display just a single sequence.

Note

13.1 General Appearance of the Score Edit Window

Important Elements of the Score Edit Window

Here's an overview of the Score Edit window's elements and their names, as used in this manual. In the parameter column along the left hand side (from top to bottom) you can see:

- Buttons for Catch, Link, and MIDI-Out
- Display Parameter Box
- Event Parameter Box
- Toolbox
- Partbox

Detailed descriptions of these terms can be found later in this chapter. Descriptions for Tool Box, Bar Ruler, Zoom symbols, the switches for Catch, Link, and MIDI-Out can be found in other chapters, since all these exist in other windows as well. The functions found in the other menus are all described in this chapter.

There are a few options for changing the general appearance of the Score window. The settings for these options can be found in different places:

View Menu

Here you can activate and deactivate the following display options, by selecting the corresponding menu entries:

Parameters

Hides/shows the left column of the Score window (Display Parameter Box, Event Parameter Box, Partbox etc.).

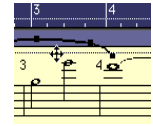
White Background

Switches between a white and yellow background.

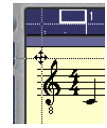
Moving the Borders between the Different Areas

You can move the left and upper borders of the main working area by positioning the cursor on one of those lines, and dragging them. During these operations, the cursor becomes a tool with two or four arrows. There are three possibilities:

- On the left side you can alter the width of the column containing the parameters, (thereby mainly changing the appearance of the Partbox Groups), and the instrument names.



- Along the upper border you can create *vertical headroom*. This is useful mainly when working on parts in linear view, which contain very high notes or symbols above high notes, that might not be visible otherwise, and therefore could not be edited.



- In the upper left corner of the main working area, you can change the width of the parameter column, and the height of the bar or page ruler.

Parameter Boxes

Both the Display Parameter Box and the Event Parameter Box in the parameter column at the left side of the window can be reduced to display only their title lines, by clicking on the triangles at their upper left corners.

The Main Working Area

The appearance of the score display itself display depends on:

- The settings of the *Link* and *Catch* buttons (see page 198).
- Zoom level: There are 11 possible zoom levels. Please note: These do not affect the printout, but only the screen display.

13.2 Logic fun's Notation Concept

Recorded sequences automatically are displayed in the Score window. If you like the sound of the playback, but not the score display, in most cases you can get the desired result by changing the display settings in the *Display Parameter Box*. You can further control the display by selecting different fonts, sizes and styles for text in the Score window.

If you generally prefer mouse input instead of MIDI real-time recording, you must first create empty sequences, using the Pencil tool in the Arrange window. These will then be displayed as empty staves in the Score window. Rests are always displayed automatically in Logic fun, and don't need to be inserted.

If you want to insert additional notes into a previously recorded sequence with the mouse, you can select a rhythmic value for it from the *Partbox*, and drag it to the desired bar and pitch position, in any of the visible staves.

No matter which input method you decide to use, the selected display settings will always be applied to the inserted MIDI events. This means for example, that a thirty-second note can only be displayed if the *Qua* parameter in the *Display Parameter Box* of the corresponding sequence is *1/32*, or shorter. If that value is set to*1/8*, an inserted 32nd note will be displayed as an eighth note (but still played back with the length of a 32nd). Note that this also is affected by the *Interpretation* setting in the sequence's Display Parameter Box. However, these settings can be different for each sequence, even if they are on the same track. To use different display parameter settings in the same staff, just cut the sequence with the *Scissors tool* in the Arrange window. Now different display settings can be assigned to the resulting shorter sequences, although they will still be displayed as one uninterrupted staff. MIDI playback will not be affected by this procedure.

The printed result always corresponds to what you see in the selected Score window.

Staff Display in Relation to Position and Length of Sequences in the Arrange Window

Sequences in the Arrange window represent parts played by certain instruments (represented by the tracks), and are displayed as staves in the Score window.

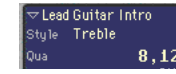
Each of these systems or (in the Arrange window) tracks, can consist of an (almost) unlimited number of sequences. If in the Arrange window, the sequences on one track directly follow one another (with no gaps between them), they are displayed as one continuous staff in the score (except in *Show Contents mode, (Link button activated)*, where only one sequence at a time will be displayed).

The Display Parameters for each of these sequences can be set differently. This allows you to influence the interpretation of sequences recorded in real time in a very flexible way, especially concerning the rhythmic display. If necessary, sequences can be divided into several parts with the *Scissors tool* (in the Arrange window), allowing different display parameters to be assigned to each resulting part, because each is now an independent sequence.

Logic fun's Basic Elements for Score Display

The following elements and their parameters form the basic concept for the score display in Logic fun. (Detailed explanations will follow later in this chapter)

The Display Parameter Box



The parameters in the Display Parameter Box affect the display of the selected sequences. They can be different for each sequence, whether the sequences are on different tracks, or the same track.

Score Styles

Score Styles contain a fixed combination of predefined display settings: The clef(s) and the display transposition.

Assigning a different Score Style to a sequence will result in a display that reflects the chosen Score Style. Keep in mind that the Score Style *never* affects MIDI playback, it only affects the way Logic fun displays the score.

Input Methods in the Score Edit Window

There are several methods for the input of notes and symbols in the Score window:

- MIDI real time recording
- Mouse input of notes from the Partbox
- Insertion of copied events

Any input and insertion methods can be combined. With all input methods, however, you should keep in mind that MIDI playback can also be influenced by the settings in the *Sequence Parameter Box* in the Arrange window (for example the playback transposition settings). The second essential thing to keep in mind is, that the score display always depends on the chosen display parameter settings for each individual sequence.

13.3 MIDI Real Time Recording in the Score Window

Although MIDI real time recording usually is done in the Arrange window, you can also start recording directly while working in the Score window. You must first select the desired destination track in the Arrange window's track column. In the Score window, this can be achieved by clicking on a staff which belongs to that track. If there are no sequences on that track

yet, you will have to switch to the Arrange window for the recording, since the track is not yet displayed in the Score.

The score display of newly recorded notes depends on:

1. The score display settings in the *Display Parameter Box*. Please read the corresponding sections in this chapter.

2. The *Quantize* and *Transpose* settings in the Arrange window's *Sequence Parameter Box*:

   Logic fun creates the score display based on the actual MIDI data, including any changes caused by these two playback parameters.
   An example: If *Transpose* in the Sequence Parameter Box is set to+*2*, a note that initially (when recorded) was a C will be played back *and* displayed as a D. The same applies to playback quantization.

Note: The Score window's *Info Line* always shows the original pitch of a note, independent from any playback, or display transposition parameters.

- Positioning the SPL directly in the Score

The Song Position Line can be set directly in the score window by clicking into a staff at the desired position, while pressing the ⌥ (Mac), or ctrl-key (Windows). This function is only available when the sequencer is stopped. The chosen position is displayed in the *Info Line* while the mouse key is pressed.

13.4 Mouse Input

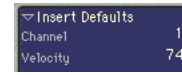
In order to insert notes and text elements with the mouse, there has to be a staff into which these objects can be inserted. Each staff (even an empty one) is the direct representation of one or several sequences. Empty sequences can be created with the Pencil tool in the Arrange window, where their length and position can also be changed.

These empty sequences are displayed in the Score window as empty staves, with automatically displayed rests.

Input

For mouse input, you first have to select a note in the *Partbox*, and then drag it to the desired position in a staff. As a positioning aid, you will see an *Info Line* while you are "holding" the note with the mouse. Now move the mouse with the button pressed, until the desired position is shown in the *Info Line*. Release the mouse button. It is especially important to use the *Info Line* to help you find the correct position when you are working in a small zoom level.

MIDI Channel and Velocity of Inserted Notes



The MIDI channel and velocity of notes inserted with the mouse are determined by the *Insert Defaults* settings in the Event Parameter Box. These *Insert Defaults* are visible (and can be edited), whenever no object is selected. Click anywhere in the working area, except on an object, to display this status. Make sure that "Insert Defaults" is displayed in the top line of the Event Parameter Box.

