Beatnik® Editor™ 2.1

User's Guide

Document Version 2.1.0

Reflects Beatnik Editor version 2.1.0

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Introduction

Welcome – and thanks for your interest in authoring Beatnik interactive audio.

Quick Start for Editor 2.0 Users: Be sure to review **What's New in Version 2.1**.

Note: If you run into difficulty installing, registering, or using the Beatnik Editor, and can't find an answer in the Online Help or User's Guide, then contact Customer Support via the Beatnik Web site:

http://www.beatnik.com/?editor-support

This document you're reading is the **Beatnik Editor User's Guide**. It explains how to use the program, and includes detailed reference materials and links to further information at the Beatnik Web site.

The Beatnik Editor is the leading tool for preparing RMF-format music and sound content for Beatnik Platform interactive audio players – chiefly the Beatnik Player for Web browsers. It's a big program that different kinds of people tend to use in different ways:

Musicians and Sound Designers: Think of the Beatnik Editor as a patch editor/librarian for the MIDI synthesizer included in all Beatnik playback software, plus a tool to convert your samples, MIDI files, and Beatnik patches into RMF format. The Beatnik Editor includes that same synthesizer, with a **Live MIDI Input** that you can play from a MIDI sequencer program or external instrument – just like any MIDI synth in your studio.

Web content designers: Think of the Beatnik Editor as a file converter that turns standard audio and music files (MP3, WAV, AIFF, AU, and MIDI) into RMF files for use on the Web. You can control RMF file playback interactively using the Music Object interface for JavaScript in Web browsers, or for Lingo in Shockwave and Director movies.

Topics:

How to Read this User's Guide
About the Beatnik Editor
About Beatnik and the RMF File Format
Where to Go Next?

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How to Read this User's Guide

Nobody likes reading manuals – but **we recommend you read through this short Introduction before using the Beatnik Editor**.

After the **Introduction** you can go a couple different ways, depending on your needs and experience level – the **Where Do You Go From Here?** section will link you to the next information you need.

Other **Reference** sections to be aware of include the **FAQ**, the **Menu Reference** and **Window Reference**, and maintenance information including **Versions and Updates**, **Troubleshooting**, and **Removing the Beatnik Editor**.

Musicians and sound designers will be interested in **Advanced Techniques** like **Creating Banks of Triggerable Samples (RMFX)** and **Automatic Looping and Track Muting**, the list of **Built-In Instruments**, and the **MIDI Implementation Chart**.

Beyond this **User's Guide**, the Beatnik Web site includes many **Online Resources** you'll find helpful as you learn to create Beatnik soundtracks. If you're not sure where to get music and sound content to use in your RMF files, remember that **Beatnik publishes a huge library of top-quality audio and MIDI content** that you can use in your RMF files – **available live on the Web** for browsing & licensing 24 hours a day, 7 days a week.

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About the Beatnik Editor

The Beatnik Editor is a powerful program that works a little differently from any other application you've ever used before. It's three different things, all at the same time:

- **A MIDI- and Audio-to-RMF File Converter**
- **An Editor/Librarian for Beatnik Instruments**
- **A Live MIDI Synthesizer**

If that sounds like it might be too much stuff to worry about, you can relax – you don't have to master the whole thing. In fact, most people use the Beatnik Editor strictly for converting music and sounds into the RMF format – and that part's easy.

A MIDI- and Audio-to-RMF File Converter

It's important to understand that the Beatnik Editor isn't a tool for creating RMF music and sound files from scratch – its Sample Editor is very simple, and there aren't any facilities for building MIDI songs or editing individual MIDI events (like notes). Instead, the Beatnik Editor is designed as a tool for collecting your existing MIDI files and audio sample files, and then converting them into the RMF format for secure, interactive playback on the Web in the Beatnik Player (and elsewhere).

To create an RMF file, you first import your Standard MIDI Files and/or digital audio files (WAV, AIFF, AU, Sound Designer II, or MP3) into a Beatnik Editor Session document, then add your copyright notices, credits, and other information – and finally export the whole bunch as a single RMF file.

Drag-and-drop operation and streamlined processes make converting to RMF as quick and easy as possible.

An Editor/Librarian for Beatnik Instruments

If you're a musician, sound engineer, or sound designer, then the **Instrument Editor window** and **Sample Editor window** are meant for you – they're the parts of the Beatnik Editor that act as a patch editor for the expressive and flexible software MIDI synthesizer at the heart of all Beatnik Platform players.

The **Instrument Editor window** is a workspace where you can apply the Beatnik synthesizer's

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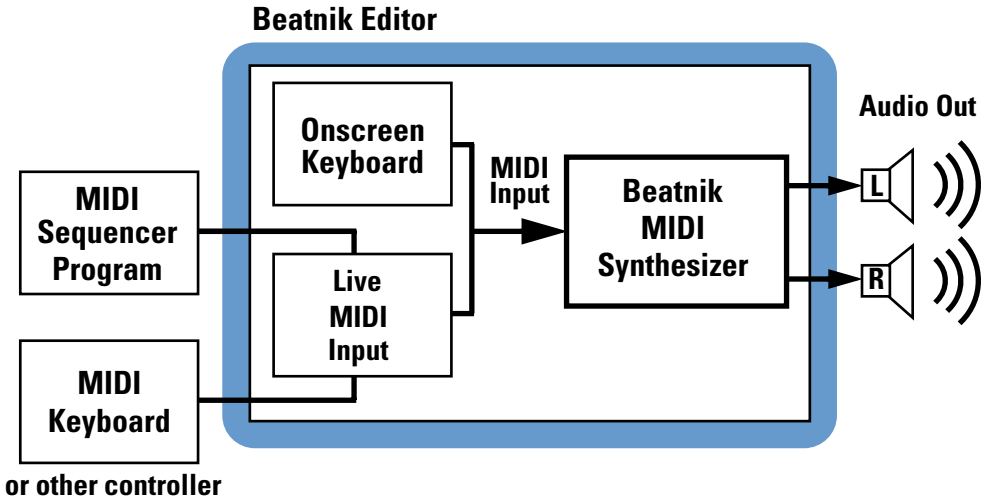
powerful sound shaping capabilities to your own imported sound Samples, and save the combinations as custom Instruments for use in RMF files. The **Sample Editor window** gives you tools for cleaning up imported Samples, to make them – and the Instruments that use them – sound better.

A Live MIDI Synthesizer

You can also play the software wavetable synthesizer inside the Beatnik Editor software live, in real time – using either the onscreen keyboard in the **Player window**, or a MIDI connection from an instrument or controller. Or from another MIDI program running at the same time – which lets you compose and arrange your music in your MIDI sequencer, using the Beatnik Editor as your sound module, at the same time you're also editing your instruments in the Beatnik Editor – and all on the same computer, if you want. It's a much faster way to make MIDI music.



Key Concepts

Before we can get very far, it's important that you understand a few key concepts regarding the Beatnik Editor.

The Beatnik Editor is Different from the Beatnik Player

You may have heard of the Beatnik Player, Beatnik Xtra, Beatnik Audio Engine, and other Beatnik Platform playback software. It's important to understand that the Beatnik Editor is different from these players:

- The free Beatnik Player is Beatnik's Web browser plug-in. RMF content can be played in several different Beatnik Platform players, but more RMF content is created for the Beatnik Player for Web browsers than any other target (see **RMF Playback Platforms**). The Beatnik Player handles RMF playback with interactive user control, but doesn't include any file creation or editing functions.
- The Beatnik Editor, by contrast, is a professional authoring tool for making RMF files and the custom Instruments and Samples they contain.

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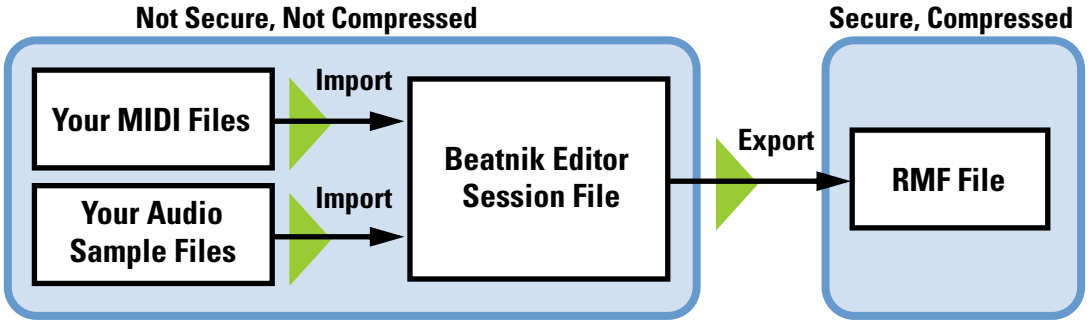
The Beatnik Editor is Similar to the Beatnik Player

Despite very different appearances, the Beatnik Player and the Beatnik Editor also have much in common. Both contain the exact same synthesizer engine, and the Beatnik Player comes with the same set of built-in Instruments, Samples, and 'Groovoids' you'll find in your Beatnik Editor Session documents. Understanding these similarities is very important – they're the reason why the sounds you create and hear in the Beatnik Editor are exactly the same as what your audience will hear when your RMF content plays in Web browsers.

Beatnik Editor Session Documents are Different from RMF Files

You already know that the purpose of the Beatnik Editor is to create RMF files, but it's crucial to remember that the Beatnik Editor's Session files are different from RMF files.



- **Beatnik Editor Session files** are the Beatnik Editor's own file format. They contain, in unprotected and (usually) uncompressed form, collections of the music and sound resources that go into the RMF files you create. Whenever you use the **New** or **Save** command in the Beatnik Editor, that's a Session file and not an RMF file. When you've got those resources sounding the way you want, then you're ready to export an RMF version of them.
- **RMF files** are the compressed, encrypted files that you can safely deploy for playback in Web browsers, Shockwave movies, and all the other Beatnik Platform players – without risking your intellectual property. The Beatnik Player never sees a Session file, only RMF files. You export RMF files from the Beatnik Editor.

Guard Your Session Files!

It's critical to understand that **once you've converted your music and sound resources into an RMF file, you can never extract those resources back out**. The original resources for making any RMF file are kept in Beatnik Editor Session files, so losing the Session file means losing the ability to make changes to the RMF file.

This means you shouldn't think you can safely discard your Beatnik Editor Session document (**.bsn** file) once you've generated your RMF file and uploaded it to your Web site. If you do, then later, when you need to change some sound or music for the site, you'll realize your original resources are gone and you can't make the change!

The moral of this story is: **Never delete your Session documents**, back them up regularly, and generally guard them against damage or loss.

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About Beatnik and the RMF File Format

Beatnik makes the Beatnik Platform software that works with Web browsers and other programs and devices to make interactive music and sound possible. We also make software tools for preparing RMF music and sound content for the Beatnik Platform, and for making it easy for Web page creators and other developers to control Beatnik playback.

Interactive audio means music, sound effects, and speech that can trigger instantly, or change instantly, in response to actions that the user takes while browsing and interacting with your production. For example, an audio logo that plays whenever the mouse moves over your logo graphic – or a piece of music that changes mood when the user goes to a different page in your Web site.

Beatnik Interactive audio is fundamentally different from the other two basic types of Web audio:

- **Streaming audio** is like listening to a live radio program over the Internet, using your computer as the radio. The program is pre-produced and you can only listen, not change it as it proceeds – no interactivity. The audio quality is sometimes poor or not suitable for music.
- **MP3 audio** is like collecting CDs, using your computer's hard drive as your record shelf. Audio quality is good to excellent, but you have to deliberately select what to listen to, and when.

With Beatnik Interactive Audio and the RMF format, by contrast, content designers and musicians automatically furnish the listener with whatever soundtrack they want to provide, in high fidelity, by weaving the music and other sounds directly into the Web pages – with rich control over how the user's audio experience unfolds as the site is explored.

> **Only Beatnik offers this powerful combination of instant response, high quality, and flexible control – plus, Beatnik technology keeps the audio file sizes and download times quite reasonable.**

These features are available under JavaScript control in Web browsers, under Lingo control in Shockwave, and in Flash. Beatnik's Music Object interface enables all our advanced features. To ease the programming burden, exceptional tool support is available in the form of plug-ins and ActionSets for major Web site authoring packages including Macromedia Director, Macromedia DreamWeaver, Adobe GoLive, and NetObjects Fusion, and several tools generate custom cut-and-paste HTML and JavaScript code.

RMF Playback Platforms

Beatnik Interactive Audio playback is also available to multimedia developers using Director, and to software developers using JavaSound, the BeOS, and the Beatnik Audio Engine. Beatnik's RMF format is used in the Beatnik Player, Beatnik Xtra, and Beatnik Audio Engine, JavaSound, the Be OS, and set-top boxes including Liberate and WebTV.

All these systems use Beatnik's unique RMF music and sound file format, **Rich Music Format**, which guarantees identical playback on all players – bridging all differences between computers, processors, and operating systems.

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Where to Go Next?

If you're...	Then go here...
New to music and sound on computers	• You might want to start out by visiting the **Tutorials** page on the Beatnik Web site, where basic concepts like digital audio and MIDI are explained: **http://www.beatnik.com/to?wida** **http://www.beatnik.com/to?miditutorial** • Then read **Getting Started**. It'll make a lot more sense once you have that background.
Experienced with MIDI or **audio production**, but **new to Beatnik**	• Jump straight to **For Musicians** for an overview of Beatnik's MIDI and sampling facilities. • Then read **Getting Started** to see how to use the Beatnik Editor to create media to drive them. • Later you may also want to learn about **Advanced Techniques**.
A Web developer or **Multimedia developer**	• Proceed to **Getting Started**. It should explain everything you need to know for most uses of RMF you'll encounter. • You'll also need to understand how the RMF content you create with the Beatnik Editor relates to your Web authoring world. If you're working in JavaScript for Web browsers, you'll need Beatnik's **Web Authoring Documentation** – or if you're working in Lingo for Shockwave/Director, get familiar with the **Beatnik Xtra User's Guide** and, if you're working in Flash, the **Flashnik Tutorial**. **http://www.beatnik.com/to/?music-object-doc** **http://www.beatnik.com/to/?xtra-doc** **http://www.beatnik.com/software/tutorials/flashnik_authoring.html**
A Software developer using **BeOS**, **JavaSound** or the **Beatnik Audio Engine**	• Proceed to **Getting Started**, which should cover everything you need to know for most uses of RMF you'll encounter. • To understand how the RMF content you create with the Beatnik Editor relates to your programming world, please consult your **BeOS** or **JavaSound** documentation, or the **BAE Developer Reference**.

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Getting Started

Explains the Installation and Registration process, and how to convert files to RMF.

Topics:

Installing the Beatnik Editor
Registering the Beatnik Editor
Using the Beatnik Editor
How Do I...

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Installing the Beatnik Editor

A guide to the Beatnik Editor installation process.

Topics:

System Requirements
Running the Beatnik Editor Installer Program

System Requirements

Mac OS

Minimum system:

- PowerPC Macintosh, 604 processor or later, 180 MHz or better
- System 8.6 or later
- 64 megabytes of RAM - 10 megabytes free for Editor 2.0
- 8 megabytes of free hard drive space for installation
- Netscape, Microsoft Internet Explorer, or AOL Web browser, version 4.0 or higher (for online help)
- 16-bit or higher color display

Recommended:

- PowerPC Macintosh, G3 processor or later
- Mac OS 9.0.4 or later
- 128 megabytes of RAM
- 15 megabytes of free hard drive space for installation

Windows

Minimum system:

- Pentium Pro Processor, 200 MHz or better
- Windows 95
- 64 megabytes of RAM
- 7.3 megabytes of free hard drive space for installation
- Netscape, Microsoft Internet Explorer, or AOL Web browser, version 4.0 or higher (for online help)
- 16-bit or higher color display

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Recommended:

- Pentium III Processor, 300 MHz or better
- Windows 98
- 128 megabytes of RAM
- 15 megabytes of free hard drive space for installation

Running the Beatnik Editor Installer Program

The installation steps depend on your operating system:

Installing For Windows
Installing For Mac OS

Installing For Windows

For Windows, the Beatnik Editor installer is distributed as a program called **beatnik-editor-2.0-install.exe**.

To install the Beatnik Editor:

1. Launch the installer program, **beatnik-editor-2.0-install.exe**.
2. Follow the onscreen instructions.
3. If you want to drive the Beatnik Editor's **Live MIDI Input** feature with a MIDI sequencer program running on the same computer, you'll need to install a free MIDI routing utility such as MIDI Yoke or HUBI. For detailed instructions, see the section **Setting Up for Live MIDI Input**

Installing For Mac OS

For Mac OS, the Beatnik Editor installer is distributed as a StuffIt archive file called **beatnik-editor-2.0-install.sit**.

To install the Beatnik Editor:

1. Unstuff the file **beatnik-editor-2.0-install.sit**, using any of the StuffIt utilities from Aladdin Systems.

   For a free copy of a StuffIt utility, see the Aladdin Systems Web site:

   http://www.aladdinsys.com

   Unstuffing the file produces an application called **Beatnik Editor Installer**.
2. Launch the installer program, **Beatnik Editor Installer**
3. Follow the onscreen instructions.
4. In your Mac OS **Memory** Control Panel, make sure **Virtual Memory** is turned off.
5. If you expect to use large Sessions or large amounts of MP3 data in the Beatnik Editor,

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increase the Beatnik Editor's minimum memory requirement by a few megabytes:

In the Finder, select the Beatnik Editor application icon, and then select **Get Info** from the **File** menu. In the **Beatnik Editor Info** window that appears, select **Memory** from the **Show**: menu, and then increase the number in the **Minimum Size:** box by a few thousand, and close the **Info** window.

6. If you want to use the Beatnik Editor's **Live MIDI Input** feature, you'll have to install the Open Music System (OMS) MIDI routing utility. Performer users will also have to install FreeMIDI. For detailed instructions, see the section **Setting Up for Live MIDI Input**.

7. If you want to use a Netscape browser to view the Beatnik Editor's online User's Guide and Help, be sure Netscape's minimum memory requirement is set to at least 26,000 K bytes.

In the Finder, select the Netscape application icon, and then select **Get Info** from the **File** menu. In the **Netscape Info** window that appears, select **Memory** from the **Show**: menu, and then type **26000** into the **Minimum Size:** box and close the **Info** window.

Note for Beatnik Editor version 1 Users:

Installing version 2 of the Beatnik Editor does not remove your version 1 installation, so you can have both versions on you machine if you like. With both versions installed, you'll notice the following behavior:

- Session documents created with version 2 have a new icon.
- Session documents created with version 1 will open in version 1 when double-clicked in the Finder.
- Session documents created with version 2 will open in version 2 when double-clicked in the Finder.
- To update a Session document from version 1 to version 2, open it in version 2.

If you want to remove version 1 from your machine – for example, to recover disk space – just drag the **Beatnik Editor Folder** to the trash, as well as the **BeatnikEditorPrefs** file (in the **Preferences** folder, which is inside your **System Folder**).

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Registering the Beatnik Editor

How to get a Registration Key and enable the Export RMF and Export as Audio features.

When first installed, the freely distributable Beatnik Editor is fully functional – except that the **File** menu commands **Open**, **Save**, **Save As...**, **Export RMF...** and **Export as Audio** are disabled. These features – which are essential for using the Beatnik Editor in professional Web and multimedia development – are reserved for users who purchase a Registration Key.

To register your copy of the Beatnik Editor:

1. Using your Web browser, purchase a Registration Key from the Beatnik Web site:

   http://www.beatnik.com/to?editor

   Follow the instructions on the Web page, and you will receive a Registration Key – a sequence of numbers, letters, and dashes that looks something like this:

   TX6F-H3RRTF8-Q32U-X9M2D

2. Launch your installed copy of the Beatnik Editor.

   A new **Untitled Session** document window appears.

3. Open the **About Beatnik Editor** dialog box. This step depends on your operating system:
   - On Windows, go to the **Help** menu and select **About Beatnik Editor**.
   - On Mac OS, go to the Apple menu and select **About Beatnik Editor**.

4. In the **About Beatnik Editor** dialog box, click the **Register** button.

   The **Registration** dialog box appears.

5. In the **Registration** dialog box, enter your **User Name**, **Email Address**, and **Registration Key**.

   Note: Be sure to enter exactly the same **User Name** and **Email Address** that you used when purchasing the Registration Key, and type the exact **Registration Key** you received. If even one letter is different, the program will not register successfully.

6. Click the **OK** button.

   If the Beatnik Editor detects a problem with your information, it will ask you to re-check your entries. Otherwise, your copy will be registered and the **Export RMF...** and **Export as Audio...** commands will be enabled.

If you run into difficulty registering the Beatnik Editor, then contact Customer Support via the Beatnik Web site:

http://www.beatnik.com/?editor-support

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Using the Beatnik Editor

An Introduction to the Beatnik Editor, and how to use it for the jobs you care about.

We'll begin with an **Orientation** explaining the program's main windows, and the basics that all Beatnik Editor users need to know.

We've found that Beatnik Editor users fall in two major groups, so we've split the rest of this section into two parts:

- The fundamentals of RMF conversion are covered first, under two **Basic Operation** headings.
- People who need to work with the Beatnik Editor's more advanced features should also read the **Advanced Editing** section.

If your Beatnik projects don't call for anything beyond the basics, feel free to skip the **Advanced Editing** section.

Topics:

Orientation

Basic Operation: Converting a Sample File to RMF

Basic Operation: Converting a MIDI File to RMF

Advanced Editing:

The Sample Editor
Working with Instruments

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Orientation

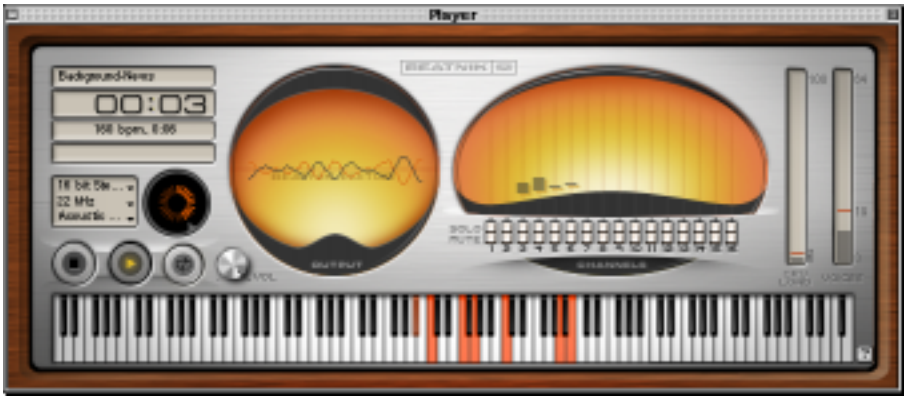
In the Beatnik Editor, you'll mainly be working with two windows:

The Player Window and **Session Document Windows**

Once you understand these windows, you'll be in a better position to see **The Big Picture**.

The Player Window

You'll use the Player window to listen to the music and sound elements going into your RMF files – and to watch them too. Besides the controls, the Player window has real-time displays of the activity in MIDI channels and voices, the audio output, and the CPU load. There's only one Player window in the Beatnik Editor.



- You can play musical notes by clicking on the keyboard, using any available Instrument. As notes play, the keys light up.
- You can play imported MIDI and RMF Songs, and Solo and Mute their channels.

  Note: The Mute and Solo buttons control the triggering of MIDI notes on the indicated MIDI channel – not the channel's audio output. As a result, when you turn a Mute button off the channel's sound will not return immediately – only when the next MDI note occurs on that channel. In some cases this lag can be fairly long, for example in pieces using slow tempos or long notes. The lag may be especially noticeable if you're using music pre-mix samples (such as beat loops) which won't retrigger until the MIDI file loops.
- You can control the overall playback settings: volume, sample rate, mono/stereo, bit depth, and reverb type.
- If you have a MIDI keyboard (or other controller) connected to your computer, or are running a MIDI sequencer program, the Player window will respond to them, acting as a wavetable synthesizer. As MIDI notes play, the keys light up.

  See also: **Player window** in the **Window Reference**.

Session Document Windows

The second important window type in the Beatnik Editor is the Session document window. You can have multiple Session windows open at once if you want, up to the limits of available mem-

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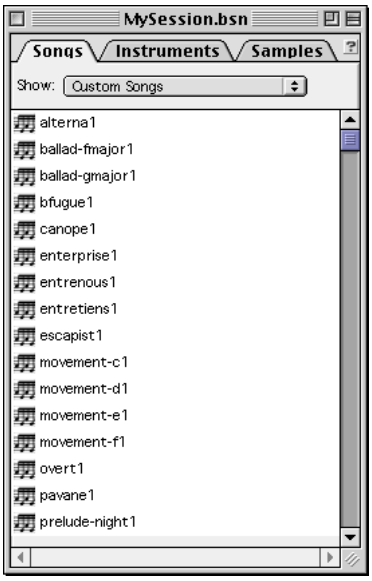
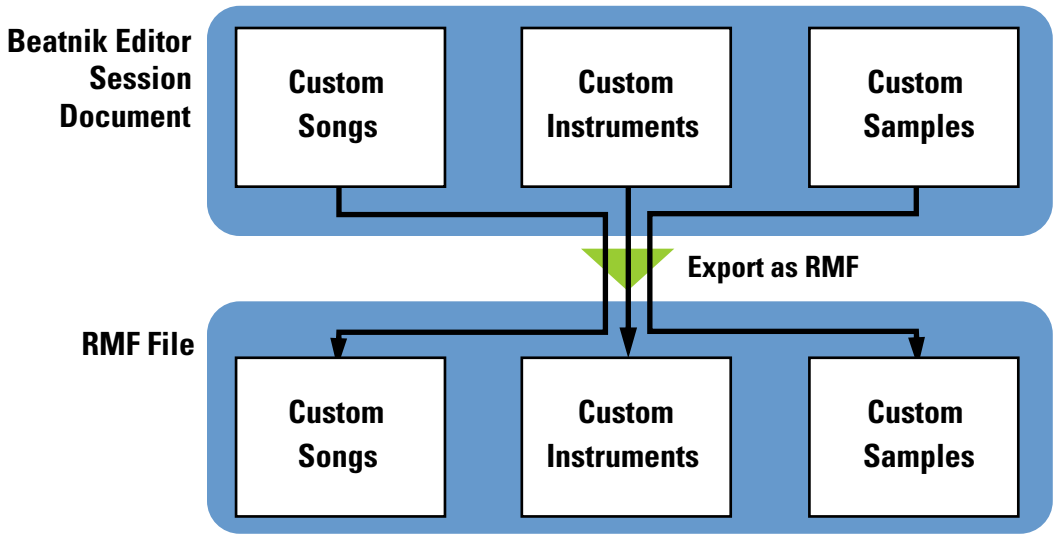
ory.



Beatnik Editor Session documents are different from RMF files. You'll use Session documents to manage and develop all the music and sound resources destined for the RMF files you create – your Songs, Instruments, and Samples. Think of a Session as the workspace where you build Custom Instruments, audition imported Songs, and manipulate imported Samples.



On disk, Session documents are **.bsn** files:

In the Beatnik Editor, you can manipulate Session documents in many ways:

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- You can resize the window to show more or fewer items at once.
- To select an item in the Session window, just click on it.
- To select multiple items, shift-click.
- To add single items to the selection, or remove them, control-click (for Windows) or cmd-click (for Mac OS).
- You also can rename, copy, paste, and delete items in any Session window – except that built-in Songs and Samples can't be copied, and none of the built-in items can be modified.

  Note: When you copy a Custom Instrument, a dialog box appears, offering the option of also copying the Samples used in that Instrument.

  Note: When pasting an Instrument into a Session document would result in more than one Instrument with the same MIDI program number, the Beatnik Editor will renumber the colliding Instruments and alert you.

Topics:

Tabs for Songs, Instruments, and Samples
Access to Built-In Songs, Instruments, and Samples
Within Each Tab, 'Show:' Displays a Category
What are Songs?
What are Samples?
What are Instruments?
The Big Picture

See also: **Session windows** in the **Window Reference**.

Tabs for Songs, Instruments, and Samples

Each Session document window organizes your music and sound resources under three tabs, like the tabs on file folders: a **Songs** tab, an **Instruments** tab, and a **Samples** tab. Each tab holds a list of

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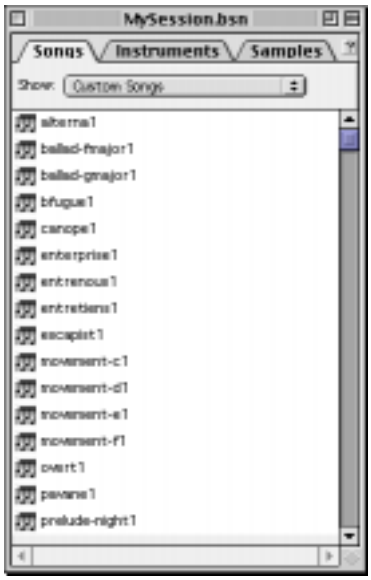
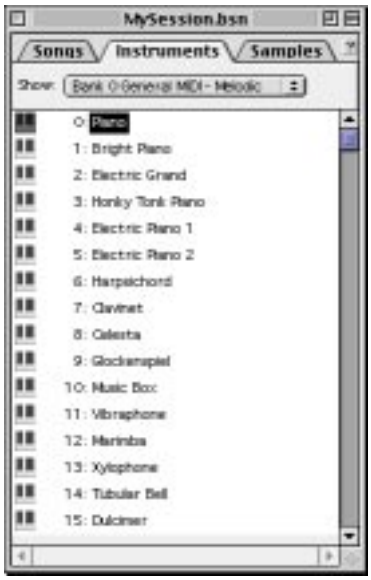
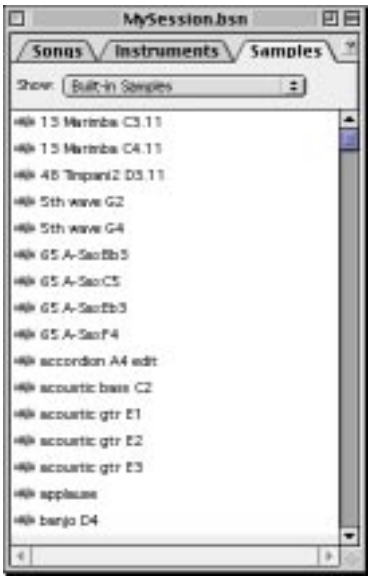
resources – to see what's inside a tab, just click on it:



Songs



Instruments



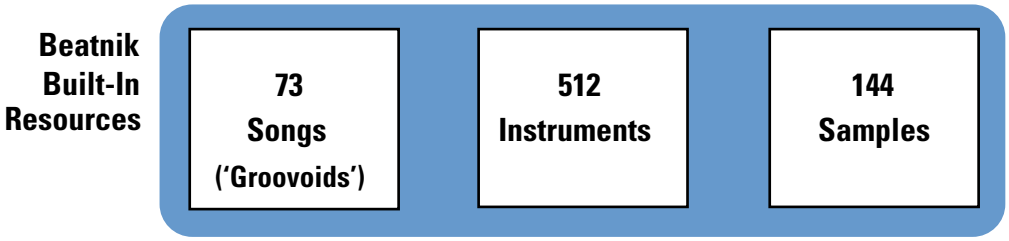
Samples

To work on any item in the list, you'll click on it once to select it, and then select a menu command – either from the application menus, or from the context menu.

To access the context menu: for Windows, right-click; for Mac OS, control-click.

Access to Built-In Songs, Instruments, and Samples

Besides the music and sound elements that you'll import and create in the Beatnik Editor, every Session document also gives you access to the music and sound resources in the built-in Beatnik Bank – the same resources available in every Beatnik Player for Web browsers – and that's a lot of material:



Although you can't edit the built-in Songs, Instruments, and Samples, you can copy the built-in Instruments to use as starting points for your own variations.

Within Each Tab, 'Show:' Displays a Category

To help you focus on the right things at the right times, all three tabs include a **Show:** pop-up menu that controls what categories of items appear in the list – for example, in the **Samples** tab

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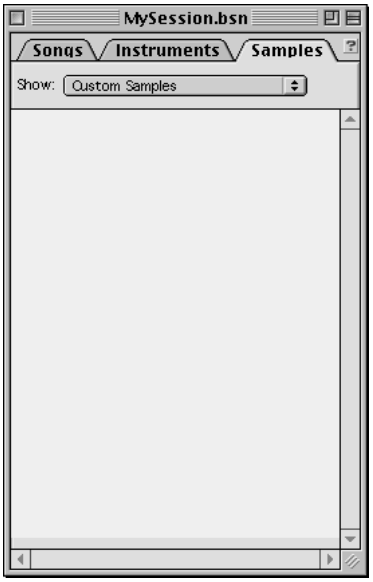
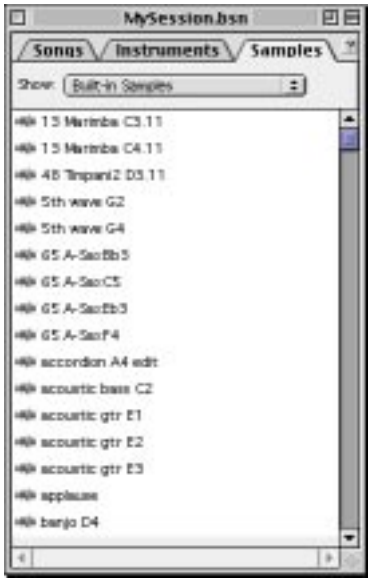
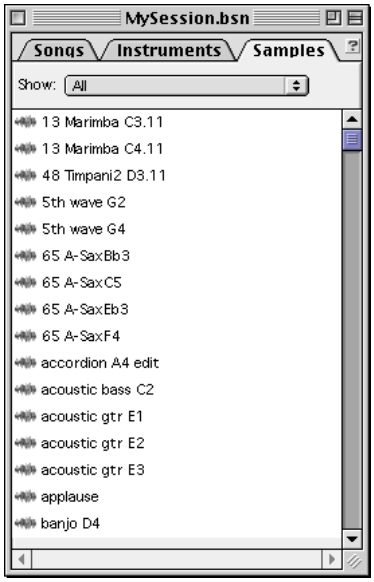
you can view just **Custom Samples**, just **Built-In Samples**, or **All Samples**:



Custom Samples



Built-In Samples



All Samples
(Custom + Built-In)

See also: **Instrument Bank Organization**.

What are Songs?

Songs are stored music performance data. That is, they're computer recordings of all the individual MIDI notes that add up to the performance of a piece of music. Like sheet music, but in the form of lists of events stored in computer memory rather than of notes on a page.

Most Songs are based on Standard MIDI Files that you'll create in another program (a MIDI sequencer) and then import into the Beatnik Editor. (The Beatnik Editor doesn't include tools for editing the individual notes and other events within a MIDI file.) When you import a MIDI file, the Beatnik Editor creates a new Song to hold it.

Note: Built-in Songs are called **Groovoids**.

What are Samples?

Samples are stored digital audio data. That is, they're computer recordings of actual sounds – any

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sounds at all. Like tape recordings, but made in digital memory instead of on recording tape:

Because they're recordings, Samples can reproduce any kind of sound – music recordings, sound effects, or speech. That's why every sound Beatnik makes is stored internally as a Sample. All Beatnik playback software comes with a large library of built-in Samples that you can access.

Your own Custom Samples are based on digital audio files (WAV, AIFF, AU or MP3 files) that you'll create in another program (a sound file editor) and then import into the Beatnik Editor. When you import a digital audio file, the Beatnik Editor creates a new Sample to hold it – as well as a new Instrument and a new Song that you can use if you want to play the sample at its natural pitch. You can also use the Beatnik Editor's built-in Sample Editor to further massage the imported Sample.

Two things to keep in mind regarding Samples:

- **Compression –** Unfortunately, high-fidelity Samples tend to be really big – and that can be a problem on the Internet, where bigger files take longer to download. That's why Beatnik gives several options for reducing the size of the sample data in your RMF files – a wide range of compression technologies is available (including MP3). Sample compression gives you a way to keep RMF file sizes manageable, and still achieve high fidelity.
- **Samples are Accessed through Instruments –** In RMF files, you'll never find a Sample without an Instrument – because Samples are never played directly, only by means of Instruments. Even a very simple RMF file made from a Session containing just a single Sample will always include an Instrument to trigger the Sample.

What are Instruments?

Beatnik Instruments are where Songs and Samples meet. They're the virtual musical instruments on which the Song's MIDI notes are played – and their sounds come from playing modified Samples. Like real-world musical instruments, each individual Beatnik Instrument can have a completely unique sound – the only difference is that Beatnik Instruments exist only inside the computer.

See also: **Instrument Bank Organization**.

The Big Picture

The Songs, Samples, and Instruments in your Beatnik Editor Session documents correspond to Songs, Samples, and Instruments in RMF files. Now that you understand about all those pieces, the following illustration should help you see how all these elements relate to one another and to

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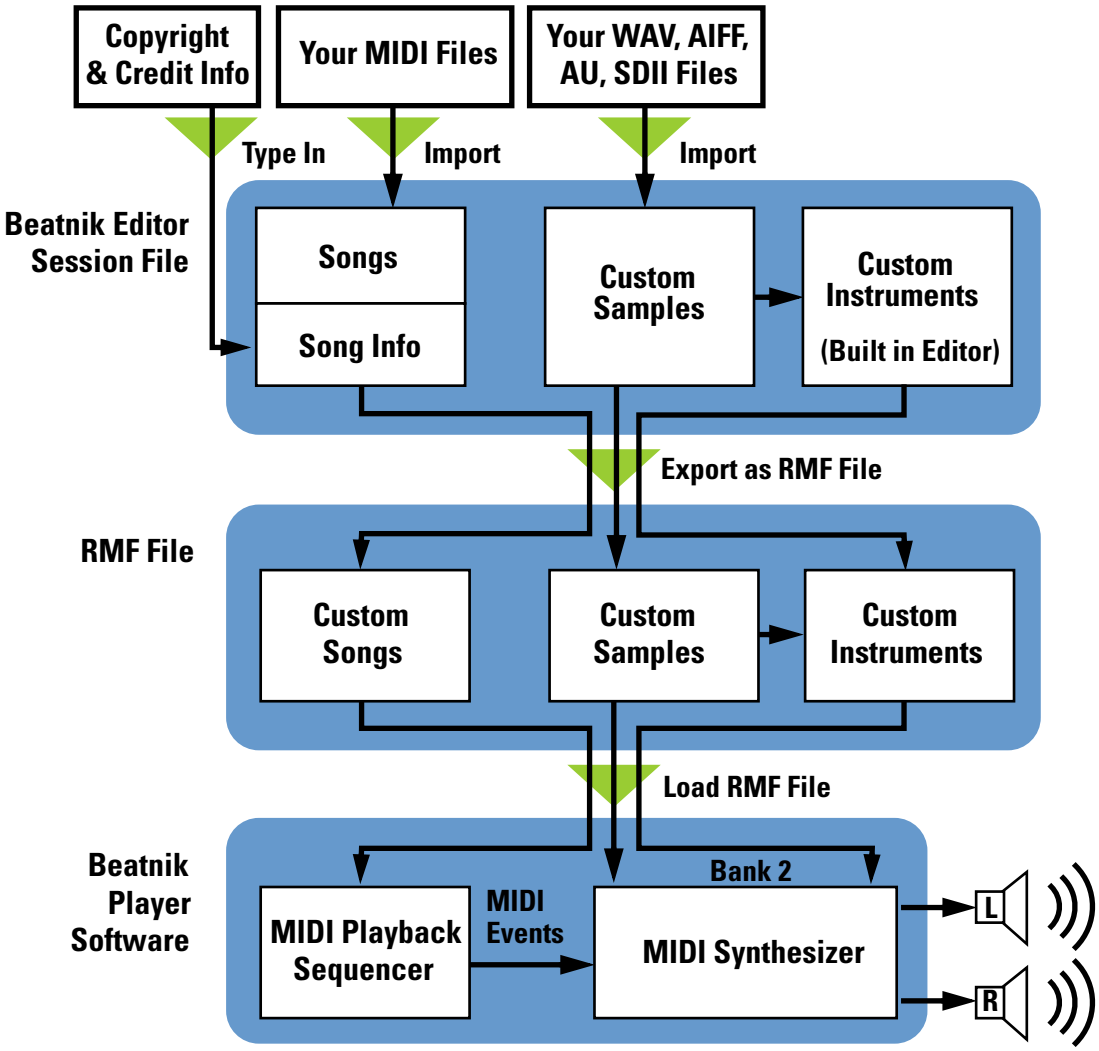
the Beatnik playback software that will play your RMF files.



That about covers the fundamentals. Now that you're oriented, we can explain the basic operation of the Beatnik Editor.

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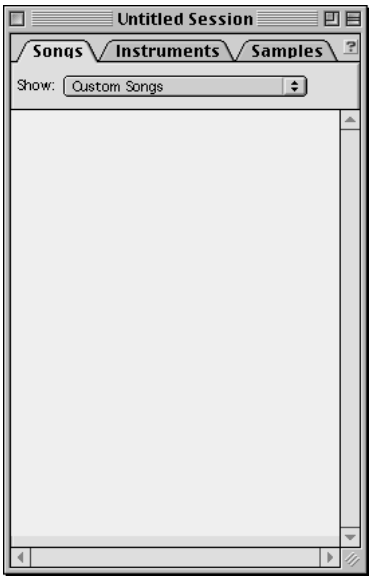
Basic Operation: Converting a Sample File to RMF

The most frequent use of the Beatnik Editor is to convert a digital audio sample file into the RMF format. This involves importing the file into a Beatnik Editor Session file, typing in any desired copyright and credit information, and exporting as an RMF file. In most cases you'll also want to compress the sample.

Here's how, in six easy steps:

1. Launch the **Beatnik Editor**.

Double-click the **Beatnik Editor** program icon on the desktop. The program will launch, display the splash screen, and create a new **Untitled Session** window. You'll use this Session document to hold audio content for your RMF file, then **Export as RMF**.



2. Import your digital audio file into the Session.

Drag your file from the desktop into the Songs tab of the **Untitled Session** window. (You could also select the **Import** command from the **File** menu, or drag it in from another Session

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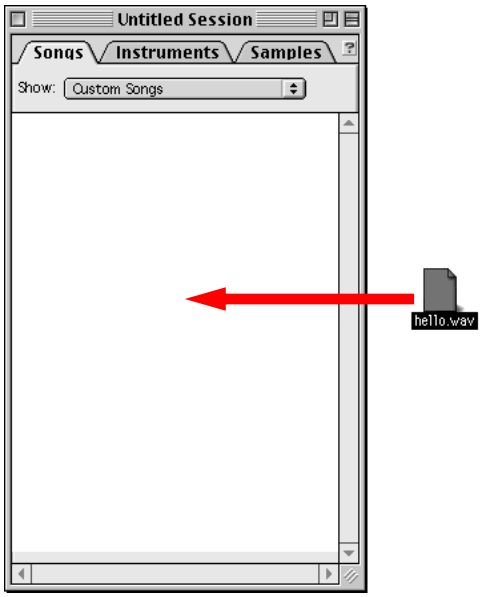
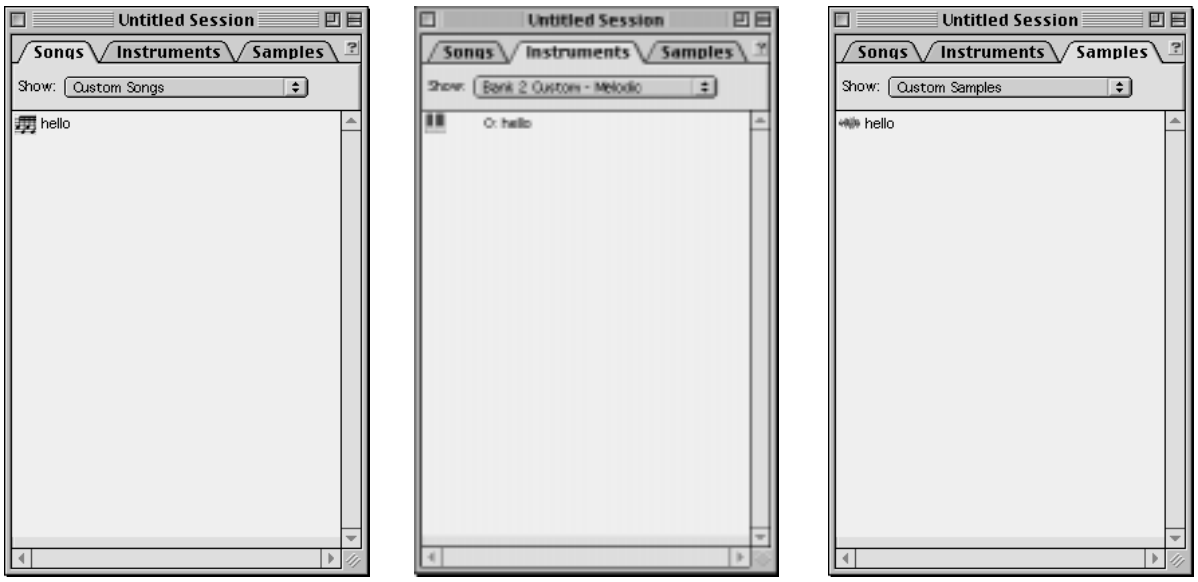
document.)



The import produces a new Sample in the **Untitled Session** document, and a new Instrument and a new Song – all with the same name as your audio file.



Songs Instruments Samples

3. Play your newly imported Song, as a check.

In the Songs tab of the **Untitled Session** window, select your new Song; then go to the **Player** window and click the **Play** button. You should hear your imported sample playing (if not, see the **Troubleshooting** section). To stop before the Song plays all the way to the end,

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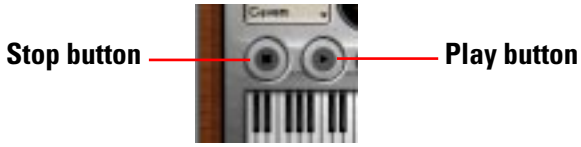
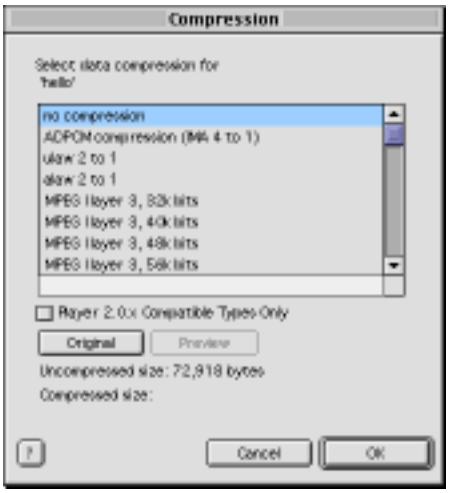
click the **Stop** button.



4. Compress the Sample.

In the Samples tab of the **Untitled Session** window, select your newly imported Sample, then select **Compression** from the **Sample** menu. The **Compression dialog box** will appear, offering many data compression options:



Each of these compression types presents a different size vs. quality trade-off, and each one is useful for a different kind of sound material. As you become more familiar with the Beatnik Editor you'll learn more about the compression types – but for now, just select **MPEG I layer 3, 128k bits** from the list, and then click the **OK** button.

5. Add your copyright notice and other text information.

Every Song can include a copyright notice and other 'meta-data' describing the Song. This information is encrypted into RMF files that include the Song, and can be displayed when the Song is played on the Web in the Beatnik Player. To enter this data for your RMF file, go to the Songs tab of the **Untitled Session** window, select the newly imported Song, and then select the **Song Info...** command from the **Song** menu. The **Song Info dialog box** will appear, with fields where you can enter a copyright notice and other text information for the RMF

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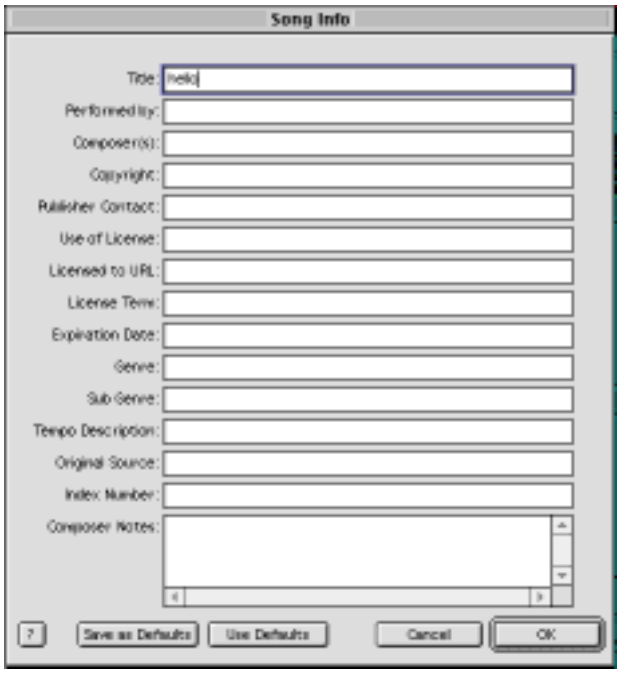
file:



Fill in the info for your Song, and then click the **OK** button.

> **Note:** If you want to change the Song's title, or set playback volume or tempo, or set a reverb type, a separate **Song Settings dialog box** is also available from the **Song** menu.

6. Export the Song as an RMF file.

Go back to the Songs tab of the **Untitled Session** window, make sure your new Song is still selected, and then select the **Export RMF...** command from the **File** menu.

The **Export RMF File dialog box** will appear, asking which Instruments to include in the RMF file. Click the **Custom** button, and then click the **OK** button.

When the **Save RMF File** dialog box appears, set your desired name and location for the

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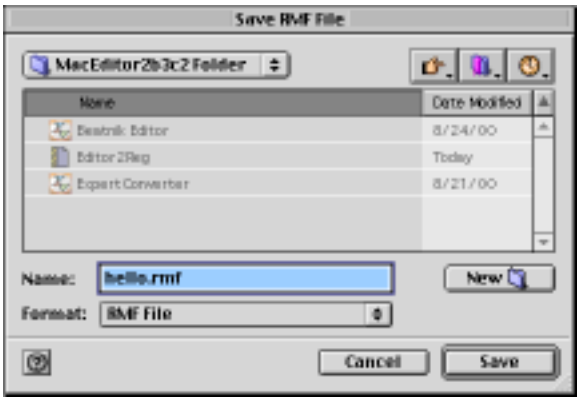
exported RMF file, and then click **Save**:



When you **Save**, the Beatnik Editor produces your RMF file:

That's It – You're Done!

You've just successfully created an RMF version of your sound file. You can play your new RMF file with any Beatnik Platform player – including the Beatnik Player for Web browsers, the Beatnik Xtra for Shockwave and Director, BeOS, and JavaSound for Java2 – with the same high-quality sound on every platform.

> **Remember, though:** RMF files are encrypted, so after creating one you can't open it later for further editing. To 'change' an RMF file, you'll have to go back to its Session document, make your changes to the individual Songs, Instruments, or Samples, and then **Export RMF...** again – replacing the previous RMF version.

You may want to spend a little time getting familiar with generating RMF files – feel free to experiment with importing different kinds of digital audio files. When you're finished, go on to the next section.

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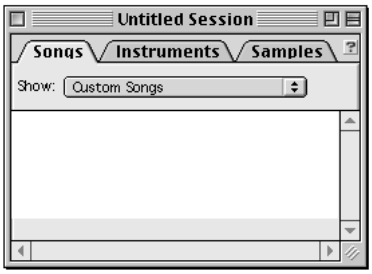
Basic Operation: Converting a MIDI File to RMF

The second most frequent use of the Beatnik Editor is to convert a Standard MIDI File into the RMF format. This is similar to converting an audio sample file to RMF, but even simpler. The basic steps remain the same: Import your MIDI file into a Beatnik Editor Session file, then type in any desired copyright and credit information, and finally export as an RMF file.

Here's how, in five easy steps:

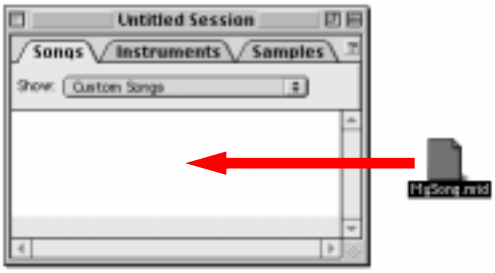
1. Launch the **Beatnik Editor**.

Double-click the **Beatnik Editor** program icon on the desktop. The program will launch, display the splash screen, and create a new **Untitled Session** window. You'll use this Session document to hold MIDI content for your RMF file, then **Export as RMF**.



2. Import your MIDI file into the Session.

Drag your MIDI file from the desktop into the Songs tab of the **Untitled Session** window. (You could also select the **Import** command from the **File** menu, or drag it in from another Session document.)



The import produces a new Song in the **Untitled Session** document, with the same name as

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your file.

3. Play your newly imported Song, as a check.

In the Songs tab of the **Untitled Session** window, select your new Song, then go to the **Player** window and click the **Play** button. You should hear your imported file playing – if not, see the **Troubleshooting** section. To stop before the Song plays all the way to the end, click the **Stop** button.

4. Add your copyright notice and other text information.

Every Song can include a copyright notice and other 'meta-data' describing the Song. This information is encrypted into RMF files that include the Song, and can be displayed when the Song is played on the Web in the Beatnik Player. To enter this data for your RMF file, go to the Songs tab of the **Untitled Session** window, select the newly imported Song, and then select the **Song Info...** command from the **Song** menu. The **Song Info dialog box** will appear, with fields where you can enter a copyright notice and other text information for the RMF

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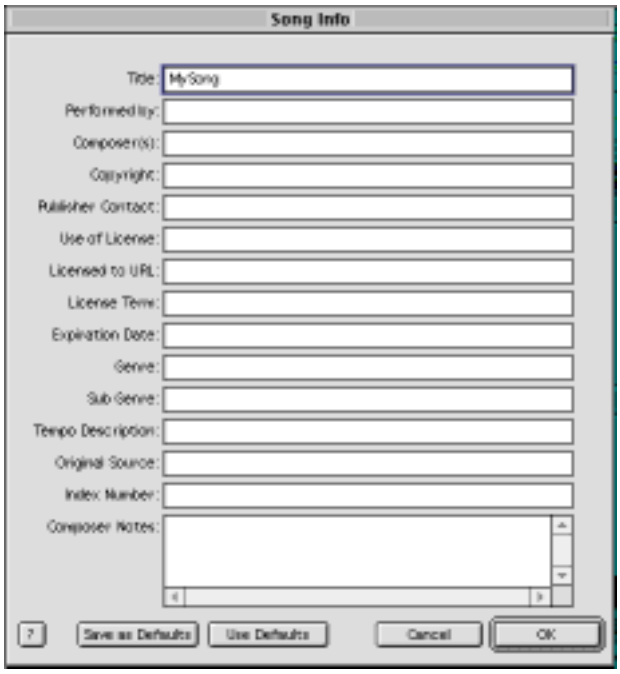
file:



Fill in the info for your Song, and then click the **OK** button.

> **Note:** If you want to change the Song's title, or set playback volume or tempo, or set a reverb type, a second **Song Settings dialog box** is also available from the **Song** menu.

5. Export the Song as an RMF file.

Go back to the Songs tab of the **Untitled Session** window, make sure the new Song is still selected, and then select the **Export RMF...** command from the **File** menu.

> The **Export RMF File dialog box** will appear, asking which Instruments to include in the RMF file. Click the **Custom** button, and then click the **OK** button.

When the **Save RMF File** dialog box appears, set your desired name and location for the

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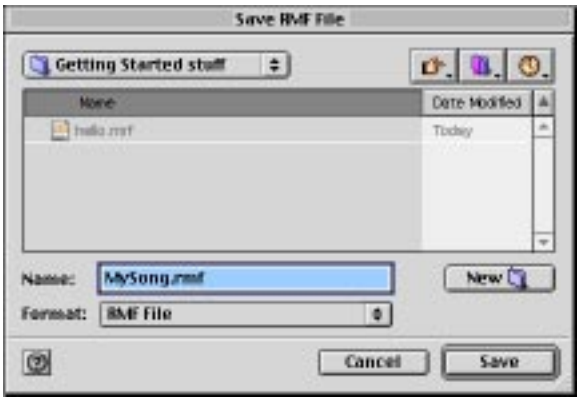
exported RMF file, and then click **Save**:



When you **Save**, the Beatnik Editor produces your RMF file:

That's It – You're Done!

You've just successfully created an RMF version of your MIDI file. You can play your new RMF file with any Beatnik Platform player – including the Beatnik Player for Web browsers, the Beatnik Xtra for Shockwave and Director, BeOS, and JavaSound for Java2 – with the same high-quality sound on every platform.

> **Remember, though:** RMF files are encrypted, so after creating one you can't open it later for further editing. To 'change' an RMF file, you'll have to go back to its Session document, make your changes to the individual Songs, Instruments, or Samples, and then **Export RMF...** again – replacing the previous RMF version.

You may want to spend a little time getting familiar with generating RMF files – feel free to experiment with importing different kinds of MIDI files. When you're finished, exit the Beatnik Editor.

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Advanced Editing

Advanced Editing means anything beyond the simple RMF file conversions just described under **Basic Operation**.

There are two major areas here:

The Sample Editor and Working with Instruments.

Note: To get much use out of the Beatnik Editor's advanced features, you'll need to understand the basic concepts of MIDI files and digital audio files. If these terms are new to you – or if you could use a refresher – you might want to visit the Beatnik Web site to read two Tutorials: **What is MIDI?** and **What Is Digital Audio?**

http://www.beatnik.com/to?miditutorial

http://www.beatnik.com/to?wida

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The Sample Editor

Producing high-quality music and sound playback requires high-quality Samples – and that's why the Beatnik Editor includes a basic Sample Editor. It's a workspace for doing clean-up work on your imported Samples, for use in Instruments for your exported RMF files.

Just a Simple Tool – While the Beatnik Editor's Sample Editor may help you learn how to edit sounds creatively, it's intended mainly as a convenience tool. If you need to do extensive sample editing, you'll probably prefer to use a separate full-featured sample editor program – or, many people like to use cleanly prepared samples obtained from a professional source.

> **See also:** The **Sample Editor window** section in the **Window Reference**, and the **Editing Samples** section in **For Musicians**.

Why Edit a Sample?

The Sample Editor gives you editing tools good for fixing several common problems that can make a Sample sound bad:

- **Dead Space –** Samples should usually start at the first audible sound, and end as soon as the sound is completely over. Dead space at the start throws off timing, and dead space at the end wastes memory and download time.
- **Clicks –** A sample should smoothly begin and end with silence, even if the initial fade-in and terminal fade-out are very short. Any sample that starts or ends away from the zero level will produce a click.
- **Low Level –** A sample should usually be normalized – that is, the highest peak in the recording should take full advantage of the available range. Small signals produce weak sound.

Loops are another reason to use the Sample Editor. In order to be able to hold arbitrarily long notes, Instrument designs often require a section of a Sample to loop – that is, repeat over and over – for as long as the note is held. The Sample Editor gives you control over whether a Sample will loop, and where in the Sample the loop start and end bounds should be.

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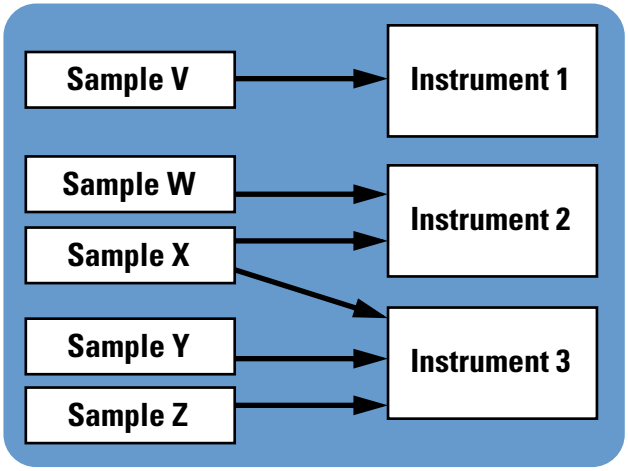
Working with Instruments

The Beatnik Editor includes an **Instrument Editor** – a workspace where you can build your own custom musical Instruments for use with your RMF songs. You build Instruments by combining Samples – usually recordings of musical instruments or tones – with musical sound shaping processes like envelopes, filters, and modulators.

See also: The **Instrument Editor window** section in the **Window Reference**, and the **Editing Instruments** section in **For Musicians**.

How Instruments and Samples are Related

The Beatnik playback software uses the MIDI wavetable synthesizer technology, which defines the relationship between Instruments and Samples.



- **All Instruments are based on Samples –** Every Instrument uses at least one Sample.
- **An Instrument can use Multiple Samples –** An Instrument can use up to 128 Samples. In the illustration above, Instrument 1 uses one Sample, Instrument 2 uses two Samples, and Instrument 3 uses three Samples. You'll assign each Sample to a MIDI note range with the Keymap page of the Instrument Editor.

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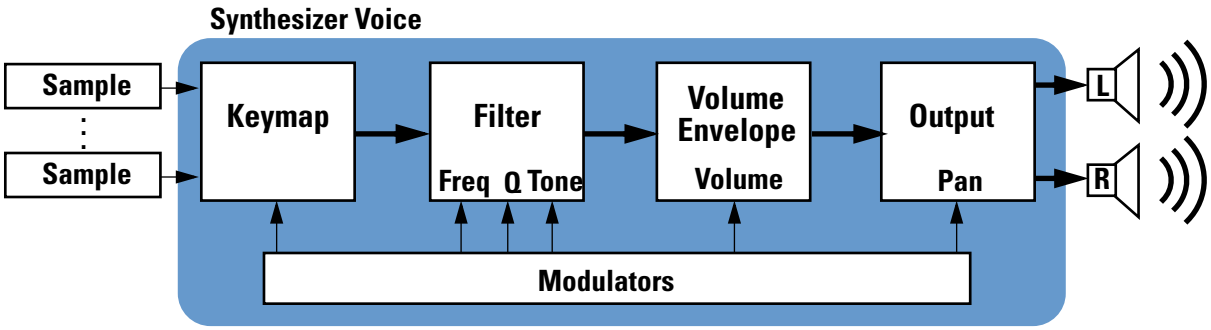
- **Instruments and Samples are Independent –** Separate Instrument and Sample pools are present in Beatnik Editor Session files and RMF files, and any Instrument you create can use any Sample(s) – including built-in General MIDI and Beatnik Special Samples.
- **Multiple Instruments can share the same Samples –** For example, Sample X is used by both Instrument 2 and Instrument 3.
- **Samples can only be played by means of Instruments –** To use your own Sample in an RMF file, you'll need to import the sample into your Session document and use it in an Instrument. This is necessary because RMF doesn't provide any way to play Samples directly. The only way to play a specific Sample is to play a MIDI note on an Instrument that uses that Sample. That note can come from playing the RMF file's Song, or by way of the Music Object `noteOn()` or `playNote()` methods. (The only place where this dependency on Instruments doesn't exist is in the **Sample Editor window**, when you're working on the Sample directly.)
- **Instruments can modify the pitch and sound of Samples –** Most Instruments will play a Sample at different pitches, depending on the MIDI note being played. Instruments can also dynamically shape the sound by applying volume envelopes, filtering, moving the sound between the left and right speakers, and altering the pitch independent of the note being played. The **Instrument Editor** pages contain all the controls for the processing and modification blocks available in each synthesizer voice:



Technically, an Instrument definition is a collection of settings for these same synthesizer voice blocks – the set of Samples needed for an Instrument, the Keymap that specifies what Sample to use for each received MIDI note, and the values to use for all the block parameters.

Instrument Bank Organization

Like many musical instruments, the Beatnik playback software includes built-in Instrument definitions – in this case, over 300 of them. Instruments are divided into three Banks: the built-in General MIDI and Beatnik Special Banks, and the Custom Bank space for Instruments that you make and included in your RMF files.

Each Bank consists of two sets of 128 Instruments each. Melodic Instruments are numbered 0–127, and are 'normal' Instruments that can be played at pitches ranging across the keyboard.

The Percussion Instruments are treated differently. The 128 Percussion Instruments in each bank make up a 'drum kit' that puts a different Instrument on each of the 127 MIDI note numbers. So with Percussion Instruments, playing different notes produces different Instruments, instead of playing a single Instrument at different pitches. This Percussion behavior is a part of the General

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MIDI standard, and is ordinarily used only on MIDI channel 10; however, in Beatnik playback software any set of MIDI channels can use it (see **MIDI Channel Modes**).

Bank Number and Name		Built-In?	Description
Bank 0: General MIDI	**Melodic**	**Yes**	The first bank is organized according to the General MIDI specification, for compatibility with all Standard MIDI Files.
	Percussion		
Bank 1: Beatnik Special	**Melodic**	**Yes**	The second bank is organized similarly to the GM bank, but includes unique sounds beyond the GM set, and Web-appropriate sound effects, all created by Beatnik artists.
	Percussion		
Bank 2: Custom	**Melodic**	**No**	The third bank provides room for your own Custom Instruments, including variations on the built-in instruments.
	Percussion		

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How Do I...

Quick-Start tips for the most common Beatnik Editor tasks.

Topics:

How Do I...
...Get some Help?
...Make an RMF File from a WAV or AIFF file?
...Make an RMF File from a MIDI file?
...Link the Beatnik Editor with my MIDI Sequencer?
...Make my own Instruments?
...Change the Built-In Instruments?
...Change the Built-In Samples?
…Get my MIDI and Digital Audio Files into my Session?
...Make my Samples Smaller?
...Enter my Copyright Notice?
...Enter the Song Title and Performer Credits?
...Encrypt / Protect my Music?

...Get some Help?

If you run into difficulty installing, registering, or using the Beatnik Editor, and can't find an answer in the Online Help or User's Guide, then contact Beatnik Customer Support via the Beatnik Web site:

http://www.beatnik.com/?editor-support

...Make an RMF File from a WAV or AIFF file?

Follow the steps above, under **Basic Operation: Converting a Sample File to RMF.**

...Make an RMF File from a MIDI file?

Follow the steps above, under **Basic Operation: Converting a MIDI File to RMF.**

...Link the Beatnik Editor with my MIDI Sequencer?

Follow the steps for your sequencer in the **Linking to Your Sequencer** section.

...Make my own Instruments?

Create a new Custom Instrument in the **Instruments** tab of your Session document, then edit it with the **Instrument Editor** (select the Instrument, then select **Edit Instrument** from the **Instrument** menu). For advice on making better Instruments, see **Editing Instruments**.

To use your own Samples in the Instrument, you'll first have to import them into the **Samples** tab of your Session document.

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...Change the Built-In Instruments?

Strictly speaking, you can't edit the built-in Instruments – but you can do something almost as good. Just copy any built-in Instrument to your Custom Instrument bank, then make your changes to the copy, and include the instrument in your exported RMF file. You'll be starting from the exact same high-quality Instrument used in the Beatnik Bank files for the Beatnik Player, Beatnik Xtra, and the other Beatnik Playback player software. This is a good way to keep your RMF files small – your Instrument can use the built-in Samples, without having to include them in your RMF file.

...Change the Built-In Samples?

Sorry, you can't copy or alter the built-in Samples – although you can create your own instruments that use them in ways different from the built-in Instruments (see previous item).

…Get my MIDI and Digital Audio Files into my Session?

There are several ways to import MIDI and audio files into your Session:

- Drag any number of MIDI files and/or audio files from the desktop into the Session window. (To import MIDI, the Songs tab must be showing.)
- Go to the **File** menu and select the **Import** command, the use the dialog box to navigate to any directory and open any number of MIDI and/or audio files.
- Drag a Song, Instrument, or Sample from one Session window to another Session window.
- **Copy** a Song, Instrument, or Sample in one Session window, then **Paste** it into another Session window.

Importing a file creates one or more new items in your Session document:

- Importing a MIDI file into a Session produces a new Custom Song.
- Importing an RMF file into a Session produces an **Imported RMF** Song – a special kind of Song that can only be played, not edited, due to the security of the RMF format. This is useful mainly for testing exported RMF content.
- Importing an audio file (MP3, WAV, AIFF, or AU) into a Session produces a new Custom Sample.

  If the **Instruments** tab of the Session window is showing at the time, the import also produces a new Instrument that uses the newly imported sample.

  If the **Songs** tab of the Session window is showing at the time, the import also produces both an Instrument that uses the newly imported sample and a Song that plays that Instrument at the Sample's natural pitch for the duration of the sample. This makes it easy to convert a sample to RMF: to hear the sample at its natural pitch, all you have to do is play the RMF file.

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...Make my Samples Smaller?

You can make a Sample smaller by:

- Using the **Compression...** command in the **Sample menu**.
- Using the **Sample Editor window** to reduce the Sample length by trimming away unnecessary material from your sample's attack, loop and release segments.
- Converting stereo Samples to mono in another sample editor program.
- Reducing the sampling rate in another sample editor program. Although Beatnik supports sample playback rates as high as 44.1 kHz, in many cases you can get acceptable results with 22kHz or lower rates.
- Limiting the number of Custom Samples used in each Song.

  Note: Reducing the number of bits from 16 to 8 isn't recommended, unless you really like junky sound. Data compression (see above) will give you far greater space savings and much better sound than linear 8-bit audio provides.

...Enter my Copyright Notice?

...Enter the Song Title and Performer Credits?

In the **Songs** tab of your Session document, select your Song and then select **Song Info...** from the **Song** menu. The **Song Info dialog box** will appear, where you can enter your text information for the exported RMF file.

...Encrypt / Protect my Music?

You don't have to take any extra, special steps to protect your music – whenever you're working in Beatnik, that's automatic. Every RMF file you create is always encrypted.

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For Musicians

Worried it might be hard to make music with Beatnik? Well, relax – if you've done any MIDI production, you already know almost everything you'll need to know to get great results. This **For Musicians** section will explain the rest, one topic at a time:

Heading...	Covers...
Orientation	Basic concepts of the Beatnik musical environment
The Beatnik MIDI Playback Sequencer	How the programmer controls the playback sequencer
The Beatnik MIDI Synthesizer	Playing it, special features, creating Instruments
Production Technique Tips	General guidance on making music for Beatnik

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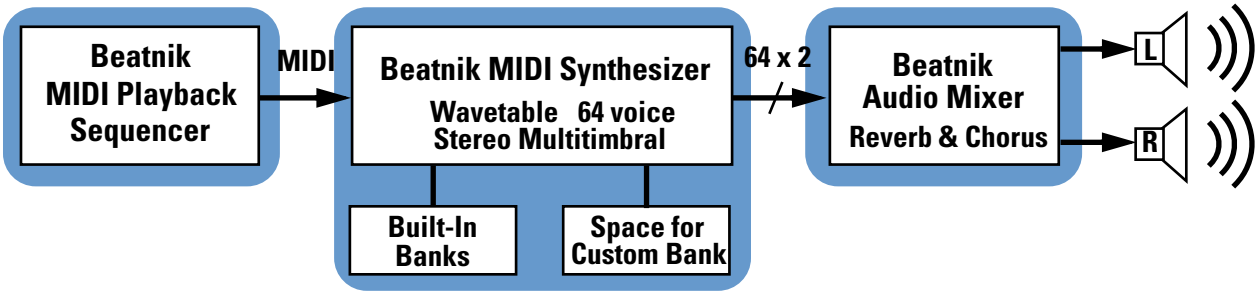
Orientation

Producing music and sounds for Beatnik is a lot like working with a small MIDI studio. The Beatnik software gives you a playback-only MIDI sequencer, a 64-voice multi-timbral stereo MIDI wavetable synthesizer, and a mixer with reverb and chorus effects.

The Beatnik Playback Software includes all this:



The Beatnik MIDI Synthesizer comes with built-in Banks containing hundreds of Instrument patches and Samples. You can also use your own Custom Instruments, which you create with the Beatnik Editor, based on built-in Samples, your own custom mono or stereo Samples, or both.

Custom Samples can be anything from short instrumental sounds to long audio mixes, with sustaining loops if you want. (Long custom Samples are good for adding vocals to a MIDI piece, or for building interactive multi-track audio remixers.)

Key Concepts

While many aspects of Beatnik will be pretty familiar, you should keep a few new concepts in mind:

The Beatnik MIDI Synthesizer

- The Beatnik Editor includes the Beatnik software synthesizer – and you can play it in real time using MIDI as you work on your composition and arrangement in your MIDI sequencer or play your controllers. This ensures that the music your listeners hear will be the music you intended. (See **Linking to Your Sequencer**.)
- The Beatnik synth can be "played" by several different things at once: by your musical score, or by programming on your Web site, game, Shockwave movie, etc. Even if more than one source is triggering notes, there's just the one synthesizer to play them all. So, program changes on a given MIDI channel will affect all notes played on that channel, regardless of where those note messages "came from."
- The same is true for mixer volume, pan and effects settings, such as reverb. If your sequence assigns a reverb send level to a particular channel, sounds played through the same channel by the Web page will share the same reverb settings.

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The Beatnik Editor

- The Beatnik Editor provides sequence playback only, not MIDI recording or editing, so you won't build your composition in the Beatnik Editor. Instead, you'll create your music in some other MIDI sequencer program, export the sequence as a Standard MIDI File, and import that MIDI file into your Beatnik Editor Session document. The imported MIDI file becomes a new Song in your Session.
- In addition to the imported MIDI notes, you can assign each Song a mix level and reverb type to use when played.
- You can also use the Beatnik Editor to modify the built-in Instruments, or to add new Samples and create your own palette of sounds – essentially, as a patch editor/librarian for Beatnik Instruments. You probably know that large Samples can produce slow downloads – and that's why Beatnik also gives you data compression tools for juggling each Sample's size against quality, to find the best trade-off for each one.

RMF Files

- All Beatnik playback software is optimized to play **Rich Music Format** files (**RMF**) – and the purpose of the Beatnik Editor is to create them. A typical RMF file includes your MIDI file and any custom Instrument patches and Samples you're created for that song. RMF files can also embed copyright, licensing information, composer and performer credits, and similar information. The entire RMF file is encrypted, to help you control your intellectual property.
- You'll deliver your music and sounds as RMF files, not audio recordings like DAT, CD-R, WAV files, etc. (Actually, you **can** export digital audio versions of your Beatnik songs from the Beatnik Editor – but the files get huge, and they're not interactive. RMF is almost always the better choice.)
- For Beatnik on the Web, a webmaster will place the RMF files you create onto the Web site, and add commands to its Web pages so that your music and sounds trigger and play as Web users browse the site. (If you're versatile, the webmaster may be you!)

Interactivity

- Interactivity is a major element of Beatnik. Your Song can play the same way each time (yawn), or it can change dynamically in response to your listener's actions (wow!). For example: special sounds triggered by mouse-clicks, or musical arrangements that change dynamically over time.
- Interactivity is **not** defined in the Beatnik Editor. Instead, the programming that makes up the Web site, movie or game will monitor the user's actions and send commands to the Beatnik Player. These commands (in JavaScript, if you're interested) can mute or unmute MIDI file tracks or MIDI channels, trigger built-in or custom sounds, start or stop song playback, and much more. See **Playing the Beatnik MIDI Synthesizer**.
- Unless you're a programmer as well as a musician, the interactive control of your Song will probably be implemented by someone else. You'll hand off RMF files to your programmer or Web page author, along with suggestions on where and how each Song should be used. Staying involved and maintaining good communication with your programmer is critical to

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achieving good interactive results!

- It's possible to create an RMF file that has only Instrument and Samples, but no musical score (no MIDI file). This would be appropriate when the Web site needs to play sound in response to user actions, but doesn't use a traditional music track. This form of RMF file is called RMFX.

That's the high-level view of what working with Beatnik is like for a musician. The rest of this **For Musicians** section explains all the details.

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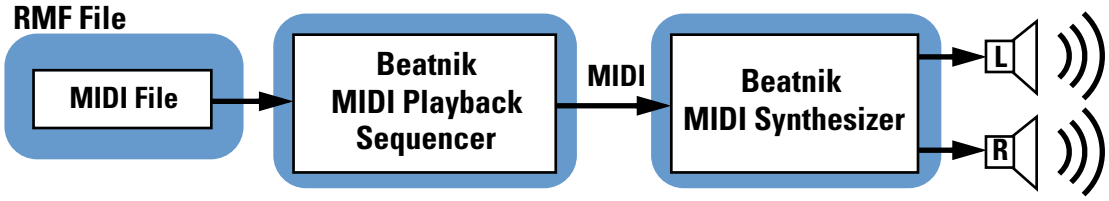
The Beatnik MIDI Playback Sequencer

All Beatnik player software includes a simple MIDI sequencer that's used to play back the imported MIDI files embedded in your RMF files.



Because this is a playback-only sequencer, there's no way to record or add new tracks, notes, or other MIDI events while a Song is playing. There's also no way to directly control starting, stopping, pausing, or resuming from within your MIDI file.

The sequencer's 'transport controls' are instead handled with the Music Object programming interface – in JavaScript for Web pages, or in Lingo for Director, Shockwave, and Flash projects. (C and C++ developers can achieve the same results with the Beatnik Audio Engine Client API). It's completely up to the Web page developer, Director author, or C/C++ developer to tie the user's actions to the musically correct starting and stopping operations. In other words, the programmer's the one who gets to press the 'play button'. RMF files are usually made to start playing immediately upon loading, but the programmer has control over that too.

This means that your MIDI file is essentially a resource that gets used by the playback sequencer – the MIDI file doesn't get to touch the transport controls on its own.

> **Note:** To a designer of interactive music, that means that nearly all interactive, adaptive effects will have to be achieved using just the tracks, notes, and other MIDI events stored in the Standard MIDI File – basically, you need to put all your dynamic variations and alternatives into the MIDI file, and rely on interactive track and channel muting to control which parts are exposes and when. This muting and unmuting is also controlled not from the MIDI file itself, but with the Music Object interface (or Beatnik Audio Engine Client API). Again, the Web page developer, Director author, or C/C++ developer must make the musically correct link between user actions and muting and unmuting operations.
>
> **Tip:** The one exception to this rule of developer control is the **Advanced Technique** we call **Automatic Looping and Track Muting**. This involves using your MIDI sequencer program to place certain markers and MIDI controller events in your MIDI files before you import them into the Beatnik Editor. When the Beatnik Audio Engine encounters these items in RMF files, it interprets them as embedded 'instructions' that define the starts and ends of looping regions, and then selectively mutes and unmutes a different set of your tracks at each pass through the loop. (See **Automatic Looping and Track Muting** for the details).

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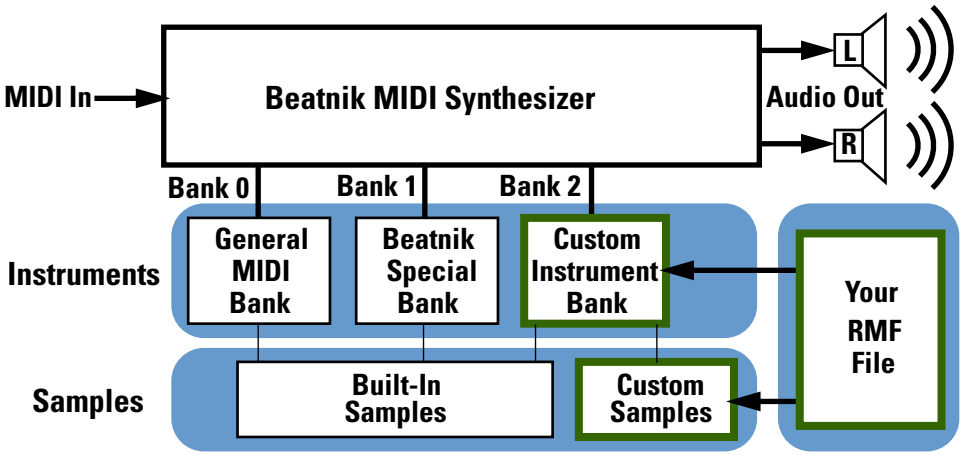
The Beatnik MIDI Synthesizer

All Beatnik playback software uses the same sound generator: a high-quality, multitimbral wavetable synthesizer implemented completely in software. It includes a built-in General MIDI soundset Bank, plus a 'Beatnik Special' Bank of more interesting alternatives. You can also create your own Custom Instruments using either the built-in Samples or your own Samples. The synth can respond independently to all 16 MIDI channels, with a separate Instrument for each channel, and up to 64-voice polyphony.



You can think of the Beatnik Editor as patch editor/librarian for this synthesizer – you'll use the Beatnik Editor to create your own Custom Instruments and variations on the built-in ones. You'll collect Beatnik Instruments and Samples in your Beatnik Editor Session documents, and work on them using the Beatnik Editor.

The rest of this section explains all the details of working with the Beatnik MIDI Synthesizer, broken down by topic:

Heading...	Covers...
Synthesizer Voice Architecture	The Keymap, Envelopes, Filter, and other elements that make up the synth voice
Playing the Beatnik MIDI Synthesizer	High-level view of how the synthesizer responds to MIDI – from RMF files or from live MIDI input in the Beatnik Editor
Instrument Bank Organization	Including a quick survey of the built-in Instruments
Controlling the Mix	How to control level, pan, and effects
MIDI Implementation	Low-level details of how the synthesizer responds to specific MIDI messages
Building Your Own Patches	High-level view of how Instruments and Samples are organized, and how to work with them in the Beatnik Editor
Editing Instruments	Specific techniques for improving your patches

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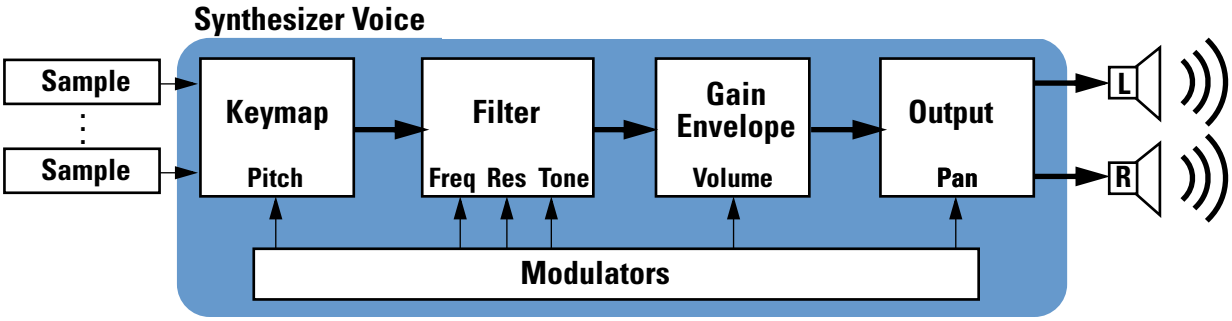
Synthesizer Voice Architecture

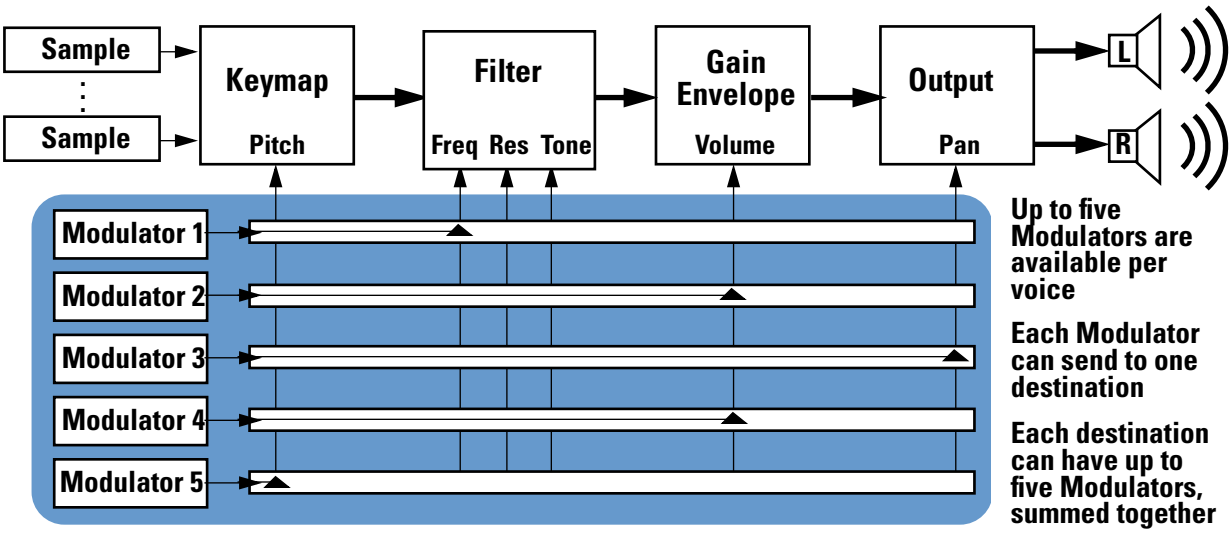
Like all wavetable synthesizers, Beatnik Instruments are created by combining one or more samples, spread across the keyboard. A large number of built-in Samples are provided, and you can also add your own. Samples are played through a resonant Comb Filter, a Volume Envelope, and a Pan control into Beatnik's internal mixer.



Modulation

Up to five modulators per voice are also available – and they're really flexible. Each modulator has two sources: an LFO (low-frequency oscillator) and an envelope. You can pick just the LFO or just the envelope, or use both with the envelope acting as an LFO depth control. You can set the LFO shape and frequency, and you can edit the envelope.

Each modulator can send to any one destination: the Instrument's Volume, Pitch, Pan, or any of three Filter parameters. Each of these destinations can receive from any combination of the five modulators, which gives you room to create extremely complex modulation effects if that's what you want to do.



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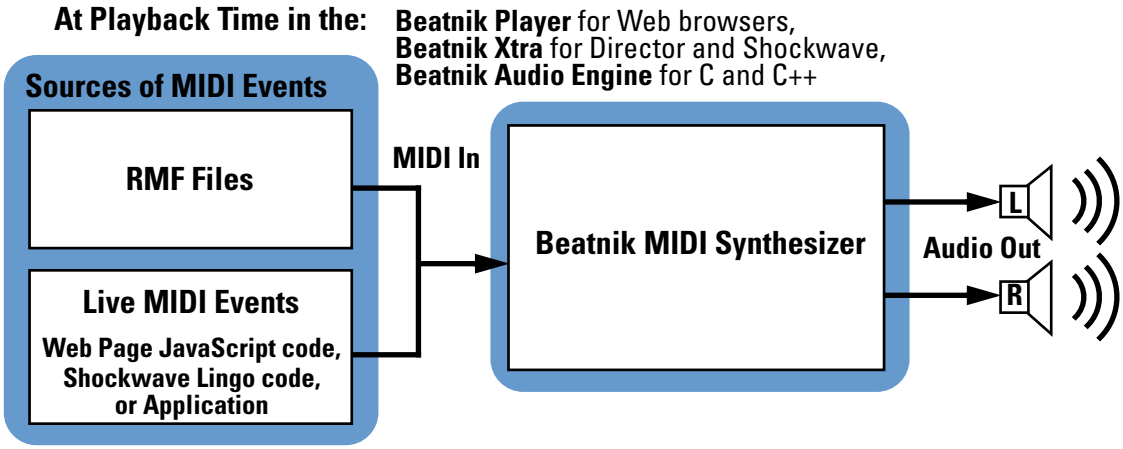
Playing the Beatnik MIDI Synthesizer

The Beatnik MIDI Synthesizer generates sound in response to MIDI events received from a variety of sources. The MIDI sources available in the Beatnik Editor – that is, at authoring time – are different from the MIDI sources that will be available when the RMF file is played back in a Web page, Shockwave movie, or application.

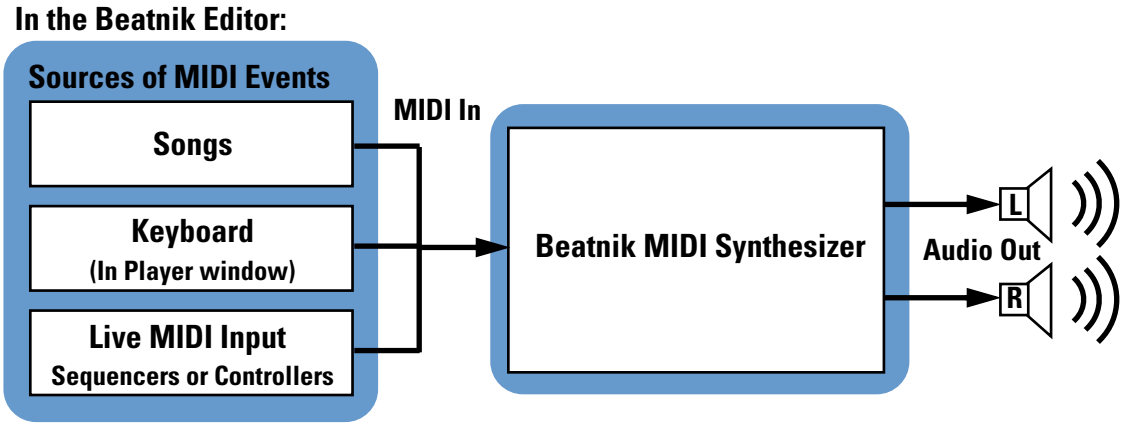
At playback time – that is, in the Beatnik Player, Beatnik Xtra, BAE or other Beatnik playback software – MIDI input can come from two different sources:

- From playing the MIDI sequence in an RMF file.
- From individual MIDI note events arriving from the Web page code, Shockwave movie, or application program.



In the Beatnik Editor – that is, as you're working on your Instruments and Samples – MIDI input can come from three different sources:

- From the **Live MIDI Input**.
- From **The Onscreen Keyboard** in the **Player window**.
- From playing the Songs in your Session files.



In both of these situations, all MIDI events arriving at the Beatnik MIDI Synthesizer are handled

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in exactly the same way. This section explains how the synthesizer responds to those MIDI events.

See also: **MIDI Implementation** and **MIDI Implementation Chart**.

Note: When the Beatnik MIDI Synthesizer is listening to a musical score and interactive input at the same time, **both sources are playing the same synthesizer**. Program change messages and level or effects adjustments arriving from either MIDI source will affect the playback of both of them.

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Instrument Bank Organization

Like many musical instruments, the Beatnik playback software includes built-in Instrument definitions – in this case, over 300 of them. Instruments are divided into three Banks: the built-in General MIDI and Beatnik Special banks, and the Custom bank for Instruments that you make in the Beatnik Editor and include in your RMF files.