Insert Quantization

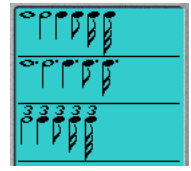
To make positioning of notes and symbols easier, objects can be inserted only at certain bar positions:

- For positioning of notes there is an invisible grid. You can imagine its resolution as if the whole bar—beginning on one—were filled with notes of the chosen value. For example: In an empty 4/4 measure, half notes can only be inserted on beats one and three, eighth note triplets only on the first, second or third eighth note triplet of every beat, and so on.
- Also, all binary and dotted values can be inserted at any position of an automatically displayed rest, i.e., if there is an eighth note on one, you can insert a quarter or a dotted quarter note at the second eighth's position.

You can, however, move all notes to any desired position by editing their numeric bar position in the Event List. For example, if you want to insert a half note on “two” in 4/4 time, place it on “one” or “three”, and change the position to “two” in the Event List.

13.5 The Partbox—Inserting Notes

The note values are organized in three sub-groups: Simple (binary) rhythmic values, dotted values and triplet values:

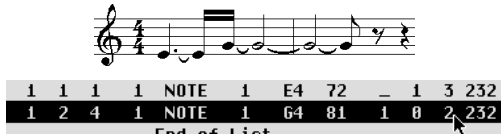


Inserting any of those symbols creates a MIDI note event with exactly the length of that value. For display however all these MIDI notes are interpreted by Logic fun as if they had been recorded in real time. Therefore the Display Parameter Box’ settings have to be set in a way that allows the inserted notes to be displayed correctly. Please read the page 193

If you simply want to enter notes with the mouse, without using real time recording at all, select the highest possible *Qua* value in the Display Parameter Box.

Ties

Ties cannot be inserted in Logic fun, but are created and displayed automatically, according to the length of the MIDI note. The reason: Notes which are displayed as several graphical notes connected with ties in Logic fun always represent only *one* MIDI note. To insert such notes you first insert a shorter note value, and change its length afterwards in the Event Parameter Box or the Event List.



Triplets

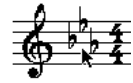
Depending on the display quantization chosen, and the particular situation, Logic fun usually recognizes and notates regular triplets correctly. However, this requires a "hybrid" *Qua* value in the Display Parameter Box (see the page 194).

After inserting the first note of a group of triplets, you won't see a triplet yet. Insert the second note exactly at the graphic position of the rest following the first inserted note, and do the same with the third note. Now a complete triplet group will be displayed.

Automatic Rest Display

Rests are always displayed automatically in Logic fun, in such a way that existing notes and automatic rests together always add up to complete bars, according to the given time signature.

Key Signatures and Key Signature Changes



The *basic* key signature of a piece can be set by double-clicking into the first staff, between clef and time signature. This opens a dialog box where you can set any major or minor key. There is also the option in this window to disable the use of double flats and sharps.

This method not only works for the first staff, but in all staves. However, if the piece contains prior key signature changes, the newly inserted key signature only changes the key which is active at that particular point up until the next key signature change. As with the starting key signature, inserted key signatures affect all sequences, on all levels.

Natural symbols are displayed automatically with the new key signature when necessary (e.g. when changing from A flat major to F major or A major).

Minor Keys

To choose a minor key, insert the parallel major key first (e.g. Ab major for F minor). Then double-click on the key signature. In the appearing dialog box, click on the word *major*. The display will change to *minor* and at the same time to the parallel key. This also works the other way around.

Display Transposition Of Key Signatures

Note: *Display transposition* of key signatures for non-C instruments is achieved by assigning a corresponding Score Style to the desired sequence(s). This will only affect the displayed transposition of the selected part(s), not the MIDI output. If you insert general key signature changes into your song, Logic fun will automatically account for this in the displayed key signature for non-C Score Styles. For example, if your song plays in the key of C Major, a part assigned the *Trumpet in Bb* style will be displyed in the key of D major (but will still play in C major). If you insert a key signature of F major at bar 33, the displayed key signature will be G major.

Time Signatures and Time Signature Changes

Time signature changes can be inserted at the beginning of any bar, either by double-clicking the time signature, or by changing the time signature setting in the Transport window. In the latter case, the signature change will be inserted at the beginning of the measure of the current song position

Time signatures and time signature changes are also effective globally for all instruments, on all display levels. It is not possible to insert different time signatures for different instruments or tracks. Time signature changes affect only the display, not

the playback. Note: The tempo indication in the Transport window always relates to quarter notes, even if eighth notes are chosen as the denominator for the time signature.

Editing Time Signatures

All time signatures can be edited by double-clicking on them. A dialog box opens, where you can insert the desired changes. To delete a time signature change, use the Eraser tool or select the signature and press ⌫.

13.6 Move, Copy and Paste in the Score Edit Window

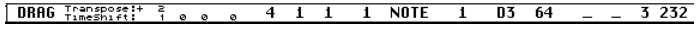
Moving or copying of complete sequences, or major parts of a sequence should generally be done in the Arrange window.

Still, most of the following described functions in the Score window work similarly to Logic fun's other editor windows. However, it is *not* possible to copy, or move time or key signature changes.

Moving/Copying with the Mouse

You can move/copy by dragging the selected objects (with ⌥ (Mac), or ctrl (Windows) for copying). This allows you to move or copy any number of notes to other bar positions and/or pitches.

It is important to watch the *Info Line*, which appears during this process. It shows the status (*Drag* or *Copy*), the difference from the original position (*Transpose* and *Timeshift*), and the current cursor position (bar position and—for notes—pitch).



Positioning Grid

Movement along the time axis occurs along a quantization grid, corresponding to the particular sequence's chosen display quantization (*Qua*) in the Display Parameter Box. If a hybrid quantize value is chosen (i.e.*16*,*24*), the grid corresponds to the binary value (*16* in this example). If note positions are not in accordance with this time grid (for example, because they were recorded in real time), their relative offset to this grid is still kept when moving or copying them. This allows you to move or copy unquantized passages within the Score Editor, without losing the original time feeling.

Please note: Copying and moving notes with the mouse is only possible within the same sequence.

Moving and Copying Several Objects at Once

To move or copy several objects (notes and symbols), just select all desired objects (rubberband or ⇧-click) and drag one of them (preferably the first one, or one positioned at exactly the beginning of a measure) to its destination position. Again, watch the *Info Line* for exact positioning. The other selected objects will be moved or copied in exact relation to the first one.

It is also possible to simultaneously move or copy objects which are in different sequences/staves. Each event will be moved/copied to its new position within its original sequence.

Move/Copy with Cut, Copy & Paste via the Clipboard

These menu or key command functions work the same way as in many other software programs and in the other Logic fun windows.

Important

Please note: *Paste* inserts the clipboard's contents (i.e. a note) into the selected sequence *at the current song position* (indicated in the Transport window). So, before pasting, you have to set the Song Position Line to the desired destination position.

When you copy and paste several objects at once, the *first* object is pasted at the indicated bar position, the others in relation to it.

Note: If you copy the contents of a whole bar which starts with a rest on the first beat, the first object is not on *one*, since automatically displayed rests are not objects, and therefore cannot be copied. In this case, you have to set the paste position to the position of the first actual object.

Automatic Insert Quantization

Important

When you *Paste* (or *Paste Multiple*) objects from the clipboard, the position of the first inserted event is automatically quantized according to the current global display format (in the Transport window). If, for example the current bar position is *4.1.1.37*, and the global display format is set to*1/16*, the pasted object will be inserted at position *4.1.1.1*. When the clipboard contains more than one object, the other objects' positions are not quantized, but their exact relative position from the first object is kept.

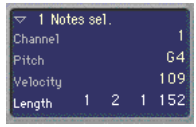
If you don't want this (i.e. because you want to keep the unquantized timing of the original preserved) it is better to use one of the other methods of copying.

13.7 Editing Notes

Changes in the Event Parameter Box

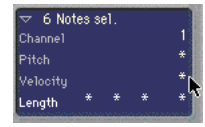
In the Event Parameter Box you can edit the following parameters (please also note the subsequent explanations about changing several selected objects simultaneously):

Notes



MIDI channel, pitch, velocity and note length.