Every Bank consists of two sets of 128 Instruments each:

- **Melodic Instruments** are numbered 0–127, and are 'normal' Instruments that respond to the 128 MIDI note numbers by playing the corresponding melodic pitches.
- **Percussion Instruments** are treated differently. The 128 Percussion Instruments in each bank make up a 'drum kit' that puts a different Instrument on each of the 128 MIDI note numbers. So with Percussion Instruments, playing different notes produces different Instruments, rather than playing a single Instrument at different pitches.

  This Percussion behavior is a part of the General MIDI standard, and is ordinarily used only on MIDI channel 10; however, in Beatnik playback software you can put any set of MIDI channels into this mode if you want to (see **MIDI Channel Modes**).

Bank Number and Name		Built-In?	Description
Bank 0: General MIDI	**Melodic**	**Yes**	The first bank is organized according to the General MIDI specification, for compatibility with all Standard MIDI Files.
	Percussion		
Bank 1: Beatnik Special	**Melodic**	**Yes**	The second bank is organized similarly to the GM bank, but includes unique sounds beyond the GM set, and Web-appropriate sound effects, all created by Beatnik artists.
	Percussion		
Bank 2: Custom	**Melodic**	**No**	The third bank provides room for your own Custom Instruments, including variations on the built-in Instruments.
	Percussion		

When you create a new Session in the Beatnik Editor, the Custom bank will be empty, and the other two banks (GM and Beatnik Special) will be full. You can't change anything in the first two banks, however – to modify an existing Instrument, you'll have to copy it to the Custom Instrument bank, and modify the copy there.

Note: You can drag and drop Instruments and Samples between Session files.

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Controlling the Mix

The Beatnik MIDI Synthesizer gives you control over everything you need to create a finely-tuned mix: the relative balance between Instruments, their positions in the stereo field, their effect sends, and the effects processor program. There isn't any traditional EQ (equalization, or bass and treble controls), but each Instrument does have a **Filter** that you can control.

The Beatnik Editor doesn't have any traditional "mixer window" for working on your mix (although the **Player window** does have **Mute** and **Solo** buttons and a **Reverb** setting menu). Instead, you mainly control the mix by means of MIDI controller messages – which you can either include in your Song's MIDI sequence, or send in real time from the Web page's JavaScript (or from the game code, Shockwave movie Lingo code, etc.).

Outside of MIDI, the system-wide effects processor program can be set when individual Songs are played (see the **Song Settings dialog box**), and most of the mix parameters can also be independently modulated on a per-voice basis (see the **Instrument Editor window**).

> **Note:** Like most MIDI systems, the channels and effects processor in the Beatnik MIDI Synthesizer and Audio Mixer always retain their most recent settings. That means that if your listener plays some other RMF file before listening to yours, they're likely to have volume and reverb send settings "left over" from the previous Song. That's why it's a good idea to always start your Songs' MIDI tracks with your desired values for MIDI Continuous Controllers 7, 10, and 11 for every MIDI channel you use, and to set the effects controllers once each (MIDI Continuous Controllers 91 and 93).

Topics:

Volume

Pan

Effects: Reverb and Chorus

Volume

MIDI Continuous Controller number 7 sets the volume on a per-Instrument (that is, per MIDI Channel) basis. The dynamic volume of individual voices (notes) can also be affected independently with modulators in the Instrument definition, and each Instrument has a constant Volume setting on the **Output Page** page of the **Instrument Editor window**.

> **Note:** If you're used to using the "expression" controller (MIDI Continuous Controller number 11) to create smoothly changing volume effects like fade-ins/fade-outs, or crescendo/decrescendo, be advised that this won't work in Beatnik. The Beatnik MIDI Synthesizer interprets controller 11 in an unusual way: values 0–126 are ignored, but a value of 127 boosts volume by 25%. This means that if you want to use a MIDI controller for smooth volume changes, you have to use controller 7, not controller 11.

Muting MIDI Channels

Although the Music Object programming interface includes Mute commands, and the **Player window** includes onscreen Mute buttons, there is no direct equivalent that can be encoded in MIDI events. The nearest thing would be to use MIDI Continuous Controller 7 (the volume controller)

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to set a channel's volume to 0 temporarily; however, doing this would risk getting the volume wrong when it comes time to un-Mute, as you may not know how the volume controller has been set in the meantime.

See also: Automatic Looping and Track Muting.

Pan

MIDI Continuous Controller number 10 sets the stereo pan position on a per-Instrument (that is, per MIDI Channel) basis. The dynamic pan position of individual voices (notes) can also be affected independently with modulators in the Instrument definition, and each Instrument has a constant Pan setting on the **Output Page** page of the **Instrument Editor window**.

Effects: Reverb and Chorus

The Beatnik Audio Mixer has a built-in effects processor that provides a range of preset reverb programs, some of which include a parallel chorus effect. MIDI Continuous Controller number 90 sets the program for this system-wide effects processor, and you can also use the **Song Settings dialog box** to pick an effects program for each Song. Because there's only one effects processor, all Instruments (that is, all MIDI channels) will receive the same effect – however, you can turn each channel's effects send on and off independently. For the effects programs that offer simultaneous chorus and reverb, you also have independent, continuously variable reverb and chorus

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send controls on a per-MIDI-channel basis.

Reverb Number	Name	Description
1	No reverb	Mono reverbs, no chorus. Effect send either on or off.
2	Closet	
3	Garage	
4	Acoustic Lab	
5	Dungeon	
6	Cavern	
7	Small Footprint	
8	Early reflection	Stereo, with chorus. Variable send levels.
9	Basement	
10	Banquet hall	
11	Catacombs	
Note: Reverbs 8 – 11 are only available when the Beatnik Audio Engine is operating in stereo.		

Effects Send Controls

Any MIDI channel can use the reverb and chorus, with an independent send control for each MIDI channel.

Reverb

MIDI Continuous Controller number 91 is used as the reverb send control, but it's used in two different ways.

- For reverb types 2 through 7, the reverb send for each MIDI channel is either completely on or completely off – there's no fine control over the reverb send. Values of 14 or less for MIDI controller 91turn a channel's reverb send off, values of 15 and above turn it on.
- For reverb types 8 through 11, you have much finer control (Early Reflections, Basement, Banquet Hall and Catacombs – the higher-quality programs). A value of 0 for MIDI controller 91 means no reverb send, and higher settings gradually increase the reverb send level, up to the maximum of 127.

  Note: Many people have found 10 to be a good starting effects level, and send levels over 30 to be too high for many situations – but let your own ears be the judge.

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Chorus

For reverb types 8 through 11 only (Early Reflections, Basement, Banquet Hall and Catacombs), MIDI Continuous Controller number 93 is used as the chorus send control. This is completely separate from the reverb send. The chorus send has the same fine-resolution control as the reverb send: a value of 0 for MIDI controller 93 means no reverb send, and higher settings gradually increase the reverb send level, up to the maximum of 127.

> **Note:** Chorus is only available when reverb type 8, 9, 10, or 11 is in use, and the Beatnik Audio Engine is operating in stereo.

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MIDI Implementation

The Beatnik MIDI Synthesizer, although a piece of software, behaves as if it were a General MIDI sound module. It responds to the following standard MIDI messages, arriving on any of the 16 MIDI channels:

- **Program Change and Bank Select**
- **Note Events**
- **Pitch Bend**
- Several **Continuous Controllers**

You can use any MIDI sequencer to create a Standard MIDI File containing these messages.

See also: **MIDI Implementation Chart**

Program Change and Bank Select

The Beatnik MIDI Synthesizer responds to MIDI Program Change messages, which set the Instrument that each MIDI channel will use to play its notes. Each channel tracks its own program number independently, and all notes played on a channel will use the channel's current program. Instrument programs are numbered from 0 through 127.

The Beatnik MIDI Synthesizer also responds to MIDI Bank Select messages, which involve the concept of program Banks. Because 128 Instruments really isn't enough to hold all the useful musical Instruments in the world, the need arose to for a way to access more of them. So in MIDI, a Bank is defined a set of up to 128 Instruments, and a MIDI synthesizer can provide multiple Banks – for example, the Beatnik playback software furnishes three Banks. The MIDI Bank Select message (implemented as a Continuous Controller event for controller 0) determines which of the available Banks a MIDI channel will look to when it receives a MIDI Program Change message. Each channel tracks its own Bank number independently, and all Instruments used for a channel – as accessed by MIDI Program Change messages – will be fetched from that Bank until and unless a different Bank Select message is received.

In Beatnik, MIDI Program Changes access Bank 0 (General MIDI) by default, so:

- If you're only accessing General MIDI instruments in a given channel, you don't need to include any Bank Select messages, but
- If you want to access Beatnik Special Instruments (Bank 1) or Custom Instruments (Bank 2) in your RMF file, you'll have to place a Bank Select message before any Program Change messages.

For example:

Controller #0, 1 – Selects Bank 1, which is Beatnik Special
Program 1 – Change to instrument 1, Reflection Piano, in the Beatnik Special bank
Program 2 – Change to instrument 2, Flange Piano, in the Beatnik Special bank
Controller #0, 0 – Selects Bank 0, which is General MIDI
Program 1 – Change to instrument 1, Bright Piano, in the General MIDI bank

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Program 2 – Change to instrument 2, Electric Grand, in the General MIDI bank

See also: List of **Built-In Instruments** in the General MIDI and Beatnik Special banks.

Note Events

MIDI treats every played note as two separate events: one Note On message that specifies the note number and velocity, and a separate Note Off message arriving some time later (also specifying the note number). Any MIDI channel can play any number of notes simultaneously, however the synthesizer does have an overall maximum (usually 56 voices).

Velocity

In the Beatnik MIDI Synthesizer, the velocity in the Note On message always affects the note's volume.

MIDI Channel Modes

MIDI Channel Mode determines how a channel will interpret MIDI note events. In addition to the two MIDI channel modes used in the General MIDI scheme (Normal Percussion and Normal Melodic modes), the Beatnik MIDI Synthesizer offers a third mode, Pitched Percussion. Each channel tracks its own channel mode independently, and all notes played on a channel will sound using the channel's current channel mode. By default, all channels start up in General MIDI Mode.

To change a channel's MIDI channel mode, send a Non-Registered Parameter Number (NRPN) with MSB (controller 99) of 5 and LSB (controller 98) of 0, followed by a Data Entry (controller 6) with your desired mode number:

Data Entry Controller	Mode	Effect
0	**General MIDI** Mode (for that channel)	On Channel 10, puts the channel into Normal Percussion Mode; on all other channels, puts the channel into Normal Melodic Mode
1	**Pitched Percussion** Mode	Program Changes select Percussion bank sounds, note numbers transpose them as though they were Melodic Bank Instruments
2	**Normal Percussion** Mode	Note number selects Percussion bank sounds (ala General MIDI Channel 10)
3	**Normal Melodic** Mode	Program Changes select Musical bank sounds, note numbers transpose them.

See also: the **Advanced Techniques** section.

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Pitch Bend

Like most instruments, the Beatnik MIDI Synthesizer responds to MIDI Pitch Bend events. Each channel tracks its own pitch bend value independently, and all notes played on a channel will use the channel's current pitch bend value. Value range is 12 bits, with a default depth of 2 semitones.

To change a channel's pitch bend depth, send a Registered Parameter Number (RPN) with MSB (controller 101) of 0 and LSB (controller 100) of 0, followed by a Data Entry (controller 6) with your desired bend range in semitones.

For example, to set a channel's pitch bend range to one octave:

Controller #101, 0 – RPN MSB of 0 – Select Pitch Bend Depth as Data Entry destination
Controller #100, 0 – RPN LSB of 0
Controller #6, 12 – Set depth to 12 semitones, via Data Entry controller

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Continuous Controllers

The following table summarizes the Beatnik MIDI Synthesizer's response to MIDI Continuous Controller messages. Each Continuous Controller message contains a controller number and a value. For further details, see the **MIDI Implementation Chart**.

MIDI Controller Number & Description		Notes
0	**Bank Select (MSB Only)**	Beatnik only responds to the most significant byte (MSB). **Values:** **0 –** General MIDI Bank **1 –** Beatnik Special Bank **2 –** Custom Instrument Bank (in RMF file)
1	**Modulation**	If the Instrument uses a Pitch modulator, this controller affects its depth; otherwise, it affects a built-in uneditable Pitch LFO. **Value Range:** **0** (no modulation) – **127** (maximum modulation)
6	**Data Entry**	Used after NRPN 640 (Controller Numbers 98/99) to set the MIDI Channel Mode for note events. **Values:** **0 –** Channel's normal General MIDI mode: On Channel 10, puts the channel into Normal Percussion Mode; on all other channels, puts the channel into Normal Musical Mode **1 –** Pitched Percussion Mode: Program Changes select Percussion bank sounds, note numbers transpose them **2 –** Normal Percussion Mode: Ala General MIDI Channel 10, note number selects Percussion bank sounds **3 –** Normal Musical Mode: Program Changes select Musical bank sounds, note numbers transpose them.
7	**Volume**	**Value Range:** **0** (no sound) – **127** (maximum volume).
10	**Pan (stereo position)**	**Value Range:** **0** (full left) – **127** (full right). Center is **64**.
11	**Expression**	**Value Range:** **0** – **126**: No effect on volume **127**: Volume is boosted by 25% **Note:** This behavior is different from most other MIDI synthesizers.
64	**Hold1 (Sustain)**	Ordinary sustain pedal.

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85, 86, 87	**Beatnik Loop & Mute**	(Available during file playback only) When stored in a MIDI or RMF file, Controllers 85, 86, and 87 can be used to loop sections of MIDI data and selectively mute a different set of tracks at each pass through each looped region. See **Automatic Looping and Track Muting**.
90	**Master Reverb Type**	Sets the Reverb Type. See **Effects: Reverb and Chorus**. **Value Range:** **0** – **11**
91	**Reverb Send**	**Value Range:** **For Reverb Types 2 through 7 –** Each channel's reverb send is either On (Controller 91 values 15 and above) or Off (Controller 91 values below 15). **For Reverb Types 8 through 11 –** Each MIDI channel has independent send levels ranging from 0 (no reverb or "dry") to 127 (maximum reverb or "wet"). See **Effects: Reverb and Chorus**.
93	**Chorus Send**	Reverb Types 8 through 11 include a Chorus effect. Each MIDI channel's chorus send level can be set independently from its reverb send level. **Value Range:** **0** (no chorus or "dry") – **127** (maximum chorus or "wet"). See **Effects: Reverb and Chorus**.
98, 99	**NRPN (LSB, MSB)**	Controller 98 – Least Significant Byte (LSB) Controller 99 – Most Significant Byte (MSB)
100, 101	**RPN (LSB, MSB) - Reserved**	Controller 100 – Least Significant Byte (LSB) Controller 101 – Most Significant Byte (MSB)
121	**Reset All Controllers**	Equivalent to sending the following set of Controller messages: Bank Select0 (General MIDI) Mod Wheel0 (off) Volume127 (full) Pan64 (center) Expression0 (off) Sustain0 (off) Reverb Level14 (normal) NRPN0 RPN0
123	**All Notes Off**	Standard 'Panic Button' to kill all playing notes. Value is ignored.

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Building Your Own Patches

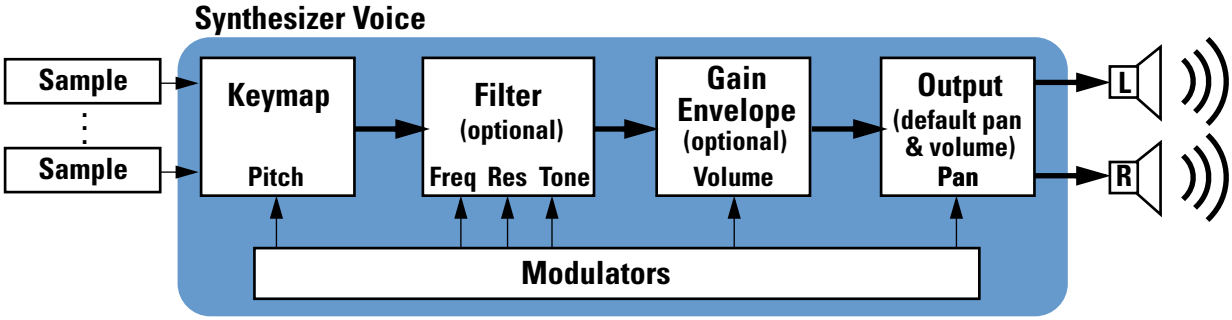
Eventually, you'll want to use a sound that doesn't exist among Beatnik's built-in instruments. When this happens, it's time to create your own Instrument.

This can be a pretty involved process, so you may find it takes a little practice to get the best results. You'll need to decide if your sound requires new custom Samples, or if you can just re-use the built-in Samples and modify them with your Instrument parameters. In many cases you may be able to get the sound you're after by copying one of the existing built-in Instrument and changing some of its parameters.

To build your patches in the Beatnik Editor, you'll use the **Instrument Editor window**, and perhaps the **Sample Editor window**. For introductions to these editors, see the **Production Technique Tips** and **Editing Instruments** sections below.

Overview for Sound Designers

If you've spent time working with a multi-timbral MIDI sampler or wavetable synthesizer, you'll find Beatnik's software-based sampling and synthesis environment very familiar. Alternately, it may be helpful to think of Samples as the equivalent of a multitrack tape player and the rest of the Instrument definitions as your signal processing and mixing tools.



Each Instrument starts with one or more Samples. Whenever your Instrument receives a MIDI note one Sample is played – and its pitch is optionally transposed – depending on a Keymap that you design. The Sample is then processed by three further blocks (two of which are optional):

- The **Filter** block (optional)
- The **Gain Envelope** block (optional)
- The **Output** block

  This block contains controls for the Instrument's default pan position and volume.

The Filter, Gain Envelope, and Output blocks can also be affected by Modulators, which we'll talk about shortly.

Beyond the individual voice, each MIDI channel also supports several MIDI Continuous Controllers that affect the audio of all notes being played on that channel – including volume, stereo pan, and other parameters that have parallel controls in the Instrument design. For details, see **Continuous Controllers**.

Finally, all Instrument are mixed together in the Beatnik mixer (not shown above), which provides

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optional reverb and chorus effects with an independent send control for each of the 16 MIDI channels – see **Effects: Reverb and Chorus**.

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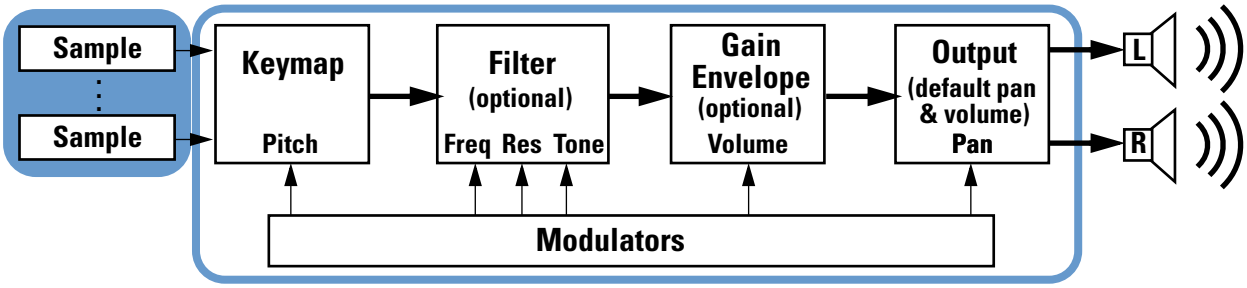
Editing Samples



Samples are the basic building block of all Instrument sounds. While the Beatnik built-in Instrument banks contain a huge number of Samples, composition-specific sounds like speech, singing, sound effects, and featured musical sounds generally require custom Samples. To use custom Samples in an RMF file, you must import them into the Beatnik Editor Session file.

Often you'll find that the Samples you've imported need a little cleaning-up before they'll work well in Instruments. You can use the Beatnik Editor's built-in **Sample Editor window** for most such basic work – deleting unwanted parts, creating fade-ins and fade-outs, adjusting overall volume, and setting loop points for sustaining. However, if you need to do any more elaborate sample editing – for example, converting sample rates or turning stereo samples into mono – you'll need a separate, full-featured sample editor software package.

About Sample Sizes

Custom Samples can bring your projects a unique edge – but you should be aware that they can also greatly increase download times, which carries the risk of irritating your users on the Web. In the Sample Editor, the size of each Sample is shown as **bytes used on disk** in the info display at the bottom of the window.

See also: **How Do I ...Make my Samples Smaller?**

Working with the Sample Editor

The **Sample Editor window** should feel pretty familiar if you've ever used any sample editing

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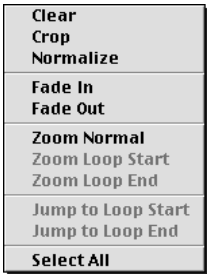
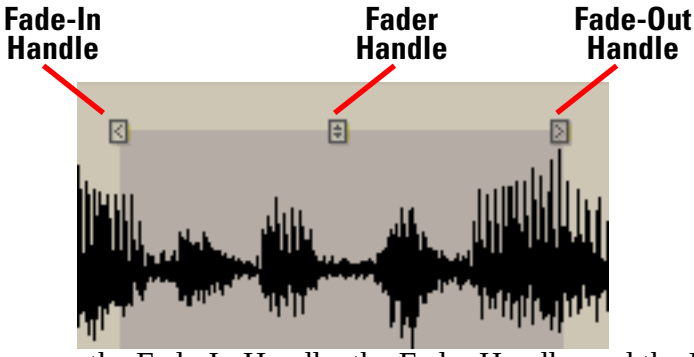
application before. The middle section of the window is a waveform editing display that you can zoom into – on both the time axis and the level axis – and scroll left and right. The loop point markers appear above the waveform, with a Loop on/off button and editable start and end number fields below. To edit the waveform, you make a selection by dragging across your desired range (or using the Select All command), and then use either the Volume Handles, the context menu, the Sample menu, or the Delete command (in the Edit menu). You can also set the playback sampling rate, and set the Root Key that the Beatnik Editor will use whenever you ask it to make a new Instrument using this Sample – automatically correcting for pitch in the Keymap it generates.

Sound Editing Controls

The context menu and the Sample menu contain both edit commands and view control commands, which are explained in the Window Reference section for the **Sample Editor window**:



The Volume Handles are a little different from any other sample editor you've seen. Whenever you make a selection, three Volume Handles appear across the top:



From left to right, these are the Fade-In Handle, the Fader Handle, and the Fade-Out Handle.

To create a fade-in: Click in the **Fade-In Handle** and drag to the right, releasing the mouse button where you want the fade-in to finish.

To create a fade-out: Click in the **Fade-Out Handle** and drag to the left, releasing the mouse button where you want the fade-out to start.

To adjust the level: Click in the **Fader Handle** and drag up or down to turn the level up or down.

Note: Be sure to listen critically to your sample after boosting, since excessive volume boosts will cause digital distortion. To boost a selection to its maximum before distortion, use the **Normalize** command.

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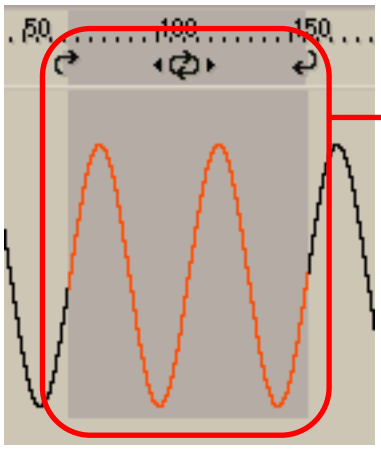
Looping Tips

Creating a smooth loop can be the most challenging part of creating a custom musical instrument Sample. Here are a couple of tips:

- Good loops need very similar timbre and pitch at the start and end of the looping region, otherwise the splice between end and beginning will sound jarring. The best loops are usually found some time after the sound's initial attack – specifically, after the initial transients have died down and a stable, pitched tone remains.
- Try setting your loop markers at the positive zero-crossing of one or more cycles of this pitched tone. For example, in the following illustration two waveform cycles have been selected as the loop, and the loop stat and end are both at places where the signal crosses the zero line, moving upwards.



Two Waveform Cycles Selected for Loop

Once you find the right pitch, you may need to shift the loop left or right to find a place where the timbre is stable enough to work well. To move the looping region without changing its length, drag the middle Loop Handle.

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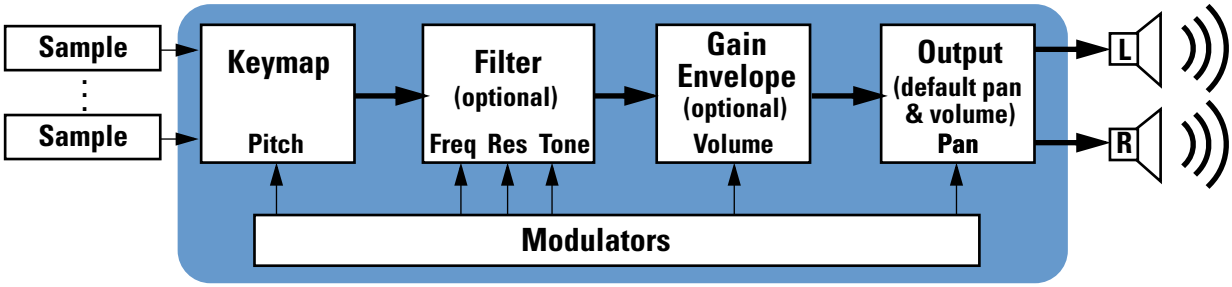
Editing Instruments

Editing Instrument parameters is usually quicker and easier than editing the underlying Samples themselves. In addition, creating Custom Instruments (as opposed to custom Samples) has a negligible effect on user download times. We would encourage you to experiment with Instrument editing, even if you aren't creating your own Custom Samples.



Note: You can only edit Custom Instruments, not the Built-In Instruments. You can create new Instruments from scratch, or copy built-in Instruments to the Custom bank, then edit them. Instruments can be copied and pasted (or dragged and dropped) between Sessions.

The **Instrument Editor** has five Pages:

Heading...	Covers...
Keymap	Assigns specific Samples (built-in or custom) to ranges MIDI notes
Filter	Sets the peak frequency spacing and resonance used by Beatnik's comb filter, and the tone control
Volume	Controls the amplitude envelope applied to each note
Output	Sets the Instrument's position in the left-right stereo mix
Modulation	Defines up to five modulation sources to further manipulate an Instrument's sound

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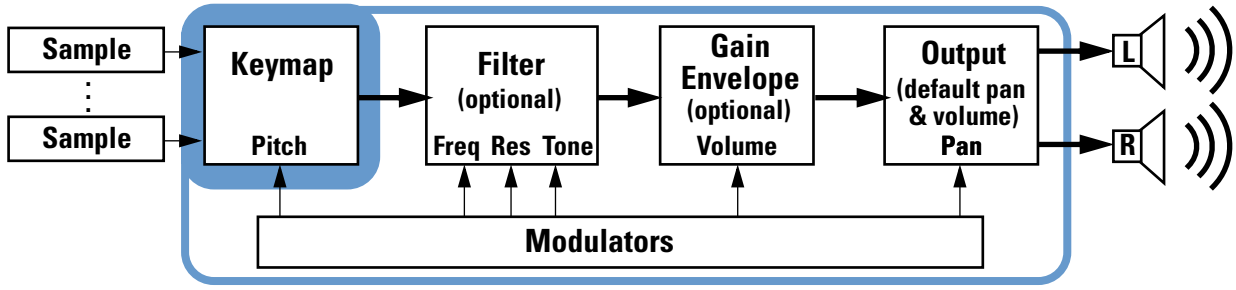
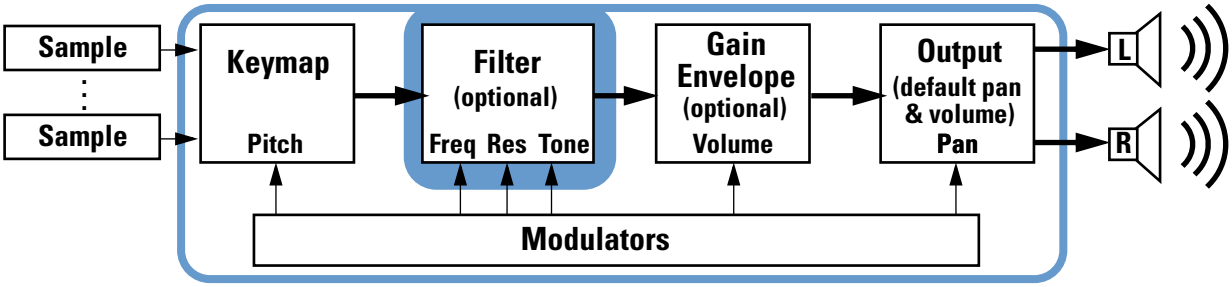
Keymap



The **Keymap Page** defines which Samples are played across an Instrument's keyboard. As a Sample is played further from its original pitch, transposition artifacts become more apparent. So, modern samplers and wavetable synthesizers use multiple samples to create a single Instrument. For instance, a piano could use half a dozen samples originally recorded across a range of pitches. An Instrument can contain from 1 to 128 of these zones.

See also: Keymap Page in the **Instrument Editor window** section.

Filter



The **Filter Page** is the second block in the signal path. Each Instrument can use its own Comb Filter and tone control. The Comb Filter has both peak frequency spacing and resonance settings.

In general, the Filter can liven up the sound of an Instrument, as well mask aliasing or noise in a Sample. The only drawback is that each Filter uses some CPU power, particularly when its resonance is turned up. When you have a Song that uses a lot of Instruments with Filters, keep an eye on the **CPU Load** meter in the **Player window** to make sure it's performing within acceptable limits.

The most important Comb Filter setting is its peak frequency spacing. A comb filter has multiple, fixed peaks evenly spaced across the frequency spectrum. Frequencies in between the peaks are turned down, removing those components. Peak frequency spacing can be set to a fixed frequency from 175 to 11,200 Hz. The sound will get progressively brighter and duller as you play across the keyboard from low notes to high notes, depending on how wide the spacing is.

There is an alternate to a fixed frequency spacing: The **Track Pitch** option causes the filter frequency spacing to increase and decrease as the pitch of the played notes goes up and down the keyboard. When **Track Pitch** is enabled, you can allow all notes to have a similar tonal character.

Another important filter control is Resonance. Resonance creates a hump or frequency boost centered around the cut-off frequency. The higher the resonance setting, the more audible this hump

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becomes. The resonant frequency will follow behavior of the cut-off frequency as described in the Track Pitch option.

In addition to the Comb Filter, there's also a Tone Control – a gentle high or low frequency rolloff filter with a Depth setting:

- When the Tone setting is positive, the Tone Control rolls off high frequencies.
- When the Tone setting is negative, the Tone Control rolls off low frequencies, and the Comb Filter is bypassed.

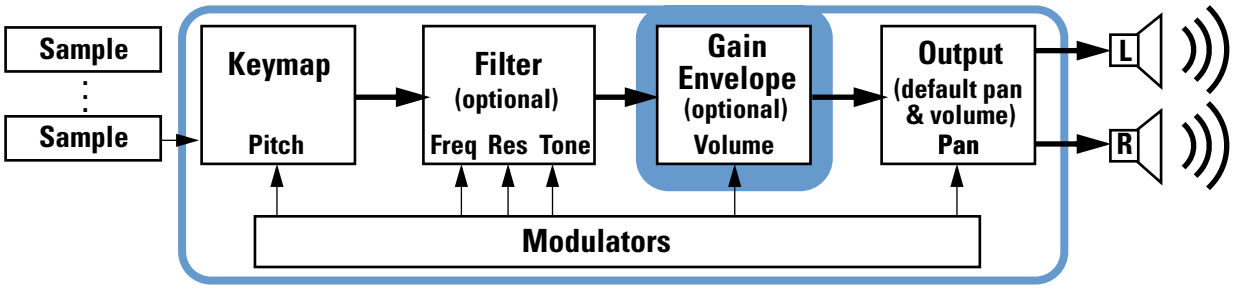
Note that you have the option to dynamically sweep any or all of the continuous filter settings (comb filter frequency peak spacing and resonance, and tone control) – see the **Modulation** section.

See also: Filter Page in the **Instrument Editor window** section.

Player Sample Rate and Filter Frequency

Note: An Instrument with prominent filtering will sound significantly different depending on whether the listener's Beatnik playback software is operating at 22kHz or 44.1 kHz.As a result, you should set the **Player window** playback settings to the same sample rate as the playback system where you plan your music to be played. For the Beatnik Player for Web browsers, this is 22kHz. For the Beatnik Xtra, JavaSound, or the Beatnik Audio Engine, check with your programmer to see what sample rate they intend to use. As you work on your Instrument in the Beatnik Editor, you may want to listen to your song at a number of different sample rates, evaluate the sound character of each.

Volume



The **Volume Page** contains a flexible Envelope Generator that controls the attack, sustain and release levels of each Instrument's sound. These levels are shown as an editable, graphical curve defining the note's overall volume contour over time.

See also: Volume Page in the **Instrument Editor window** section.

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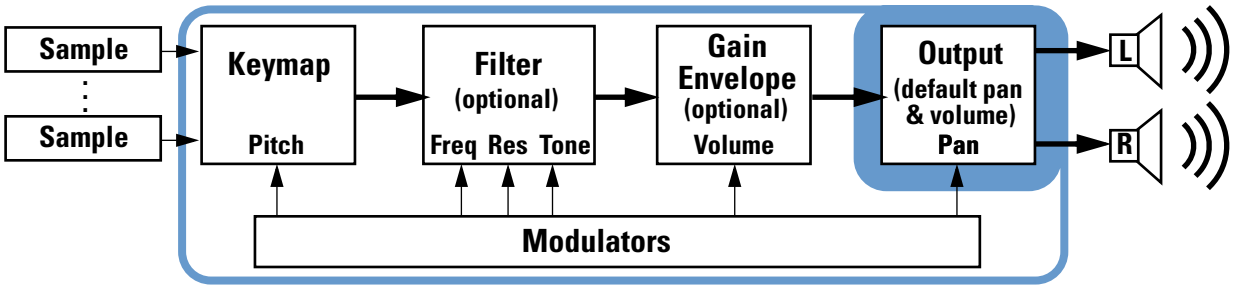
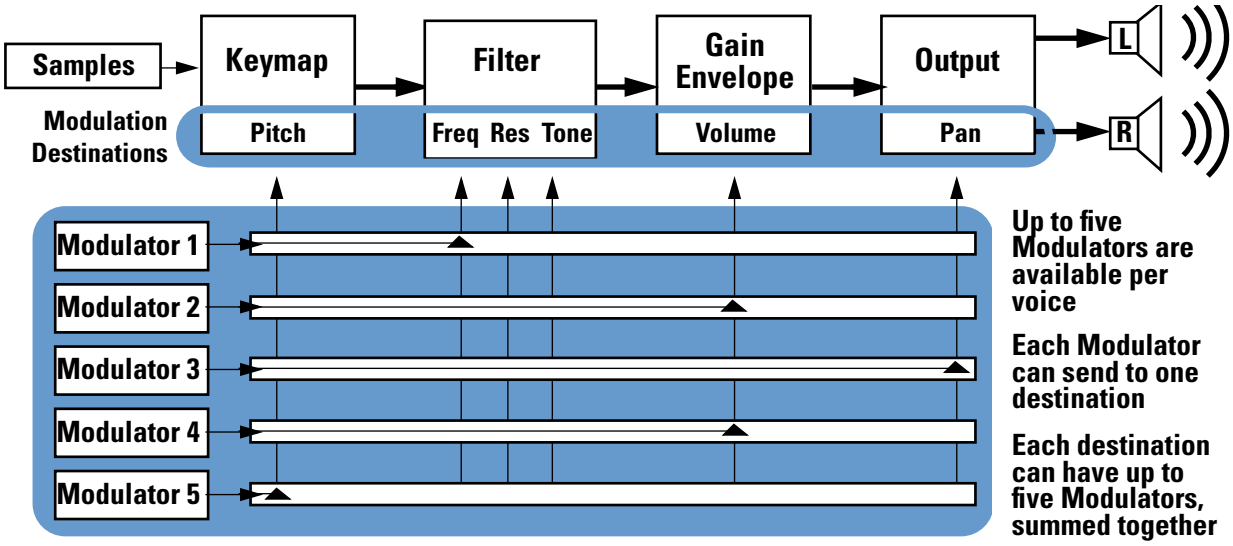
Output



The **Output Page** is the simplest part of the Instrument editor. Here, you can set the Instrument's default Stereo Pan position. You can also disable reverb for the Instrument.

See also: Output Page in the **Instrument Editor window** section.

Modulation



Modulators can make an Instrument more dynamic and interesting, but they make no sound of their own. Instead, they work by changing (modulating) various parameters of the instrument dynamically in real time. Parameters like volume, filter settings, or pitch can be modulated by low frequency oscillators (LFO's) and envelopes. You may have up to five simultaneous modulators per instrument; it's also OK if your instrument doesn't use any.

See also: Modulation Page in the **Instrument Editor window** section.

As you may know, modulation is a two-part proposition; each modula-tor controls a modula-tee, if you will. Beatnik has four different types of modulators, and six different Instrument parame-

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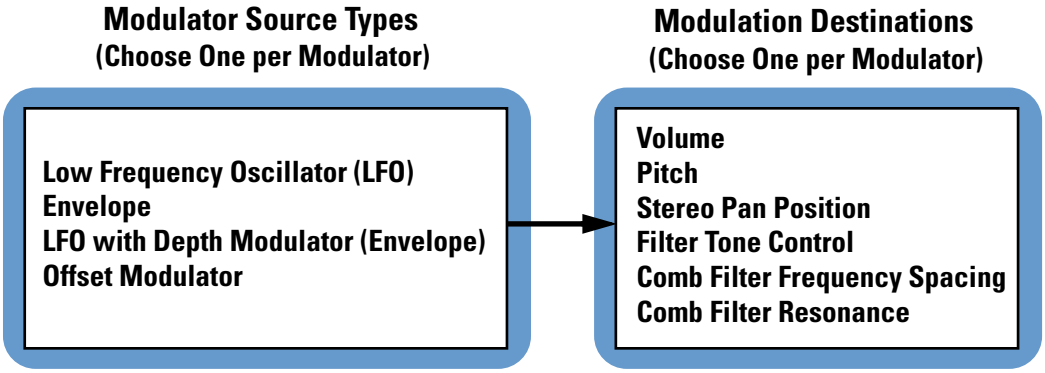
ters can be modulated.



Modulator Destinations

Volume

Modulating the volume of an instrument creates a fluctuation in the Instrument's level. Those familiar with the classic guitar amplifier tremolo effect will know exactly how this sounds.

Pitch

Normally, an Instrument's pitch is controlled by the MIDI note being played, and the pitch bend wheel (if used). Applying a modulator to the pitch of an Instrument will add a pitch vibrato, warble, bend or other gesture to every note played.

Stereo Pan position

There are three ways to adjust the stereo position of an Instrument's sound: The Stereo Position setting in the Instrument Output tab, the use of MIDI controller 10 (pan) and a modulator set to control Stereo Pan position. Using an LFO to change an Instrument's pan is an effect often heard with electronic pianos, giving the sound a back-and-forth motion.

Filter Tone

Use care when modulating the Filter Tone, especially when going back and forth between positive and negative values. The Comb Filter is disabled when the Tone control value is negative, and bad-sounding artifacts can occur when the Comb Filter suddenly cuts in or out.

Filter Frequency

Modulating the filter peak frequency spacing of an Instrument allows you to create electronic swishing and sweeping sounds, without altering the note's fundamental pitch – sounds you'll recognize from electronic dance music. This effect is most apparent on Instruments with higher filter resonance settings.

Filter Resonance

Modulating filter resonance tends to add a pulsating character to each note. If you turn on Track Pitch (on the Filter page), then you can create a pulsing harmonic at a pitch above or below the key played by using a semi-tone offset.

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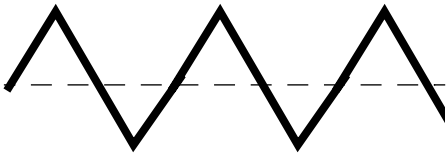
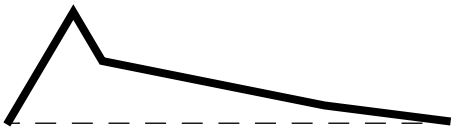
Note that filter resonance is perhaps the most subtle modulation destination. When the filter is not set to Track Pitch, the effects of resonance in general vary depending on the pitch of the note played. When Track Pitch is enabled, the behavior of different pitches is more consistent.

Modulator Types

The Beatnik synthesizer supports four different modulator types, all of which are based on two signal sources – a Low Frequency Oscillator (LFO) and an Envelope generator. Choosing a modulator type is easier once you understand how they differ:

Modulator Type.	Description
Low Frequency Oscillator (LFO) 	An **LFO** applies a continuously repeating wiggle to an Instrument parameter, such as pitch or volume. This wiggle continues as long as the note is held. You can think of an LFO as an invisible monkey turning an Instrument control knob up and down at a certain rate. If the knob the monkey is turning happens to be "volume," you'll hear the level of that instrument rise and fall periodically, like the tremolo effect on an old guitar amp. LFO's have three important settings: how fast the knob is wiggled, how far the knob gets wiggled relative to its starting position and the "shape" of the wiggling gesture. In the Modulation window, these three parameters are represented by Period, Depth and Shape.
Envelope 	An **Envelope** applies a one-time gesture to each note. Once the envelope is complete, the note continues normally until released. Use envelopes for any gesture that begins anew each time a note is struck – for example: a filter sweep, a pitch bend, etc. The difference between an Envelope and an LFO is that LFOs produce a continuously repeating wiggle; by contrast, Envelopes happen just once per note, regardless of how long that note is held. If you've worked with MIDI or digital audio software that supports mix automation, you might want to think of an Envelope as an automation curve. When a note is triggered, the envelope will begin playing, modulating the Instrument parameter to which it is attached. The difference between envelopes and automated mixing is that the envelope has the option to "freeze" during the sustain portion of the note, then continue after the note is released.

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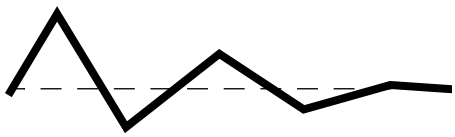
LFO with Depth Modulator (Envelope)



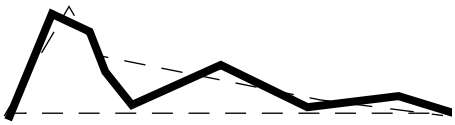
LFO with Depth Modulator uses the Envelope to vary the Depth parameter of the LFO. This creates a wiggling effect who's intensity changes over time. Notice how the shape combines elements of the previous two modulator types – the envelope modulates the LFO's depth, but not it's frequency or shape.

The actual result of this type of modulator is determined by multiplying the LFO's Depth setting (0-100%) and the current value of the Depth Modulator envelope (-100%-100%).

When using this type, you may want to set the LFO Depth to 100%, as this gives you maximum control and flexibility with the Depth Modulator envelope.

Negative Depths: In some cases, an envelope with points at levels less than zero (in the range of 0 to -100%) may have the same result as if the point was simply at zero. In cases where negative modulation values have an effect, be mindful of envelopes that have points both above and below the zero line – the modulation's destination will "invert" its behavior when the envelope crosses from negative to positive, which can produce interesting and complex sound behaviors. Predicting the results before you hear them will take practice!

Offset Modulator



Offset Modulator combines the LFO and Envelope in a different way. In this type, the LFO's Depth is still controlled by the envelope, but the Envelope shape is also **added** together with the LFO's shape. The result is an "offset," which you can seen by comparing the diagram with the **LFO with Depth Modulator** immediately above.

The Offset Modulator adds an **Amount to use as ADSR %** slider to the Modulator page.

Modulation Tips

Modulation is a classic synthesis technique. Here's how to get some familiar modulation-based effects:

- **Vibrato:** Use an LFO mapped to Pitch. Usually the LFO depth will be set quite low. Note that if there is a Pitch Change LFO present in an Instrument, the Mod Wheel (MIDI controller 1) will affect its depth. Otherwise, Mod Wheel will activate a default Pitch Change LFO that cannot be edited by the user. Using an LFO with a Depth Modulator envelope that slowly ramps up or down can be very effective.
- **Stereo Panning Effect:** Use an LFO mapped to Stereo Pan. This can be an adequate substitute for using a stereo sample; the triangle wave shape offers the smoothest result, square and sawtooth are more striking. Using an LFO with a Depth Modulator envelope that slowly ramps up

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or down can be very effective.

- **Tremolo:** Use an LFO mapped to Volume, or to Filter Frequency with a **low** filter resonance setting. Using an LFO with a Depth Modulator envelope that slowly ramps up or down can be very effective.
- **Filter Sweep:** Use an LFO mapped to Filter Frequency with a **high** filter resonance setting. The LFO rate should be very low (long period). Achieving your desired effect will probably require a lot of experimentation with adjusting the LFO and Filter parameters.
- **Arpeggiator Effects:** Modulate Pitch from two or three LFOs with different but arithmetically related frequencies. This will create repeating arpeggiator-like effects. For example, examine Special Bank #99, Analog Sequence. Alternatively, offsetting the LFO frequencies by smaller arbitrary amounts can create interesting and complex effects.

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Production Technique Tips

Although MIDI has a reputation for sometimes sounding flat or mechanical, there are many ways to make your music more engaging to listeners. Here's a few tips for enhancing the emotional impact and richness of your Instrument sounds.

Topics:

Humanizing MIDI Music

Dynamic Level and Pan

Thickening Instrument Sounds

Humanizing MIDI Music

Creating expressive music with MIDI takes a certain amount of care and effort. Here are some tips that can help your music convey a more human vibe:

- **Avoid excessive quantizing.** Most MIDI sequencers let you "Quantize" notes to line them up exactly with the beat. While quantizing can tighten up a sloppy take, it can also leech the emotion from a good performance.
- **Create expressive velocity data.** A great deal of expression is contained in the note velocity messages within a skilled musician's performance. If your notes weren't played using a MIDI keyboard or other controller, try adjusting some velocity values manually in your sequencer. Even randomization of velocity values can help.
- **Use volume & modulation controllers.** Depending on the Instrument, Modulation or Mod Wheel (controller 1), may add a 'vibrato' effect to the sound. This can help vary the flat, unchanging sound of looping samples. Use the MIDI volume controller (Continuous Controller 7) to create crescendos, decrescendos, and expressive phrasing in instruments such as strings, winds, synth pads, etc.

  Tip: Continuous Controllers such as Volume, Pan Modulation or Pitch Bend can generate huge amounts of MIDI information, increasing your listener's download times. Most sequencers offer a controller thinning function that reduces these messages while preserving much of the original gesture. Excessive thinning, however, may result in blocky, or stepped volume fades or pitch bends – so don't go to extremes.
- **Fine-tune note lengths.** The length of notes conveys a great deal of expression and can make a performance sound more lifelike, especially with basses and sustaining instruments such as strings or woodwinds. Pay attention to whether the notes sound better detached, or legato (end-to-end).

Dynamic Level and Pan

Volume and Pan are fundamental mixing tools. You can set fixed Pan positions for Custom Instruments, but beyond that, all level and pan settings will be part of your MIDI sequence, or the result of interactive Music Object function calls arriving from the Web browser, Director Movie, or game.

- Volume is set on a per-MIDI-channel (per-Instrument) basis, using MIDI Continuous Control-

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ler 7.

- Pan is also set on a per-MIDI-channel (per-Instrument) basis, using MIDI Continuous Controller 10.

It's a good idea to include a Volume and Pan message for each MIDI channel at the start of the Song. These settings can be changed during the song by placing appropriate controller messages on specific channels throughout your sequence.

Thickening Instrument Sounds

There are many ways to add depth and texture to the mix. Here are some examples:

- **Doubling:** Playing the same part simultaneously with two different Instruments, on two MIDI channels, is the simplest method for creating a rich, full sound. It is especially effective in an environment like Beatnik where Web bandwidth constraints discourage large samples.
- **Detuning:** Try doubling the same Instrument on two MIDI channels, but send a small pitch bend message to one of them at the start of the Song. The result is similar to a "chorus" effect. Experiment with similar vs. different Pan settings for the two channels. Varying the amount of pitch bend during the Song can also be effective. Setting your **Pitch Bend** to a small value gives you greater resolution when setting subtle detuning offsets.
- **Stereoizing:** Double an instrument on two MIDI channels and pan them to opposite sides, then delay the MIDI events on one channel slightly. Echo effects can be created by longer MIDI event delays. For a better echo effect, reduce the velocities of the notes in the later 'echo' track.

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Linking to Your Sequencer

The primary purpose of the Beatnik Editor's Live MIDI Input feature is to let you drive the program's software MIDI synthesizer with the MIDI output stream from your sequencer program, so that you can hear how your pieces will actually sound when played back in a Web page, Shockwave movie, or other Beatnik playback environment. It also lets you work on your arrangements' Instruments and notes at the same – much better than having to save a MIDI file and import it every time you want to hear the results of a change.

> **Note:** Before you can link the Beatnik Editor to your MIDI sequencer, you'll have to set up your system MIDI software and/or hardware to suit your particular situation and computer. Full details are provided for each sequencer below, or if your sequencer is not listed here, see the **Live MIDI Input** section

> **Note:** The caveats for using **Live MIDI Input** section also apply when linking to a sequencer, including latency (delays between MIDI notes going in and sound coming out) and Program Change conventions (see the **Live MIDI Input** section).

Once your computer is correctly set up to route MIDI, most MIDI sequencers will automatically handle most of the details of driving the Beatnik Editor. However, you may need to do a little manual set-up work in the sequencer. The remainder of this section covers how to set up several popular sequencers to drive the Beatnik Editor's Live MIDI Input.

Windows:

- **Linking with Cakewalk Pro**
- **Linking with Cubase VST/24 3.7 (Windows)**
- **Linking with Cubase VST/24 5.0 (Windows)**
- **Linking with emagic Logic Audio (Windows)**

Mac OS:

- **Linking with MOTU Digital Performer**
- **Linking with emagic Logic Audio (Mac OS)**
- **Linking with Steinberg Cubase VST/24 (Mac OS)**
- **Linking with Opcode Vision DSP**

See also: **Live MIDI Input**.

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Linking with Cakewalk Pro

(Windows)

Beatnik has verified compatibility with Cakewalk Pro version 8.03 through 9.03, as well as Sonar 1.0.1.

> **Note for Windows 2000 and NT Users:** You should be prepared for a certain amount of irregularity in live MIDI event timing, as these operating systems are optimized for server processes, not real-time media presentation.

Setting Up

1. Install some form of MIDI linking software on your PC, following the supplied installation instructions.

   We support two different freeware linking utilities: MIDI Yoke and HUBI.

   - MIDI Yoke can be downloaded off the net. As of May, 2001, the most reliable place to get it is:

     http://www.midiox.com/myoke.htm

     If this site is inaccessible, do a search for MIDI Yoke and something will turn up.

   - The HUBI Loopback Device is also available for download off the net at:

     http://www.geocities.com/SiliconValley/Vista/2872/hmidilb/hmdlpbk.html

2. Install Cakewalk Professional on your PC, following the supplied installation instructions.
3. Restart your computer.

   This will enable the MIDI linking software, so that Cakewalk and the Beatnik Editor can detect it.

4. Launch the Beatnik Editor.

   Always launch the Beatnik Editor **before** Cakewalk. Otherwise Cakewalk won't detect the Beatnik Editor at the other end of the linking utility.

5. In the Beatnik Editor, select the linking utility as your MIDI input source.

   Go to the **File** menu and select the **Preferences...** command, then in the **Preferences dialog box** select your linking utility as your MIDI input source:

   - If you're using MIDI Yoke, choose one of the three junctions.
   - If you're using HUBI, choose LB1.

6. In the Beatnik Editor, make sure you have one or more **Session windows** open.
7. If you want visual linking, click on the **Instruments** tab in a **Session window**.
8. Launch Cakewalk.

   The first time you open Cakewalk, it will prompt you to set your MIDI ports. If Cakewalk was already installed on your computer, go to the **Tools** menu and select the **MIDI Devices**

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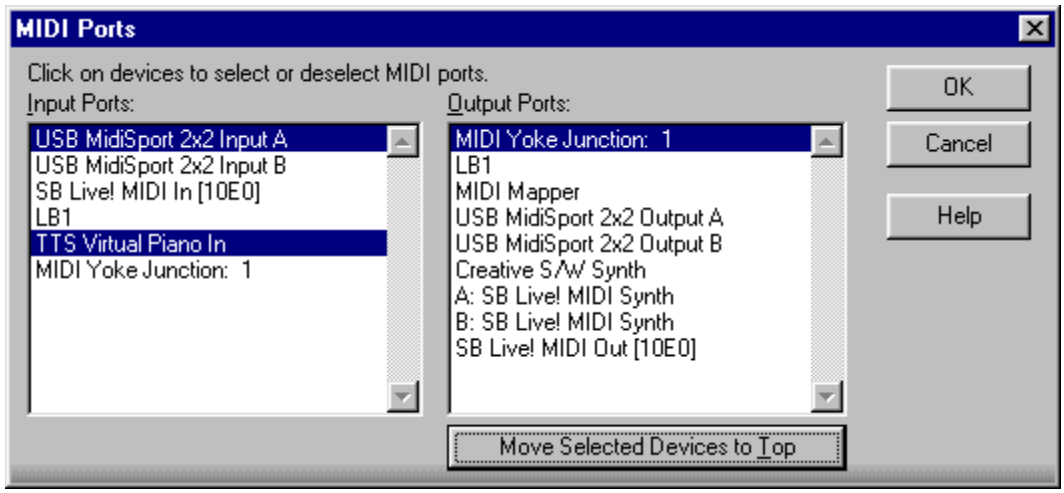
command. The **Port Selection** dialog box will appear.

9. In the **Port Selection** dialog box, choose whatever inputs you have in your MIDI setup, and select a MIDI Yoke junction for output.

When you've finished your selections, the dialog box should look something like this:



10. Click the **OK** button and exit Cakewalk.

Working with Cakewalk and the Beatnik Editor

Remember: Always **launch the Beatnik Editor first**.

1. Launch the Beatnik Editor.

Launching the Beatnik Editor first ensures that Cakewalk will be able to find it when Cakewalk starts up.

2. Launch Cakewalk.

At this point playing any attached hardware MIDI input devices (MIDI keyboards, MIDI drum pads, etc.) should produce sound.

If not, try closing both applications and reopening. If you still do not have sound, it's possible that Cakewalk detected MIDI feedback and disabled the port you selected. Recheck all MIDI device settings, then restart your computer.

3. In Cakewalk, open your sequence.

4. Set up your Tracks to play back on the Beatnik Editor MIDI synthesizer.

You can set all playback selections in Cakewalk's **Track Properties** window: MIDI channels,

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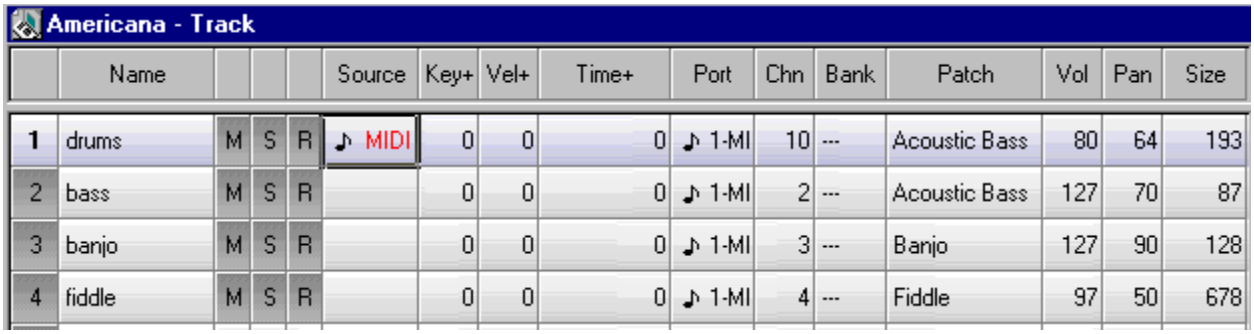
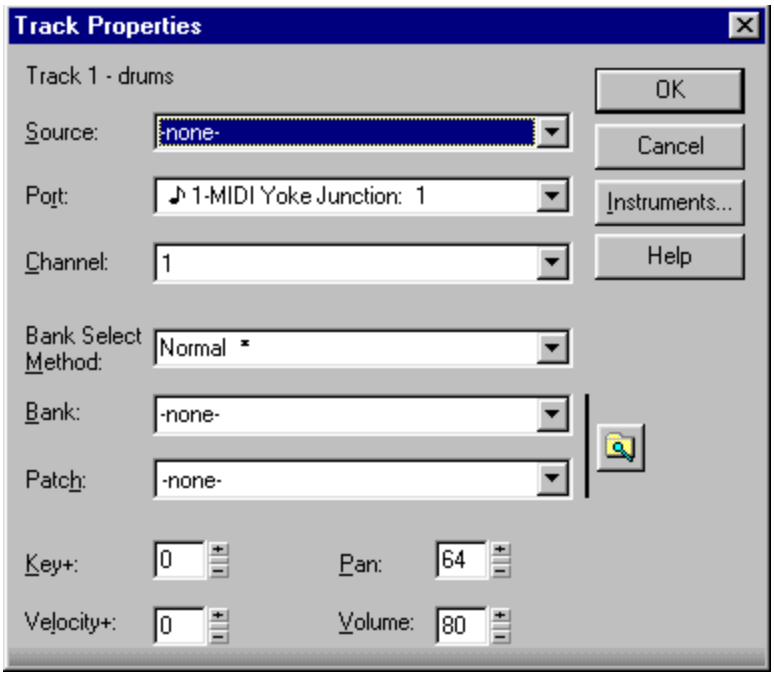
banks, and patches.



	Name				Source	Key+	Vel+	Time+	Port	Chn	Bank	Patch	Vol	Pan	Size
1	drums	M	S	R	MIDI	0	0	0	1-MI	10	---	Acoustic Bass	80	64	193
2	bass	M	S	R		0	0	0	1-MI	2	---	Acoustic Bass	127	70	87
3	banjo	M	S	R		0	0	0	1-MI	3	---	Banjo	127	90	128
4	fiddle	M	S	R		0	0	0	1-MI	4	---	Fiddle	97	50	678

Double-click in the **Track** area, under any of these labels: **Source**, **Port**, **Chn**, **Bank**, or **Patch** The **Track Properties** window will appear.



To drive the Beatnik Editor, your **Track Properties** must be set as follows:

- **Source** – None
- **Port** – Depends on the MIDI routing utility you're using. Select **1-MIDI Yoke Junction:** if you're using MIDI Yoke, or **LB1** if you're using HUBI.
- **Channel** – Any channel 1 through 16.

  Notes:

  – Visual linking between Cakewalk and the Beatnik Editor only exists on channel 1.

  – Channel 10 is always going to be the Percussion (General MIDI 'Drum Channel'). So, if you choose Bank 1 and Channel 10, you will be playing Bank 1, Beatnik Special Percussion Instruments in the Beatnik Editor. Any other channel on the same Bank will play Beatnik Special Melodic Instruments.
- **Bank Select Method** – Controller 0

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- **Bank** – The Beatnik Editor includes banks 0, 1, and 2, each having both a Melodic set and a Percussion set.

  Note: You have to manually type the bank number.

  Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

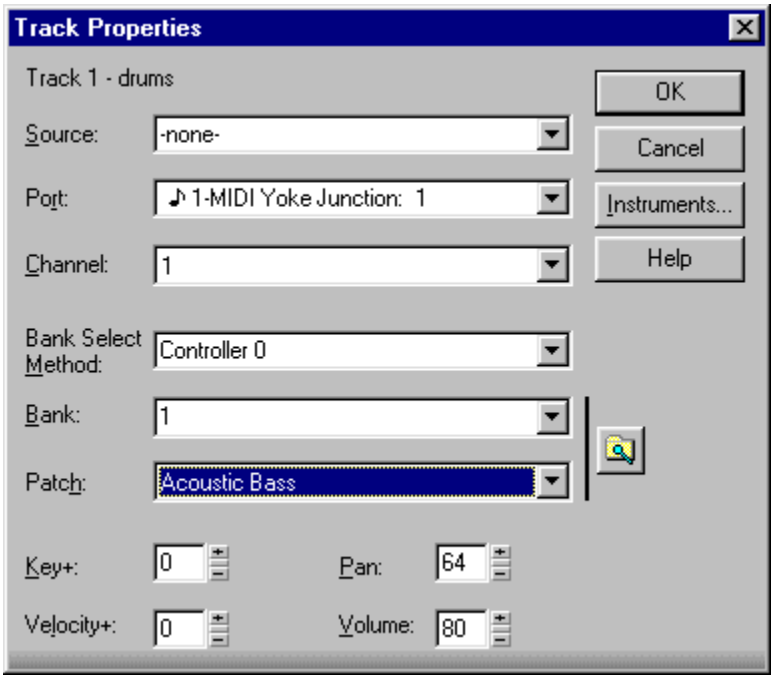
  Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

  Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

- **Patch** – Whatever Instrument you want. Unfortunately, Cakewalk doesn't list patch numbers in the playback patch choices. Instead, it lists General MIDI Instrument names. So, if you're in either Bank 1 or 2, you have to count to get the right Instrument. Or, if you're on channel 1, you can surf through the Beatnik Editor's patches and find the one you want.

Tip: See the **Goodies** folder for an Instrument Profile for the Beatnik Editor. With this profile, you won't have to count Instrument numbers to find patches.

When completed, the **Track Properties** settings should look like this:



Inserting MIDI Bank Select and Program Change (Patch Change) Events Into Your Sequence

In order for you to be able to export a MIDI file from Cakewalk, import it into the Beatnik Editor, and convert it to an RMF file that plays the same MIDI instruments every time, it is necessary to place the Bank Select and Program (patch) Change events in the MIDI event list. Some sequenc-

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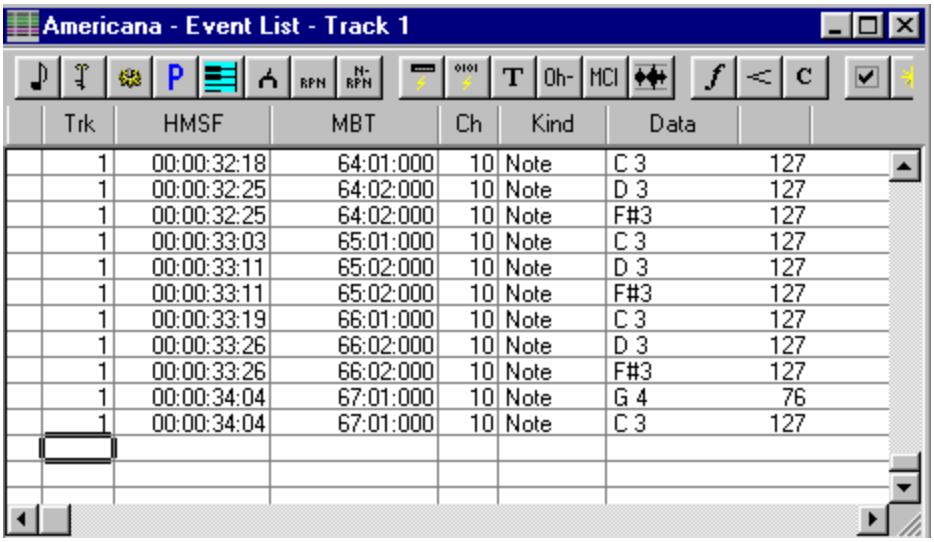
ers will insert the ones you set in the playback area, but not Cakewalk.

1. Open a Track in the **Event List** window.

Select a Track that contains notes that you want to drive the Beatnik Editor, then go to the **View** menu and select the **Event List** command. An **Event List** window will appear:

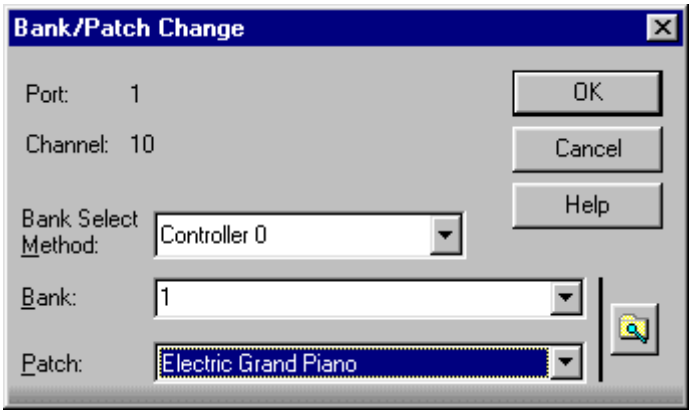


2. Indicate the time for the Bank Select and/or Program Change, and open the **Bank/Patch change** dialog box.

In the **Event List**, select the spot where you want the Program Change and/or Bank Select event to go, then go to the **Insert** menu and select the **Bank/Patch change…** command.

To set a single Instrument for the whole Track, select the very first event and insert the change there.

The **Bank/Patch change** dialog box will appear:



3. In the **Bank/Patch change** dialog box, indicate what Bank and/or Program you want to use.

- Set the **Bank Select Method** to **Controller 0**, then manually enter the Bank number. Use 0, 1, or 2:

  Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion

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Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

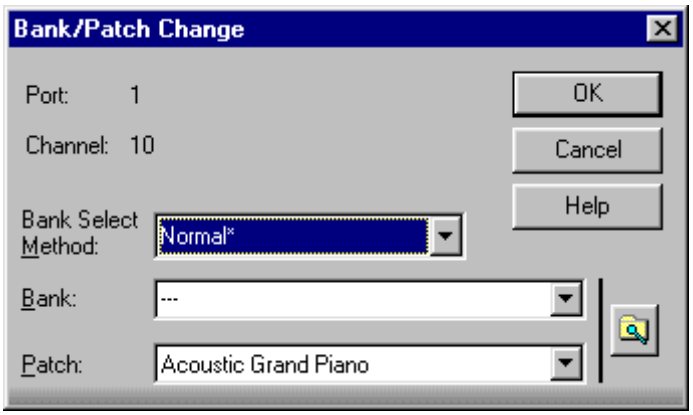
- Next, click on **Patch** and select your desired Instrument from the pop-up menu.

Note: Cakewalk lists Instruments by General MIDI instrument names, not MIDI program numbers. This works fine for Bank 0, but in Bank 1 (Beatnik Special Instruments) and 2 (Beatnik Custom Instruments), you'll have to count items to get the right Instrument number.

Tip: If you're on channel 1, you can surf through the Beatnik Editor patches to find the one you want. Just look in the Beatnik Editor's **JavaScript** window to find the instrument number, then type that number into the Event List, replacing the Instrument name. Or, if you've already recorded notes in the Track, just choose the instrument name you set in the **Track Properties** dialog box.

Tip: See the **Goodies** folder for an Instrument Profile for the Beatnik Editor. With this profile, you won't have to count instrument numbers to find patches.

When you're finished, the dialog box should look something like this:



Tips:

- Save your work often
- Remember that to ensure consistency of sound, your playback settings should match the **Event List**.

Moving Your Sequence Into the Beatnik Editor and the RMF Format

When you're finished inserting all your Bank and Patch changes, and your notes are all sounding the way you want them, save your sequence as a Standard MIDI File. Then, in the Beatnik Editor, Import that MIDI file into a **Session window** (or just drag it into the **Songs** tab of a **Session window**), Play the song as a check, and finally export it as an RMF file.

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Linking with Cubase VST/24 3.7 (Windows)

Beatnik has verified compatibility with Cubase VST, VST Score, and VST/24 for Windows, version 3.7. For version 5.0, see the next section.

> **Note for Windows 2000 and NT Users:** You should be prepared for a certain amount of irregularity in live MIDI event timing, as these operating systems are optimized for server processes, not real-time media presentation.

Setting Up

1. Install some form of MIDI linking software on your PC, following the supplied installation instructions.

   We support two different freeware linking utilities: MIDI Yoke and HUBI.

   - MIDI Yoke can be downloaded off the net. As of May, 2001, the most reliable place to get it is:

     http://www.midiox.com/myoke.htm

     If this site is inaccessible, do a search for MIDI Yoke and something will turn up.

   - The HUBI Loopback Device is also available for download off the net at:

     http://www.geocities.com/SiliconValley/Vista/2872/hmidilb/hmdlpbk.html

2. Install Cubase VST, VST Score, or VST/24 on your computer, following the supplied installation instructions.

3. Restart your computer.

   This will enable the MIDI linking software, so that Cubase and the Beatnik Editor can detect it.

4. Launch the Beatnik Editor.

   Always launch the Beatnik Editor **before** Cubase. Otherwise Cubase won't detect the Beatnik Editor at the other end of the linking utility.

5. In the Beatnik Editor, select the linking utility as your MIDI input source.

   Go to the **File** menu and select the **Preferences...** command, then in the **Preferences dialog box** select your linking utility as your MIDI input source:

   - If you're using MIDI Yoke, choose one of the three junctions.
   - If you're using HUBI, choose LB1.

6. In the Beatnik Editor, make sure you have one or more **Session windows** open.

7. If you want visual linking, click on the **Instruments** tab in a **Session window**.

8. Launch Cubase.

9. In Cubase, change your **MIDI Setup** settings to prevent a MIDI feedback loop.

   Note: By default, Cubase finds and enables all possible MIDI inputs. As a result, if the MIDI output is set to **MIDI Yoke: junction 1** and that is in turned being looped through the Beatnik Editor, Cubase will be receiving its own output – a MIDI feedback loop. If this happens,

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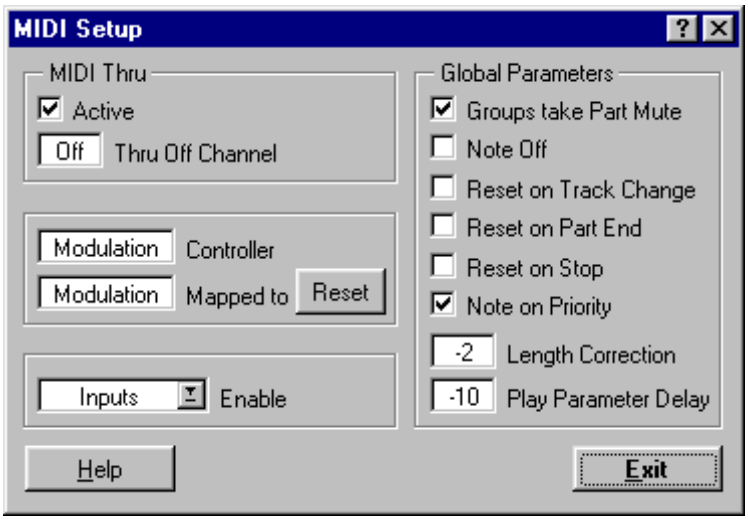
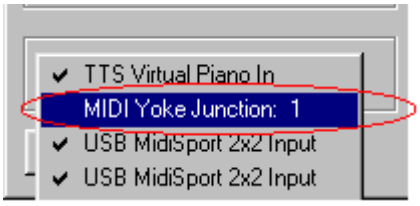
MIDI Yoke will disable the MIDI port and you'll have to restart the computer to turn it back on.

To avoid this problem, you need to disable the Beatnik Editor's MIDI In port:

- Go to the **Options** menu and select the **MIDI Setup** command. The **MIDI Setup** window will appear:



- In the **MIDI Setup** window, click on the **Enable** box, then un-check the MIDI Input that you selected for the Beatnik Editor (in MIDI Yoke or HUBI).



10. Click on the **Exit** button to save your changed MIDI Setup.

Working with Cubase and the Beatnik Editor

Remember: Always **launch the Beatnik Editor first**.

1. Launch the Beatnik Editor.

Launching the Beatnik Editor first ensures that Cubase will be able to find it when Cubase starts up.

2. Launch Cubase.

3. In Cubase, open your sequence.

4. Set up your Tracks to play back on the Beatnik Editor MIDI synthesizer.

Highlight any MIDI track, then:

- Click in the **Output** box (in the **Track Info** section) and select the same port that

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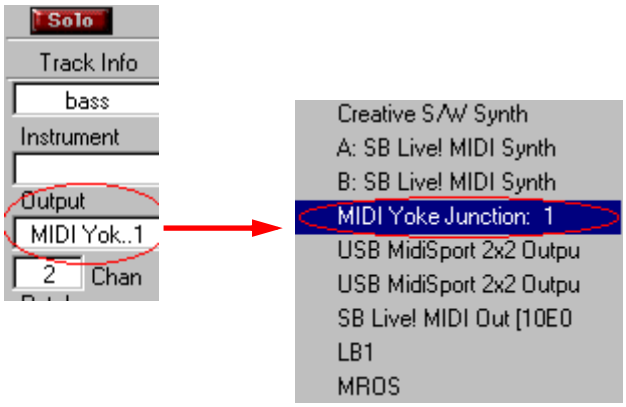
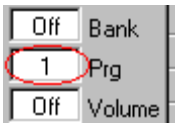
you selected (in MIDI Yoke or HUBI) as the Beatnik Editor's MIDI Input.



- For all tracks that you want to play through the Beatnik Editor, select the same MIDI Output.
- Double-click in the **Prg** box, then type the patch number that you want to use for this track.



Note: Although Cubase uses Program numbers 1-128, the Beatnik Editor uses Program numbers 0-127. As a result, you need to enter a program number **one higher** than the one you want the Beatnik Editor to receive.

Inserting MIDI Bank Select and Program Change (Patch Change) Events Into Your Sequence

In order for you to be able to export a MIDI file from Cubase, import it into the Beatnik Editor, and convert it to an RMF file that plays the same MIDI Instruments every time, you'll have to insert Bank Selects and Program Changes into your tracks' MIDI event lists. This is especially important if you're using Instruments that you've created in the Beatnik Editor.

1. Open a Track in the **Event List** window.

Select a Track that contains notes that you want to drive the Beatnik Editor, then go to the **Edit** menu and select the **List** command. An **Event List** window will appear, looking some-

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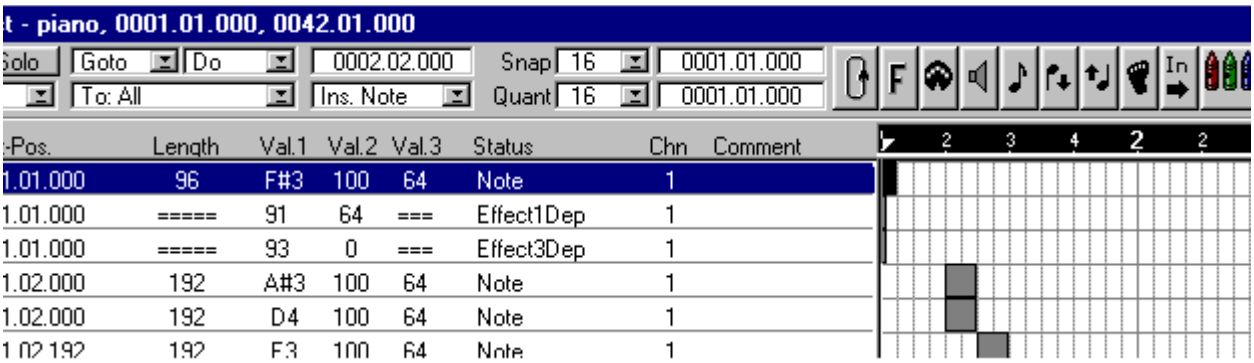
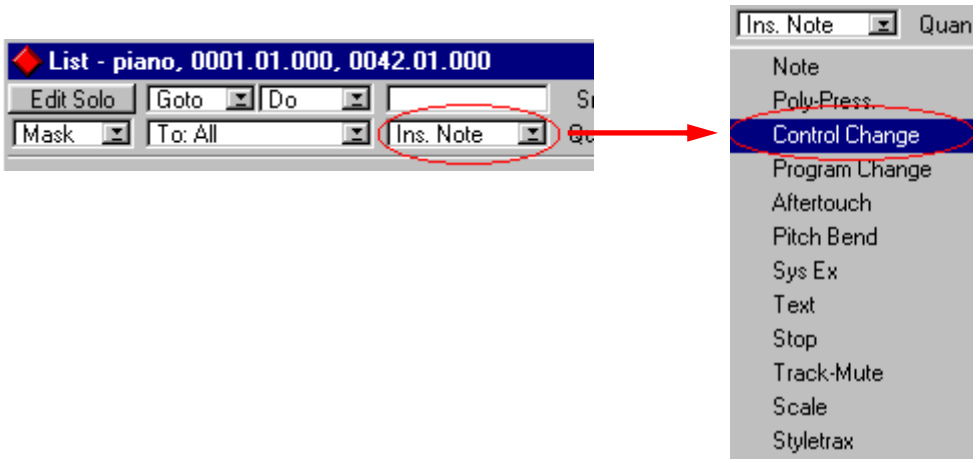
thing like the following:

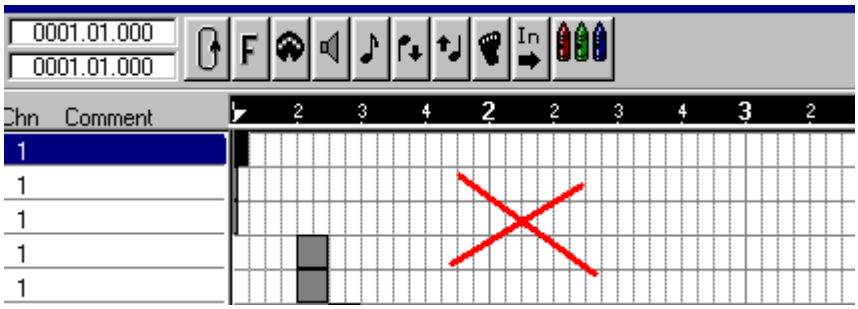


2. In the **Event List** window, insert a Bank Select event at the very start of the Track. This will be a Continuous Controller message for controller number 0.

- Click in the **Insert choices** box, then select **Control Change** from the pop-up window:



- Change your cursor to the Pencil tool by right-clicking anywhere in the graphic part of the **Event List** window (right hand side).



- Since you want this to be the first event in the Track, click your pencil in the top

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left corner of the **Event List**'s graphic part:

Start-Pos.	Length	Val.1	Val.2	Val.3	Status	Chn	Comment
0001.01.000	96	F#3	100	64	Note	1	
0001.01.000	=====	91	64	===	Effect1Dep	1	

A new Control Change event will appear at the start of the Track.

Start-Pos.	Length	Val.1	Val.2	Val.3	Status	Chn	Comment
0001.01.000	=====	0	0	===	BankSelMSB	1	
0001.01.000	96	F#3	100	64	Note	1	
0001.01.000	=====	91	64	===	Effect1Dep	1	

- Beatnik uses the MSB form of the Bank Select message, so double-click on the new Control Change event in the **Val.1** column, and type in **0**.

Start-Pos.	Length	Val.1	Val.2	Val.3	Status	Chn	Comment
0001.01.000	=====	0	0	===	BankSelMSB	1	
0001.01.000	96	F#3	100	64	Note	1	

Then, double-click in the **Val.2** column and type in your desired Bank number.

Start-Pos.	Length	Val.1	Val.2	Val.3	Status	Chn	Comment
0001.01.000	=====	0	2	===	BankSelMSB	1	
0001.01.000	96	F#3	100	64	Note	1	

The Bank number should be 0, 1, or 2:

Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments)

3. Still in the **Event List** window, insert your Program Change events:

- Click in the **Insert choices** box, then select **Program Change** from the pop-up

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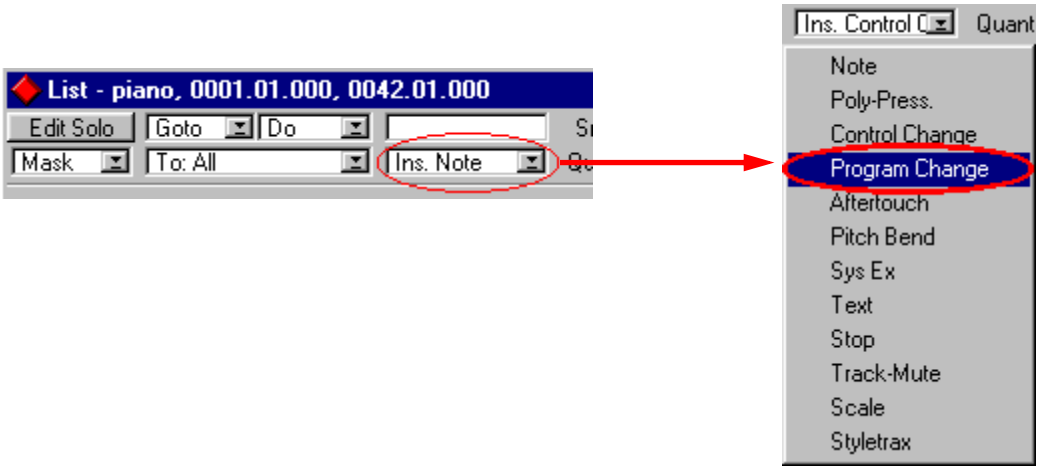
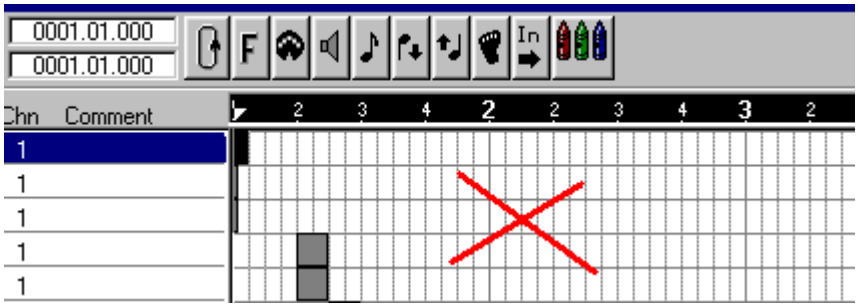
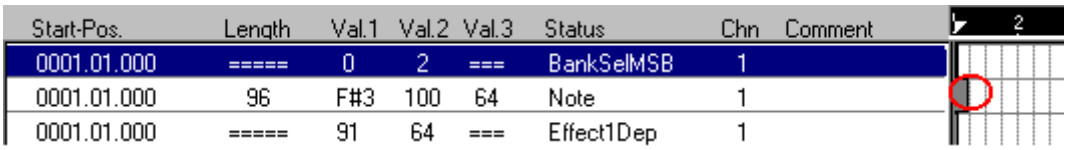
window:



- Change your cursor to the Pencil tool by right-clicking anywhere in the graphic part of the **Event List** window (right hand side).

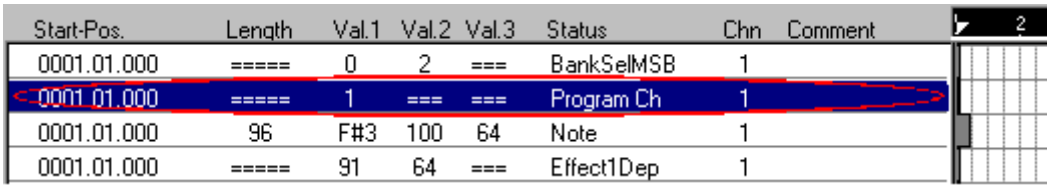


- Since you want this to be the second event in the Track – directly after the Bank Select event – click your pencil just below the Bank Select event:



Start-Pos.	Length	Val.1	Val.2	Val.3	Status	Chn	Comment
0001.01.000	=====	0	2	===	BankSelMSB	1	
0001.01.000	96	F#3	100	64	Note	1	
0001.01.000	=====	91	64	===	Effect1Dep	1	

A new Program Change event will appear.



Start-Pos.	Length	Val.1	Val.2	Val.3	Status	Chn	Comment
0001.01.000	=====	0	2	===	BankSelMSB	1	
0001.01.000	=====	1	===	===	Program Ch	1	
0001.01.000	96	F#3	100	64	Note	1	
0001.01.000	=====	91	64	===	Effect1Dep	1	

Or, to insert additional Program Changes at other times, you can insert one here and

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then drag to the desired time.

- To set the Program (Instrument) number, double-click on the new Program Change event in the **Val.1** column, and enter your desired Program number. The Program number should be in the range 1-128.

Start-Pos.	Length	Val.1	Val.2	Val.3	Status	Chn	Comment
0001.01.000	=====	0	2	===	BankSelMSB	1	
0001.01.000	=====	75	===	===	Program Ch	1	
0001.01.000	96	F#3	100	64	Note	1	
0001.01.000	=====	91	64	===	Effect1Dep	1	

Note: Although Cubase uses Program numbers 1-128, the Beatnik Editor uses Program numbers 0-127. As a result, you need to enter a program number **one higher** than the one you want the Beatnik Editor to receive.

Moving Your Sequence Into the Beatnik Editor and the RMF Format

When you're finished inserting all your Bank and Patch changes, and your notes are all sounding the way you want them, save your sequence as a Standard MIDI File. Then, in the Beatnik Editor, Import that MIDI file into a **Session window** (or just drag it into the **Songs** tab of a **Session window**), Play the song as a check, and finally export it as an RMF file.

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Linking with Cubase VST/24 5.0 (Windows)

Beatnik has verified compatibility with Cubase VST, VST Score, and VST/24 for Windows version 5.0. For version 3.7, see the previous section.

> **Note for Windows 2000 and NT Users:** You should be prepared for a certain amount of irregularity in live MIDI event timing, as these operating systems are optimized for server processes, not real-time media presentation.

Setting Up

1. Install some form of MIDI linking software on your PC, following the supplied installation instructions.

   We support two different freeware linking utilities: MIDI Yoke and HUBI.

   - MIDI Yoke can be downloaded off the net. As of May, 2001, the most reliable place to get it is:

     http://www.midiox.com/myoke.htm

     If this site is inaccessible, do a search for MIDI Yoke and something will turn up.

   - The HUBI Loopback Device is also available for download off the net at:

     http://www.geocities.com/SiliconValley/Vista/2872/hmidilb/hmdlpbk.html

2. Install Cubase VST, VST Score, or VST/24 on your computer, following the supplied installation instructions.

3. Restart your computer.

   This will enable the MIDI linking software, so that Cubase and the Beatnik Editor can detect it.

4. Launch the Beatnik Editor.

   Always launch the Beatnik Editor **before** Cubase. Otherwise Cubase won't detect the Beatnik Editor at the other end of the linking utility.

5. In the Beatnik Editor, select the linking utility as your MIDI input source.

   Go to the **File** menu and select the **Preferences...** command, then in the **Preferences dialog box** select your linking utility as your MIDI input source:

   - If you're using MIDI Yoke, choose one of the three junctions.
   - If you're using HUBI, choose LB1.

6. In the Beatnik Editor, make sure you have one or more **Session windows** open.

7. If you want visual linking, click on the **Instruments** tab in a **Session window**.

8. Launch Cubase.

9. In Cubase, change your **MIDI Setup** settings to prevent a MIDI feedback loop.

   Note: By default, Cubase finds and enables all possible MIDI inputs. As a result, if the MIDI output is set to **MIDI Yoke: junction 1** and that is in turned being looped through the Beatnik Editor, Cubase will be receiving its own output – a MIDI feedback loop. If this happens,

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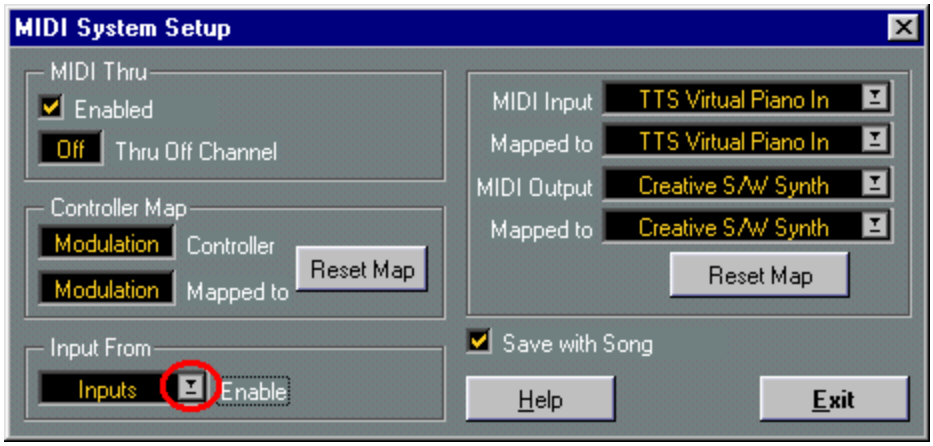
MIDI Yoke will disable the MIDI port and you'll have to restart the computer to turn it back on.

To avoid this problem, you need to disable the Beatnik Editor's MIDI In port:

- Go to the **Options** menu and select the **MIDI Setup** item, and then the **System** sub-command. The **MIDI System Setup** window will appear:



- In the **MIDI System Setup** window, click on the **Enable** box, then un-check the MIDI Input that you selected for the Beatnik Editor (in MIDI Yoke or HUBI):

- Click on the **Exit** button to save your changed MIDI Setup.

Working with Cubase and the Beatnik Editor

Remember: Always **launch the Beatnik Editor first**.

1. Launch the Beatnik Editor.

Launching the Beatnik Editor first ensures that Cubase will be able to find it when Cubase starts up.