Changing Several Selected Objects Simultaneously in the Event Parameter Box



If several objects are selected, this is indicated in the Event Parameter Box' title line by *X Notes/Events/Texts selected*. (*X* being the number of selected objects). The terms *Notes*, and *Texts* are used only if the current selection contains objects of that one particular type.

While multiple events are selected, each displayed parameter can be edited for all objects at once. " * " as a value means that the selected objects have different values for that particular parameter. There are different options for changing these values:

Relative Change (Preserving Differences):

Grab the " * " with the mouse and use the mouse as a slider. The value shown during this process belongs to the first of the selected objects. The other objects are altered by the same amount. You can also double click the value and insert the desired change (a number with a plus or minus in front of it) into the resulting entry field (see above).

Absolute Change (All Values Set Equal):

Press ⌥ (Mac), or ctrl (Windows) during the above described procedure: As soon as you move the mouse while holding the modifier key, the parameter is set to the same value for all selected objects.This way you can set all notes of a chord to the same length or velocity, or set all selected text objects to the same height (*vert.pos*).

Deleting Objects in the Score Window

Here is a short overview of the methods available to delete objects in the Score window:

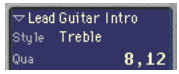
- With the Eraser tool (works for all objects)

- With ⌫ (Backspace) or **Edit** > **Clear**, while the corresponding objects are selected (flashing).

Note

You can only delete events in the Score window which are displayed. If, for example, you erase notes from a real time recording in the Score window, MIDI controller events or pitchbend data, which were recorded together with those notes, are not going to be deleted. In such cases, use the Event List to delete the unwanted events. Keep in mind that you may have both the Score Edit and Event List windows open at the same time.

13.8 The Display Parameter Box

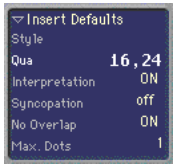


The settings in the Display Parameter Box can be different for every sequence. The displayed settings always refer to the sequence(s) currently selected. Those settings do not affect the MIDI playback of notes, but only the score display.

Different Settings within the Same Staff

If you cannot seem to find the appropriate display parameters for a particular sequence, keep in mind that you can divide each sequence using the Scissors tool in the Arrange window. This will leave the MIDI playback unaltered, but gives you the option to select different display parameters (e.g. display quantization) for each sequence. As long as the resulting sequences have no gaps between them in the Arrange window, they will still be displayed as a continuous staff.

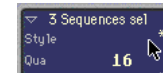
Default Settings for New Sequences



If a new sequence is created either with the Pencil tool in the Arrange window, or through MIDI recording, Logic fun always applies the *Default* parameters to that sequence. These can be seen and edited in the Display Parameter Box, whenever no sequence is selected (the title line says *Insert Defaults* to indicate this status). These settings will remain as you set them for the current song, but can be changed anytime. Click on any empty spot in the main working area (below or above the score) to display the *Insert Defaults*. You can now edit any of the para-

meters. (for example, to set *Qua* to the display quantize setting that you will use for most sequences in that song) From that point on, all new sequences will adopt these settings, as soon as they are created. If *Qua* is set to *default* here, the *Qua* setting of newly recorded or created sequences will match the *Global Format Value* in the Transport window (details see below).

Changing the Settings for Several Sequences Simultaneously



This is possible, if all desired sequences are selected. In the top line of the Score Parameter box, instead of the sequence name, you will see an indication of how many *sequences* are selected currently (*3 Sequences sel.*). If these sequences have differing values for any of the parameters, a "*" will be displayed in the corresponding line. If you edit this value, all selected sequences will now have the same value for that particular parameter.

Rhythmic Interpretation of Sequences

Traditional music notation is an imprecise way of describing the musical content in a piece. The actual performance depends heavily on the interpretation of the performing musicians. Quarter notes for example, hardly ever are held exactly for their entire duration.

The rhythmic interpretation of MIDI sequences recorded in real time to a click presents a similar problem, especially if one considers that Logic fun records MIDI events with a resolution of 960 ticks per quarter note. Nobody will play a downbeat at the exact time of the click. In some styles of music, it is common to even play a bit "laid back", or behind the beat. So, it is important that you have some idea of how the printed display of your music should look in comparison with your actual performance. This will help you to determine the proper Display Parameter Box settings, which will do much to control the display of your music.

The Parameters in the Display Parameter Box

Title Line: Name of the Sequence

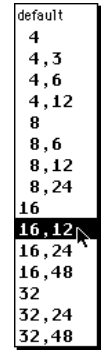
The name displayed here is identical to the name of the selected sequence in the Arrange window. It can also be edited from here. A click on the name opens a text entry field. If more than one sequence is selected, this line reads *X Sequences selected*, if nothing is selected, *Insert Defaults* (the default settings for new sequences).

Style

The Score Style used for the score display of the selected sequence. This is selected from a flip menu, which contains all available Score Styles for the current song.

Score Styles have no influence on the rhythmic interpretation and display, but are used to control such general display factors as the clef, display transposition and number of staves for the sequence. Their features are explained on page 196.

Qua (Display Quantization)



This parameter determines the shortest note value which can be displayed in the corresponding sequence.

The *Qua* value is chosen from a flip menu which contains the available display quantizations. Among these there are binary quantizations (displayed as *one* binary value like *8* or *32*), and hybrid quantizations (two values combined, a binary and a ternary value, i.e. *8,12* or *16,48*).

The binary values always correspond to the note value with the same denominator, i.e. 32 = thirty-second note etc. Ternary values refer to triplet settings. Here is a list of the ternary values and their corresponding triplet values:

"*Qua*" Setting	Corresponding Note Length
3	1/2-note triplets
6	1/4-note triplets

"*Qua*" Setting	Corresponding Note Length
12	1/8-note triplets
24	1/16-note triplets
48	1/32-note triplets

Automatic Display of Triplets

When a binary display quantization value is used, triplets will not be displayed at all. Therefore a "hybrid" quantization value must be chosen for the *Qua* parameter, to enable the proper display of triplets.

Default Setting

Unlike in older versions of Logic fun, the *Qua* cannot be set to *default* in already existing sequences. The *default* option can only be used in the *Insert Defaults* (see above) which determine the default settings for newly recorded or created sequences. If default is chosen there, the *Qua* setting of any new sequence will depend on the *Global Display Value* in the Transport window. In this case, the *Qua* value will always be the hybrid value which contains the global display value currently set in the Transport window plus—in case of a binary global value—the next higher ternary value or—in case of a ternary global value—the binary value which is divided by that particular ternary value.

A few examples: A global value of 1/8 will result in an 8,12 *Qua* setting for new sequences, global value 1/12 will become Qua = 4,12, global value 1/16 will result in *Qua* = 16,24, 1/24 in 8,24 and so on.

However, if a particular *Qua* value has already been set in the *Insert Defaults* (which are displayed in the Display Parameter Box whenever no sequence is selected), all new sequences will be assigned this value, regardless of the Global Display Value in the Transport window. Any of these values can be changed after recording.

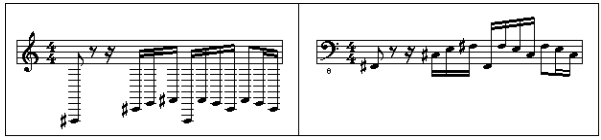
Swing Notation

For regular swing notation *8,12* should be used as the display quantize parameter. This enables the display of eighth-note triplets, but at the same time displays two uneven notes on one beat as regular eighth notes. For swinging sixteenth notes (shuffle funk, hiphop etc.) the same principle applies, however, in this case *Qua* would be set to *16,24*.

For double-time passages, you have to cut the sequence in the Arrange window and assign a correspondingly higher quantize value to the new sequence containing the double-time figure.

13.9 Score Styles

Score Styles in Logic fun are preset formats that could be compared to preset text formats in word processing and desktop publishing software. In this case, however, it is score display attributes that are stored and assigned to sequences. For example, see how choosing a style affects the display of the low register melody in the sequence shown below:



Better legibility by choosing an appropriate Score Style (right)

Score Styles in Logic fun include and determine the following (fixed) parameters:

- Clef
- Display transposition
- Number of staves (for the display of *one* sequence)
- Vertical distance between staves

Note: Unlike the "Qua" parameter in the Display Parameter Box, Score Styles do *not* affect the rhythmic display.