2. Launch Cubase.

3. In Cubase, open your sequence.

4. Set up your Tracks to play back on the Beatnik Editor MIDI synthesizer.

Highlight any MIDI track, then:

- Click in the **Output** box (in the **Track Info** section) and select the same port that

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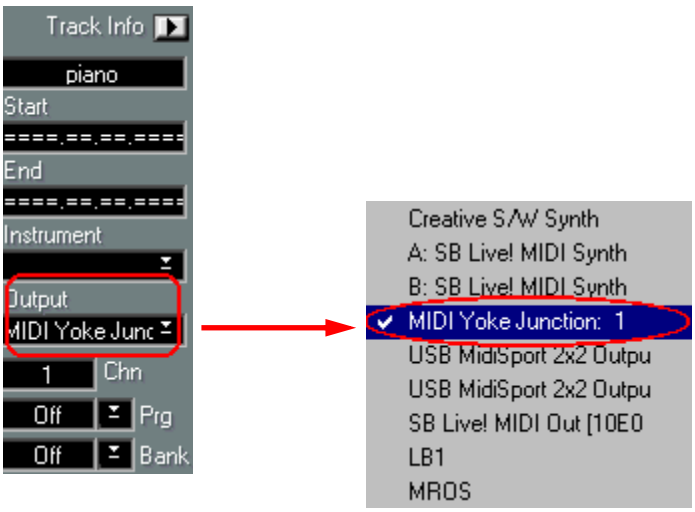
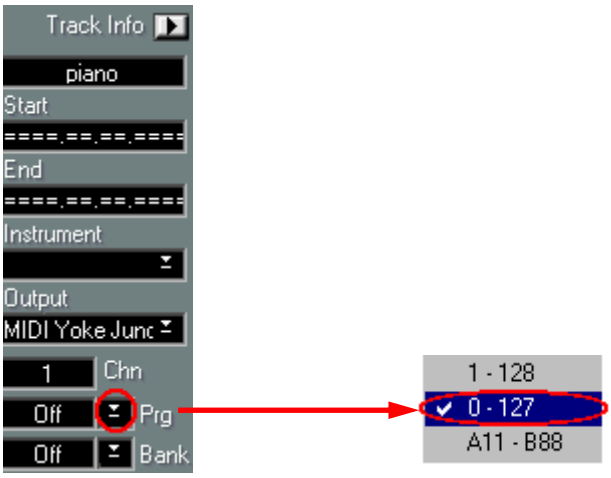
you selected (in MIDI Yoke or HUBI) as the Beatnik Editor's MIDI Input:



- For all tracks that you want to play through the Beatnik Editor, select the same MIDI Output.
- Click on the arrow next to the **Prg** box, then select 0-127 from the pop-up menu:



This is the patch numbering system that the Beatnik Editor uses.

- Click on the arrow next to the **Bank** box, then select **Swap Value Bytes (Roland)**

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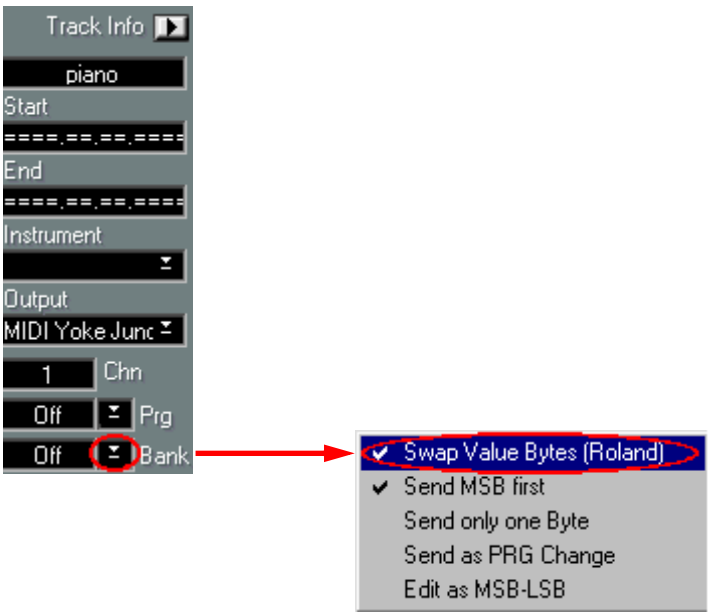
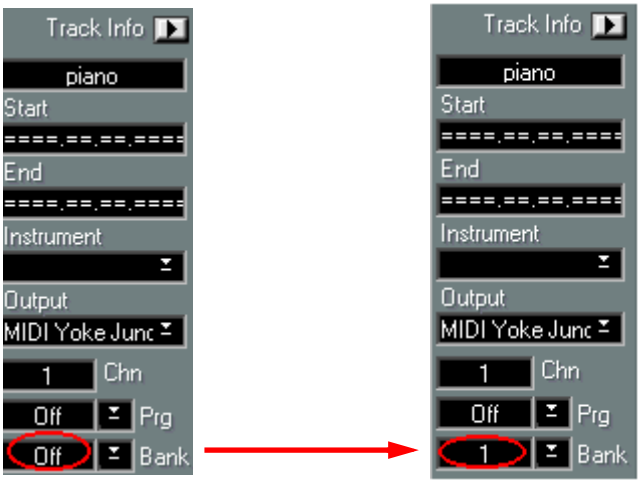
from the pop-up menu: (Leave **Send MSB First** checked.)



- Double-click in the **Bank** box, then type the Bank number that you want to use for this track:



Use Bank number 0, 1, or 2:

Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

- Double-click in the **Prg** box, then type the patch number that you want to use for

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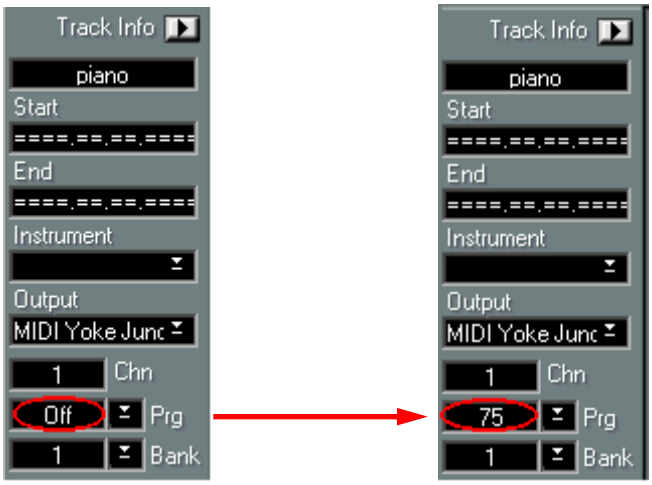
this track:

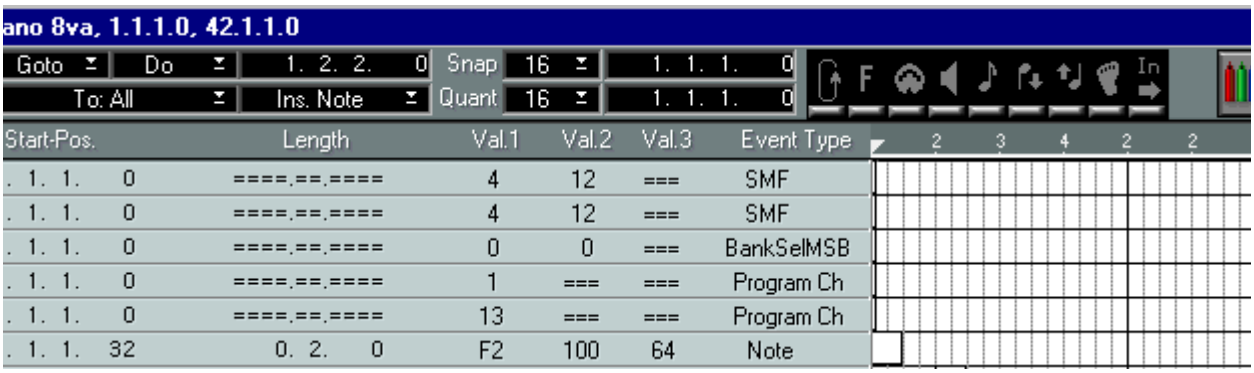


Inserting MIDI Bank Select and Program Change (Patch Change) Events Into Your Sequence

In order for you to be able to export a MIDI file from Cubase, import it into the Beatnik Editor, and convert it to an RMF file that plays the same MIDI Instruments every time, you'll have to insert Bank Selects and Program Changes into your Tracks' MIDI event lists. This is especially important if you're using Instruments that you've created in the Beatnik Editor.

1. Open a Track in the **Event List** window.

Select a Track that contains notes that you want to drive the Beatnik Editor, then go to the **Edit** menu and select the **List** command. An **Event List** window will appear, looking something like the following:



2. In the **Event List** window, insert a Bank Select event at the very start of the Track. This will be a Continuous Controller message for controller number 0.

- Click in the **Insert choices** box, then select **Control Change** from the pop-up

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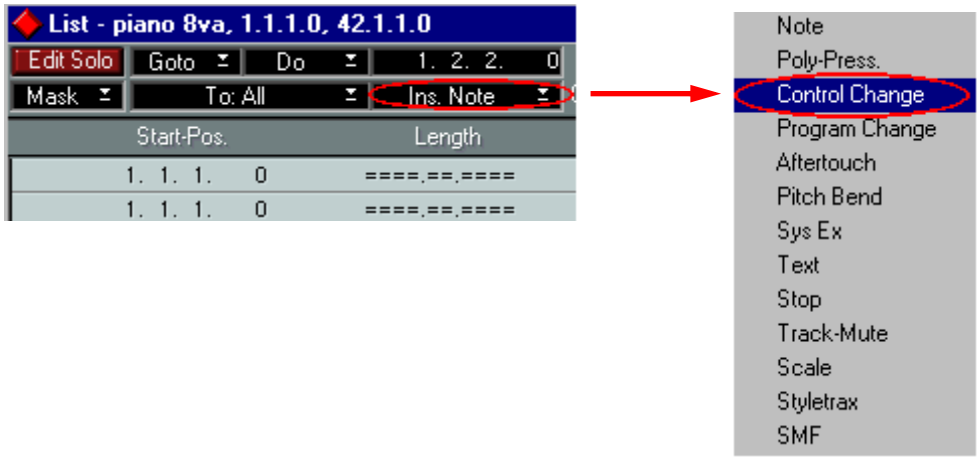
menu:

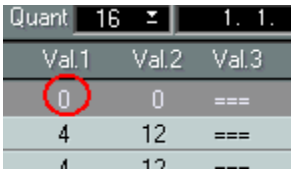


- Change your cursor to the Pencil tool by right-clicking anywhere in the graphic part of the **Event List** window (right hand side).

- Since you want this to be the first event in the Track, click your pencil in the top left corner of the **Event List**'s graphic part:

A new Control Change event will appear at the start of the Track.

- Beatnik uses the MSB form of the Bank Select message, so double-click on the new Control Change event in the **Val.1** column, and type in **0**:



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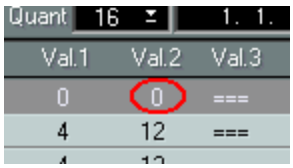
- Then, double-click in the **Val.2** column enter your desired Bank number:



The Bank number should be 0, 1, or 2:

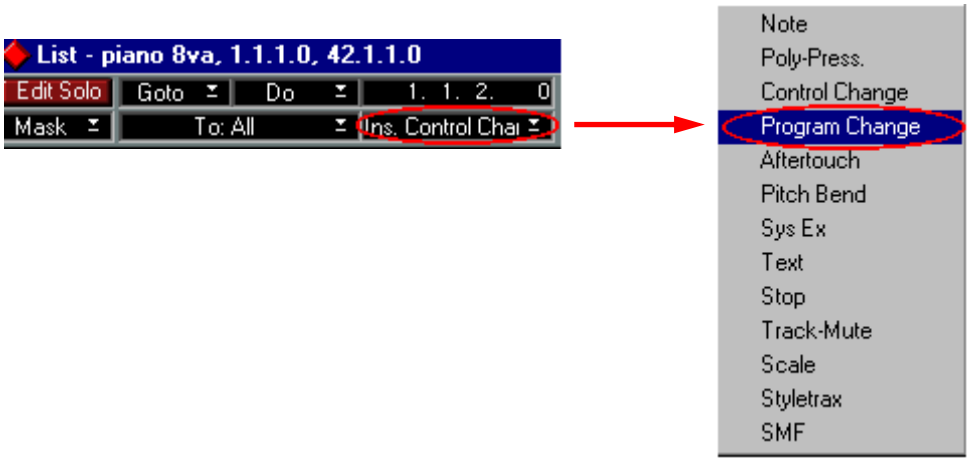
Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

3. Still in the **Event List** window, insert your Patch Change events.

- Click in the **Insert choices** box, then choose **Program Change** from the pop-up menu:



- Change your cursor to the Pencil tool by right-clicking anywhere in the graphic part of the **Event List** window (right hand side):

- Since you want this to be the second event in the Track – directly after the Bank

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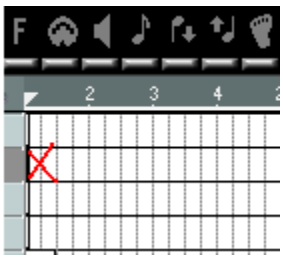
Select event –click your pencil just below the Bank Select event:



A new Program Change event will appear. Or, to insert additional Program Changes at other times, you can insert one here and then drag to the desired time.

- To set the Program (Instrument) number, double-click on the new Program Change event in the **Val.1** column, and enter your desired Program number. The Program number should be in the range 1-128:

Val.1	Val.2	Val.3	Event Type
0	0	===	BankSelMSB
1	===	===	Program Ch
4	12	===	SMF

Note: Although Cubase uses Program numbers 1-128, the Beatnik Editor uses Program numbers 0-127. As a result, you need to enter a program number **one higher** than the one you want the Beatnik Editor to receive.

Moving Your Sequence Into the Beatnik Editor and the RMF Format

When you're finished inserting all your Bank and Patch changes, and your notes are all sounding the way you want them, save your sequence as a Standard MIDI File. Then, in the Beatnik Editor, Import that MIDI file into a **Session window** (or just drag it into the **Songs** tab of a **Session window**), Play the song as a check, and finally export it as an RMF file.

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Linking with emagic Logic Audio (Windows)

Beatnik has verified compatibility with Logic Audio for Windows, from version 4.0 through 4.7.0 (we tested the Platinum version).

> **Note for Windows 2000 and NT Users:** You should be prepared for a certain amount of irregularity in live MIDI event timing, as these operating systems are optimized for server processes, not real-time media presentation.

Setting Up

1. Install some form of MIDI linking software on your PC, following the supplied installation instructions.

   We support two different freeware linking utilities: MIDI Yoke and HUBI.

   - MIDI Yoke can be downloaded off the net. As of May, 2001, the most reliable place to get it is:

     http://www.midiox.com/myoke.htm

     If this site is inaccessible, do a search for MIDI Yoke and something will turn up.

   - The HUBI Loopback Device is also available for download off the net at:

     http://www.geocities.com/SiliconValley/Vista/2872/hmidilb/hmdlpbk.html

2. Install Logic Audio on your computer, following the supplied installation instructions.
3. Restart your computer.

   This will enable the MIDI linking software, so that Logic and the Beatnik Editor can detect it.

4. Launch the Beatnik Editor.

   Always launch the Beatnik Editor **before** Logic. Otherwise Logic won't detect the Beatnik Editor at the other end of the linking utility.

5. In the Beatnik Editor, select the linking utility as your MIDI input source.

   Go to the **File** menu and select the **Preferences...** command, then in the **Preferences dialog box** select your linking utility as your MIDI input source:

   - If you're using MIDI Yoke, choose one of the three junctions.
   - If you're using HUBI, choose LB1.

6. In the Beatnik Editor, make sure you have one or more **Session windows** open.
7. If you want visual linking, click on the **Instruments** tab in a **Session window**.
8. Launch Logic Audio.

   For the Beatnik Editor to function cleanly with Logic Audio, you'll have to change two settings.

9. In Logic, change your **Environment** settings to prevent a MIDI feedback loop.

   Logic automatically finds and enables all possible MIDI inputs. As a result, if you're using a loopback application such as MIDI Yoke, Logic will be receiving its own output – a MIDI

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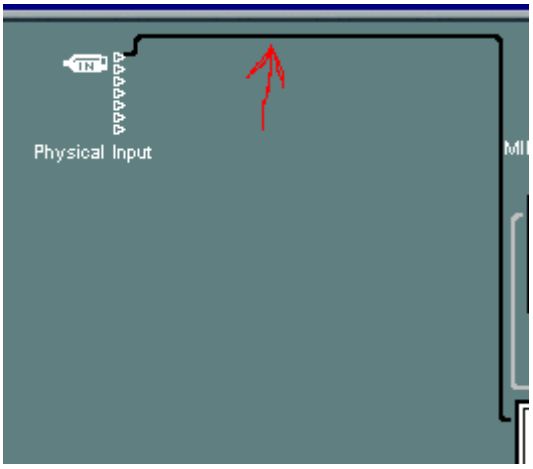
feedback loop. To avoid this problem, you need to turn off this feature and manually assign all of your MIDI inputs:

- Go to the **Windows** menu and select the **Open Environment** command.
- In the **Environment** window, click and hold on the **Object List**, then select the item **Click & Ports**:

- Click on the line that connects to the **Physical Input** object, and hit the **Delete** key on your computer keyboard:



The line will disappear, disconnecting the feedback loop.

10. Still in Logic, turn off or redirect MIDI Clock output to avoid tempo problems.

By default, Logic transmits its MIDI clock on a MIDI Output port. This can cause tempo problems when Logic is linked with the Beatnik Editor, as it would be transmitting the clock to the Beatnik Editor back to itself. It would try to synch with itself, which is impossible, and would cause erratic tempo changes and settings. To either turn off the transmission of the MIDI clock or to manually assign the ports it is sent to:

- Go to the **Options** menu, select the **Settings** item, and then the **Midi Options** sub-command.
- Then, in the **Midi Options** dialog box, either turn off MIDI Clock transmission, or re-direct it to an alternate MIDI port:

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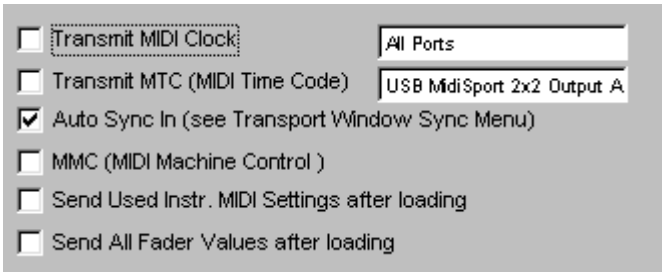
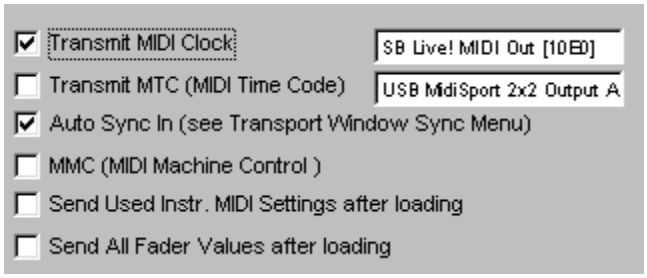
- To turn off MIDI Clock completely, un-check the **Transmit MIDI Clock** checkbox:



- Or, to assign MIDI Clock to a different MIDI port, click on the box to the right of the **Transmit MIDI Clock** checkbox, then select the desired MIDI Output port from the pop-up menu that appears, and finally, make sure the **Transmit MIDI Clock** checkbox is checked:



Working with Logic Audio and the Beatnik Editor

Remember: Always **launch the Beatnik Editor first**.

1. Launch the Beatnik Editor.

Launching the Beatnik Editor first ensures that Logic will be able to find it when Logic starts up.

2. Launch Logic Audio.

3. In Logic, open your sequence.

4. Set up your MIDI Tracks to play back on the Beatnik Editor MIDI synthesizer.

For each MIDI Track (in a new song, this will usually be track 10 and it will be assigned to GM Device 1):

- Set the MIDI Output port.

  Click and hold on the **MIDI out** selection, then select the same port you picked for MIDI Input in the Beatnik Editor. If you're using MIDI Yoke, select the same junction

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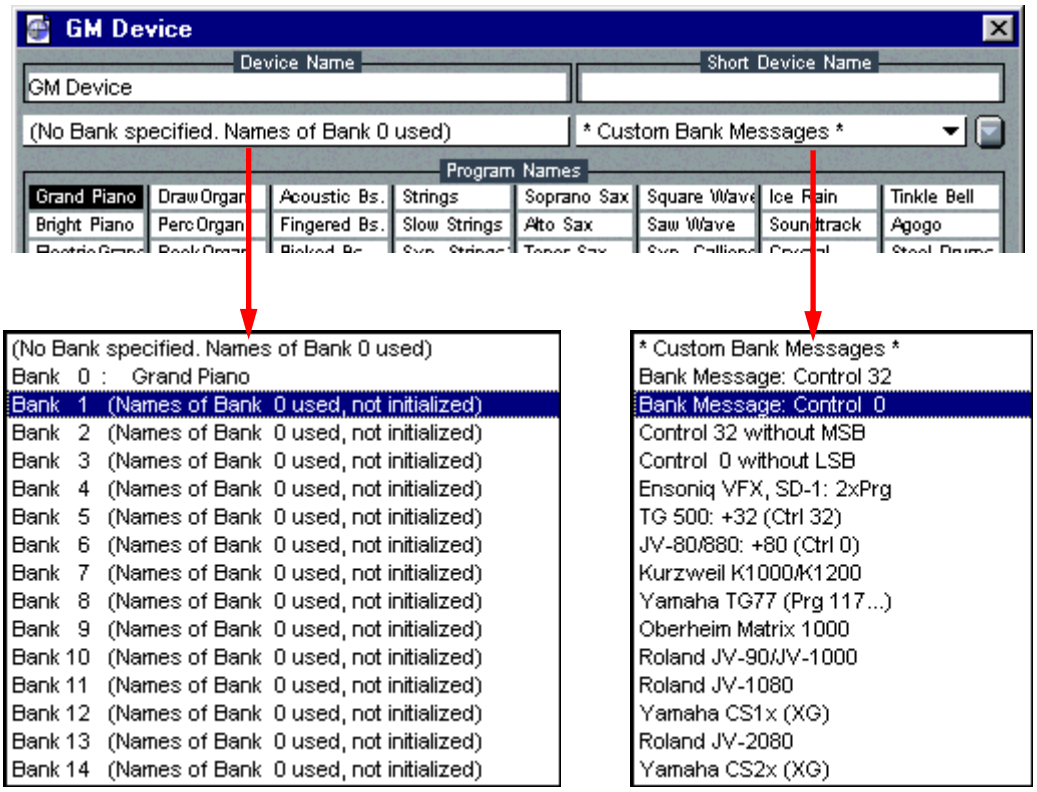
you picked in the Beatnik Editor, or if you're using HUBI, select **LB1**.

• Set the Track's Bank and Program numbers:

– Click on the **GM Device**:

– In the **GM Device** window that appears, click and hold on the ***Custom Bank Messages*** pop-up menu and select **Bank Message: Control 0**. Then click and hold on the **(No Bank specified. Names of Bank 0 used)** pop-up menu and select **Bank 1**:



– In the **LOGIC Audio** dialog box that appears, asking whether you want to initialize a

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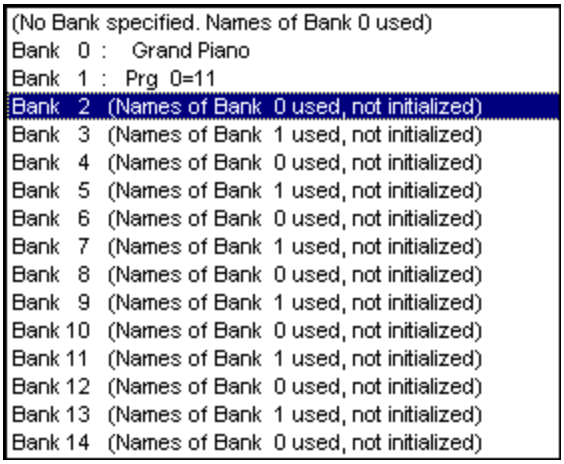
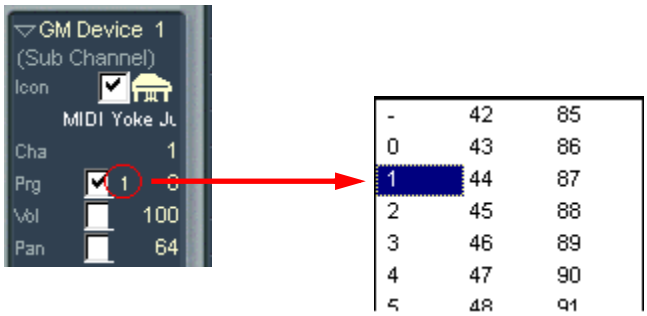
new bank, click the **Initialize** button:

– Still in the **GM Device** window, click and hold in the same pop-upmenu again, and select **Bank 2**:



– When the **Initialize new Bank?** window appears again, click the **Initialize** button again.

– Click on the dash to the right of **Prg** to select the Bank you want to use. Use Bank 0, 1, or 2:



Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

Note: If you're on channel 1, the Beatnik Editor will highlight your selection to reflect

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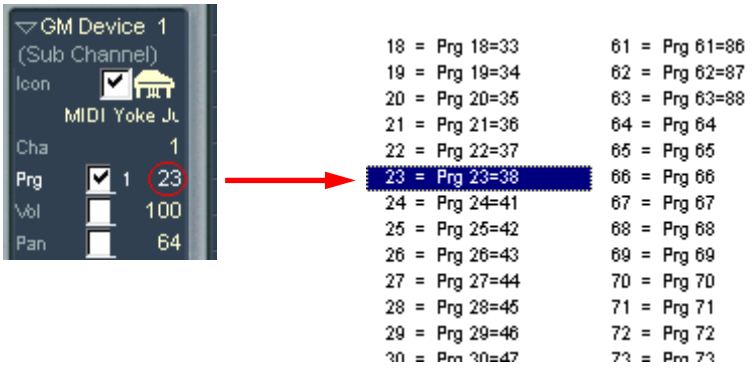
any Bank Select or Program Change.

– Click on the number to the right of the Bank number, then select your desired Program (patch) number.



Note: These settings only affect playback, not exported Standard MIDI Files. If you want to export a MIDI file, import it into the Beatnik Editor, and export it as an RMF file with the exact same instruments assigned to it, then you'll have to insert Bank Select and program Change events into the track event lists.

Inserting MIDI Bank Select and Program Change (Patch Change) Events Into Your Sequence

In order for you to be able to export a MIDI file from Logic, import it into the Beatnik Editor, and convert it to an RMF file that plays the correct MIDI Instruments every time, you'll have to insert Bank Selects and Program Changes into your tracks' MIDI event lists. This is especially important if you're using Instruments that you've created in the Beatnik Editor.

1. Open a Track in the **Event List** window.

Select a Track that contains notes that you want to drive the Beatnik Editor, then go to the

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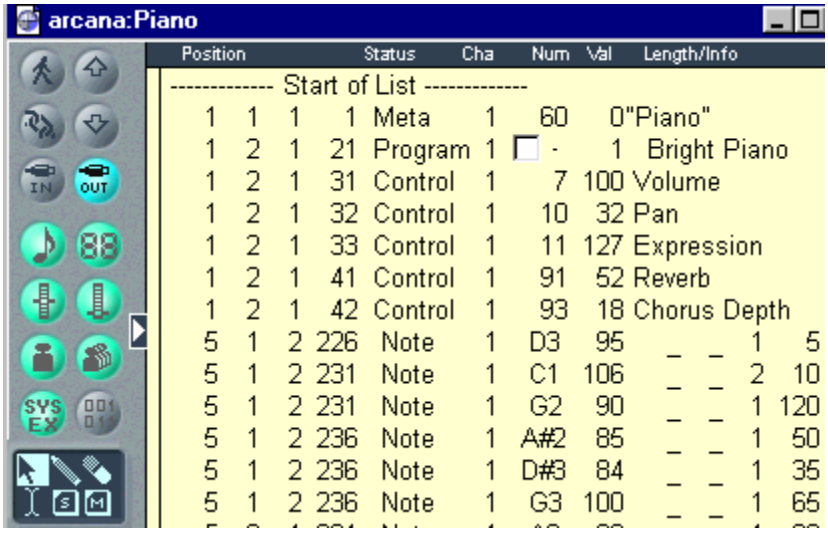
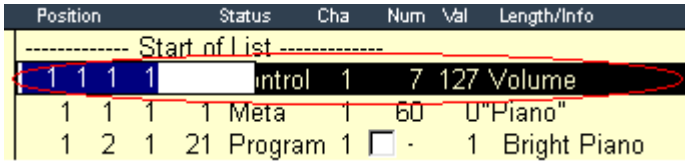
Windows menu and select the **Open Event List** command. An **Event List** window will appear:



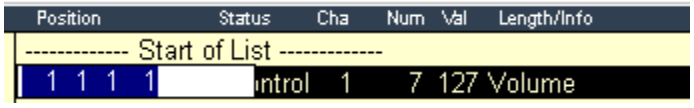
2. In the **Event List** window, insert a Bank Select event at the very start of the Track. This will be a Continuous Controller message for controller number 0.

- Change your cursor to the pencil too, then right-click on the **Control Change Events** button:

A new Control Change event will appear in the list:



- Change your cursor back to the arrow.
- Set the event time by double-clicking on the new event in the **Position** column, then typing the time at which you want the bank change to occur. The event will move to the new time in the event list.



For example, **1 1 1 1** is the first event, and **1 1 1 2** happens immediately after – in the first measure, first beat, first division, and second tick.

- Set the first part of the Bank number by double-clicking on the event in the **NUM** column, then typing the number **0**. When you hit the **Return** or **Enter** key, the

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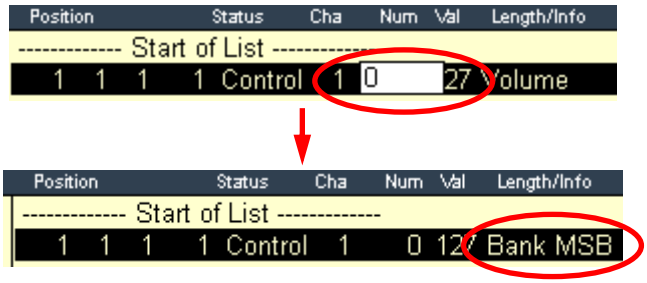
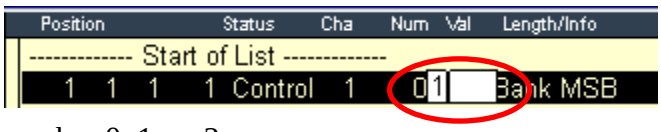
Length/Info column will change to **Bank MSB**.



- Set the second part of the Bank number by double-clicking on the event in the **VAL** column, then typing the actual Bank number you want to use:



Use Bank number 0, 1, or 2:

Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

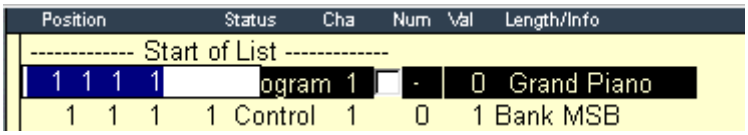
Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

3. Still in the **Event List** window, insert your Program (patch) Change events:

- Change your cursor to the pencil tool, then right-click on the **Program Change Events** button:

A new Program Change event will appear in the list.

- Change your cursor back to the arrow.
- Set the event time by double-clicking on the new event in the Position column, then typing the time at which you want the bank change to occur:



The event will move to the new time in the event list.

Note: Make sure the time of the Program Change is **after** the time of the Bank Change.

- Set the Program number by double-clicking on the event in the **VAL** column, then

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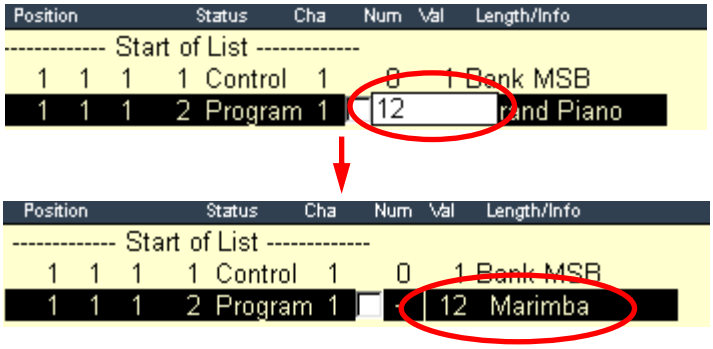
typing your desired program number:



Tips:

- Save your work often
- Remember that to ensure consistency of sound, your playback settings should match the **Event List**.

Moving Your Sequence Into the Beatnik Editor and the RMF Format

When you're finished inserting all your Bank and Patch changes, and your notes are all sounding the way you want them, save your sequence as a Standard MIDI File. Then, in the Beatnik Editor, Import that MIDI file into a **Session window** (or just drag it into the **Songs** tab of a **Session window**), Play the song as a check, and finally export it as an RMF file.

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Linking with MOTU Digital Performer

(Mac OS)

Beatnik has verified compatibility with Digital Performer versions 2.6, 2.7, 2.7.1, and 2.7.2.

Setting Up

1. Install MIDI linking software on your computer, following the supplied installation instructions. You'll need to use both the Open Music System (OMS) and MOTU's FreeMIDI. OMS is needed because the Beatnik Editor will listen to OMS, but not to FreeMIDI, so FreeMIDI has to talk to OMS in order to communicate to the Beatnik Editor. They can both be downloaded from the Web.

   • OMS is available at:

   http://www.opcode.com/downloads/

   For best results, make sure to get version 2.1 or greater.

   • FreeMIDI is available on your Performer CD, or at:

   http://www.motu.com/english/download/

   Make sure to get version 1.43 or greater – earlier versions will not work with the Beatnik Editor.

   If either of these sites are inaccessible, do a Web search using your favorite search engine.

2. Install Digital Performer and FreeMIDI on your computer, following the supplied installation instructions.

   Important: When you run the **FreeMIDI Setup** program, go to the **File** menu and select **FreeMIDI Preferences**. In the **FreeMIDI Preferences** dialog box that appears, be sure to turn on the following options:

   • **Allow other applications**
   • **Use OMS when available**

3. Restart your computer.

   This will activate OMS and FreeMIDI, so that Digital Performer and the Beatnik Editor can detect them.

4. Turn off AppleTalk **manually**, to avoid possible crashes when using OMS.

   When using OMS with AppleTalk active, the computer may crash when you exit either Digital Performer or the Beatnik Editor. Although OMS will try to turn AppleTalk off automatically, that will not prevent the crash. To avoid this problem, **manually** turn AppleTalk off before starting either Digital Performer or the Beatnik Editor:

   • Go to the **Apple** menu, then open the **AppleTalk** Control Panel.
   • In the **AppleTalk** Control Panel, click the **Options…** button. The **AppleTalk Options** dialog box will appear.
   • In the **AppleTalk Options** dialog box, select the **Inactive** option, then click the **OK**

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button. The dialog box will close.

- Close the **AppleTalk** Control Panel.

5. Launch the Beatnik Editor.

Always launch the Beatnik Editor **before** Digital Performer. Otherwise Digital Performer won't detect the Beatnik Editor at the other end of the linking utility.

6. In the Beatnik Editor, select the linking utility as your MIDI input source.

Go to the **Edit** menu and select the **Preferences...** command, then in the **Preferences dialog box** select OMS as your MIDI input source.

7. In the Beatnik Editor, make sure you have one or more **Session windows** open.

8. If you want visual linking, click on the **Instruments** tab in a **Session window**.

9. Launch Digital Performer.

Note: If FreeMIDI displays a dialog box asking whether you'd like it to slave to OMS, answer **Yes**.

Working with Digital Performer and the Beatnik Editor

Remember: Always **launch the Beatnik Editor first**.

1. In Digital Performer, open your sequence.

If you open a demo or other pre-existing file, Digital Performer may prompt you to remap the sequence's MIDI destinations. If so, click in the **New Assignment Column** (under **MIDI Destinations**) and select **Beatnik**.

Note: Digital Performer doesn't recognize the Beatnik Editor as a multi-Bank synthesizer. As a result, you'll need to enter all your Bank Selects in your Track Event Lists. If you just enter a Program number in the **Arrangement** window, Digital Performer will always access Beatnik's Bank 0 – never Bank 1 or Bank 2.

2. Verify that the link is working.

MIDI events on MIDI channel 1 are visually linked to the Beatnik Editor. This gives you an easy way to verify that the link is working: Just send a Program (patch) Change from Digital Performer on channel 1, and look at the Beatnik Editor to see whether that same patch number is highlighted in the **Instruments** tab of the current Session window.

Note: Although Digital Performer uses Program numbers 1-128, the Beatnik Editor uses Program numbers 0-127. As a result, you need to enter a program number **one higher** than the one you want the Beatnik Editor to receive.

Inserting MIDI Bank Select and Program Change (Patch Change) Events Into Your Sequence

In order for you to be able to export a MIDI file from Digital Performer, import it into the Beatnik Editor, and convert it to an RMF file that plays the correct MIDI Instruments every time, you'll

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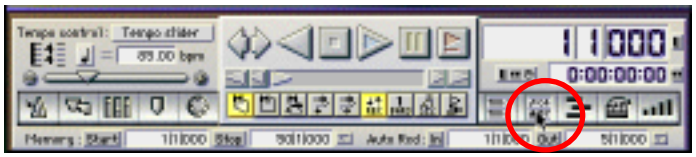
have to insert Bank Selects and Program Changes into your tracks' MIDI event lists. This is especially important if you're using Instruments that you've created in the Beatnik Editor.

1. Open a Track in the **Event List** window.

Pick a Track that contains notes that you want to drive the Beatnik Editor, then go to the Transport window and click the **Event List** button:

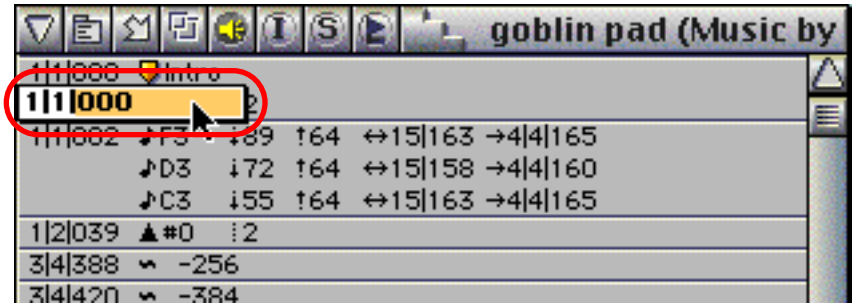


The **Event List** window will appear.

2. In the **Event List** window, insert a Bank Select event at the very start of the Track. This will be a Continuous Controller message for controller number 0.

- In the Event List toolbar, click on the **Insert** button, and then select the Controller option.

A time position box will appear:



- You want the event to occur at the very start of the Track, so type in **1/1/001**. The new event will appear at the top of the list.
- In the new event, double-click on the column beneath the **Zoom** button, then type in the number **0** to set the Most Significant Byte (MSB) part of the Bank Select

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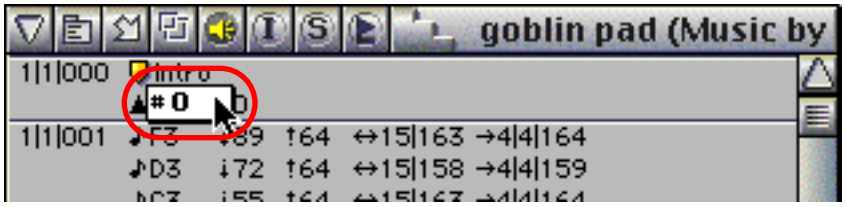
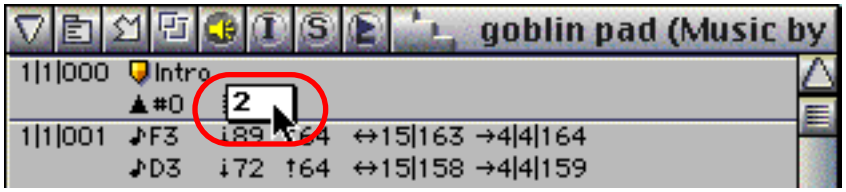
message:



- Again in the new event, double-click on the column beneath the **Audible Mode** button, then type in a number to set the Bank Number part of the Bank Select message to the Bank you want to use:



Use Bank 0, 1, or 2:

Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

3. Still in the **Event List** window, insert your Program (patch) Change events:

- In the Event List toolbar, click on the **Insert** button, and then select the **Patch**

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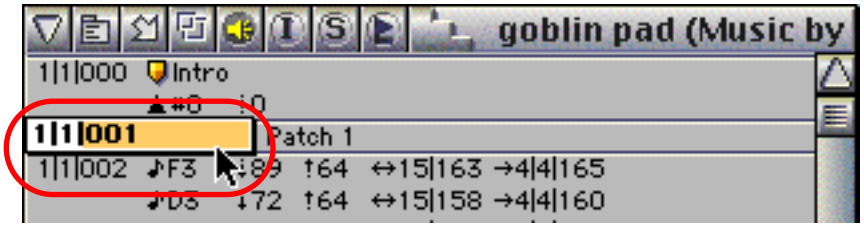
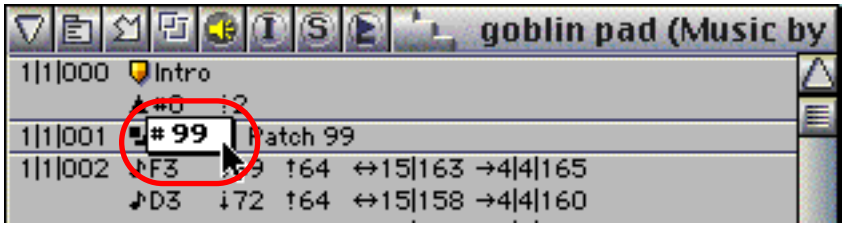
Change option:

A time position box will appear:



- You want the event to occur right after the Bank Select message, so type in **1/1/002**. The new event will appear at the top of the list.
- In the new event, double-click on the column beneath the **Zoom** button, then type in the number of the program you want to use:



Note: Although Digital Performer uses Program numbers 1-128, the Beatnik Editor uses Program numbers 0-127. As a result, you need to enter a program number **one higher** than the one you want the Beatnik Editor to receive.

Tips:

- Save your work often
- Remember that to ensure consistency of sound, your playback settings should match the Event List.

Moving Your Sequence Into the Beatnik Editor and the RMF

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Format

When you're finished inserting all your Bank and Patch changes, and your notes are all sounding the way you want them, save your sequence as a Standard MIDI File. Then, in the Beatnik Editor, Import that MIDI file into a **Session window** (or just drag it into the **Songs** tab of a **Session window**), Play the song as a check, and finally export it as an RMF file.

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Linking with emagic Logic Audio (Mac OS)

Beatnik has verified compatibility with Logic Audio Silver, Gold, and Platinum, versions 4.1.3 through 4.7.0.

Setting Up

1. Install MIDI linking software on your computer, following the supplied installation instructions. We support the Open Music System (OMS), which can be downloaded from the Web. OMS is available at:

   http://www.opcode.com/downloads/

   For best results, make sure to get version 2.1 or greater. If this site is inaccessible, do a Web search using your favorite search engine.

2. Install Logic Audio Silver, Gold, or Platinum on your computer, following the supplied installation instructions.

3. Restart your computer.

   This will enable the MIDI linking software, so that Logic Audio and the Beatnik Editor can detect it.

4. Launch the Beatnik Editor.

   Always launch the Beatnik Editor **before** Logic Audio. Otherwise Logic Audio won't detect the Beatnik Editor at the other end of the linking utility.

5. In the Beatnik Editor, select the linking utility as your MIDI input source.

   Go to the **Edit** menu and select the **Preferences...** command, then in the **Preferences dialog box** select OMS as your MIDI input source.

6. If OMS prompts you to turn off AppleTalk, answer **OK**.

   AppleTalk is known to interfere with MIDI, and can cause both Logic and the Beatnik Editor to hang.

7. In the Beatnik Editor, make sure you have one or more **Session windows** open.

8. If you want visual linking, click on the **Instruments** tab in a **Session window**.

9. Launch Logic Audio.

Working with Logic Audio and the Beatnik Editor

Remember: Always **launch the Beatnik Editor first**.

1. Launch the Beatnik Editor.

   Launching the Beatnik Editor first ensures that Logic will be able to find it when Logic

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starts up.

2. Launch Logic Audio.

3. In Logic, open your sequence.

4. Set up your MIDI Tracks to play back on the Beatnik Editor MIDI synthesizer.

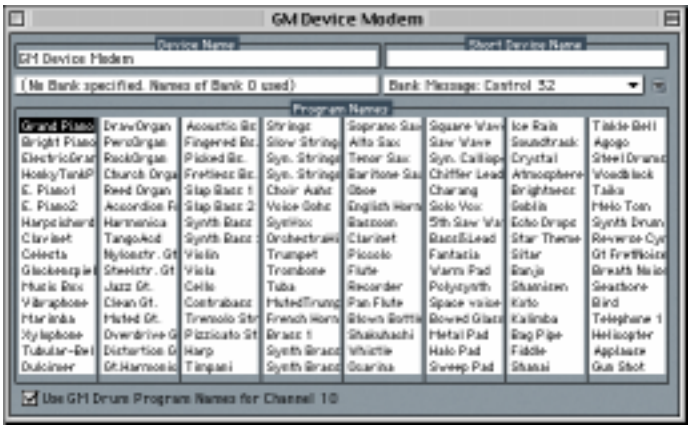
For each MIDI Track (in a new song, this will usually be track 10 and it will be assigned to **GM Device 1**):

- Set the MIDI Output port.