In Logic fun you will find 3 preset Score Styles. (The Gold and Platinum versions provide an unlimited number of user-definable Score Styles). Here is a complete list, together with the parameters of those styles (for details see below):

Style	Staves	Clef	Transposition
Bass	1	Bass	-
Piano	2	Treble/Bass	-
Treble	1	Treble	-

Assigning Score Styles to Sequences

You assign a Score Style to a sequence by selecting the sequence, then selecting the desired Score Style from the flip menu which appears when you click-hold on the *Style* Parameter line in the Display Parameter Box.

Score Style Assignments can be changed anytime.

Reminder: Sequences on the same track in the Arrange window which directly follow each other without gaps between them, are displayed as one continuous staff, but still can use different Score Styles.

Distance between Staves

The vertical distance above the staff can be changed directly in the score, by dragging the staff up or down at its clef.

Please note: This procedure change the distance settings of the corresponding Score Style itself. This means that *all* sequences which use the same Score Style will be affected, which is not always what you might want!

Using the Multi-Stave Score Style “Piano”

If you use the *Piano* style for a sequence, that sequence will be displayed as a two-stave system. The *Piano* style (second style in the Score Style list) simply distributes the notes according to their pitch: All notes below middle C will be written in the

lower staff (bass clef), middle C and above will be written in the upper staff (treble clef). This is also called a *split point*, since the notes are split between the staves at a certain point or pitch.

13.10 Display Levels

In the Score Edit window you can work with the following display levels:

Content Linked: Activated by a click on the *Link symbol*. In this mode only the *object currently selected* in another window is displayed in the Score window.

Content Catch: Similar to *Content Linked*, but *Catch* is also activated. Only one sequence is displayed at a time, but if there are several sequences on one track, during playback the display changes to the next sequence on the same track, according to the current bar position.

Not Linked (Link button deactivated): In this mode, Logic fun simply stays at the currently visible display level and doesn't react to sequence selection in other windows. If you always want to see the full score in a particular Score window, choose this mode, once the full score is displayed (see below).

Changing between Single Sequence and Full Score Display

At all display levels, a double click on a sequence/staff will take you to the next lower level (into the display of only that particular sequence). A double click in the empty space below or above the staves will bring you up to the next higher level (the full score display of all sequences of that song).

Hint: It is possible to work with several open Score windows with different Display Levels and/or different Instrument Filter settings.

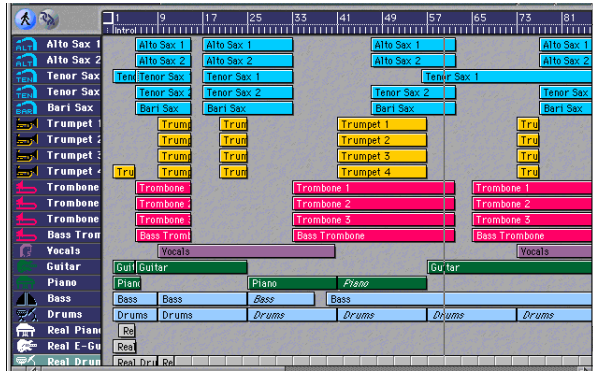
Muted Sequences or Tracks in the Score Display

Muted sequences will not be displayed in the Score window, no matter what the *Display Level* or *Instrument Filter* settings are.

Sequences on *muted Tracks*, however, will remain visible, although they will not be played back via MIDI.

13.11 Adapting MIDI Sequences for Score Printout

If a song's MIDI sequences have been recorded in real time, the Arrange window often looks similar to the picture below. Sequences are spread all over the place with gaps in between. Sometimes sequences belonging to the same instrument are on different tracks. Sometimes *Loops* are also used:



The score printout always corresponds to what is displayed in the active Score window. The staves which represent the sequences shown above would therefore be spread over the pages, with lots of space in between.

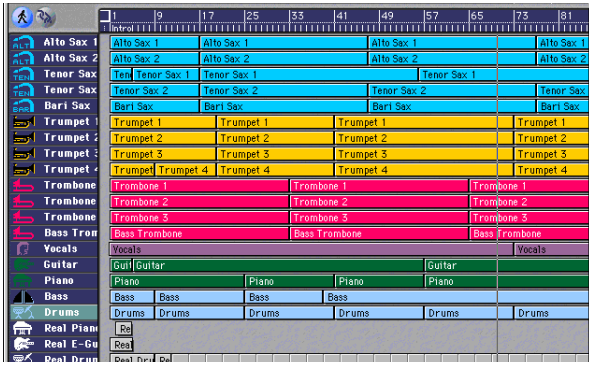
However, if you want to print out the arrangement shown above, you will need continuous staves for each instrument (track). This is achieved by changing the length of the

sequences in the Arrange window in such a way, that they connect with one another on each track.

In the Arrange window shown above, there is a looped sequence on a track called *Real Drums* (bottom track). Sequences like these hardly ever are written out in scores, so there is also another instrument (*Drums*) created for the score display. Instruments which should not be displayed in the score (like *Real Drums*, *Real Piano*, *Real Guitar* in the above example) can be excluded by simply muting their sequences before you print your score.

All sequences which are intended to be displayed on the same staff, have to be on the same track in the Arrange window. This has already been done in the above example.

Next, you have to get rid of the gaps and overlaps between sequences, by changing their length. After this procedure, the Arrange Window in the example above would look like this:



In the Score window, these sequences are now displayed as continuous staves (except in *content link* mode, where only single sequences are displayed), since they are now continuous in the Arrange window.

Alternative Method: Merging Sequences

Instead of changing the sequence borders as described above, it is also possible to simply *Merge* all the sequences of each track, thereby creating one long sequence per track. This needs to be done in the Arrange Window. Use the Glue tool.

Please note: Although this method seems to be easier and faster than adjusting all the sequence borders as described above, you loose the ability to choose different display settings (especially display quantization) for the different sections (sequences) of each track.

13.12 Printout

For printing, it is important that you first choose the appropriate paper size and format in the menu **File** > **Page Setup...**. The Score window with the intended print view has to be selected as the active window. Then start printing by selecting **File** > **Print...**, or use the corresponding key command. There will be a dialog box which is slightly different from printer to printer. Depending on the printer, there may be some additional options, such as which pages you would like to print or the number of copies.

The printout always is identical to the display in the Score window. However, neither the dashed lines which represent page and header margins nor the cursor or the Song Position Line will be printed. Those are only visible on the screen.

Printers work with a higher resolution than monitors. Therefore you should work in high zoom levels when doing layout work, such as exact positioning of text elements. It is very easy to change back and forth between a normal and extremely enlarged view of the display by using the Zoom tool.

Hint

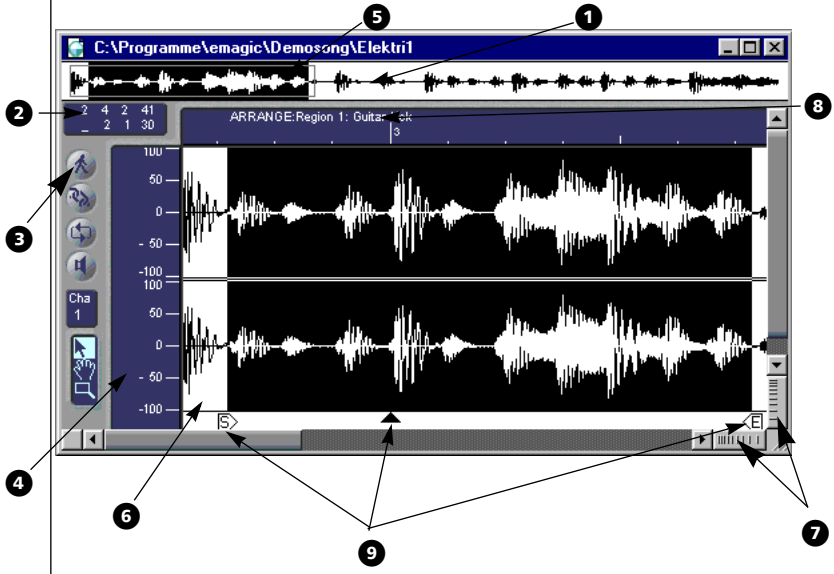
Chapter 14

The Sample Editor

14.1 The Sample Editor

The Sample editor offers tools that alow you to make changes to the audio files you have recorded or imported into your song. These edits are “destructive” in that the actual audio data is affected by the functions. This is in contrast to the non destructive editing described in earlier chapters, where working with audio in the Arrange window was stressed. The Sample Editor provides a detailed display of the audio waveform, and provides tools used for manipulating the data directly. The Sample editor is opened by double clicking on a region in the Arrange window. If the underlying audio file is longer than the region selected, only the portion of the file encompassed by the region will be highlighted when the Sample editor opens– this is practical, because then all changes made will only affect this selection.

14.2 Layout of the Sample Editor



❶ The overview displays the entire audio file.
❷ In the selection parameter field, the starting point and the length of the selected area are displayed.
❸ *Catch* ("walking man") will cause the waveform display to update to the current position, when the Play Position Line reaches the right edge of the window.
❹ Amplitude scale by percentage.
❺ Overview of the currently visible segment in the Waveform Display.
❻ Detailed Waveform Display.
❼ Telescope control sets the zoom level of the Waveform Display.
❽ In the upper left hand corner of the horizontal time line, the name of the region and then the name of the audio file
❾ The start point, anchor, and end point of the region (from left to right). These can be moved with the mouse.

14.3 Display

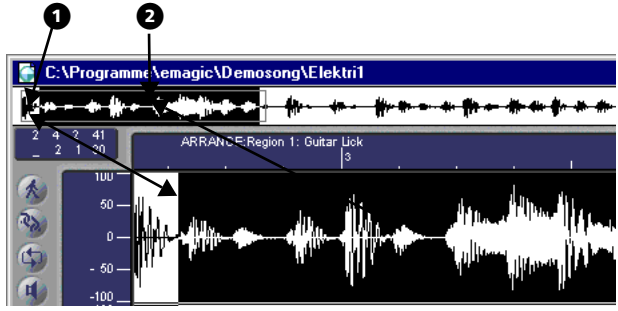
Overview

The “Overview Display” appears between the title list and the measure ruler in the Sample Edit window. This will always show the complete length of the actual audio file, not affected by the zoom setting (Telescope symbol). It is important to note that a proportion of the time axle will not be provided here: in the Overview Display, a 0.3 second-long kickdrum takes up the same area as a song passage that lasts 15 minutes.

During playback, the actual position is shown by a line that moves in real time—in the Overview as well as in the Waveform Display.

The actual selection will also be depicted in the Overview.

The selection currently shown in the Waveform display will be boxed in with a dotted line.



Overview display: the dotted lines box in ❶ the current section in the Waveform display window. The selection ❷ is also shown.

Overview Functions

A short click on the Overview display will display this area in the Waveform display.

A long click starts playback after this point. When the mouse button is released, playback will stop.

A double click starts control playback after the position that has been clicked on.

Relationship between the Windows

Basically, The Catch and Link keys work exactly as they do in other Editor windows.

Catch Mode

The Catch mode will depict the actual play position area (for song or control playback) in the Sample Editor. Catch can be turned on or off by clicking on the button with the runner or using the keyboard commands.

Link Mode

The *Link* mode will depict one of the regions selected in the Arrangement window, within the Arrangement window of the Sample Editor. Clicking on the button with the chain symbol or using the keyboard commands can turn this on and off.

Tip

If the Link mode is used frequently, the following can be done: open the Sample Editor and turn the Link mode on, then close the window. Logic fun has now permanently recorded this activated Link mode.

Double clicking on any chosen window in the Arrangewindow, will automatically produce a display that is temporarily coupled together.

Waveform Display

Scaling the Display

Zoom

The zoom telescopes (Mac) and the horizontal and vertical zoom bars (PC) control the zoom factor of the Waveform display.

Zoom Tool

As in the other windows, there is a Zoom tool in the Toolbox (magnifying glass symbol). By click-hold dragging with this tool will enlarge the area dragged over. This operation can be repeated over areas already zoomed.A brief click with the tool on an area will return it to the previous zoom setting.

Pressing the ctrl key (Mac) or the alt key (PC) will turn the arrow directly into the Zoom tool.

The Amplitude Axis and Time Axis

On the left side of the y axis, a vertical measuring scale shows the amplitude percentage.

The x axis (time line) shows the position of the audio file. By clicking on View in the menu bar, different units of measurement can be chosen.

Note that that the view format determines the way entries in the information line, and the selection parameter field are displayed:

View > Samples

Displays position as the number of samples fromeither the start of the song, or from the start of the audio file. Length is displayed as total number of samples.

View > Min:Sec:Ms

Calibrates the display to: minutes : seconds : milliseconds from the start of the song or audio file.

View > SMPTE Time

Displays time in the SMPTE format of hours : minutes : seconds : frames.Position is displayed from either the beginning of the song, or from the start of the audio file.

View > Bars/Beats

The display shows position and length in units of bars, beats, display format units and clock ticks, from either the start of the song, or from the start of the audio file. Position is displyed relative to a start point of “1 1 1 1”, whereas length is displayed relative to a start point of “0 0 0 0”.

To display the position of a region relative to the start of the song, select the region in the Arrange window. This wis indicated by the word “ARRANGE” to the left of the name of the region at the beginning of the ruler. If the region is not selected in the Arrange window, then position within the display will be shown relative to the start of the audio file.

14.4 Using the Sample Editor

Controlling Playback

There are many ways to play back regions in the Sample Editor. Here, playback is used to test edits made to audio files. If you want to hear the file in contexct with the rest of the song, the normal sequencer transport controls should be used.

Playing from the Overview Display

If you click-hold at a point on the Overview display, playback will start from that point, and continue until the mouse button

is released. Double clicking on a point in the Overview display will start playback from that point.

Playing the Entire Audio File

The keycommand *Play/Stop All* will play the entire audio file, regardless of the current selection.

Playing the Current Selection

To play the current section, click on the button with the small loudspeaker icon.

This can also be done using the key command *Play/Stop Selection*.

Playing After a Specified Point

By double clicking on the time line, the audio file will play from the click point to the end of the selection. Double clicking beyond the current selection will play the audio file to the end.

Cycle Playback

The Cycle button is located on the left side of the Sample Edit window, above the loudspeaker button. Activating this will cause the selected section to be repeated continuously in play mode.

Selection Commands

Selecting All Audio Files

Selecting **Edit > Select All**(⌘A with the Mac, and ctrl A with the PC), selects the entire audio file.

Manual Selection

To select any section of the audio file with the mouse, click-hold at the beginning or end of the desired area, and move the mouse to the right or to the left.

Changing Selection Borders

The left or right border of an existing selection can be changed by holding down the ⇧ key, and briefly clicking at the desired point. Whether the start or end point is changed, depends on whether the point clicked was closer to the beginning, or end of the selection.

Shifting the Selected Area

By holding down the ⌥ key (Mac) or the ctrl key (PC) while dragging, the selected are can be shifted left or right, without chaging its length.

The Selection Parameter Field

The Seection Parameter fiels (2) displays the position and length of the current selection numerically. The units of display are dependent on the **View** setting for the Sample editor.

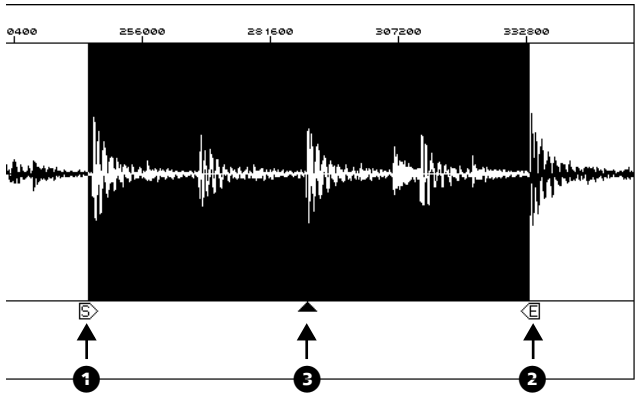
Working with Regions in the Sample Editor

When precision is important, the borders of regions should be manipulated in the Sample Editor.