  Click and hold on the **MIDI out** pop-up menu, then select **Beatnik**:

- Set the Track's Bank and Program numbers:

  – Click on the **GM Device** (above the **MIDI out** selector). The **GM Device** window will appear:



  – In the **GM Device** window, click and hold on ***Custom Bank Messages***, then select

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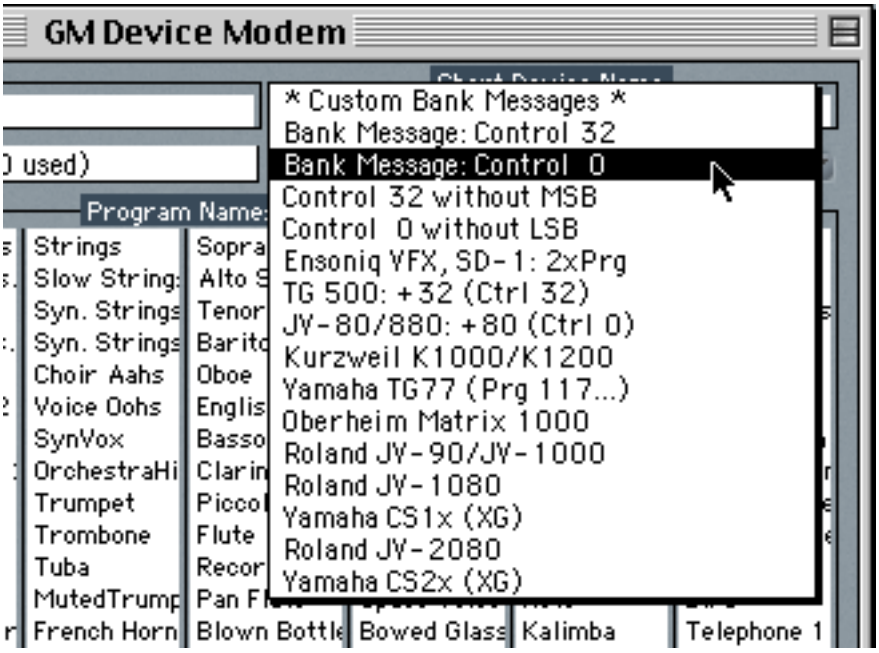
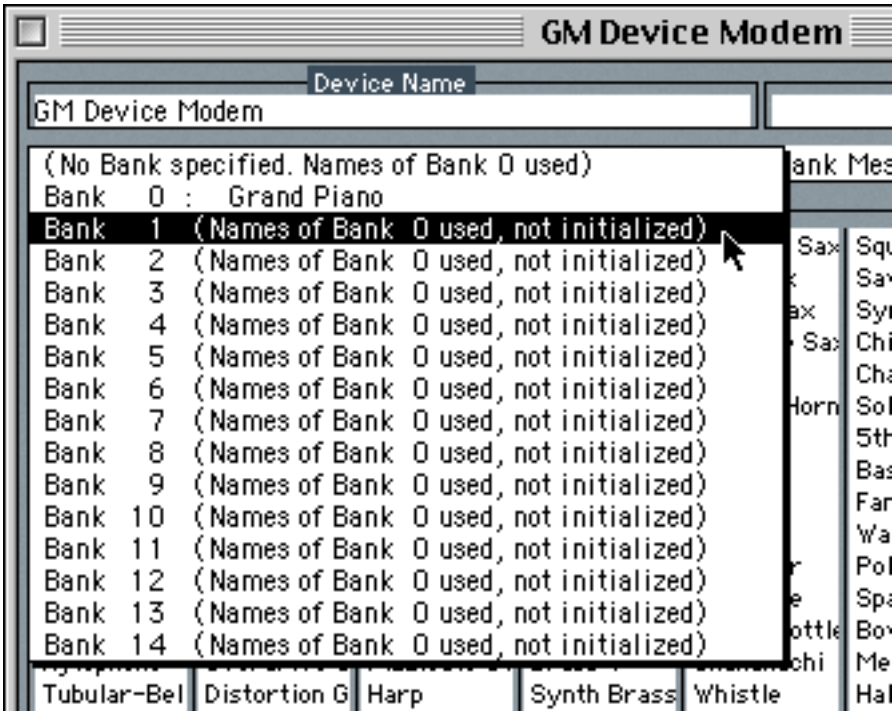
Bank Message: Control 0 from the pop-up menu:



– Click and hold on the **(No Bank specified. Names of Bank 0 used)** pop-up menu, then select **Bank 1**:



– In the dialog box that appears, asking whether you want to initialize a new bank,

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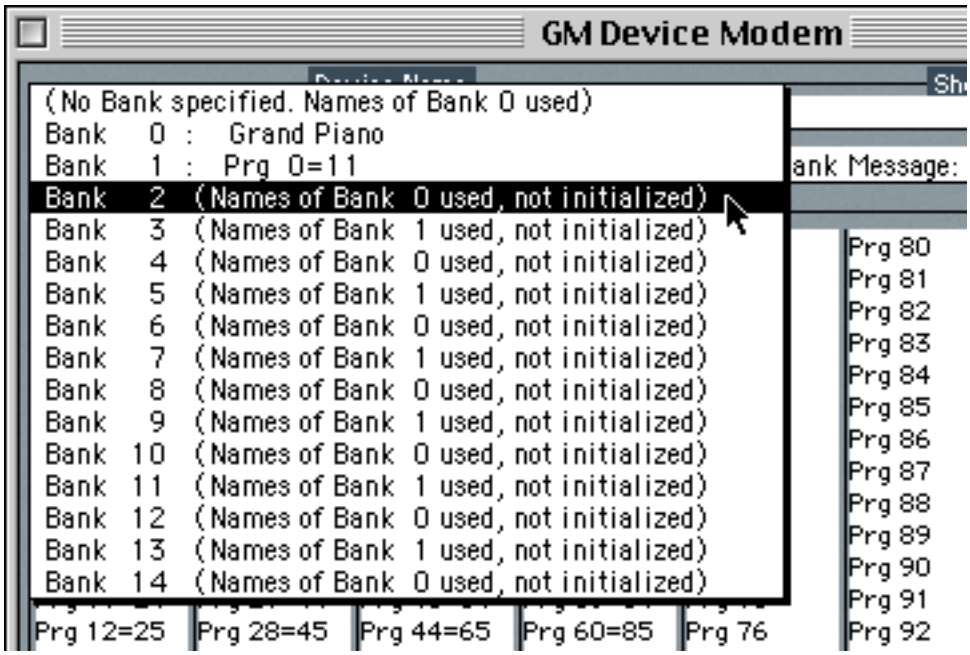
click the **Initialize** button:

– Click and hold in the same pop-up menu again, and then select **Bank 2**:



– When the **Initialize new Bank?** dialog box appears again, click the **Initialize** button

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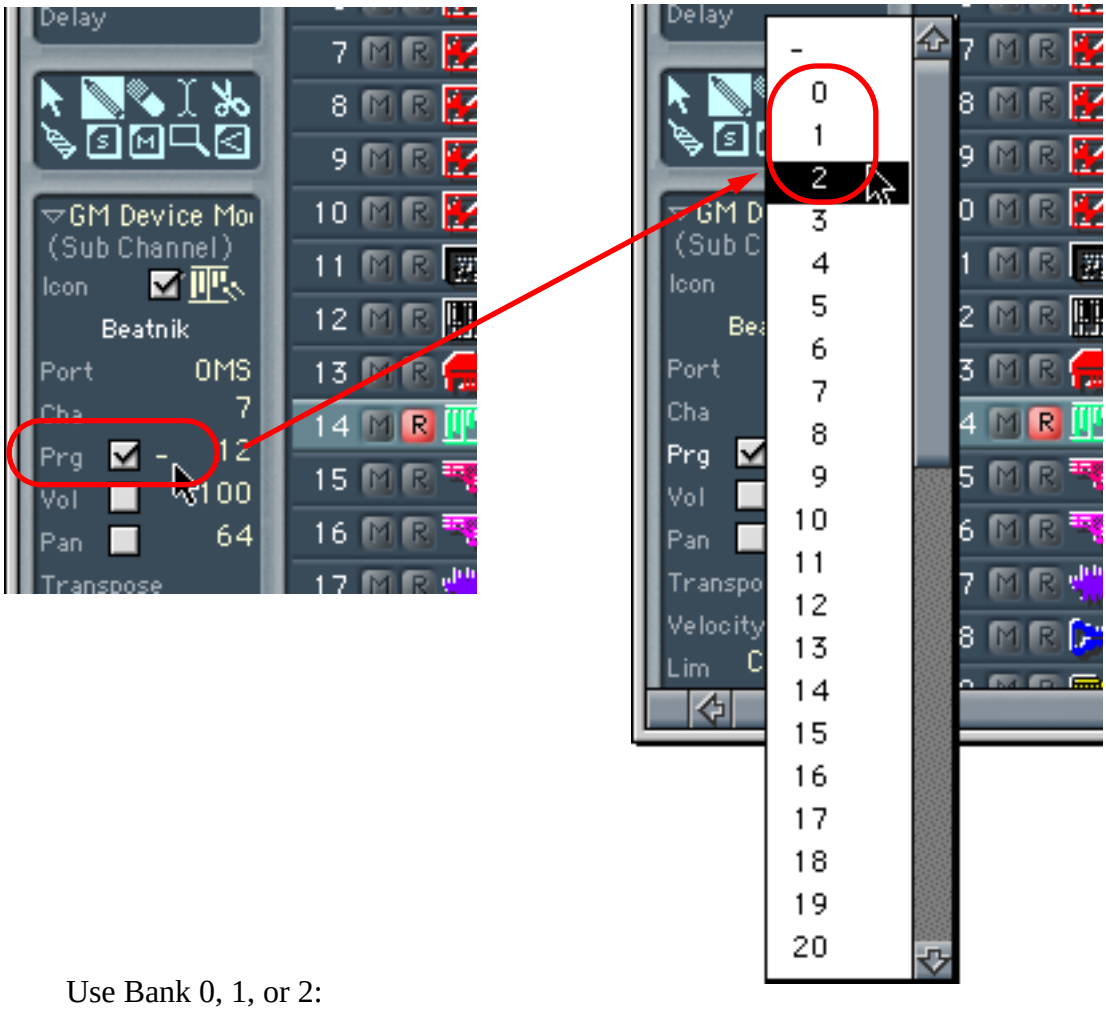
again.

– Click on the dash to the right of the **Prg** box to select the Bank you want to use:



Use Bank 0, 1, or 2:

Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

Note: If you're on channel 1, the Beatnik Editor will highlight your selection to reflect any Bank Select or Program Change.

– Click on the number to the right of the Bank number, then select your desired Pro-

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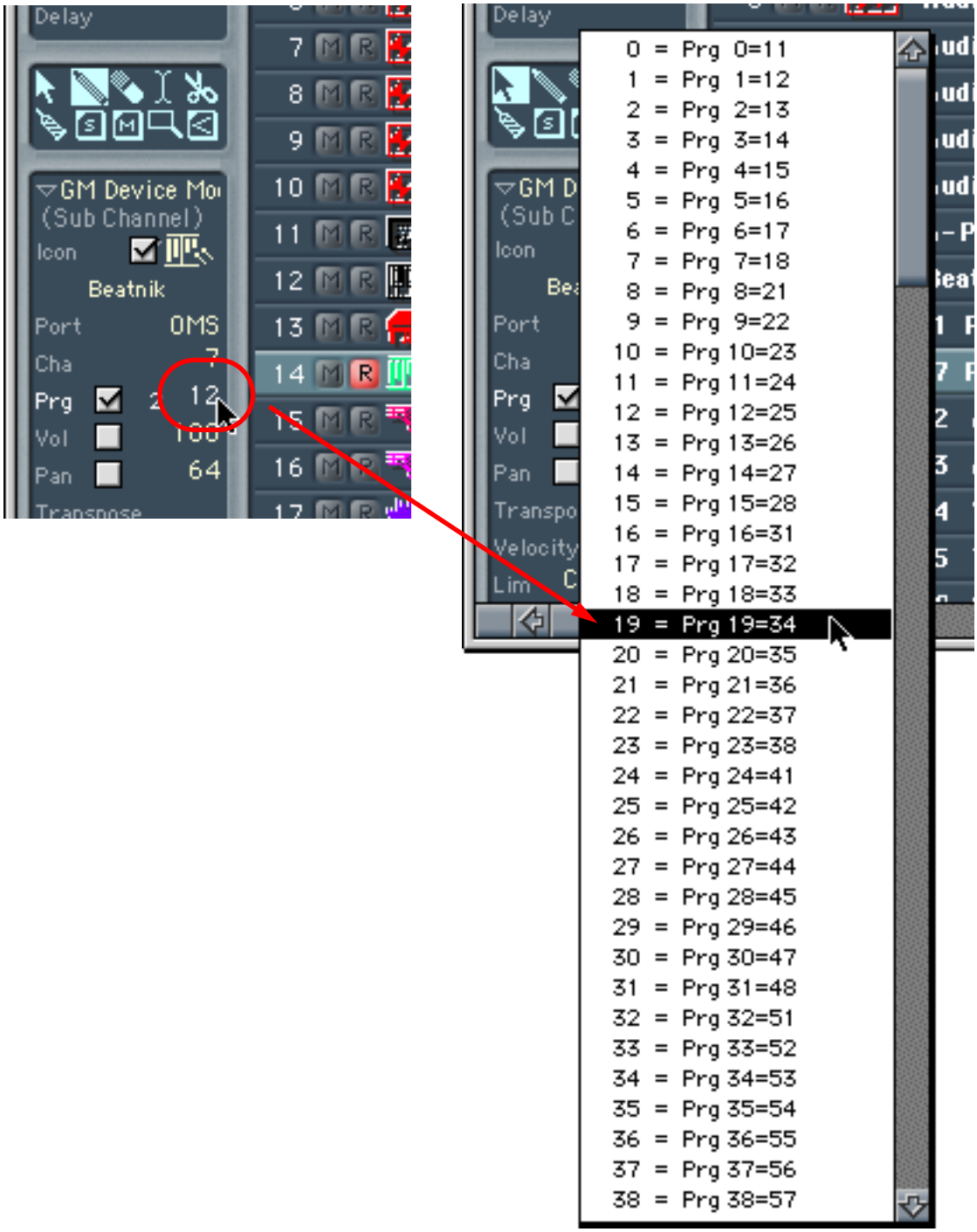
gram (patch) number:



Note: These settings only affect playback, not exported Standard MIDI Files. If you want to export a MIDI file, import it into the Beatnik Editor, and export it as an RMF file with the exact same instruments assigned to it, then you'll have to insert Bank Select and Program Change events into the Track Event Lists.

Inserting MIDI Bank Select and Program Change (Patch

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Change)
Events Into Your Sequence

In order for you to be able to export a MIDI file from Logic, import it into the Beatnik Editor, and convert it to an RMF file that plays the correct MIDI Instruments every time, you'll have to insert Bank Selects and Program Changes into your tracks' MIDI event lists. This is especially important if you're using Instruments that you've created in the Beatnik Editor.

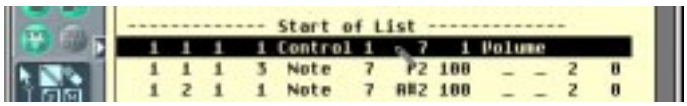
1. Open a Track in the **Event List** window.

Select a Track that contains notes that you want to drive the Beatnik Editor, then go to the **Windows** menu and select the **Open Event List** command.

2. In the **Event List** window, insert a Bank Select event at the very start of the Track. This will be a Continuous Controller message for controller number 0.

- Change your cursor to the pencil tool, then control-click on the green **Control Change Events** button:

A new Control Change event will appear in the list:



- Change your cursor back to the arrow.
- Set the event time by double-clicking on the new event in the **Position** column, then typing the time at which you want the bank change to occur:

The event will move to the new time in the event list.

For example, **1 1 1 1** is the first event, and **1 1 1 2** happens immediately after – in the

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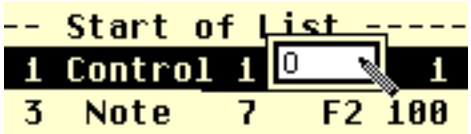
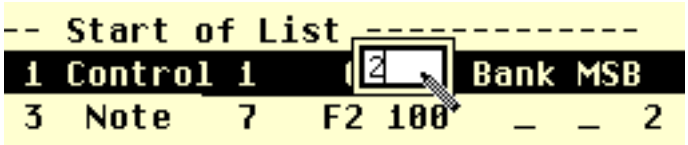
first measure, first beat, first division, and second tick.

- Set the first part of the Bank number by double-clicking on the event in the **NUM** column, then typing the number **0**:



When you hit the **Return** or **Enter** key on your computer keyboard, the **Length/Info** column will change to **Bank MSB**.

- Set the second part of the Bank number by double-clicking on the event in the **VAL** column, then typing the actual Bank number you want to use.



Use Bank 0, 1, or 2:

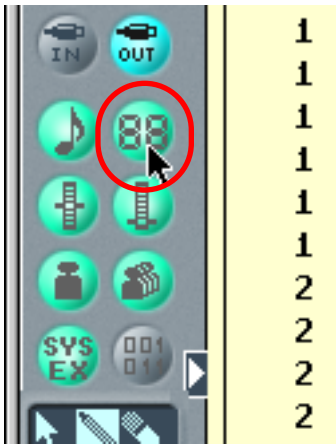
Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

3. Still in the **Event List** window, insert your Program (patch) Change events:

- Change your cursor to the pencil tool, then control-click on the green **Program Change Events** button:



A new Program Change event will appear in the list.

- Change your cursor back to the arrow.
- Set the event time by double-clicking on the new event in the **Position** column,

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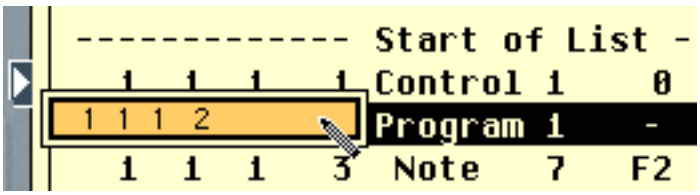
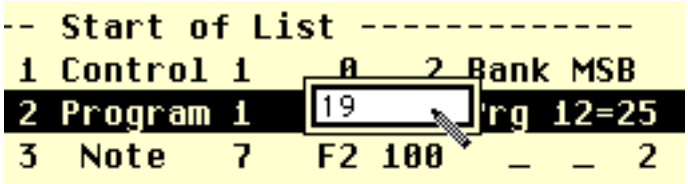
then typing the time at which you want the bank change to occur:



The event will move to the new time in the event list.

Note: Make sure the time of the Program Change is **after** the time of the Bank Change.

- Set the Program number by double-clicking on the event in the **VAL** column, then typing your desired program number:



Tips:

- Save your work often
- Remember that to ensure consistency of sound, your playback settings should match the Event List.

Moving Your Sequence Into the Beatnik Editor and the RMF Format

When you're finished inserting all your Bank and Patch changes, and your notes are all sounding the way you want them, save your sequence as a Standard MIDI File. Then, in the Beatnik Editor, Import that MIDI file into a **Session window** (or just drag it into the **Songs** tab of a **Session window**), Play the song as a check, and finally export it as an RMF file.

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Linking with Steinberg Cubase VST/24 (Mac OS)

Beatnik has verified compatibility with Cubase VST/24 for Mac OS, versions 4.1 through 5.0.

Setting Up

1. Install MIDI linking software on your computer, following the supplied installation instructions. We support the Open Music System (OMS), which can be downloaded from the Web. OMS is available at:

   http://www.opcode.com/downloads/

   For best results, make sure to get version 2.1 or greater. If this site is inaccessible, do a Web search using your favorite search engine.

2. Install Cubase VST, VST Score, or VST/24 on your computer, following the supplied installation instructions.

3. Restart your computer.

   This will enable the MIDI linking software, so that Cubase and the Beatnik Editor can detect it.

4. Launch the Beatnik Editor.

   Always launch the Beatnik Editor **before** Cubase. Otherwise Cubase won't detect the Beatnik Editor at the other end of the linking utility.

5. In the Beatnik Editor, select the linking utility as your MIDI input source.

   Go to the **Edit** menu and select the **Preferences...** command, then in the **Preferences dialog box** select OMS as your MIDI input source.

6. If OMS prompts you to turn off AppleTalk, answer **OK**.

   AppleTalk is known to interfere with MIDI, and can cause both Cubase and the Beatnik Editor to hang.

7. In the Beatnik Editor, make sure you have one or more **Session windows** open.

8. If you want visual linking, click on the **Instruments** tab in a **Session window**.

9. Launch Cubase.

10. If this is the first time you've opened Cubase, it will prompt you to select a MIDI routing utility. Select **OMS In and Out**.

Working with Cubase and the Beatnik Editor

Remember: Always **launch the Beatnik Editor first**.

1. Launch the Beatnik Editor.

   Launching the Beatnik Editor first ensures that Cubase will be able to find it when Cubase

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starts up.

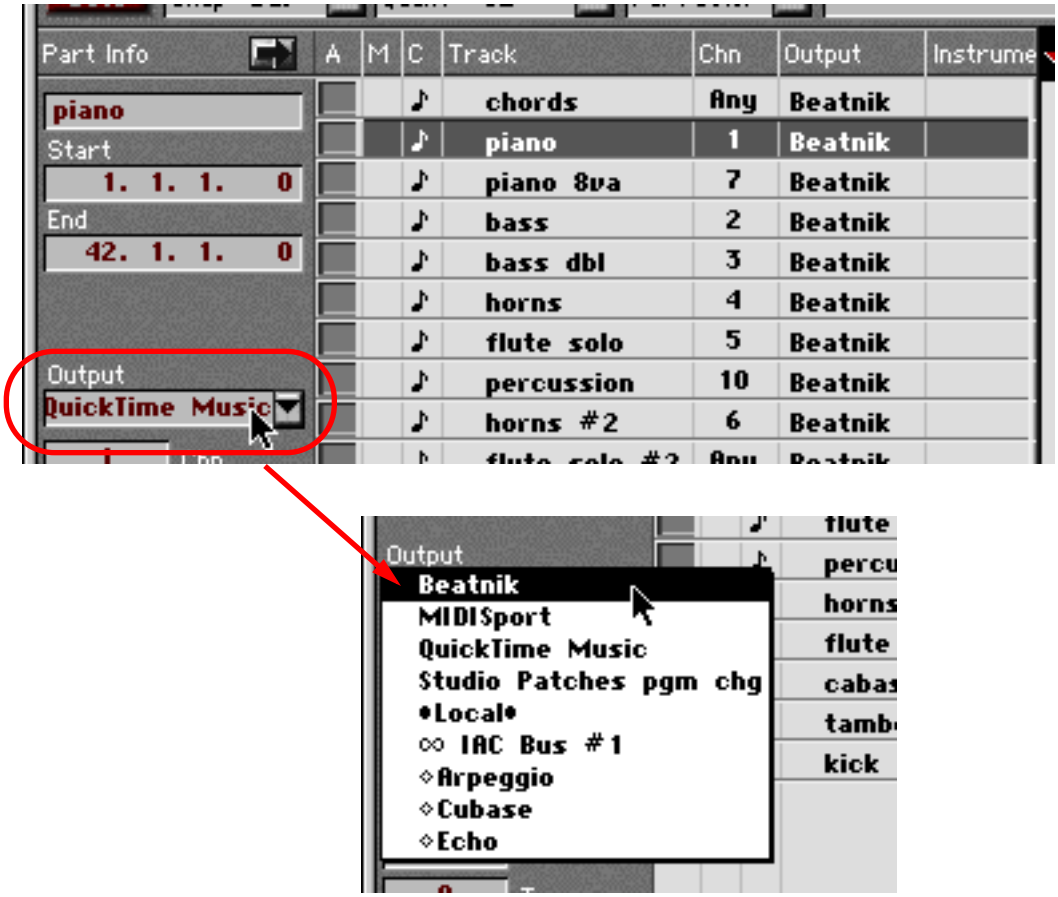
2. Launch Cubase.

3. In Cubase, open your sequence.

4. Set up your Tracks to play back on the Beatnik Editor MIDI synthesizer.

Highlight any MIDI track, then:

Click in the **Output** box (in the **Track Info** section) and select **Beatnik** from the pop-up menu:



- For all tracks that you want to play through the Beatnik Editor, select **Beatnik** as the **MIDI Output**.

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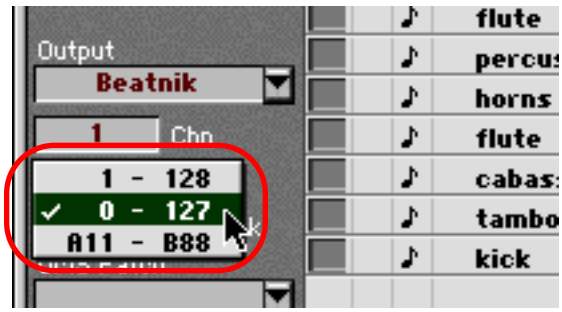
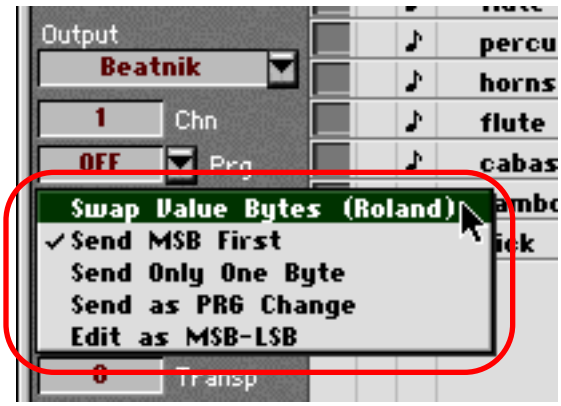
- Click and hold on the **Prg** box, then select **0-127** from the pop-up menu:

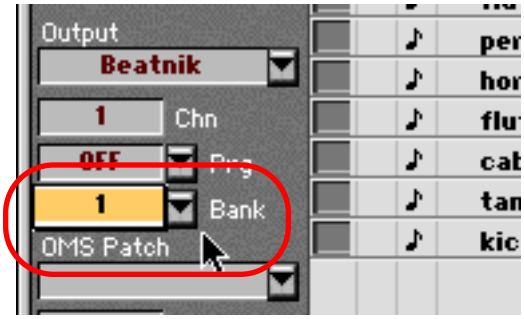


This is the patch numbering system that the Beatnik Editor uses.

- Click and hold on the **Bank** box, then select **Swap Value Bytes (Roland)** from the pop-up menu: (Leave **Send MSB First** checked.)



- Double-click in the **Bank** box, then type the Bank number that you want to use for this track:



Use Bank 0, 1, or 2:

Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

Note: You can also adjust the Bank number by clicking the top or bottom of the box.

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- Double-click in the **Prg** box, then type the patch number that you want to use for this track:

5. Verify that the link is working.

MIDI events on MIDI channel 1 are visually linked to the Beatnik Editor. This gives you an easy way to verify that the link is working: Just send a Program (patch) Change from Cubase on channel 1, and look at the Beatnik Editor to see whether that same patch number is highlighted in the Instruments tab of the current Session window.

Note: If you want to access the Beatnik Editor's Percussion Banks, then select channel 10, set the **Prg** to OFF, and select the Bank of your choice (again, 0, 1, or 2):

As with most MIDI Percussion Banks, each MIDI note number (pitch) plays a different Percussion Instrument, all at natural pitch instead of transposing to different pitches. (To get pitch control over a Percussion instrument, use the Beatnik Editor to copy it into your Custom Melodic Bank.)

Inserting MIDI Bank Select and Program Change (Patch Change) Events Into Your Sequence

In order for you to be able to export a MIDI file from Cubase, import it into the Beatnik Editor, and convert it to an RMF file that plays the same MIDI Instruments every time, you'll have to insert Bank Selects and Program Changes into your tracks' MIDI event lists. This is especially important if you're using Instruments that you've created in the Beatnik Editor.

1. Open a Track in the **Event List** window.

Select a Track that contains notes that you want to drive the Beatnik Editor, then go to the **Edit** menu and select the **List** command. An **Event List** window will appear, looking some-

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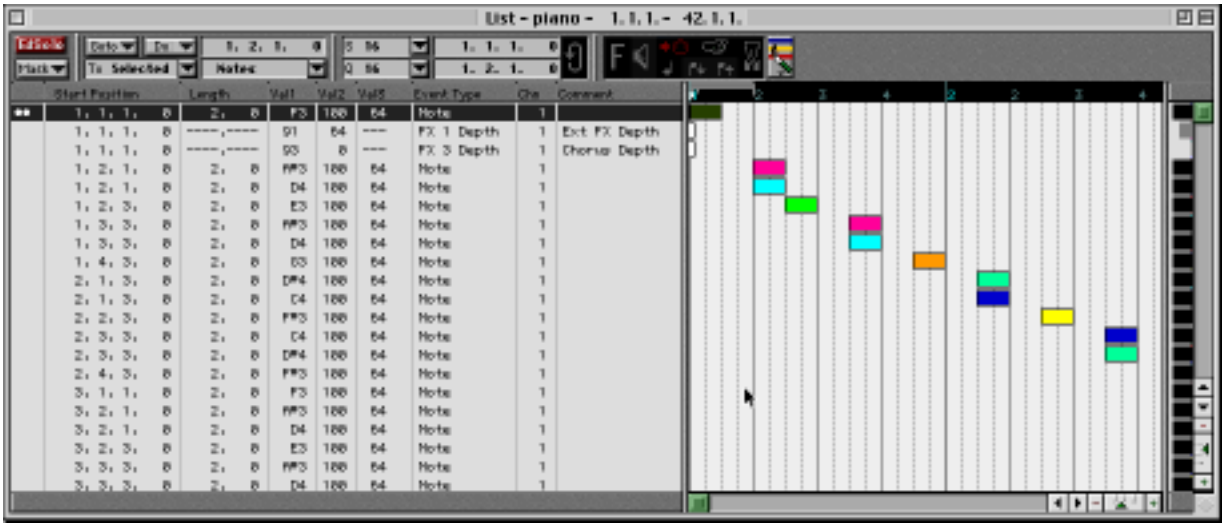
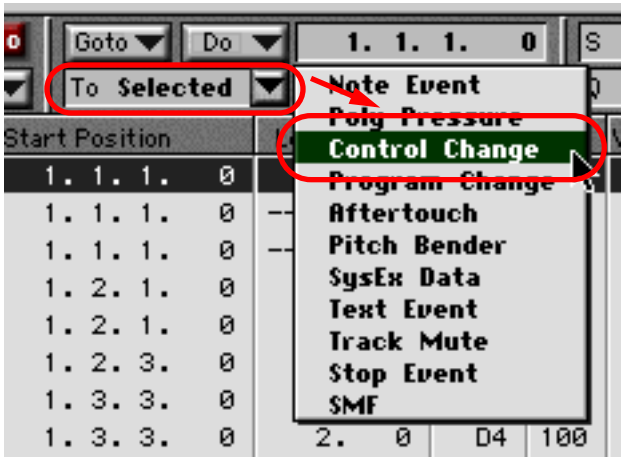
thing like the following:



2. In the **Event List** window, insert a Bank Select event at the very start of the Track. This will be a Continuous Controller message for controller number 0.

- Click in the **Insert choices** pop-up menu, then select Control Change:



- Change your cursor to the Pencil tool by control-clicking and selecting the Pencil tool from the pop-up box:

- Since you want this to be the first event in the Track, click your pencil in the top

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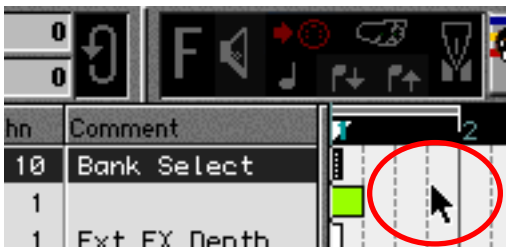
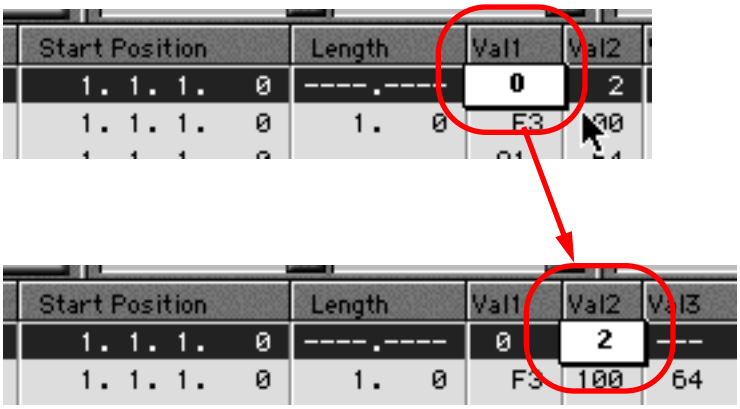
left corner of the **Event List**'s graphic part:



A new Control Change event will appear at the start of the Track.

- Beatnik uses the MSB form of the Bank Select message, so double-click on the new Control Change event in the **Val.1** column, and type in **0**. Then, double-click in the **Val.2** column enter your desired Bank number.



The Bank number should be 0, 1, or 2:

Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

3. Still in the **Event List** window, insert your Patch Change events.

- Click in the **Insert choices** box, then choose **Program Change** from the pop-up

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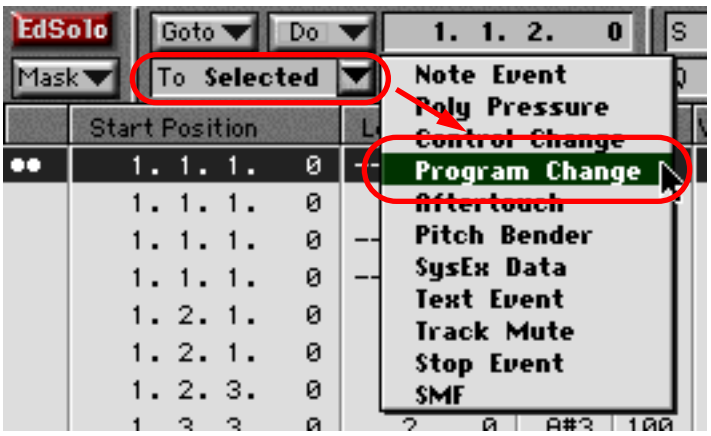
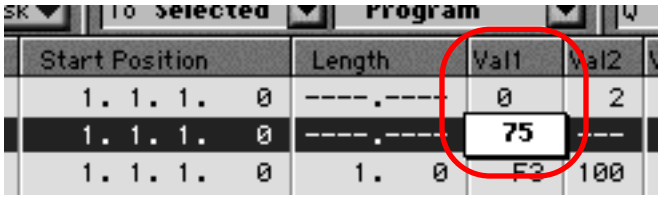
window:



- Change your cursor to the Pencil tool by control-clicking and selecting the Pencil tool from the pop-up box.
- Since you want this to be the second event in the Track – directly after the Bank Select event – click your pencil just below the Bank Select event. A new Program Change event will appear. Or, to insert additional Program Changes at other times, you can insert them here and then drag to the desired time.
- To set the Program (Instrument) number, double-click on the new Program Change event in the **Val.1** column, and enter your desired Program number. The Program number should be in the range 1-128:



Note: Although Cubase uses Program numbers 1-128, the Beatnik Editor uses Program numbers 0-127. As a result, you need to enter a program number **one higher** than the one you want the Beatnik Editor to receive.

Moving Your Sequence Into the Beatnik Editor and the RMF Format

When you're finished inserting all your Bank and Patch changes, and your notes are all sounding the way you want them, save your sequence as a Standard MIDI File. Then, in the Beatnik Editor, Import that MIDI file into a **Session window** (or just drag it into the **Songs** tab of a **Session window**), Play the song as a check, and finally export it as an RMF file.

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Linking with Opcode Vision DSP

(Mac OS)

Beatnik has verified compatibility with Vision DSP version 4.5.

Setting Up

1. Install MIDI linking software on your computer, following the supplied installation instructions. We support the Open Music System (OMS), which can be downloaded from the Web. OMS is available at:

   http://www.opcode.com/downloads/

   For best results, make sure to get version 2.1 or greater. If this site is inaccessible, do a Web search using your favorite search engine.
2. Install Vision DSP on your computer, following the supplied installation instructions.
3. Restart your computer.

   This will enable the MIDI linking software, so that Vision and the Beatnik Editor can detect it.
4. Launch the Beatnik Editor.

   Always launch the Beatnik Editor **before** Vision. Otherwise Vision won't detect the Beatnik Editor at the other end of the linking utility.
5. In the Beatnik Editor, select the linking utility as your MIDI input source.

   Go to the **Edit** menu and select the **Preferences...** command, then in the **Preferences dialog box** select OMS as your MIDI input source.
6. If OMS prompts you to turn off AppleTalk, answer **OK**.

   AppleTalk is known to interfere with MIDI, and can cause both Vision and the Beatnik Editor to hang.
7. In the Beatnik Editor, make sure you have one or more **Session windows** open.
8. If you want visual linking, click on the **Instruments** tab in a **Session window**.
9. Launch Vision

Working with Vision and the Beatnik Editor

Remember: Always **launch the Beatnik Editor first**.

1. Launch the Beatnik Editor.

   Launching the Beatnik Editor first ensures that Vision will be able to find it when Vision

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starts up.

2. Launch Vision.
3. In Vision, open your sequence.
4. Set up your Tracks to play back on the Beatnik Editor MIDI synthesizer.

   Highlight any track in the **Song** window, then click in the **Instrument** column and select **Beatnik-X** (where **X** is the MIDI channel number to which you want to assign the track).

   Note: To access instruments in Beatnik Editor Banks 1 or 2, you'll have to enter MIDI Bank Select events in the Event List (see next section). If you enter Program (patch) Change events in the **Song** window without any Bank Select to move to Bank 1 or 2, Vision will only access the Beatnik Editor's Bank 0.

5. Verify that the link is working.

   MIDI events on MIDI channel 1 are visually linked to the Beatnik Editor. This gives you an easy way to verify that the link is working: Just send a Program (patch) Change from Vision on channel 1, and look at the Beatnik Editor to see whether that same patch number is highlighted in the Instruments tab of the current Session window.

Inserting MIDI Bank Select and Program Change (Patch Change) Events Into Your Sequence

In order for you to be able to export a MIDI file from Vision, import it into the Beatnik Editor, and convert it to an RMF file that plays the same MIDI Instruments every time, you'll have to insert Bank Selects and Program Changes into your tracks' MIDI event lists. This is especially important if you're using Instruments that you've created in the Beatnik Editor.

Note: To access instruments in Beatnik Editor Banks 1 or 2, you'll have to enter MIDI Bank Select events in the Event List. If you enter Program (patch) Change events in the **Song** window without any Bank Select to move to Bank 1 or 2, Vision will only access the Beatnik Editor's Bank 0.

1. Open the **Event List** window.

   Go to the **Windows** menu and select the **List** command.

2. In the **Event List** window, insert a **Bank Select / Program Change** event.

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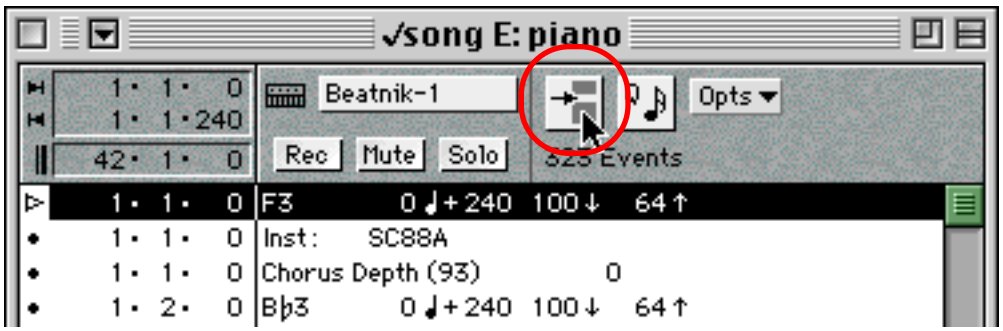
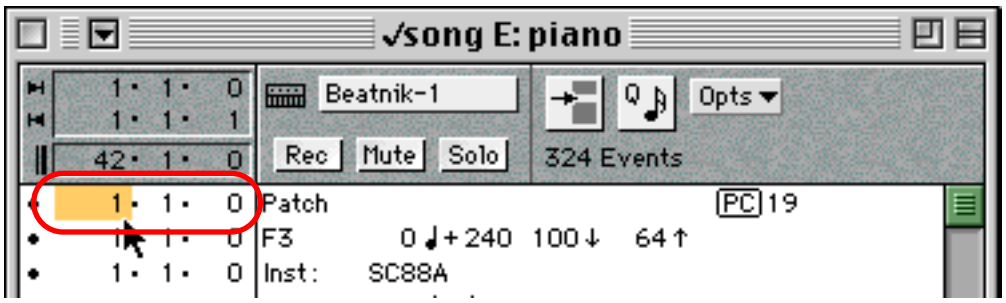
• Click and hold on the **Insert** button, then select **Patch** from the pop-up menu:

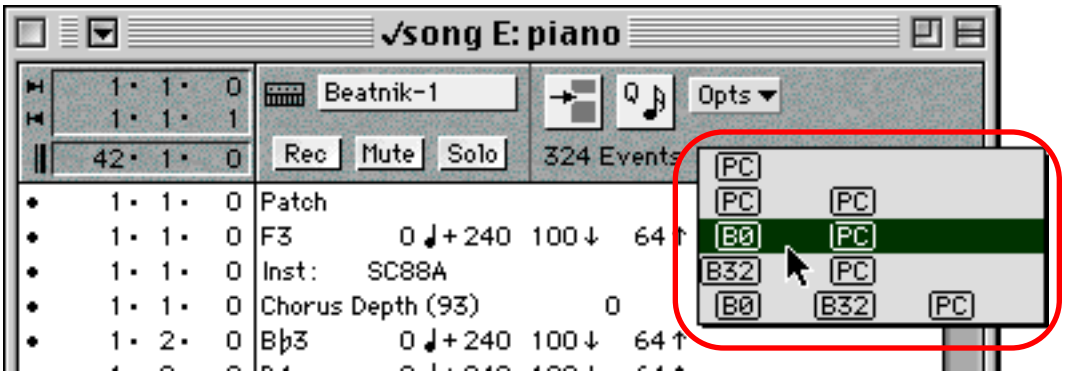


A new **Bank Select / Program Change** event will appear in the list.

• Click on the first column and type in the time at which you want the **Bank Select / Program Change** event to occur – usually the very start:



• Click on the far right column, and then select **B0 PC** from the pop-up menu:



• Click on the number after **B0**, and then type in the number of the Bank you want

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to use:

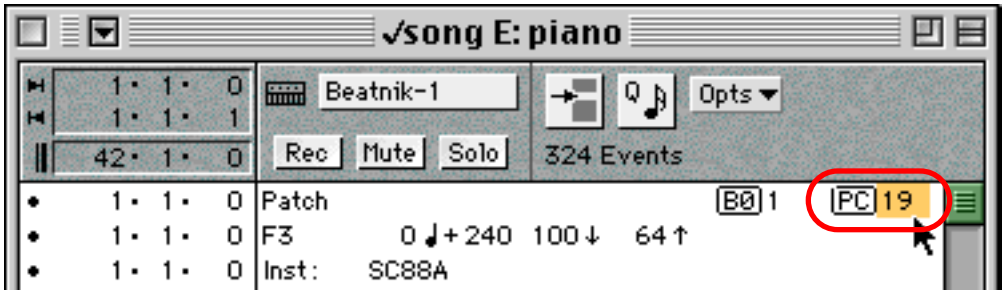
Use Bank 0, 1, or 2:

Bank 0: General MIDI Melodic Instruments (on channel 10: General MIDI Percussion Instruments)

Bank 1: Beatnik Special Melodic Instruments (on channel 10: Beatnik Special Percussion)

Bank 2: Custom Melodic Instruments (on channel 10: Custom Percussion Instruments

- Click on the number after **PC** and enter the program number of the Beatnik Instrument you want to use:



Tips:

- Save your work often
- Remember that to ensure consistency of sound, your playback settings should match the Event List.

Moving Your Sequence Into the Beatnik Editor and the RMF Format

When you're finished inserting all your Bank and Patch changes, and your notes are all sounding the way you want them, save your sequence as a Standard MIDI File. Then, in the Beatnik Editor, Import that MIDI file into a **Session window** (or just drag it into the **Songs** tab of a **Session window**), Play the song as a check, and finally export it as an RMF file.

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Advanced Techniques

How to use the Beatnik Editor for advanced interactive audio techniques.

Heading…	Covers…
Creating Banks of Triggerable Samples (RMFX)	How to make an RMF file without any Song data – a collection of Instruments that can be triggered from JavaScript, Lingo, C, C++, or Java code. This technique is most often used to trigger sampled sound effects, dialog, or music premixes.
Automatic Looping and Track Muting	How to use markers and controllers in your MIDI file data, to make the Beatnik playback sequencer loop a section of RMF music while automatically muting a different set of tracks at each pass through the loop.
MIDI Channel Modes	How to access and use MIDI channel Melodic and Percussion modes beyond the default General MIDI behavior.

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Creating Banks of Triggerable Samples (RMFX)

Ordinarily, the custom Beatnik Instruments included in an RMF file are played by notes stored in the MIDI files included in the same RMF file. However, all Beatnik playback platforms also include a programming interface with commands that allow the software developer to play individual notes whenever desired, using any available Instrument, without involving any MIDI file. When this technique is combined with an RMF file that contains sampled audio clips, you get the ability to trigger any sample – a music premix, a dialog line, or a sound effect – interactively, at any time. This section describes how to make and use RMF files containing just banks of samples – and no Song data – for use in this way. Beatnik's term for such an RMF file is **RMFX**.