Region borders can be edited with to the precision of a single sample word, if a high enough zoom setting is used. You can also position the anchor, to change the part of the region used as the position reference in the Arrange window. Remember that the position display for a region in the Arrange window always shows the position of the anchor, not the start point of the region.

There are gadgets to adjust the start, anchor and end points of a region, along the bottom edge of the Waveform

display.Therse can be moved by click-dragging them with the mouse.



1. Region Start
2. Region End
3. Anchor

Maintaining Anchor Position

Changing the anchor position will shift the position of the region in the Arrange window along the time axis. This is not always what you want.

You can prevent the anchor from moving when you drag the start or end gadgets by holding down the ctrl key (PC) or ⌥ key (Mac) key while dragging them. Keep in mind that the anchor can never be before the start point. If you drag the start point to the right, you will not be allowed to go past the anchor, if you use the modifier key to protect the anchor's position. If you releasee the key, then both the start point and the anchor can be dragged to the right together.

Edit Commands

The usual edit commands are available in the Sample Editor menu bar under **Edit**: **Cut**, **Copy**, **Paste**, **Clear**, and **Undo**, or

these can be executed by using the corresponding keycommands.

Please note that these edit commands, with the exception of Copy, are destructive, and will change the data in the audio file. Such changes can be reversed, using the **Undo** command, as long as no subsequent edits have been performed.

Cut (⌘X/ctrlX)

This cuts a selected passage from the audio file, and puts it in the clipboard. The the following sections of the file are moved up, to fill the space left by the cut.

Copy (⌘C/ctrlC)

This copies a selection to the clipboard, leaving the selection in place.

Paste (⌘V/ctrlV)

This will insert the contents of the clipboard to the cursor position, i.e., the beginning of the current selection. If there is no selection, the cursor will serve as the insert point, and be displayed as a thin line. If there is audio data after the insert position, this will be shifted to the right, to make room for the inserted data. Any data selected when the Paste command is executed be deleted, and replaced by the new material that is being inserted.

Clear (⌫)

This deletes the selection without placing it in the clipboard. Audio data beyond the will be shifted to the left, to fill the space left by the deletion.

Undo

By pressing ⌘Z (Mac) or ctrlZ (PC), the last destructive operation can be reversed. This can also be used to reverse the destructive editing commands.

Tip

The Undo command in the Sample editor is independent of Undo in other windows. This allows you to test edits made in the Sample editor in context with the entire arrangement. When you close the Sample editor, after making a destructive edit, a dialog box will ask you whether you want to keep the edit, or undo it.

14.5 Functions

Following are the Sample editor functions, which can be used to polish your audio recordings.

Warning

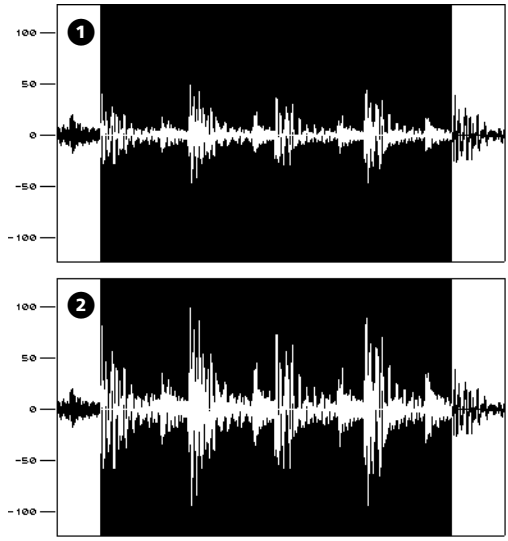
Each command operates on the currently selected portion of the file. The **Edit** > **Select All** function should be used if you want to process the entire audio file.

All the following operations are destructive, which means that they will change the file on the hard drive. The **Undo** command can only be used to reverse the very last destructive edit. .

Normalize

The **Functions** > **Normalize** function brings a digital audio signal to the highest possible level without clipping.

The selected area of the file is analyzed, and the highest peak is located. The entire selection is then raised by an equal amount, so that the peak is just at 0db. This increases the overall level of the selection, without changing its dynamic range.



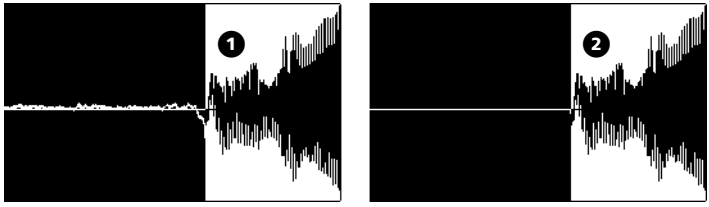
Example of the Normalization function. ❶ Before. ❷ After.

Tip

It's a good idea to set the start and end points of the area to be normalized so that they lie in an area of silence. Otherwise, audible, sudden jumps in level within the file may be evident.

Silence

The **Function** > **Silence** function completely mutes the selection, by setting its level to digital zero. This function is usually used to remove noise between phrases in a recording.



Example of the Silence function. ❶ Before, ❷ After.

Chapter 15

Video and MIDI Files

15.1 Playing Digital Video Files

Video on Windows PC

Logic fun can load digital videos in the Windows .AVI or MOV format into a song, and play them along with it.

The video will play back synchronously from the beginning of the song.

In order to play a video you first need to load it.

1. From the menu bar, select **Options** > **Movie...** or **Options** > **Movie as Float...**.
2. In the file selector box, select a Windows video file, and confirm with *OK*.

Logic fun opens a window for the video, which may be placed anywhere on the screen. The first frame of the video sequence corresponds to measure "1 1 1 1" of the Logic fun song.

3. Set the Song Position to the beginning, and start the playback.

The frames run synchronously to the song. You can jump back and forth using the Song Position Line or the Locators at any time—the video file follows the Song Position.

Video on a Macintosh

Logic fun is able to import digital videos (movies) in QuickTime standard format, and play them in sync with the song. You can therefore compose to picture in Logic fun, without a separate video recorder.

Tip

You must have Apple QuickTime™ to play QuickTime movies on your Macintosh. This is a system extension that is a part of all newer operating system versions.

Opening a QuickTime movie in Logic fun:

1. From the menu bar, select **Options** > **Movie...** or **Options** > **Movie as Float...**.

A dialog box appears in which you can select the QuickTime-Movie.

2. Select the movie and confirm by clicking *OK*.

This loads the movie. Logic fun opens an additional movie window in which the video is run.

You can navigate using the Transport in Logic fun or in the movie window. The movie and song will be synced together, so that changing position in one will affect the other.

Transport Functions of the Scroll Bar

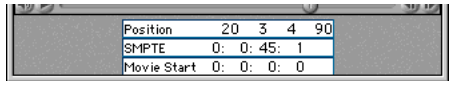
You can use the scroll bars below the movie field to move back and forth in the movie. Logic fun follows the movie running parallel to it.

- The movie scroll bar allows you to quickly jump to different points in the video. Grab it with the mouse and drag it left or right.

The button to the left of the scroll bar is a Play/Pause switch:

- Click on the button to start the movie. The button changes into a “Pause” symbol. Click the button again to stop the movie.
- The buttons to the right of the Scroll bar move the picture forward or backward by one frame. Hold the mouse button, to fast forward or rewind.

Transport Functions of the Position Pointer



- Position displays the song position by measures.
- SMPTE shows the position in SMPTE format (hours:minutes:seconds;frames;bits),

Logic fun can *not* be synchronized via SMPTE or MTC, it only shows the *Song Position* in the SMPTE time format.

Important!

- Start Movie shows the point at which the movie will start, relative to the song. You can, for example, start the movie after an introduction, beginning with Song Position 8.1.1.1.

You may directly enter position in any of the three displays:

1. Click-hold on a display value, and change it value by scrolling the mouse.
2. Double click on a display value, and enter the value in the text input box. Separate values for different fields of the display with spaces.

15.2 MIDI Files

Logic fun can save songs or parts thereof, in standard MIDI file format (SMF). Songs in this format can be loaded and played by

almost all current sequencers, and by the Windows accessory "Media Player."

Preparing a Song for MIDI File Conversion

This section describes the steps for converting Logic fun sequences into the MIDI file format, using the Tutorial Song as an example.

The MIDI FILE format does not recognize Logic fun sequences or playback parameters, but only continuous tracks.

In order to be able to save the Tutorial Song as a MIDI file you must:

- neutralize all playback parameters by editing the data correspondingly
- convert loops into real data
- merge the sequences on each track into one continuous sequence, using the Glue tool.

Saving the Song as a MIDI File

To save a song as a MIDI file, go to the local menu of Arrange window; and select **Edit > Select All**. Next, select **File > Export Selection as a MIDI File...**

Saving Individual Sequences as a MIDI File

You can save individual sequence, or any groups of sequences as MIDI files, by selecting only the sequence(s) you wish to include before executing the "Export Selection…" command.

Saving Songs as SMF Format 0

Standard MIDI Files may be saved in either of two formats, Format 0, or format 1. The typical Format is 1, where the file contains multiple tracks. Format 0 files store all data on one track.

It is necessary to save songs in Format 0, if you want to create songs for equipment that does not support Format 1.

Logic fun creates Format 1 files by default, unless you make the following setting:

1. In the menu bar, select **Options** > **Settings** > **Global Preferencesl**.
2. Enable *' Export MIDI File…' saves single sequences as Format 0*.

Tip

Logic fun can only create a Format 0 MIDI file from individual sequences. If you want to create a Format 0 file from multi track songs, you must first merge the sequences into one sequence, with the Glue tool.

Importing MIDI Files

With Logic fun, you can load MIDI files, play them, edit them, print them out as a score, save them again as a MIDI file, or save them as a Logic fun song. To load a MIDI file, select **File** > **Import**. *MIDI files* are now displayed. Select one. It is then imported, and shown in the Arrange window.

Chapter 16

Use of Key Commands and Mouse, Settings

16.1 Keyboard Command Symbols

Windows	Explanation	Macintosh
ctrl	Control	ctrl
—	Command key	⌘
alt	Alternate/Option key	⌥
⇧	Shift	⇧
↑↓←→	Cursor keys	↑↓←→
↵	Return (on the alphanumeric keyboard)	↵
enter	Enter (on the numeric key-pad)	⌅
␣	Spacebar	␣
esc	Escape	esc
⌫	Backspace/deletes to the left	⌫
del	Delete/deletes to the right	⌦
⇥	Tab	⇥
ins	Insert	—
pos1	Pos1 (beginning of line)	—
end	End (end of line)	—

Windows	Explanation	Macintosh
page up	Page up	page up
page down	Page down	page down
num	Num Lock	num
pau	Pause	—
F1—F12	Function keys	F1—F15
=, *, +, −, enter, 0—9	Keys on the numeric keypad	=, *, +, −, clear, 0—9
0=—9', A—Z, ,, ., -, +, # etc.	Normal keys	0=—9', A—Z, ,, ., -, +, # etc.

16.2 Key Commands

You can program your own key commands in the **Options** > **Settings** > **Key Commands** window for all Logic fun functions (see the section *Key Commands*, starting on page 4 - 100)xref.

Important!

Num Lock must be on for the key commands to work correctly.

The assigned key commands are shown in the Key Commands window and also in the menu, next to a function's name.

16.3 Using the Mouse

The described mouse operations apply to all Logic fun windows, with the exception to the Transport window.

Windows		Macintosh
Mouse	**Explanation**	**Mouse**
Click outside of an object + drag	Rubber band: Selects objects within the rubber band	Click outside of an object + drag
⇧-click	Selects scattered objects	⇧ click
Drag	Moves selected objects	Drag
ctrl drag	Copies selected objects	⌥ drag
Right click on a menu	The menu remains open until you select a menu item.	Double-click on a menu

16.4 Settings

Song Settings

Song settings are saved independently with each song, which means that different songs can have different song settings. You can save all of your standard settings in the Autoload Song, which is the default song file that is automatically loaded when you boot up Logic fun (unless you've started the program by double-clicking on a specific song file, instead of the actual program icon). This way, you can start each Logic fun session with your preferred working setup.

To open the Song Settings window, select **Options** > **Settings** > **Recording Options...** from the main menu.

Click in Record Mode (e)

The metronome click is automatically switched on for recording. This is the same as activating the metronome switch in the transport panel during the recording.

Click in Play Mode (p)

The metronome click is automatically switched on for playback. This is the same as activating the metronome button in the transport panel during playback.

Speaker Click

This sends the metronome click to the computer loudspeaker.

MIDI Click

The metronome click is sent out as a MIDI note.

Transmit MIDI Clock

This activates the transmission of MIDI clock for syncronizing other MIDI Sequencers.

Count In

This pull-down menu is where you set the count in that precedes a recording.

No count-in the recording begins with no count in.

*1-4 Bar count-in*1-4 bars of count in.

Global Preferences

Although the settings you make in the Preferences affect the way Logic fun deals with *all* the songs it opens, you still have to open a song before you can alter the Preferences. Y ou can't open the "Logic fun.PRF" file directly.

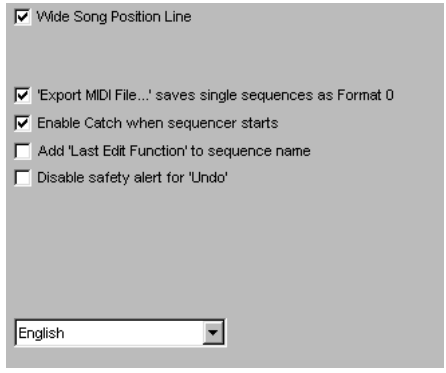
Initializing the Preferences...

If you erase the "Logic fun.PRF " file in your PC's Windows folder, Logic fun will create a new Preferences file next time you launch. All parameters will then be reset to their default values.

Watch Out!

When you erase the Preferences file, you also lose all your custom key commands.

This page is accessed via **Options** > **Settings** > **Global Preferences**



Wide Song Position Line

You can widen the song position line to make it easier to grab with the mouse. In addition, a wide SPL is more visible, especially against the stone background.

'Export MIDI File...' saves single Sequences as Format 0

If only one sequence is selected when you choose **File > Export Selection as MIDI File...** the contents of the sequence are saved in MIDI file format 0.This file format is guaranteed to be compatible with every MIDI file player.

Enable Catch when Sequencer starts

This option enables the Catch function whenever the sequencer is put into Play mode.

Add 'Last Edit Function' to sequence name

After performing any edit operation (e.g. cutting), the description of the edit operation is added to the name of the arrange object (or resulting objects).

Disable safety alert for Undo

This means that no safety alert appears when you call up the undo function.

Language

Here you can select the interface language. *Default language* is the interface language of the operating system.

Chapter 17
Menu Reference

17.1 Apple Menu

About Logic fun opens the information box containing information on the program version and authors.

Upgrade Logic Upgrade Information.

17.2 File Menu

New creates a new, blank song and opens an Arrange window.

Open... opens a song from the hard disk, or floppy disk.

Close closes current song, after prompting to save.

Save saves the song to the hard disk or floppy disk.

Save As... saves the song with another name, and/or to another location.

Revert to Saved replaces the loaded song with the last saved version.

Import... loads a standard MIDI file.

Export Selection as a MIDI File... saves the song in standard MIDI file format (Windows extension: *.MID).

17.3 Edit Menu

Undo reverses the last command.

Cut removes the selection from the active window, and places it in the Clipboard

Copy copies the selection to the Clipboard.

Paste places the contents of the Clipboard at the insertion point.

Clear deletes the selection from the active window.

Select All selects all objects in the active window.

17.4 Track Menu in the Arrange Window

Create inserts new track below the selected track.

Delete deletes the selected track.

17.5 Options Menu

Settings

Metronome Settings... opens a window used to configure the MIDI metronome.

Recording Options... opens Song Settings window, which includes the recording settings.