Samples Are Stored as Custom Instruments in the RMFX File

All sound resources in RMF files are accessed through the scheme of MIDI musical instrument programs. That may seem a little strange for sounds intended for playback at natural pitch – exactly the kinds of samples you'll most often want to use in RMFX files – but recall that Beatnik Instruments are always based on digital audio Samples. That means they can contain recordings of any kind of sound at all, and not just the single musical tone usually used in conventional Instruments. It also means that the Custom Instruments in RMF files can be used like little audio cartridges, each one loaded with its own sound recording, ready to be triggered at any time. For example, an audio logo to play when the mouse rolls over the company's logo image, or a sound effect to play when the user clicks on a link.

Events Come from the Programming, Not the RMFX File

For these kinds of effects, you'll rely on the developer of the Web page (or the Director Movie, or the application, depending on your context) to do all the Instrument selection and note event triggering – so there's no longer any need to include any Custom Songs (imported MIDI data) in your exported RMF file. All the RMF file needs to include is the Custom Samples, and the Instruments that are needed to access the samples.

Planning an RMFX File

There are basically two ways to arrange an RMFX file:

- **Option A:** Collect all the Samples into a single Instrument, with a separate Keymap Zone for each Sample.

  In this approach, different note numbers trigger different Samples, and they all play at their correct pitch. This approach means more work if you want to play the samples at different musical pitches, but in many applications – like spoken dialog or music remixers – you may not need to re-pitch the sounds anyway.

- **Option B:** Create a separate Instrument for each Sample.

  In this approach, you can easily play the sample at different musical pitches by changing the note number in your `noteOn()` or `playNote()` commands.

It's best to decide which of these two setup options you want to use **before** you start building your

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RMFX file. With a little experience you'll learn to mix the two options together within a single RMFX file, but for your first experiments you may want to pick just one or the other.

Building an RMFX File

Constructing simple RMFX files can be very easy, as the Beatnik Editor commands **Make Instrument Using...** and **Export RMF...** automate most of the detail work. Basically, you just drag your Samples in, create the Instrument(s) in one operation, and then generate the RMFX file in a second operation.

With the Beatnik Editor open:

1. Create a new Session file for your RMFX project.

- From the **File** menu, select the **New** command. A new Session document window called **Untitled Session** will appear.
- Go to the **File** menu again, select the **Save As...** command, and save your new Session file in an appropriate folder, with an appropriate filename.

2. Import your Samples.

In your Session document window, click the **Samples** tab. Then collect the sample files that you want to use anywhere on your desktop, and drag them all into the empty **Samples** list area. This will produce a new Sample item for each dragged sample file, each with the same name as the file. Any loops will be preserved.

3. Compress your Samples.

Still in the Samples tab of your Session document window, select all of your Samples, and then go to the **Sample** menu and select the **Compression...** command. The **Compression dialog box** will appear.

Use the **Compression dialog box** to apply the right compression for your material. In most cases, this will be one of the MP3 options. You can apply the same compression type to all of your Samples in a single operation.

4. Create your Instrument or Instruments.

Still in the **Samples** tab of your Session document window, select all of your Samples, and then go to the **Sample** menu and select the **Make Instrument Using...** command. The **Make Instrument dialog box** will appear.

Set your Instrument options, and then click the **OK** button:

- If you decided to **Combine Samples Into One Instrument**, pick that option and also pick the sub-option **One per key, starting at**. You can change the starting key if you want to.
- If you decided to **Separate Into Multiple Instruments**, pick that option. If you want the samples to sound at their original pitches, you'll have play them at the indicated **Root Key** note. You can change the **Root Key** note if you want to.

Your new Instrument or Instruments will appear in the **Instruments** tab of the Session docu-

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ment window, numbered starting at 0.

If you ever want to start adding variations to your Sample playback, like a volume envelope, filtering, or modulation, you can modify the Instrument or Instruments in the **Instrument Editor window**.

5. Check your Instrument or Instruments.

In your Session document window, go to the **Instruments** tab and double-click the newly created Instrument or Instruments. The **Keymap Zones** page of the **Instrument Editor window** will show the MIDI note numbers you'll need to use (in `playNote()` and `noteOn()` commands) to trigger each Sample in each Instrument, so you may want to take notes.

You can also audition a selected Instrument with the keyboard in the **Player window**, if you'd like to verify that all your Samples are playing correctly.

6. Export your RMFX file.

In the Instruments tab of your Session document window, make sure the **Show:** menu says **Bank 2: Custom Melodic**, and then select all the Instruments shown.

Now go to the **File** menu and select the **Export RMF...** command.

One of the **Export RMF dialog boxes** will appear, asking whether you want to create an RMF file or an RMFX file. Pick the **RMFX** option, and then click the **OK** button.

The **Save RMF File** dialog box will appear. Use it to save your new RMFX file in an appropriate folder, with an appropriate name. The RMFX file is ready for use in your production.

Note: If you want the RMFX file to include a copyright notice, credits, and other 'meta-data' information, you'll have to change this procedure slightly. Before step 6, use the Instrument menu command **Make Song Using** to create a Custom Song, then use the **Song** menu command **Song Info** to enter your info. Then, rather than using the **Export RMF...** command on your custom Instruments, apply it to the Custom Song instead. True, this will add a very small 'dummy' MIDI file to your RMFX file – but because meta-data is attached to Songs rather than the RMF file itself, it's the only way to attach the copyright notice, etc.

Triggering RMFX Samples from the Production

To trigger the samples in your RMFX samples from a Web page or Director movie, the programmer will need to use the appropriate combination of the Music Object commands `playNote()`, `noteOn()`, and/or `noteOff()` commands (using the optional Bank and Program parameters – be sure to indicate Bank 2, as RMFX samples are always in the Beatnik Custom Instruments bank). For programming details, please refer to the Music Object **Web Authoring Documentation**, or the **Beatnik Xtra User's Guide**. (Application programmers using the Beatnik Audio Engine should consult the BAE Client API Developer Reference for the equivalent information for that context.)

If you chose Option A (Single Instrument):

- To trigger a full sample, use the command `noteOn()`, supplying the note number for the desired sample. No `noteOff()` is needed, as reaching the end of the sample produces the same effect. However, if the Sample loops, it will continue to play until a corresponding

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`noteOff()` is received.

Alternatively, you could use `playNote()` instead of `noteOn()`, as long as the duration is longer than the Sample's own length.

- To stop a sample before it reaches the end, or to exit a loop, send a corresponding `noteOff()` command when you want the sample to stop.

  Alternatively, you could use `playNote()` instead of `noteOn()` and `noteOff()`, with a duration shorter than the Sample's own length. Be sure to indicate Bank 2, as RMFX samples are always in the Beatnik Custom Instruments Bank.

If you chose Option B (Multiple Instruments):

- To trigger the selected sample at its natural pitch, use the command `noteOn()`, supplying the Root Key note for the selected sample. No `noteOff()` is needed, as reaching the end of the sample produces the same effect. However, if the Sample loops, it will continue to play until a corresponding `noteOff()` is received.

  Alternatively, you could use `playNote()` instead of `noteOn()`, as long as the duration is longer than the Sample's own length.

- To trigger the selected sample at a transposed pitch, use the command `noteOn()`, supplying a pitch other than the selected instrument's Root Key note. The sample's pitch will be transposed by the same amount as the difference between the Root Key and the played note number. For example, if you play an Instrument at a note that's 12 semitones above its Root Key, the Sample will play back one octave higher than its natural pitch.

  Note: If the Sample contains rhythmic music material, changing the pitch will also directly affect its tempo.

- To stop the sample before it reaches the end, or to exit a loop, send a corresponding `noteOff()` command when you want the sample to stop.

  Alternatively, you could use `playNote()` instead of `noteOn()` and `noteOff()`, with a duration shorter than the Sample's own length. Be sure to indicate Bank 2, as RMFX samples are always in the Beatnik Custom Instruments bank.

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Automatic Looping and Track Muting

This feature allows you to automate muting and unmuting of tracks in a looping file to create musical "playlists," which can be of great benefit for reducing the size of a long file. This is accomplished with controllers in the MIDI data which tell the synth to play or not play specific tracks in a predetermined order. It is not a real-time interactive feature.

Here's how it works:

1. Start with a MIDI sequence designed to loop end-to-end, which **does not** contain "loopstart" and "loopend" markers.
2. Insert, in any track, a continuous controller #85 whose value will indicate the total number of loops of the file that will comprise the "playlist" (counting from zero).
3. Determine which loop repeats in which you want each track to play, and insert controllers as follows: to play track during loop (x): controller 87: (x); to mute track during loop (x): controller 86: (x).

As an example, let's say that you have a file that I want to loop 3 times, and you want to hear a piano solo during the second loop.

On any track, you would insert controller 85: 2, for 3 loops.

Then, on the track with the piano solo, I would insert:

- On any track, you would insert controller 85: 2, for 3 loops.
- Then, on the track with the piano solo, you would insert: controller 86=0, controller 87=1, and controller 86=2

A few important points:

- All of the controller data must be at 1,0,0if a track does not have controller 86/87 data, it will play normally.
- If there is no controller 86/87 corresponding to a particular loop value, the track in question will remain in its current state, either muted or unmuted.
- The file will play indefinitely; when the maximum loop value set with controller 85 is reached, it resets to 0.
- The total number of tracks is limited to 64.

What results from this process is a file of a rather short duration (8 or 16 bars, perhaps) with all of the different sections of the song lined up vertically. The process can be quite laborious and requires great care; because it is based on tracks, not channels, the muting / unmuting feature cannot be auditioned while linked to sequencer. One has to plot out the structure, collapse all the parts into a short sequence (which means this won't work with music that has uneven phrase lengths or meter changes), insert all the controller data, then hear the results after importing the MIDI file into the Editor.

Why would anyone want to go through all this trouble when they could just as easily create a long MIDI sequence with whatever arrangement they pleased? The main benefit of using this feature is decreased file size, typically cutting the MIDI data at least in half, or much more if there is a lot of repetitive pitch bend or continuous controller data. Plus, an RMF file could go on for 5, 10, 20 minutes without repeating itself and still not be appreciably larger than a much shorter version.

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MIDI Channel Modes

The Beatnik MIDI Synthesizer supports an unusual MIDI Channel Mode, called Pitched Percussion, that gives you additional creative options by letting you play Percussion Bank Instruments like regular Instruments, so that their pitch is transposed according to the MIDI note number. For example, "talking drum" effects become easy, and you may discover other unusual and useful sound textures by playing Percussion Instruments at unexpected pitches. For example, you can get a cool Gong-like effect if you play a cymbal crashes at a very low pitch. And Percussion sounds played at high pitches make good user interface clicks.

You can also use MIDI Channel Mode control to make MIDI channels other than channel 10 behave like additional Drum channels. In fact, you can put any MIDI channel into any MIDI Channel Mode.

About MIDI Channel Mode

MIDI Channel Mode determines how a channel will interpret MIDI note events. Each channel tracks its own MIDI Channel Mode independently, and all notes played on a channel will sound using the channel's current MIDI Channel Mode. Any channel can be put into any MIDI Channel Mode with a Non-Registered Parameter Number, but by default, all channels start up in their normal General MIDI Mode.

In addition to the two MIDI channel modes used in the General MIDI scheme (Normal Percussion and Normal Melodic modes), the Beatnik MIDI Synthesizer offers a third mode, Pitched Percussion. An option is also provided to return each channel to its ordinary General MIDI mode (Percussion Mode for channel 10, Melodic Mode for all other channels).

Setting the MIDI Channel Mode

To change a channel's MIDI channel mode, send a MIDI Non-Registered Parameter Number (NRPN) event, with MSB (Continuous Controller 99) of 5 and LSB (Continuous Controller 98) of 0 (also known as 'NRPN 640'), followed by a Data Entry controller message (Continuous Con-

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troller 6) with your desired mode number:

Data Entry Controller	Mode	Effect
0	**General MIDI** Mode (for that channel)	On Channel 10, puts the channel into Normal Percussion Mode; on all other channels, puts the channel into Normal Melodic Mode
1	**Pitched Percussion** Mode	Program Changes select Percussion bank sounds, note numbers transpose them as though they were Melodic Bank Instruments
2	**Normal Percussion** Mode	Note number selects Percussion bank sounds (a la General MIDI Channel 10)
3	**Normal Melodic** Mode	Program Changes select Musical bank sounds, note numbers transpose them.

Note: Mode 1, Pitched Percussion is the unusual one that you'll have the most fun exploring.

In your MIDI sequencer's Event List, the events needed to set a channel's MIDI Channel Mode are as follows, where **M** is **0**, **1**, **2**, or **3** according to the above table:

Controller #99, 5 – NRPN MSB of 5 – Select MIDI Channel Mode as Data Entry destination
Controller #98, 0 – NRPN LSB of 0
Controller #6, M – Set MIDI Channel Mode to **M**, via Data Entry controller

Uses for Normal Percussion Mode

One possible use for the MIDI Channel Mode would be to put more than one channel into Normal Percussion Mode at the same time. Here are a few of the creative applications of doing so:

- Multiple Percussion channels would let you spread a rhythm arrangement out over many MIDI channels, giving you the ability to dynamically change the pattern by muting and unmuting the channels.
- With multiple Percussion channels, you could play Percussion Instruments from multiple Banks at once – the GM Bank Percussion Instruments, the Beatnik Special Bank Percussion Instruments, and your own Custom Bank Percussion Instruments, all at the same time. Just put each channel into Normal Percussion Mode, and then use a Bank Select message to pick the Bank you want.
- Drum echo effects can be easier to achieve if you use additional MIDI channels for the echo tracks – there won't be any unpredictable retriggering problems if any of the initial notes overlap the start of their echoes.

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For Reference

Detailed reference information on the Beatnik Editor.

Heading...	Covers...
FAQ	Answers to Frequently Asked Questions
Menu Reference	Guide to Menu Commands
Window Reference	Guide to Windows and Dialog Boxes
Troubleshooting	How to fix any problems you may encounter
Removing the Beatnik Editor	How to 'un-install' the program from your computer
Compatibility Info	MIDI and file format support details
Versions and Updates	Program Version History and how to get Updates
License Agreement	The agreement that governs your use of the software
Online Resources	Links to further information on the Beatnik Web site
Built-In Instruments	List of General MIDI and Beatnik Special Instruments
Live MIDI Input	How to work with MIDI controllers and sequencers
Trademarks	Legal notices regarding Trademarks

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FAQ

Answers to Frequently Asked Questions about the Beatnik Editor.

See Also: How Do I...

How do I get help when I run into a problem?

If you run into difficulty installing, registering, or using the Beatnik Editor, and can't find an answer in the Online Help or User's Guide, then contact Beatnik Customer Support via the Beatnik Web site:

http://www.beatnik.com/?editor-support

How do I convert a .WAV file into an RMF file?

See **Basic Operation: Converting a Sample File to RMF**.

How do I convert a MIDI file into an RMF file?

See **Basic Operation: Converting a MIDI File to RMF**.

What file formats does the Beatnik Editor import?

MIDI, WAV, AIFF, Sound Designer II, AU, and MP3 files. You can also import RMF files into a Session, but you can't include them in RMF files you export.

What copyright protection does RMF offer?

You can encode 40-bit encrypted copyright and licensing information into a file, and it can be easily displayed anywhere an RMF file plays. It will help a publisher or composer keep track of who is using their music.

Will the Beatnik Editor support DLS (the MIDI Manufacturers Association standard for downloadable samples)?

Beatnik intends to provide support for the DLS standard in a future version of the Beatnik Editor. As new file types become popular, we'll add support for them.

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Menu Reference

Guide to the Commands in the Beatnik Editor's Menus.

Topics:

File menu

Edit menu

Song menu

Instrument menu

Sample menu

Window menu

Help menu

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File menu

Commands for working with Beatnik Editor Session documents, for importing and exporting your work in other formats, for setting Preferences, and exiting the program.

Command	Description
New	Creates a new Session document, called **Untitled Session**. See **Session windows**.
Open... (Not available in Demo mode)	Opens a previously saved Session document on disk. **Note:** You can also open files in other recognized music and sound formats, resulting in an Import operation. If no Session document is currently open, a new Session document is created first.
Close	Closes the current Session document. If you haven't saved your latest changes to disk, an alert will appear asking whether you want to save the Session before closing it. **Closing without saving means losing** all changes made since the latest **Save** or **Save As**.
Save (Not available in Demo mode)	Saves the current Session document to disk under the same file name, replacing the previous file version. **Notes for Mac OS Users:** • The Beatnik Editor will automatically add **.bsn** to the filename. • The Mac OS file creator code will be '**MPL2**'.
Save As... (Not available in Demo mode)	Saves the current Session document to disk, with an option to change the file name. After saving, the Session window will show the new name and will remain open for further editing. **Note for Mac OS Users:** The Beatnik Editor will automatically add **.bsn** to the filename.

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Revert	Operation depends on the current window: • In a Session document, replaces the current Session document with its latest saved version on disk, discarding any recent changes. **Reverting means losing all changes made** since the last **Save** or **Save As**. • In an **Instrument Editor window** or **Sample Editor window**, exits that window and reverts the Instrument or Sample to its previous state. In all cases, An alert will appear asking you to confirm that you want to Revert.
Import...	Opens the **Import dialog box**, where you can import one or more music and digital audio files, in several formats, into the current Session document.
Export RMF... (Not available in Demo mode)	Opens one of the **Export RMF dialog boxes**, where you can export the currently selected Song or Songs in RMF format. Because RMF is a secure file format, an RMF file cannot be further edited after you export it. Be sure to **retain your Beatnik Editor Session files** so that you can update your RMF files with any future changes.
Export as Audio... (Not available in Demo mode)	Opens the **Save Audio File dialog box**, where you can export the currently selected Song in any supported digital audio format – AIFF, WAV, raw samples, or MP3; for Mac OS users, Sound Designer II is also available. **Note:** Does not work on multiple Songs at once – only one Song at a time. **Note:** Although the exported audio file will sound the same as the RMF version, it will be much larger – up to 10 MB per minute – and interactive control over individual notes and instruments will no longer be possible. RMF is almost always a better choice.
Preferences... (Windows only)	Opens the **Preferences dialog box**, where you can set general Beatnik Editor operating preferences. **Note:** For Mac OS, this item appears in the **Edit menu**.
(Recent Session Names)	Opens recently accessed Session documents on disk.
Exit	Ends your Beatnik Editor working session, exiting the program. If you haven't saved your latest changes, an alert will appear asking whether you want to save the Session before exiting. **Note: Exiting without saving means losing all changes made** since your most recent **Save** or **Save As**.

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Edit menu

Commands for working with selected items.

Command	Description
Undo	Undoes the most recent **Edit** operation. **Note:** The Beatnik Editor uses 'Multiple Undo'. Every additional Undo command you issue takes you another step back in time (but no farther back than the latest saved version). **Note:** Every window has a separate **Undo** history.
Redo	Reapplies the most recently Undone operation. Available only after an **Undo**.
Cut	Removes the selection from the document and places it in the clipboard for later Pasting, replacing any previous clipboard contents.
Copy	Copies the selection to the clipboard for later Pasting, replacing any previous clipboard contents. **Note:** When you copy a Custom Instrument, a dialog box appears, offering the option of also copying the Samples used in that Instrument.
Paste	Pastes the clipboard contents into the document. The Paste command is unavailable whenever the clipboard is empty, or contains items of the wrong type. **Note:** When pasting an Instrument into a Session document would result in more than one Instrument with the same MIDI program number, the Beatnik Editor will renumber the colliding Instruments and alert you. **If you see this message, you should carefully verify that any Songs being added still play correctly** because the Beatnik Editor will not update the corresponding MIDI Program Change events in any Songs that use the Instrument to use the altered Instrument numbers. If the Song is now playing with wrong Instruments, you will need to use your MIDI sequencer program to set the program numbers manually in your original sequence, then save a revised MIDI file and **Re-Import MIDI** (see **Song Settings dialog box**).
Delete	Deletes the selection from the document, without changing the clipboard.

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Rename	Allows you to edit the selected item's name. **Note:** Only Custom items can be renamed – Custom Songs, Custom Instruments, and Custom Samples. Built-in Songs and Samples can't be renamed at all; to rename a built-in Instrument, you'll have to first Copy it and Paste it, creating a Custom Instrument copy that can then be renamed.
Select All	Selects all items in the current Session window tab – that is, all Songs, all Instruments or all Samples.
Preferences... (Mac OS only)	Opens the **Preferences dialog box**, where you can set general Beatnik Editor operating preferences. **Note:** For Windows, this item appears in the **File menu**.

About the Clipboard

The clipboard is a temporary storage area used to hold items for editing operations – **Cut**, **Copy**, and **Paste**. Whenever you **Copy** or **Cut** an item, a copy of the item is placed on the clipboard. The next **Paste** produces a copy of the item.

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Song menu

Commands for working with selected items in The Songs Tab of a Session window.

Note: Some commands will only be available when a Song is selected and a Session window is in front.

Command	Description
Song Settings...	Opens the **Song Settings dialog box**, where you can set several basic Song parameters.
Song Info...	Opens the **Song Info dialog box**, where you can enter text information fields for the exported RMF file, such as copyright notice and performer credits.
Re-Import MIDI...	Replaces the selected Song's MIDI data from a Standard MIDI File (SMF) on disk. **Note:** The Beatnik Editor only imports MIDI Files, it does not edit them directly. To edit the individual MIDI notes and other events within a Song, you'll need to use a separate MIDI sequencer program and save your work as a Standard MIDI File. When working in this way, you'll use the **Re-Import MIDI** command every time you make a change in the sequencer and want to update the corresponding Song in your Beatnik Editor Session document. That's the only way to make the change show up in your exported RMF file.
Play	Starts playback of the selected Song. There's also a Play button in the **Player window**, and double-clicking a Song in **The Songs Tab** of a **Session window** also works.
Stop	Stops playback of the currently selected Song. There's also a Stop button in the **Player window**.

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Instrument menu

Commands for working with selected items in **The Instruments Tab** of a Session window.

Note: Some of these commands will only be available when an Instrument is selected and a Session window is in front.

Command	Description
New Instrument...	Creates a new, 'blank' instrument in the next available slot, titled **New Instrument**. To turn it into a useful Instrument, use the **Instrument Editor window**. **Note:** The new Instrument contains no Samples, so trying to play it (with the onscreen keyboard in the **Player window** or the **Live MIDI Input**) produces silence.
Edit Instrument...	Opens the **Instrument Editor window**, where you can inspect and edit the selected Instrument. **Note:** Only Custom Instruments can be edited. To edit a built-in Instrument, you'll have to first Copy it and Paste it, creating a Custom Instrument copy that can be edited.
Move Instrument...	Opens the **Move Instrument dialog box**, where you can set the selected Instrument's MIDI Program number to any unused number in either the Custom Melodic Instruments bank or the Custom Percussion Instruments bank. MIDI Program numbers are in the range 0 – 127. **Note:** Only Custom Instruments can be moved. To edit a built-in Instrument, you'll have to first Copy it and Paste it, creating a Custom Instrument copy that can be edited.

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Make Song Using

Creates a new, simple Song with the same name as the first selected Instrument, playing every Sample in the selected Instruments, all simultaneously. This may or may not meet your needs as a way to trigger the Instruments in your final production, however it may make it easy to audition the Instruments and their Samples as you're working in the Beatnik Editor.

> **Note:** If you have more than 15 Instruments selected, only the first 15 will be used in the created Song. This is because MIDI channel 10 is reserved for percussion, leaving only 15 available MIDI channels for triggering the Instruments.

The Song will contain one MIDI file Track for each created Instrument, and each Instrument's Track will contain one MIDI note for each Keymap Zone used in the Instrument. These notes will be same as the Keymap Zones' Root Keys, so the Samples will usually play at their natural pitches. All of the notes will begin at the same time, and will be the same length.

For example, if you select one Instrument using a single Keymap Zone, and a second Instrument that uses three Keymap Zones, the **Make Song Using** command will produce a Song with two tracks: Track 1 will contain one note (the Root Key of the one keymap zone), and Track 2 will contain three notes (the Root Keys for the three keymap zones).

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Sample menu

Commands for working with selected items in The Samples Tab of a Session window, selected waveform ranges in the Sample Editor window, and for managing the disk cache of compressed Sample copies.

Note: Some of these commands will only be available when a Sample is selected and one of the **Session windows** is in front, or when a waveform range is selected and a **Sample Editor window** is in front.

Command	Description
Edit Sample...	Opens the **Sample Editor window**, where you can inspect and edit the selected Sample. **Note:** Only Custom Samples can be edited, never the built-in Samples.
Compression...	Opens the **Compression dialog box**, where you can inspect and change the data compression setting for the selected Sample. To apply the same Compression type to multiple Samples, select them all and then select the **Compression...** command. **Note:** You can't change the Compression setting for built-in Samples – only Custom Samples.
Make Instrument Using	Creates one or more new, simple Instruments with the same names as the selected Samples, and using the selected Samples. When applied to multiple Samples, opens the **Make Instrument dialog box** dialog box, with additional options.
Make Song Using	Creates a new, simple Song with the same name as the selected Sample, and one or more new, simple Instruments with the same names as the selected Samples, and using the selected Samples. This is the same effect produced by doing a **Make Instrument Using** followed by a **Make Song Using** the new Instruments. For details on the created Song, see the **Make Song dialog box**. When applied to multiple Samples, opens the **Make Song dialog box**, with additional options.
Clear compression cache...	Opens the **Clear compression cache dialog box** where you can clear the cache of compressed copies of your Samples. This command won't be available if the disk cache is empty.
Delete uncompressed originals...	Opens the **Delete uncompressed originals dialog box** where you can delete the original, uncompressed versions of all compressed Samples stored in your Session document. Only available for Sessions with uncompressed Samples.

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Crop	In the **Sample Editor window**, with a range of the Sample selected, trims away all sound before and after the selection.
Normalize	In the **Sample Editor window**, with a range of the Sample selected, increases the selection's volume to the highest possible level before distorting.
Fade In	In the **Sample Editor window**, with a range of the Sample selected, creates a fade-in across the entire selection.
Fade Out	In the **Sample Editor window**, with a range of the Sample selected, creates a fade-out across the entire selection.
Zoom Normal	In the **Sample Editor window**, resets the X and Y zoom levels.
Zoom Loop Start	In the **Sample Editor window**, zooms in on the loop start.
Zoom Loop End	In the **Sample Editor window**, zooms in on the loop end.
Jump to Loop Start	In the **Sample Editor window**, if the loop start isn't visible, horizontally scrolls to it.
Jump to Loop End	In the **Sample Editor window**, if the loop end isn't visible, horizontally scrolls to it.

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Window menu

Commands for working with the Beatnik Editor's windows.

You can close Session document windows, bring any open window to the front, or open the Player or JavaScript window if they aren't already open.

Command	Description
Close All Documents	Closes all open Session documents, leaving the **Player** and **JavaScript** windows open. If you haven't saved your latest changes, an alert will appear asking whether you want to save the Sessions before closing them.
Close All	Closes all windows, including all Sessions and the **Player** and **JavaScript** windows. If you haven't saved your latest changes, an alert will appear asking whether you want to save the Session before closing.
Player	Brings the **Player window** to the front, opening it if necessary.
JavaScript	Brings the **JavaScript window** to the front, opening it if necessary.
(Session window names)	Brings any one of your **Session windows** to the front, opening it if necessary.

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Help menu

Commands for getting information about the Beatnik Editor.

Command	Description
Contents	Displays the **Help Contents dialog box**, where you can access the Beatnik Editor User's Guide and online help system. **Note:** You must have a Web browser for this command to work.
Beatnik on the Web	Opens your Web browser and takes you to the Beatnik Web site: **http://www.beatnik.com** **Note:** Your computer must be connected to the Internet for this Web link to work.
About Beatnik Editor Windows only	Displays the **About Beatnik Editor dialog box**, with registration information, the software release version, and related information. **Note:** For Mac OS, this item appears in the **Apple Menu**.

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Window Reference

How to use all of the Beatnik Editor's Windows and Dialog Boxes.

Note: This Window Reference is organized into sections, according to the application menu used to access the window.

Topics:

File Menu windows
Song Menu windows
Instrument Menu windows
Sample Menu windows
Window Menu windows
Help Menu windows

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File Menu windows

How to use the Dialog Boxes accessed from the File menu.

Topics:

Import dialog box
Export RMF dialog boxes
Save Audio File dialog box
Preferences dialog box (for Mac OS, this item appears in the Edit menu)

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Import dialog box

Imports MIDI files and/or digital audio files into your Session document, for use in exported RMF files.

Note: The **Import** dialog box always adds files into the current Session document. Be sure the right Session document window is in front before you give the **Import** command – just click in the window, or select it from the **Window menu**.

Note: For best results, use standard filename extensions for MIDI and digital audio files you may want to import into the Beatnik Editor (see table below). On Mac OS, files with bad (missing or incorrect) type and creator codes whose filenames don't end with a recognized extension will not appear in folder listings of importable files.

The Beatnik Editor uses a conventional file opening dialog for selecting files to import:

To import MIDI and/or digital audio files into the current Session document:

1. Navigate to the folder containing the files you want to import.
2. Use the **Show:** pop-up menu to display the file types you're looking for.

   Note for Mac OS Users: The **Show:** menu relies on Mac OS file types and creator codes, plus filename extensions, to determine which files will appear. In rare cases, valid files will be omitted because they don't have a recognized type or creator, and the filenames don't end with a recognized extension. For example, files transferred from Windows will frequently have missing or incorrect Mac OS file type and creator codes – and if the name of such a file doesn't end in one of the recognized extension (.mid, .wav, .aif, etc.) then the file won't be listed. To correct the problem, rename the file with the correct extension for its format (or use a utility to reset the Mac OS file type and creator).
3. Select the files you want to import.

   You can import any of the music and sound file formats listed in the table below.
4. Click the **Open** button.

   Imported files appear as new items in the Session document, depending on the file type:

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- Digital audio files will appear in the **Samples** tab, as new Custom Samples
- MIDI files will appear in the **Songs** tab, as new Custom Songs
- RMF files will appear in the **Songs** tab, as Imported RMF Songs.

File Format	Filename Extension	Type	Description	When Imported, Creates a New…
WAVE	.wav	audio	Microsoft WAVE	Custom Sample
AIFF	.aif .aiff	audio	Audio Interchange File Format	Custom Sample
Sound Designer II	.sd2	audio	Digidesign Sound Designer II	Custom Sample
AU	.au	audio	Sun/Next audio	Custom Sample
MP3	.mp3	audio	MPEG 1 Layer 3 audio	Custom Sample
MIDI	.mid .smf .midi .rmi	MIDI	Standard MIDI File	Custom Song
RMF	.rmf	audio + MIDI combo	Beatnik Rich Music Format	Imported RMF Song

Note: You won't be able to play imported RMFX files. Although importing an RMFX file does produce an Imported RMF Song in your Session document, recall that RMFX files contain no MIDI score data. As a result, there aren't any notes for the **Play** command or button to use, and so no sound is produced. For more information on RMFX files, see the **Advanced Techniques** section for **Creating Banks of Triggerable Samples (RMFX)**.

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Export RMF dialog boxes

Creates an RMF or RMFX file from the selected Song, Instrument, or Sample resources.

The whole purpose of the Beatnik Editor is to create RMF files. There are several types of RMF files and several ways to create them, and the **Export RMF...** command is used for all of them. When you issue the **Export RMF...** command, the Beatnik Editor displays one of the following dialog boxes, depending on the type and number of resources you've selected:

Export RMF File dialog box
Export Multiple RMF Files dialog box
Export RMF from Instrument dialog box
Export RMF from Multiple Instruments dialog box
Export RMF from Sample dialog box
Export RMF from Multiple Samples dialog box

Before describing these dialog boxes, a brief introduction for users of previous versions of the Beatnik Editor is in order. For background information on RMF files, see **About Beatnik and the RMF File Format**.

> **Note:** Because RMF is a secure file format, an RMF file cannot be edited after you create it. **The only way to change an RMF file is to change the resources that go into it, and then use the Beatnik Editor to re-generate the RMF file.** If you want to be able to update an RMF files with any future change, you **must** be sure to retain the Beatnik Editor Session file you used to generate the RMF file.

Changes to 'Export RMF...' since Beatnik Editor version 1

If you've used earlier versions of the Beatnik Editor, you may recall that creating some kinds of RMF files required a lot of manual work. In particular, creating an RMF file for use as a bank of triggerable Samples – known as an RMFX file – was pretty complicated because you'd have to build all the Instruments and keymap zones, and then place all the Samples into the keymap zones by hand.

In the Beatnik Editor version 2, we've changed the RMF Export procedure to automate most of that sort of grunt work. Now, you can just select the Songs or Instruments or Samples that you want in your RMF file, and issue the **Export RMF** command – the Beatnik Editor will take care of all the details it can, and display a dialog box asking for your instructions on how to handle the optional parts. Although these descriptions may seem wordy, you'll find it quicker and easier to generate RMF files now.

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Export RMF File dialog box

When exporting an RMF file containing just a single Song, the Song data is always included in the RMF file – so the only question to answer is what Instruments, if any, you want to include.

The **Export RMF File** dialog box looks like this:

Topics:

Working with the Export RMF File dialog box
What Instruments Should You Include?

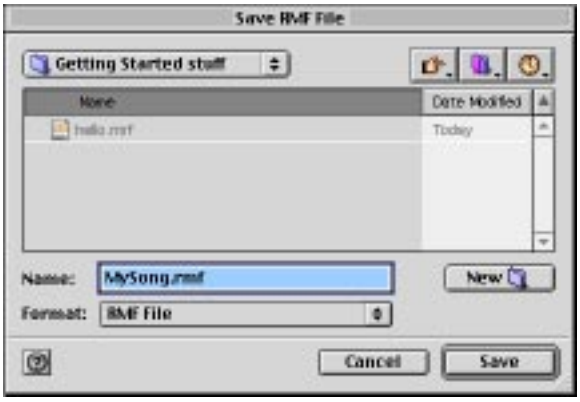
Working with the Export RMF File dialog box

When the Export RMF Song dialog box opens, the listbox shows all Instruments that the Song you're Exporting uses, with all of the Custom Instruments (if any) selected. To add or remove individual Instruments to the selection, use click and shift-click. You can also use the **All**, **Custom**, and **None** buttons to add or remove groups of Instruments to the selection.

For help deciding which Instruments to select, see **What Instruments Should You Include?**, below.

When you're happy with your selection of Instruments, click on the **OK** button to close the dialog box.

Finally, use the **Save RMF File** dialog box to pick a folder and provide a filename for your exported RMF file:



Notes for Mac OS Users:

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- In some versions of Mac OS, an erroneous item may appear in the **Format:** menu. Be sure **not** to select the option '**Beatnik Editor document**'.
- The Beatnik Editor will automatically add **.rmf** to the filename.
- The Mac OS file creator code will be '**MPL2**'.

What Instruments Should You Include?

When the Export RMF Song dialog box opens, the listbox shows all Instruments that the Song you're Exporting uses, with all of the Custom Instruments (if any) selected. **In most cases** (including RMF files intended for use in the Beatnik Player for Web browsers) **these Custom Instruments are the only ones you need to include in the RMF file**.

That's because most Beatnik playback environments include their own permanent copy of the Built-In Instruments. For example, the Beatnik Player for Web browsers always has the full set of Built-In Instruments, so there's no need to supply another copy of each Instrument within the RMF file. There are a few exceptions to this rule, however. If you expect your RMF file to be used in Beatnik playback environments that don't (or aren't guaranteed to) include the Built-In Instruments, then you should also include any Built-In Instruments that are used.

> **Note:** Specifically, the Beatnik Audio Engine for C and C++ and the Beatnik Xtra for Director and Shockwave may or may not include the Built-In Instruments, depending on which sample library file is being used at the time. Check your Beatnik documentation for details.

Of course, none of the Beatnik playback environments can be expected to already have a copy of any of your Custom Instruments – so in order to make them available at playback time, you'll need to include any Custom Instruments that are used. If the selected Song uses any Custom Instruments, and you fail to include them in the RMF file, then when the RMF file is played back all notes intended for those Custom Instruments will be missing.

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Export Multiple RMF Files dialog box

When exporting multiple Songs, each one will be saved to a separate RMF file containing just a single Song. The only question to answer is what Instruments, if any, you want to include in each RMF file. (The Song data is always included.)

The **Export Multiple RMF Files** dialog box asks for your answer to that question:

Topics:

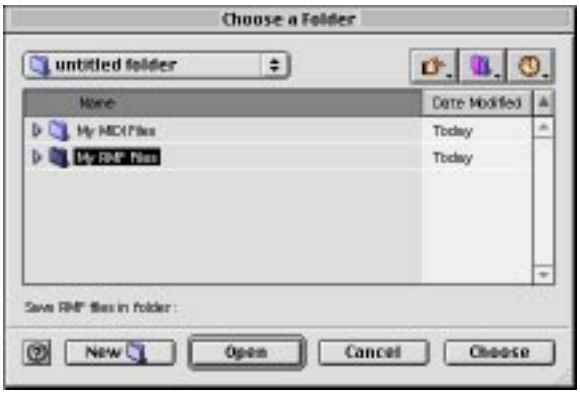
Working with the Export Multiple RMF Files dialog box
What Instruments Should You Include?

Working with the Export Multiple RMF Files dialog box

This dialog box is very simple to use: just choose one of the three options by clicking on the option you prefer. For help deciding which Instruments to select, see **What Instruments Should You Include?**, below.

When you're happy with your selection, click on the **OK** button to close the dialog box.

Finally, use the **Choose A Folder** dialog box to pick a folder for your exported RMF files:



The filenames will be taken from the Song names, but will all end with the **.rmf** extension.

Note for Mac OS Users: The Mac OS file creator code will be '**MPL2**'.

What Instruments Should You Include?

You have three options here. In most cases (including RMF files intended for sonifying Web pages), **Include All Custom** Instruments is the best choice.

- **Include No Instruments** means none of the generated RMF files will include any Instruments,

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neither Custom nor Built-In, even if used by the Songs.

Don't use this option if any of the selected Songs depend on Custom Instruments – the Custom Instruments won't be included, and when the RMF file is played, all notes that use the Custom Instruments will be missing.

If the selected Songs use only Built-In Instruments, and you know the RMF files will be played in Beatnik playback environments that provide the Built-In Instruments, then it's OK to use the **Include No Instruments** option.

The Beatnik Player for Web browsers always includes the Built-In Instruments; however the Beatnik Audio Engine for C and C++ and the Beatnik Xtra for Director and Shockwave may or may not include the Built-In Instruments, depending on which sample library file is being used at the time. Check your Beatnik documentation for details.

- **Include All Custom** Instruments means that each generated RMF file will include any of your Custom Instruments that the respective Song uses, but none of the Built-In Instruments it uses.

  This is usually the best choice, because most Beatnik playback environments include their own copy of the Built-In Instruments. For example, the Beatnik Player for Web browsers always has the full set of Built-In Instruments. Of course those players don't have a copy of your Custom Instruments, so to make them available at playback time you'll need to include them in the RMF files.

- **Include All Instruments** means that each generated RMF file will include all Custom and Built-In Instruments it uses.

  Use this option if you expect the RMF files to be used in Beatnik playback environments that don't (or aren't guaranteed to) include the Built-In Instruments. (The Beatnik Audio Engine for C and C++ and the Beatnik Xtra for Director and Shockwave may or may not include the Built-In Instruments, depending on which sample library file is being used at the time. However, the Beatnik Player for Web browsers always includes the Built-In Instruments.)

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Export RMF from Instrument dialog box

When exporting from one or more Instruments, all selected Instruments are combined into a single RMF file. The only question to answer is whether you want the Beatnik Editor to generate a Song and include it in the RMF file.

The **Export RMF from Instrument** dialog box asks for your answer to this question:

Working with the Export RMF from Instrument dialog box

This dialog box gives you a two-way choice:

- The **Include song data in file (creates playable song file)** option automatically generates a Song that plays one note on the selected Instrument, and adds it to the exported RMF file. If you're exporting a single Instrument, and you want to hear the Instrument's default Sample when the RMF file is played, then you should select this option.

  An RMF file with a Song is considered a 'normal' playable file – in a Web page it can be 'autostarted,' and will respond to Music Object JavaScript commands like `play()` and `stop()`. If you have multiple Instruments selected, you get a chord with one note for each Instrument, with each note on a separate MIDI file track.

- The **Do not include song data** option creates an RMF file without any Song – what we call an RMFX file, because one of its main uses is for sound FX. If you're exporting multiple Instruments, you should probably select this option. (The Song that the Beatnik Editor would generate for you would cause all the Instruments to play at once – which in most cases won't be what you want.)

  Note: You can't 'autostart' an RMFX file in a Web page because there's no Song data to play, and it won't respond to Music Object JavaScript commands like `play()` and `stop()`. However, you can trigger specific sounds at any time by selecting Instruments with the command `setProgramBank()` and then using `noteOn()` and `noteOff()`, or `playNote()`.

  Note: The filename of an RMFX file will end in **.rmf**, not **.rmfx**.

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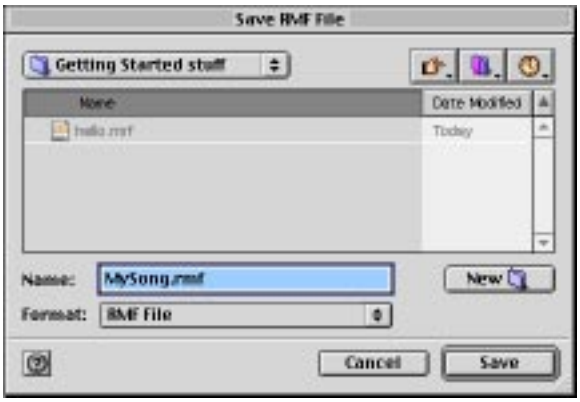
When you're happy with your selection, click on the **OK** button to close the dialog box. Finally, use the **Save RMF File** dialog box to pick a folder and provide a filename for your exported RMF file:



Notes for Mac OS Users:

- In some versions of Mac OS, an erroneous item may appear in the **Format:** menu. Be sure **not** to select the option '**Beatnik Editor document**'.
- The Beatnik Editor will automatically add **.rmf** to the filename.
- The Mac OS file creator code will be '**MPL2**'.

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Export RMF from Multiple Instruments dialog box

Note: This command produces a single RMF file containing all the selected Instruments, not one RMF file per selected Instrument.

Note: If you have more than 15 Instruments selected, only the first 15 will be used in the exported RMF file. This is because MIDI channel 10 is reserved for percussion, leaving only 15 available MIDI channels for triggering the Instruments.

When exporting from one or more Instruments, all selected Instruments are combined into a single RMF file. The only question to answer is whether you want the Beatnik Editor to generate a Song and include it in the RMF file.

The **Export RMF from Multiple Instruments** dialog box asks for your answer to this question:

Working with the Export RMF from Instrument dialog box

This dialog box gives you a two-way choice:

- The **Include song data in file (creates playable song file)** option automatically generates a Song that plays one note on the selected Instrument, and adds it to the exported RMF file. If you're exporting a single Instrument, and you want to hear the Instrument's default Sample when the RMF file is played, then you should select this option.

  An RMF file with a Song is considered a 'normal' playable file – in a Web page it can be 'autostarted,' and will respond to Music Object JavaScript commands like `play()` and `stop()`. If you have multiple Instruments selected, you get a chord with one note for each Instrument, with each note on a separate MIDI file track.

- The **Do not include song data** option creates an RMF file without any Song – what we call an RMFX file, because one of its main uses is for sound FX. If you're exporting multiple Instruments, you should probably select this option. (The Song that the Beatnik Editor would generate for you would cause all the Instruments to play at once – which in most cases won't be what you want.)

  Note: You can't 'autostart' an RMFX file in a Web page because there's no Song data to play, and it won't respond to Music Object JavaScript commands like `play()` and `stop()`. However, you can trigger specific sounds at any time by selecting Instruments with the command `setProgramBank()` and then using `noteOn()` and `noteOff()`, or `playNote()`.

  Note: The filename of an RMFX file will end in **.rmf**, not **.rmfx**.

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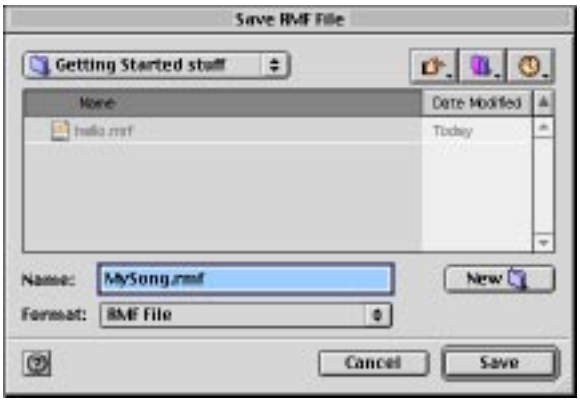
When you're happy with your selection, click on the **OK** button to close the dialog box. Finally, use the **Save RMF File** dialog box to pick a folder and provide a filename for your exported RMF file:



Notes for Mac OS Users:

- In some versions of Mac OS, an erroneous item may appear in the **Format:** menu. Be sure **not** to select the option '**Beatnik Editor document**'.
- The Beatnik Editor will automatically add **.rmf** to the filename.
- The Mac OS file creator code will be '**MPL2'**.

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Export RMF from Sample dialog box

When exporting an RMF file from just a single Sample, there are two question to answer:

- Do you want the Beatnik Editor to generate a Song and include it in the RMF file?
- To make the Sample available to be played, the Beatnik Editor will have to create an Instrument for it – so what Bank and what Instrument Number do you want it to use for that Instrument?