MIDI Interface Communication... opens the menu option MIDI/Global in the Preferences.

Global Preferences... opens the Global Preferences window.

Key Commands... opens the Key Command window.

Tempo

Tempo List Editor... opens the Tempo List Editor.

Others

Movie... opens a dialog window for importing movies.

Movie as Float... opens a dialog window for importing a movie to be opened as a floating window, which cannot be covered by other windows.

Movie Settings... opens the Settings for the movie.

Wave Player... opens the Wave Player, which can be used as a monophonic Sample Player for WAV files.

Open Keyboard Window... opens a virtual keyboard, which can trigger MIDI events with mouse clicks.

Send to MIDI

Maximum Volume sends controller 7 with a value of to all MIDI channels.

Reset Controllers resets all controllers to neutral positions (zero modulation, releases the sustain pedal, zero Pitch Bend, etc.).

In the Score Window

Diatonic Insert inserted notes are automatically forced to pitches within the current key.

Score Font... opens the window to select the font for text in the Score window.

17.6 View Menu in the Sore Editor

Toolbox toggles the Tool Box display on and off.

Parameters hides/Shows the Parameter Area. Hiding it can creats more room for the Arrangement field.

White Background displays a white background.

17.7 Windows Menu

Open Arrange opens the Arrange window of the active song.

Open Event List opens the Event Editor for the selected object.

Open Score opens the Score Editor for the selected object.

Open Matrix Edit opens the Matrix Editor.

Open Transport opens the floating Transport window.

Open Mixer opens the Track Mixer.

Larger View increases the zoom. 

Smaller View decreases the zoom. 

Next Window brings the next window into the foreground.

Zoom Window sets the maximum size of the active windows to fit the screen.

Close Window closes active window.

Tile Windows arranges opened windows side by side.

Tile Windows Horizontally arranges opened windows horizontally.

Stack Windows stacks opened windows.

17.8 Help Menu

Explanations On explanations can be displayed for most of the objects on the screen. 

Help Contents opens the table of contents for online help. 

Search Help searches for subjects or terms in the online help. 

About Logic fun opens the information box containing information on the program version and authors. 

Upgrade Logic Upgrade Information. 

Glossary

You´ll find a glossary for the rocket-relevant terms under section *Glossary from page 52 onwards*.

After Touch A type of MIDI data generated by pressure applied to the keyboard after the initial depression of a key. This can control the vibrato or tone quality of the sound.

Arrange Window Window in Logic fun where tracks and sequences are displayed and edited.

Bar Ruler Ruler in Logic fun windows, that displays the time axis—subdivided into measures.This is also where the Cycle and Autodrop zones are graphically displayed. Use the mouse to control different functions in M.L. (→Locators, →Song Position Line).

Catch Function A mode that keeps the visible section of a window updated with the current song position.

Click Another term for the metronome of a sequencer.

Control Change Various types of MIDI data that add expressiveness to recorded music by controlling standard parameters such as volume, pan, portamento, etc.

Count In Programmable number of beats before recording actually starts.

Cycle Mode Mode in which Logic fun repeats the passage between the left and the right →Locator Position.

Delay Setting that allows a track to be slipped forward or backward in time→Tick Steps.

Display Format Value Subdivision of quarter notes in Logic fun's edit displays. This determines the layout of position displays, and the display quantization in the Score window, among other things.

Event MIDI Event

Event List Editor window in Logic fun in which events can be displayed as text, and edited.

Flip Menu Also known as a Pop-Up or a Pull-down Menu. This is a list of entries that can be opened by clicking and holding the mouse button.

Font File on the system that determines the shape and size of text characters. You can choose any font from the system when working with text in the Score Editor.

General MIDI Standard for MIDI tone generators, which among other things, prescribes the minimum requirements for sounds, including patch location, drum kits, and hardware requirements. GM-compatible songs—like the Tutorial Song—can be played on any GM tone generator, without having to adjust any of the settings.

Key Command Computer key, or combination of keys, used to control a function in Logic fun.

Link Mode When engaged in an editor window, Link Mode assures that this window continually displays the contents of whatever sequence is currently selected.

Locator Position markers in the song that enclose a section (Cycle, Autodrop)

Local Menu Menu within a window, whose influence is limited to that specific window.

Loop Repetition of a sequence within a track.

Matrix Editor Editor window in Logic fun, which displays notes as horizontal bars. Pitch is determined by the vertical position of the note, duration by its length.

Merge In Logic fun, the merge function is carried out via the Glue tool, which merges all of the selected sequences together.

Meta Events A type of event found in the Event List, which represents non-MIDI events (text in the Note Editor).

MIDI-Clock A MIDI synchronization event, which is sent from a generator every 1/96 note and advances any slave devices correspondingly.

MIDI Driver Software drivers that control communication between the computer and MIDI Interface.

MIDI Event A complete MIDI Event consists of a status bytes and, if needed, one or two data bytes.

MIDI Interface Device that transfers data between the computer and attached MIDI instruments.

Mixed Quantization A form of quantization, which combines binary and triplet values—such as a 1/16 and a 1/24 note.

Path Folder on a hard drive where a file is stored.

Pitch Bend MIDI Event type that varies the pitch of notes on a channel.Synthesizers typically generate Pitch Bend using a wheel or joystick.

Play Parameter Track parameter that influences the output of the →MIDI Events during playback, but does not destructively affect the data.

Preferences Settings that are "global", affecting all songs.

Quantization Rhythmic correction of notes in Logic fun. The time positions of the notes are recalculated according to a selectable grid. As a result, the timing is perfected.

Score Editor A Logic fun window, in which the events, sequences, and songs can be displayed as notation, edited, and printed.

Scroll Bar Bars on the side of a window (in Windows) with a small box (Scroll box). To move to another part of the window, drag the scroll box with the mouse, or click in the Scroll bar.

Scrub Function Back and forth movement of the "recording head". In this case, use the mouse to move the →Song Position Line to listen to the MIDI events.

Select Selected objects are displayed in reverse color.

Sequence Container for MIDI events in Logic fun that are be displayed as horizontal bars in the Arrange window.

Solo tool Enables the user to listen to an individual track or sequence.

Song Position Line Vertical line in the Arrange window, Sample editor, Matrix Editor andScore editor that displays the current Song Position, and can be dragged with the mouse to change position in the song.

Song Position Pointer This is a MIDI event that indicates the current position in the song, calculated from the beginning of the song in sixteenth note increments. Song Position Pointer is used along with MIDI Clock for synchronization.

Standard MIDI File A standard file format that allows MIDI songs to be loaded into almost any MIDI program, on any computer platform..

Status The first byte in a MIDI event, displayed in the *S* column of the Event List.

Style Setting in the Score window that sets the basic score display for a sequence, including clef, display transposition, number of staves.

Synchronization Means by which several devices can be run together "in sync". One device acts as the "Clock Master" sending a sync signal, such as MIDI Clock, to the other "Slave" devices, which follow the clock signal.

Synchronizer Device used to convert various synchronization formats; it monitors and manages the synchronization of various devices centrally.

Toggle Computer jargon for switching back and forth.

Transport Window Independent window in Logic fun that contains the transport functions and the keys for the sequence modes (e.g. Cycle).

TrueType Fonts Freely scaleable fonts that can be installed into your system and can be used in Logic fun for the Score

Text. These have the advantage that they will be displayed the same on the computer screen as they will print.

User Interface All control elements and functions of a piece of softwar, or of a device

Velocity The force with which a note is struck on a keyboard, or controller. It is represented by the second data byte (*Val*) in the Event List. Velocity may have a range of 0-127.

Virtual Memory Storage space on the hard disk, which is used by Windows as a "swap file" to enlarge RAM capacity.

WAV Files File format for sound files on a Windows PC. WAV files can be recorded in various formats (8bit, 16bit, Stereo/ Mono,) and various sample rates, such as 22 kHz or 44.1 kHz.

Wave Player Feature that allows sound files in the computer to be triggered with MIDI Notes.

Windows Commonly used operating system for PC compatible computers. It offers a graphical user interface.

Zoom Optional magnification or reduction of the contents in a Logic fun window.

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