The **Export RMF from Sample** dialog box asks for your answers to these questions:

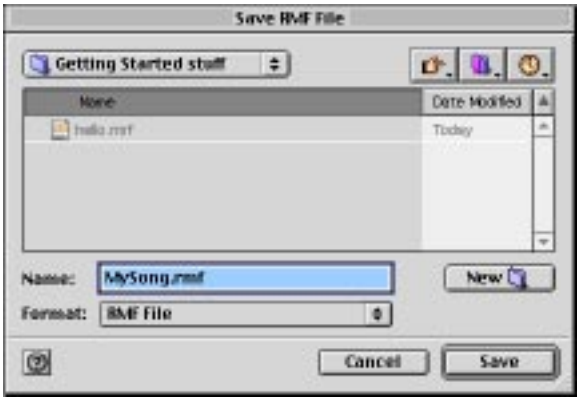
Topics:

Working with the Export RMF File dialog box
Should You Include a Song in Your RMF File? (RMF or RMFX?)
What Bank and Instrument Number Should You Use?

Working with the Export RMF from Sample dialog box

See the following two headings for guidance on how to answer the two questions.

When you're happy with your choices, click on the **OK** button to close the dialog box. Finally, use the **Save RMF File** dialog box to pick a folder and provide a filename for your exported RMF file:



Notes for Mac OS Users:

- In some versions of Mac OS, an erroneous item may appear in the **Format:** menu. Be sure **not** to select the option '**Beatnik Editor document**'.
- The Beatnik Editor will automatically add **.rmf** to the filename.

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- The Mac OS file creator code will be '**MPL2**'.

Should You Include a Song in Your RMF File? (RMF or RMFX?)

Here's how to decide whether you should include a Song in your RMF file:

- The **Include song data in file (creates playable song file)** option automatically generates a Song that plays one note on the selected Instrument, and adds it to the exported RMF file. If you're exporting a single Instrument, and you want to hear the Instrument's default Sample when the RMF file is played, then you should select this option.

  An RMF file with a Song is considered a 'normal' playable file – in a Web page it can be 'autostarted,' and will respond to Music Object JavaScript commands like `play()` and `stop()`. If you have multiple Instruments selected, you get a chord with one note for each Instrument, with each note on a separate MIDI file track.

- The **Do not include song data** option creates an RMF file without any Song – what we call an RMFX file, because one of its main uses is for sound FX. If you're exporting multiple Instruments, you should probably select this option. (The Song that the Beatnik Editor would generate for you would cause all the Instruments to play at once – which in most cases won't be what you want.)

  Note: You can't 'autostart' an RMFX file in a Web page because there's no Song data to play, and it won't respond to Music Object JavaScript commands like `play()` and `stop()`. However, you can trigger specific sounds at any time by selecting Instruments with the command `setProgramBank()` and then using `noteOn()` and `noteOff()`, or `playNote()`.

  Note: The filename of an RMFX file will end in **.rmf**, not **.rmfx**.

What Bank and Instrument Number Should You Use?

Custom Instruments always appear in Bank 2, but you can place the created Instrument(s) in either the Melodic side of Bank 2, or the Percussion side of Bank 2. Select **Bank 2 Custom - Melodic** unless you are certain that you need to create a Percussion Bank Instrument (which is rare).

You can use any of the 128 available Instrument numbers (0–127) in either side.

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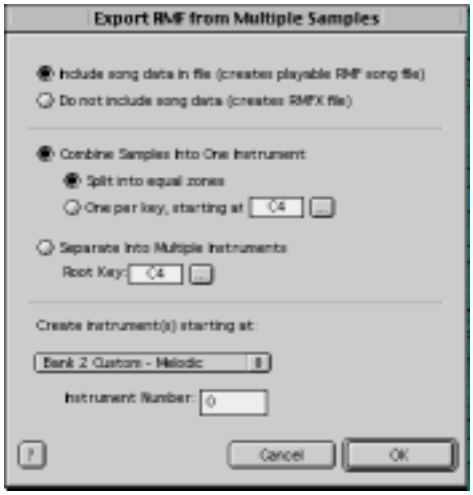
Export RMF from Multiple Samples dialog box

Note: This command produces a single RMF file containing all the selected Samples, not one RMF file per selected Sample.

When exporting an RMF file from multiple Samples, you have three questions to answer:

- Do you want the Beatnik Editor to generate a Song and include it in the RMF file?
- To make the Samples available to be played, the Beatnik Editor will have to create at least one Instrument for them, and there a lot of possible ways to do that. Do you want the Samples to appear as separate Instruments, or do you want them combined into one multi-zoned Instrument? Either way, there are additional questions to answer about how to set up the Keymap Zones.
- What Bank and what Instrument number (or numbers) do you want to use for the created Instrument(s)?

The **Export RMF from Multiple Samples** dialog box asks for your answers to these questions:



Topics:

Working with the Export RMF from Multiple Samples dialog box
Should You Include a Song in Your RMF File? (RMF or RMFX?)
What Kind of Instrument(s) Should You Create?
What Bank and Instrument Number Should You Use?

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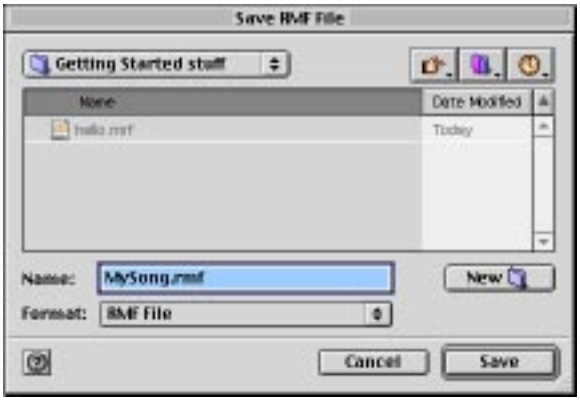
Working with the Export RMF from Multiple Samples dialog box

See the following three headings for guidance on how to answer the three questions.

When you're happy with your choices, click on the **OK** button to close the dialog box. Finally, use the **Save RMF File** dialog box to pick a folder and provide a filename for your exported RMF file:



Notes for Mac OS Users:

- In some versions of Mac OS, an erroneous item may appear in the **Format:** menu. Be sure **not** to select the option '**Beatnik Editor document**'.
- The Beatnik Editor will automatically add **.rmf** to the filename.
- The Mac OS file creator code will be '**MPL2**'.

Should You Include a Song in Your RMF File? (RMF or RMFX?)

Here's how to decide whether you should include a Song in your RMF file:

- The **Include song data in file (creates playable song file)** option automatically generates a Song that plays one note on the selected Instrument, and adds it to the exported RMF file. If you're exporting a single Instrument, and you want to hear the Instrument's default Sample when the RMF file is played, then you should select this option.

  An RMF file with a Song is considered a 'normal' playable file – in a Web page it can be 'autostarted,' and will respond to Music Object JavaScript commands like `play()` and `stop()`. If you have multiple Instruments selected, you get a chord with one note for each Instrument, with each note on a separate MIDI file track.

- The **Do not include song data** option creates an RMF file without any Song – what we call an RMFX file, because one of its main uses is for sound FX. If you're exporting multiple Instruments, you should probably select this option. (The Song that the Beatnik Editor would generate for you would cause all the Instruments to play at once – which in most cases won't be what you want.)

  Note: You can't 'autostart' an RMFX file in a Web page because there's no Song data to play, and it won't respond to Music Object JavaScript commands like `play()` and `stop()`. However, you can trigger specific sounds at any time by selecting Instruments with the command `setProgramBank()` and then using `noteOn()` and `noteOff()`, or `playNote()`.

  Note: The filename of an RMFX file will end in **.rmf**, not **.rmfx**.

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What Kind of Instrument(s) Should You Create?

If you want to create a single new Instrument from your selected Samples, the **Combine Samples Into One Instrument** option spreads the Samples across one Instrument's keyboard layout. These sounds can be distributed in two ways. The first is **Split into equal zones**, which results in multiple pitches being available for each Sample. The second option, **One per key**... is typically used for Percussion Instruments where different untransposable sounds reside on adjacent keys. The **starting at** field lets you choose the keyboard note your individual Samples will start on, and each subsequent Sample will be placed on the next available higher key.

If you prefer to split each Sample out into a separate Instrument, choose the **Separate into Multiple Instruments** option. All of the Instruments will use the same Root Key, which you can set.

> **Note:** If you have more than 15 Samples selected, only the first 15 will produce new Instruments. This is because MIDI channel 10 is reserved for percussion, leaving only 15 available MIDI channels for triggering the Instruments.

What Bank and Instrument Number Should You Use?

Custom Instruments always appear in Bank 2, but you can place the created Instrument(s) in either the Melodic side of Bank 2, or the Percussion side of Bank 2. Select **Bank 2 Custom - Melodic** unless you are certain that you need to create a Percussion Bank Instrument (which is rare).

You can use any of the 128 available Instrument numbers (0–127) in either side.

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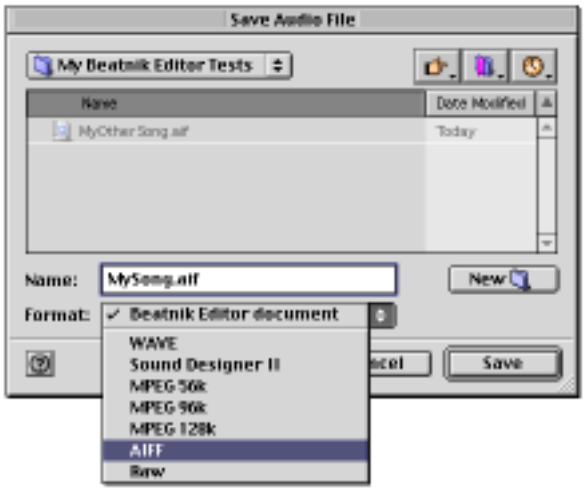
Save Audio File dialog box

Creates a digital audio file 'print' of the selected Song.

Note: Does not work on multiple Songs at once – only one Song at a time.



The **Save Audio File** dialog box is accessed from the **Export as Audio...** command in the **File** menu, and provides a way to export the currently selected Song in any supported digital audio format – AIFF, WAV, raw samples, or MP3; for Mac OS users, Sound Designer II is also available. The selected Song is not changed in any way, and remains in the Session document.

The generated audio file will sound exactly the same as the Song, and will have the same duration. Any MIDI note events will be 'rendered' into the equivalent digital audio output, so in most cases the saved audio file will be much larger than the original MIDI file.

Note: Converting MIDI to digital audio forecloses all interactive event control when the file is played back – for example: muting, soloing, live program changes or volume changes to individual Instruments, and so forth.

Notes for Mac OS Users:

- The Beatnik Editor will automatically add an appropriate extension to the filename, based on the selected format: **.wav**, **.sd2**, **.mp3**, **.aif**, or **.raw**.
- The Mac OS file type will reflect your selected format.
- The Mac OS file creator will be Apple QuickTime, whose creator code is '**TVOD**'.

Working with the Save Audio File dialog box

To create your audio file, use the dialog box controls to:

1. Choose an appropriate folder, or create a new one.
2. Provide an appropriate filename.
3. Select your desired digital audio file format from the **Save as type:** (Windows) or **Format:**

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(Mac OS) pop-up menu.

Note for Mac OS Users: In some versions of Mac OS, an erroneous item may appear in the **Format:** menu. Be sure **not** to select the option '**Beatnik Editor document**'.

4. When you're happy with your choices, click on the **Save** button to close the dialog box.

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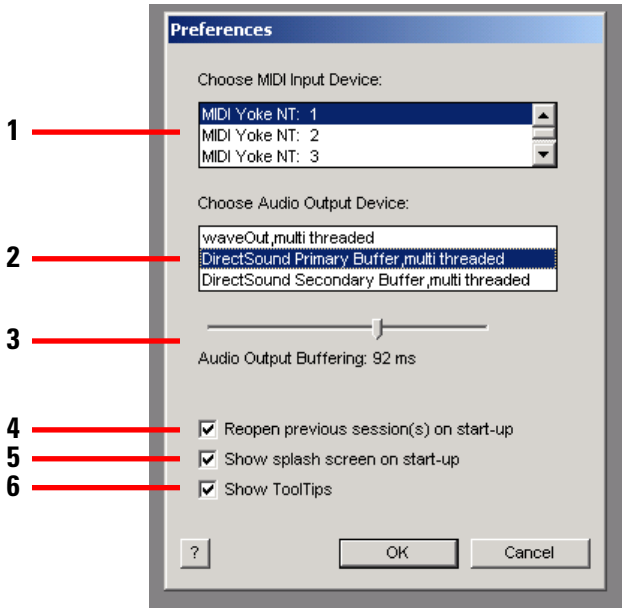
Preferences dialog box

General Beatnik Editor operating settings.

Note: Your Beatnik Editor preferences are stored in the file **BeatnkEditorPrefs.bpf**.



The Beatnik Editor uses a conventional **Preferences** dialog, containing just a few items:

Item	Use
1 Choose MIDI Input Device list	Determines which MIDI interface hardware, or MIDI router software, the **Player window** and Beatnik MIDI Synthesizer will respond to. MIDI events arriving from this source will drive the synthesizer in real time. Notes, Program Changes and Bank Select events will play notes, set the Beatnik Instrument for each of the 16 MIDI channels, and control other aspects of the synth and mixer. See also: **Live MIDI Input**.
2 Choose Audio Output Device list (Windows only)	Determines which of the available audio output methods the Beatnik MIDI Synthesizer will use for its output.

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3 Audio Output Buffering slider (Windows Only)	Adjusts the size of the Beatnik Editor's audio output buffer, in milliseconds. If the audio output buffer is too short, you'll hear crackling, 'glitches' or 'break-up' in the Beatnik synthesizer's sound, and you should increase the buffer size until the problem goes away. **Suggested buffer sizes:** **Windows 95/98:** Can be as short as 11 milliseconds **Windows NT:** 50 milliseconds or more **See Also: About Audio Output Buffering**, below.
3 Reopen previous session(s) on start-up checkbox	When checked, launching the Beatnik Editor will always restore the same set of Session documents that were open when you last exited the program.
4 Show splash screen on start-up checkbox	When checked, launching the Beatnik Editor will always display the program's name and version number.
5 Show ToolTips checkbox (Windows Only)	When checked, the Beatnik Editor will pop up a brief explanation of any onscreen item your cursor lingers over.

About Audio Output Buffering

The purpose of the audio output buffer is to keep sound flowing to the speakers even when the computer's CPU is experiencing heavy usage. The longer the buffer, the more audio output is 'on tap' to play out while the CPU is busy processing tasks other than audio. Larger audio output buffers, however, make the sound take longer to reach the speakers. If this delay, known as 'latency,' is long enough, you'll notice it when playing a MIDI instrument, or when playing the keyboard in the **Player window**, or when working with a MIDI sequencer.

See also: **Coping with Latency**.

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Song Menu windows

How to use the Dialog Boxes accessed from the Song menu.

Topics:

Song Settings dialog box
Song Info dialog box

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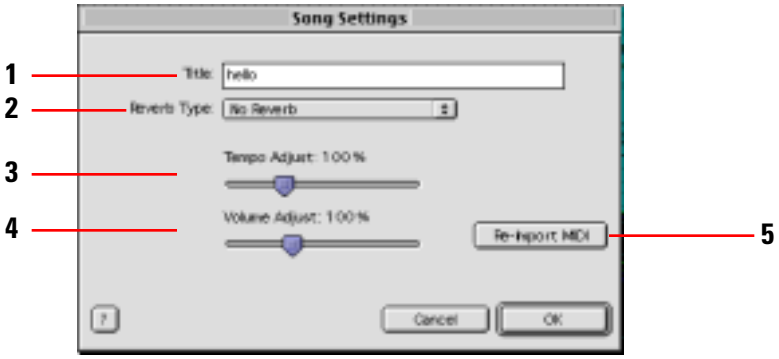
Song Settings dialog box

Lets you inspect or change a Song's title and playback properties, or update its MIDI File data.



Item	Use
1 Title	The name shown in **The Songs Tab** of your **Session windows**. Changing the name here produces the same result as changing it there. When the Song is created, its name is taken from the imported Standard MIDI file.
2 Reverb Type	Determines which digital reverberation type the Beatnik Audio Engine will use for the Song when loaded and played. Reverb types simulate the spacious sound of various sizes and kinds of acoustical rooms. For descriptions of the listed reverb types, see the **Effects: Reverb and Chorus** heading in the **For Musicians** section. **Note:** Setting a reverb type here doesn't necessarily guarantee the Song will be heard with that reverb. The Beatnik mixer only has one reverb processor, which can be set to a different reverb type at any time by MIDI Song data, or with interactive program controls. Also, each Instrument may bypass the reverb processor. **Note:** Using reverb increases the CPU load at playback time, sometimes dramatically.

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3 Tempo Adjust	Sets the Song's playback tempo, as a percentage of the tempo stored in the imported MIDI file (25% – 300%). This is a convenience feature that lets you adjust the tempo without having to re-edit the MIDI file in a sequencer, as you'd otherwise have to do. A **Tempo Adjust** setting of 100% will play at the same tempo as the imported MIDI file, values over 100% play faster, and values below 100% play slower. For example, with a **Tempo Adjust** setting of 50% the Song would play at half the tempo of the original MIDI file.
4 Volume Adjust	Sets the Song's playback volume, as a percentage of normal volume (5% – 300%). This is a convenience feature that lets you adjust the volume without having to re-edit the MIDI file in a sequencer or adjust all the Instrument volumes individually, as you'd otherwise have to do. A **Volume Adjust** setting of 100% will play at normal volume, values over 100% play louder, and values below 100% play quieter. For example, with a **Volume Adjust** setting of 50% the Song would play at half normal volume. **Note:** Excessive volume settings may produce digital distortion.
5 Re-Import MIDI button	Updates the Song's MIDI File (notes) data from a Standard MIDI file on disk, using the **Import dialog box**. To keep your RMF files in sync with the composer/arranger, be sure to re-Import every Song's MIDI data every time it changes. **Note:** The Beatnik Editor doesn't edit the notes and other events inside MIDI Files – you need a separate MIDI sequencer program for that. Every time you make changes in the sequencer, you'll have to re-import the updated MIDI file into the Song.

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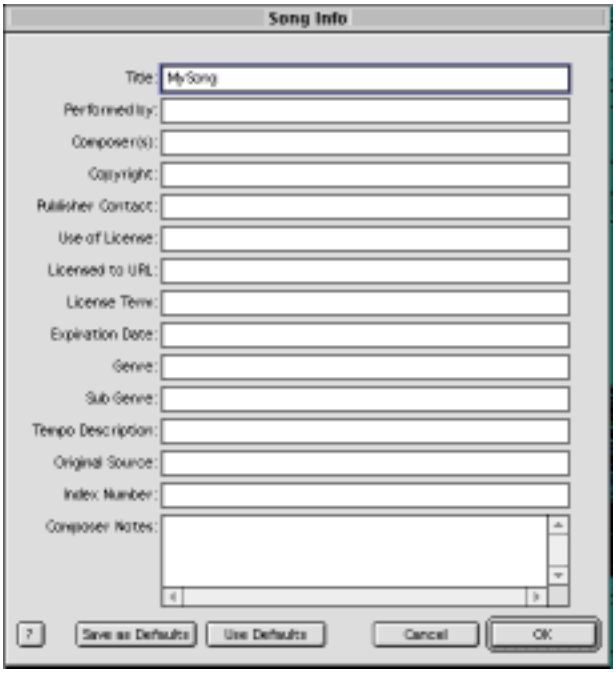
Song Info dialog box

Lets you inspect or change the RMF 'meta-data' information for one or more selected Songs, including copyright notice and credits.



Topics:

About Song Info Fields
How to Fill In the Info Fields
Editing Song Info for Multiple Songs
About Default Settings
URL Links in Song Info Fields

About Song Info Fields

The **Song Info** dialog box contains 15 text fields that are included in RMF Files exported from the Song. Listeners can view most of this information in Web browsers while the RMF file is playing, using the Beatnik Player control panel. This is how you attach your copyright and license information to the RMF files you release onto the Web. Web page and Shockwave developers can also read the text fields with the Music Object `getInfo()` method.

> **Note:** The following fields are primarily intended to help organize music libraries, and so **do not** appear in the Beatnik Player's control panel display: **Genre**, **Sub-Genre**, **Tempo Description**, and **Original Source**.

A few things to keep in mind about the **Song Info** fields:

- RMF is a secure file format. Once your Song is exported to RMF, any attempt to tamper with these Info fields – such as your copyright notice or license term – will render the file unusable. This is a good thing.

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- RMF's security also means that if you lose your Session file, you won't be able to change your **Song Info** fields any more! If you care about being able to make future adjustments to your RMF files – either in the **Song Info** or in the audible content – **be sure to retain the Beatnik Editor Session files** you made them from.
- **Song Info** entry fields can contain large amounts of text – up to 32,768 characters in each field. However, in the Beatnik Player for Web browsers, only about the first 50 characters will be visible (subject to the user's system font and point size settings). If you intend to use large amounts of **Song Info** text, you'll probably want to prepare the text in a separate text editor program, and then use the clipboard to copy and paste into the text entry fields in the **Song Info** dialog box. The fields are limited in size to discourage very large text blocks.
- Another reason to avoid very long text is that every character of **Song Info** you use adds one byte to the size of your RMF file – so if you want to minimize the size of your RMF files, keep your **Song Info** entries brief.

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How to Fill In the Info Fields

The following table lists the available fields and explains how to fill them in.

Field	Description	Example
Title	Title of the Song	Go Doe Go
Performed by	Name of performer/group	The Doe Boys
Composer(s)	Name of composer	Joe Doe
Copyright	Copyright notice	© 2000 Joe Doe
Publisher Contact	How to reach the Song's publisher to learn more about licensing it	www.DoeMusicCompany.com 1-800-555-1234
Use of License	Uses for which the Song has been licensed	For Doe Boys Website Promotion Only
License URL	Web URL from which the RMF file is authorized to be served	www.doeboys.com
License Term	Duration of license	1 year
Expiration Date	End of license term	Dec 31, 2000
Genre	The Song's musical style (general) (not displayed in Beatnik Player)	House
Sub Genre	The Song's musical style (specific) (not displayed in Beatnik Player)	Dubno
Tempo Description	Descriptive only; tempo BPM is set in the **Song Settings dialog box**. (not displayed in Beatnik Player)	A lively waltz!
Original Source	Where did the Song data come from? (not displayed in Beatnik Player)	The Doe Boys
Index Number	For music library management	DoeLib volume 23, index 47
Composer Notes	Miscellaneous notes about the Song.	This file loops seamlessly.

Editing Song Info for Multiple Songs

If you entered the **Song Info** dialog box with more than one Song selected, the number of selected Songs will appear near the top of the dialog box, and the changes you make here will be applied to **all** of those Songs when you click the **OK** button. Any fields you don't change will retain their current contents.

Some fields will have different existing contents for different Songs – for example, the **Title** is likely to be different for each Song. These fields will be indicated with the message **Multiple**

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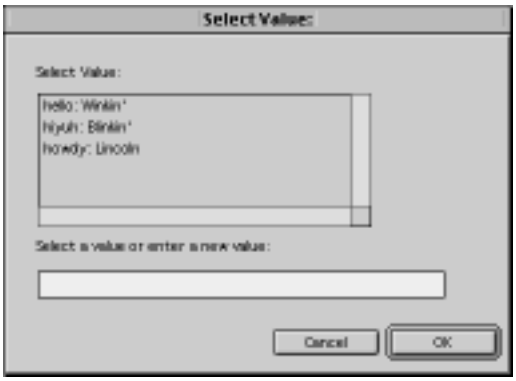
selection with unmatched values, and a **...** button will appear to the right of the item:

To enter new information into such a field, replacing all selected Song's existing information for that field:

1. Click the **...** button.

   A **Select Value:** dialog box will appear listing all the different values that the selected Songs contain for that field, and a text entry box in case you want to enter a completely different value.



2. Select one of the entries from the list, or type your new field contents into the text entry box.
3. Click the **OK** button.

   The **Select Value:** dialog box will close, returning you to the **Song Info** dialog box with your field filled in.

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About Default Settings

Two buttons allow you to set up a default 'template' of **Song Info** field settings that you use frequently. Just type in the information for fields that change infrequently, leave any Song-specific fields blank (like the **Title**, for instance), and click the **Save as Defaults** button. This saves that collection of field contents as your 'Default Setting'. Then later, any time you want to re-use your template information for a Song, just open the **Song Info** dialog box and click the **Use Defaults** button:

Item	Use
Save as Defaults button	Copies the current field contents to the Default Setting.
Use Defaults button	Fills fields in from the Default Setting, replacing the current field contents. Fields that are blank in the Default Setting will **not** be replaced.

URL Links in Song Info Fields

Several of the **Song Info** fields support URLs. This gives you a way to provide hyperlinks that Web listeners viewing your **Song Info** with the Beatnik Player control panel can click, taking them to Web pages of your choice.

For example, the URL in following text will be clickable in the Beatnik Player:

Click for licensing info: http://www.doeboys.com/licensing.htm

Note: Don't try to use HTML tags like `<A HREF="..."></A>` in a Song Info field – any text starting with the familiar `http://` is automatically treated as a URL.

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Instrument Menu windows

How to use the dialog boxes accessed from the Instrument menu.

Topics:

Instrument Editor window
Move Instrument dialog box

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Instrument Editor window

A workspace for creating custom Instruments for use in RMF files.

Note: All Instruments are based on Samples.

Tip: If you decide to cancel all your **Instrument Editor** window edits and revert to the previous version, there are two ways to do it:

- If you're working in the **Instrument Editor** window when you decide to revert, go to the **File** menu and select the **Revert** command.
- If you've just closed your **Instrument Editor** window and then decide to revert, then immediately click in the Session document window that contains the Instrument you just edited, then go to the **File** menu and select the **Undo** command.

Overview

The **Instrument Editor** window is a patch editor for the MIDI synthesizer that's used in all Beatnik playback software – the Beatnik Player for Web browsers, the Beatnik Xtra for Director and Shockwave, JavaSound, and the Beatnik Audio Engine for C and C++.

The **Instrument Editor** has five **Pages**. To access a page, click on its large button:

Page	Contains
Keymap Page	Sample Keymap, with transpose and volume controls
Filter Page	Filter settings
Volume Page	Volume Envelope
Modulation Page	Dynamic Modulators: LFO's, envelopes, and combinations
Output Page	Pan and Reverb settings

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Keymap Page

Every Instrument includes one Keymap. The Keymap determines what Sample will be played for each received MIDI note number (pitch), so you can think of the Keymap page as a 'digital voice' that plays a Sample and produces an audio output. The Keymap is displayed in two ways: as a list of Keymap Zones, and as a keyboard diagram.

The Keymap consists of one or more Keymap Zones, each linking one MIDI note range to one Sample, with instructions on how to play the Sample when a note in that range is received. The Beatnik MIDI Synthesizer doesn't support crossfades or velocity switching, so Keymap Zones can't overlap.

Since there are 128 MIDI note numbers, and a Keymap Zone can be as little as one note wide, a Keymap can contain up to 128 Keymap Zones. A very simple Instrument would have just one Keymap Zone covering the entire keyboard, whereas a more complicated Instrument (for example, Beatnik's General MIDI piano at Bank 0, Program 0) uses many Keymap Zones to provide many different Samples for different ranges of the keyboard.

On the keyboard diagram, adjacent Keymap Zones have different colors, and the selected Keymap Zone's name and Root Key dot appear on the keyboard. In the list, each Keymap Zones appears on a separate line.

The two buttons below the keyboard diagram apply to all Keymap Zones in the Instrument:

- **Always Play at Root Pitch** controls whether the Instrument will act as an ordinary playable musical instrument, or as a bank of non-transposable sounds. When this button is turned on, the Samples will never be transposed by the pitch of the received MIDI notes, and will always play back at the same pitches at which they were recorded.
- **Ignore Loops in Sample** controls whether any loops stored with the Samples will be used. When this button is on, the loops will be ignored and the Samples will always play straight through from beginning to end – ending before the played MIDI note does, if the note is held long enough.

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Each Keymap Zone contains the following fields:

Column	Sets
Low note **High** note	Lowest and highest MIDI notes in this Keymap Zone. See **Adjusting a Keymap Zone's Range** below.
Sample name	Name of the Sample to use for this note range. To open the Sample in a **Sample Editor window**: • **Windows:** Hold the **Alt** key and double-click on the Sample name. • **Mac OS:** Hold the **Option** key and double click on the Sample name. To replace the current Sample with a different one, either: • Drag a Sample in from the Samples tab of a Session window, and drop it on the Sample name, or. • Double-click on the Sample name, then make a selection from the list of available Samples that appears.
Root Key	MIDI note that will cause the Sample to play at its original pitch. This **Root Key** isn't required to fall inside the Keymap Zone's note range, although for most conventional Instruments it will. See **Adjusting a Keymap Zone's Range** below.
Volume	Volume to use for this Keymap Zone, so that you can balance zones whose Samples have different volumes. Volume is expressed as a percentage of the Sample's normal volume. For example, a volume of **100** is considered normal, and **800** would overdrive the Sample volume eight times over. **Note:** Excessive volumes may cause digital overload distortion. To change a **Volume**, click on the current value in the list, then type a number from **0** through **800**, and then press the **Return** or **Enter** key.

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Working with Keymap Zones

Adding and Removing Keymap Zones

- To add a new Keymap Zone, click the **Add** button above the list.

  The new Keymap Zone will fill the lowest available empty note range – or, if the whole keyboard is already covered with Keymap Zones, the largest existing Keymap Zone will be split in two, and the new Keymap Zone will take over one of them.

- To remove a Keymap Zone, select it and click the **Delete** button above the list.

Selecting Keymap Zones

There are three ways to select a Keymap Zone:

- On the keyboard diagram, click on the Keymap Zone you want.
- In the list, click on the Keymap Zone you want.
- In the list, use the cursor control keys on your computer keyboard to move to the Keymap Zone you want: **up arrow**, **down arrow**, **left arrow**, **right arrow**, **Home**, and **End** all work.

Adjusting a Keymap Zone's Range

There are two ways to change a Keymap Zone's range – either visually, or by typing:

- To type, click on the Keymap Zone's **Low** or **High** note in the list, and then type your new note name and octave – for example, D1.

  Note: For a flat, type a lowercase **b** (for example, **Gb3**) and for a sharp use pound sign (**#**) – but remember that the Beatnik Editor always displays the sharp version (**F#3**).

- To set the range visually, first select the Keymap Zone, then go to the keyboard diagram and click and horizontally drag the zone's low (left) or high (right) boundary.

  Note: Dragging a boundary will ordinarily also move the boundary of the adjacent Keymap Zone. If you want to open up an empty space instead:

  - **Windows:** Alt-click the boundary, then drag left or right.
  - **Mac OS:** Option-click the boundary, then drag left or right.

  Tip: Single-zone Keymaps always cover the entire keyboard. If you only need one Sample in your Instrument, but want to limit the note range in which it can be played, then add a second zone. This will let you adjust their zone ranges separately, and will let you leave key ranges uncovered. If you wind up with an unnecessary zone that you want to be silent, make it just one note wide and set its volume to **0**.

Adjusting a Keymap Zone's Root Key

There are three ways to change a Keymap Zone's **Root Key**:

- On the keyboard diagram, first select the Keymap Zone, and then drag the orange dot to your desired note.
- On the keyboard diagram, first select the Keymap Zone, and then shift-click the desired note.
- In the list, click on the **Root Key** note and then type your desired note name.

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Filter Page

The audio signal from the **Keymap Page** feeds the **Filter Page**. If the filters are switched on, the signal is processed by the filters, otherwise the filters are bypassed.

Note: You don't need to use the filters if your Instrument design doesn't call for them. In fact, the filters contribute significantly to the synthesizer's CPU processing load – so if you don't need the filters, you should switch them off.

To switch the filters off, click the small light next to the large Filter Page button to turn it off:

Notes:

- If you want to use any stereo Samples in an Instrument, you'll probably want to avoid using the **Filter**.
- If you're going to mix mono and stereo Samples in the same Instrument, you'll probably want to avoid using the **Filter**.
- If you want to use the **Filter** on an Instrument, you'll have to use mono Samples.

This is all because whenever an Instrument is playing a stereo Sample, the **Filter** is bypassed. As a result, bad-sounding artifacts can occur when a filtered Instrument switches from a mono Sample to a stereo Sample, or vice versa.

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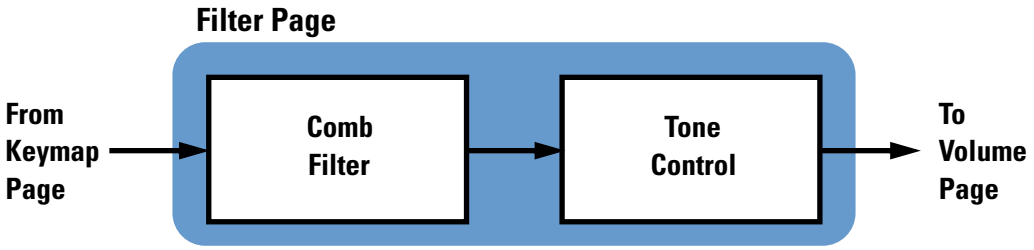
About the Filters

The **Filter Page** contains two different filters, acting in series:



- The **Comb Filter** has controls for the peak frequency spacing and resonance, and can be made to track the pitch of the notes that the Instrument is playing (see **Track Pitch**).

  Note: When the Tone Control setting is negative, the Comb Filter is bypassed.

- The **Tone Control** is a gentle high or low frequency rolloff filter with a Depth setting:
  - When the Tone setting is positive, the Tone Control rolls off high frequencies.
  - When the Tone setting is negative, the Tone Control rolls off low frequencies, and the Comb Filter is bypassed.

Both the Comb Filter and the Tone Control can be modulated (see **Modulation Page**).

Note that this filter set is a little different from most synthesizers and samplers, which usually use a resonant lowpass filter.

Tip: To approximate a conventional lowpass filter, set the Comb Filter for very wide peak frequency spacing, so that one cycle of the comb spreads out over the whole frequency spectrum.

Working with the Filter Page

Comb Filter

You can set both of the comb filter's parameters (peak frequency spacing and resonance) at once by clicking on the handle (small square) in the large display and dragging:

- To change the peak frequency spacing, drag the handle left or right.

  Alternatively, you can click on the **Comb Frequency** field, type in a frequency in Hertz (from 175 to 11200 Hz), and hit **Enter**.

- To change the resonance amount, drag the handle up or down.

  Alternatively, you can click on the **Resonance** field, type in a resonance depth amount (from 0 for no resonance to 255 for maximum resonance), and hit **Enter**.

  Note: To change just one parameter and not the other, hold the Shift key to constrain your drag to just one dimension at a time.

Tone Control

- When the Tone setting is positive, the Tone Control rolls off high frequencies. The larger the number, the greater the rolloff.

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- When the Tone setting is negative, the Tone Control rolls off low frequencies, and the Comb Filter is bypassed. The larger the negative number, the greater the rolloff.

Track Pitch

The Filter Page includes a **Track Pitch** button, whose effect is a little unusual:

When this button is turned on, the Comb Filter's peak frequency spacing will be based on the note's MIDI note number (pitch), with an optional offset in semitones. This can produce many interesting and unusual harmonic effects. The result is best heard when the Comb Filter resonance setting is fairly high.

For example:

- If you set the semitone offset to **0**, then the Comb Filter's peak frequencies will exactly match the pitch of the played note, and will adjust on a note-by-note basis.
- If you set the semitone offset to **7**, then the Comb Filter's peak frequencies will always be 7 semitones (a perfect fifth) above the played note.

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Volume Page

The audio signal from the **Filter Page** feeds the **Volume Page**. If the Volume Envelope is switched on, the signal is processed by the Volume Envelope, otherwise the Volume Envelope is bypassed.

> **Note:** You don't need to use the Volume Envelope if your Instrument design doesn't call for it. In fact, the Volume Envelope contributes to the synthesizer's CPU processing load – so if you don't need the Volume Envelope, you should switch it off.
>
> To switch the Volume Envelope off, turn off the small light next to the large Volume Page button.

About the Volume Envelope

The Volume Envelope is displayed as a graph, where the horizontal axis represents **Time** and the vertical axis represents the volume **Level**. The graph shows all the segments that make up the Volume Envelope. You can edit the envelope's shape directly in the graph – just click on a point and drag it up and down, and right and left, to a new **Time** and **Level**.

The Volume Envelope points are also listed below the graph as pairs of numbers (**Time** and **Level**).

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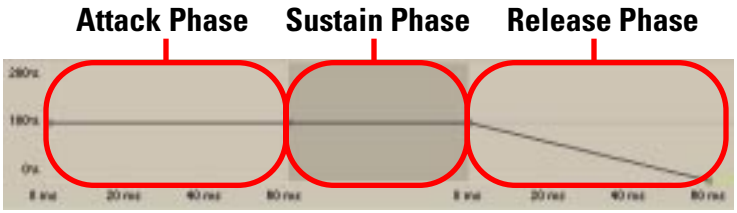
How Envelope Phases Relate to Note Timing

A Volume Envelope has up to three phases – the Attack phase, an optional Sustain phase, and the Release phase. These phases link envelope timing to the MIDI note events that trigger the note:



Phase	Description
Attack (before grey section) Can have multiple segments	The Attack phase begins when the MIDI Note On message is received. The Volume Envelope starts working through its segments, and continues until one of two things happen: • The MIDI Note Off event is received. If this happens first, the Volume Envelope jumps to the first segment in the Release phase, skipping any phases not yet reached. • The last segment in the Attack phase ends. If this happens before the Note Off event, the Volume Envelope continues into the Sustain phase.
Sustain (grey background) Can only have one segment	If the Attack phase has completed, but the MIDI note is still being held, then the Volume Envelope stays in the Sustain segment until the MIDI note is released. Remember, the MIDI note can be held for an unlimited amount of time. That's why the **Time** axis isn't labeled during Sustain segment, and why **Time** begins again from 0 when the Release phase starts. For the same reason, the Sample will typically be looping while the Volume Envelope is in the Sustain phase. **Decay during the Sustain segment:** Ordinarily the Volume Envelope will hold steady at the same Level during the Sustain segment, so that the note can be held infinitely long if necessary. However, for many kinds of Instruments – including plucked strings and pitched percussion – maintaining a steady volume during the sustain period sounds unnatural, so you also have the option to allow the Volume Envelope to decay during the Sustain segment. **Note:** If you use Decay during the Sustain segment, the segment is drawn in red. **Note:** If you use Decay during the Sustain segment, and your Envelope decays to zero before the MIDI notes are finished, the notes will end prematurely.
Release (after grey section) Can have multiple segments	The Release phase begins when the MIDI Note Off message is received. The Volume Envelope jumps to the first Release segment, and works through the Release segments until reaching the end of the last Release segment – at which time, the note is finished.

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Working with the Volume Page

Zooming the Display

To manually zoom in and out, use the magnifying glass buttons in the upper right corner. If you drag a point off the right edge of the window, the display will automatically zoom out to fit.

Using the Preset Envelope Shapes

The three **Create New Shape** buttons below and to the right of the graph call up simple, predefined envelope shapes. For example, the second button is a basic 3-point envelope with no sustain segment.

> **Note:** Clicking a **Create New Shape** button will wipe out your current, edited envelope and replace it with one of the preset shapes.
>
> **Tip:** Changing the Envelope type with the **Create New Shape** buttons can drastically change the Instrument's sound. If you don't like the sound of resulting change, use the **Undo** command immediately.

Editing the Envelope Shape

- **To Add a new point:** Click on any graph segment and a new segment will be added to the same phase of the Envelope.

  > **Note:** If the Volume Envelope you're editing does not already include a Sustain segment, you cannot add a new Sustain segment directly. Instead, you'll have to use the **Create New Shape** buttons to select a preset shape that does include a Sustain segment, then edit its shape to meet your Instrument's requirements.

- **To Move a point's Time and/or Level:** Click on the point and drag its handle.

  Notes:
  - To enter exact **Time** and **Level** values, click on the number fields and type.
  - To change just one and not the other, hold the **Shift** key to constrain your drag to just one dimension at a time.

- **To Delete a point:**
  - **Windows:** Alt-click the point.
  - **Mac OS:** Option-click the point.

- **To use Decay during the Sustain segment:** Drag down on the Sustain segment's end handle, and then move it left or right. The Sustain segment will be redrawn in red.

Hold Sample In Release

The **Hold Sample in Release** button controls how Samples that include loops will behave in this Instrument:

- If the **Hold Sample in Release** button is **on**, the Sample Loop will never exit once entered. The part of the Sample after the Looping region won't be heard in this Instrument.
- If the **Hold Sample in Release** button is **off**, the Sample Loop will only repeat as long as the MIDI note is held. As soon as the MIDI note is released – in other words, as soon as the Vol-

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ume Envelope enters the Release phase – the Sample will stop Looping, and the part of the Sample after the Looping region will play.

Note: Samples without Loops aren't affected by the **Hold Sample in Release** button.

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Modulation Page

Tip: The **Modulation Page** is the **Instrument Editor**'s most complicated page. It can be confusing at first if you're not familiar with the Beatnik Editor, or with music synthesizers in general. For some introductory material to help you figure out what's going on here, see the section **For Musicians**.

The **Modulation Page** is different from the other **Instrument Editor** pages in that it doesn't directly generate or process any audio signals. Instead, it generates control signals that modify parameters all the other Pages. Modulators are LFO's (Low Frequency Oscillators), Envelopes, and combinations of the two – control signal sources that you can edit to make an Instrument sound more dynamic and interesting by varying those parameters over the life of the note, in musically useful ways.

Note: You don't need to use Modulation if your Instrument design doesn't call for it. In fact, Modulation contributes to the synthesizer's CPU processing load – so if you don't need to use Modulation, you should switch it off.

To switch Modulation off, set all five Modulators' destinations to **Not Used** (see below).

Topics:

Modulators in a Nutshell
Working with the Modulation Page
A Modulation Tutorial

Modulators in a Nutshell

- An Instrument can use up to five Modulators.
- The Modulators that your Instrument actually uses are indicated in the lower rectangular window, just above the Page selector buttons. If the window shows **Not Used** five times, then you aren't using any Modulators.
- To select a Modulator for editing or inspection, click on it in the lower rectangular window. The Modulator will appear in the upper editing display.
- Each Modulator has a Modulator Type and a Modulator Destination. The Modulator Type

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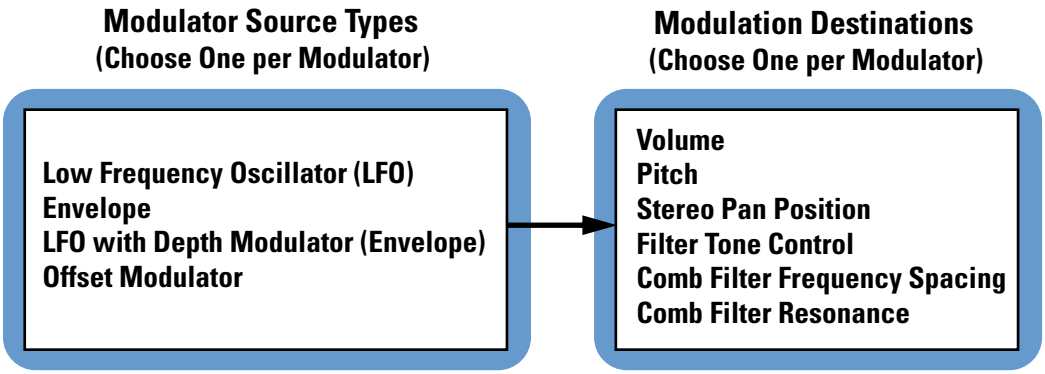
determines what kinds of signal the Modulator is able to generate. The Modulator Destination is the Instrument parameter that the Modulator affects:



Note: Modulator Types and Destinations are explained in much greater detail in the **For Musicians** section, starting at the heading **Modulation**. You may also find the **Modulation Tips** section helpful.

Working with the Modulation Page

To Add a New Modulator:

Assigning a Modulator to an actual destination turns the Modulator on. In the lower rectangular window, find a Modulator slot that's **Not Used**, then click and hold on the words **Not Used** and select one of the available Modulator Destinations from the pop-up menu that appears.

A thumbnail will appear beneath, and the Modulator Type pop-up menu will appear to the right.

To Delete a Modulator:

Removing a Modulator's destination turns the Modulator off. In the lower rectangular window, click and hold on the Modulator's Destination pop-up menu, then select **Not Used**.
The Modulator's thumbnails will disappear beneath, as will the Modulator Type pop-up menu to the right.

To Change a Modulator's Destination:

In the lower rectangular window, click and hold on the Modulator's Destination pop-up menu, then select the destination you want.

To Change a Modulator's Type:

In the lower rectangular window, click and hold on the Modulator's Type pop-up menu, then select the Modulator Type you want.

To Select a Modulator's LFO or Envelope for Editing:

Depending on the Modulator Type, each Modulator will show either one or two 'thumbnail' graphs in the lower rectangular window – an LFO thumbnail on the left if it includes an LFO, and an Envelope thumbnail on the right if it includes an Envelope. To select an LFO or Envelope for

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editing in the large editing window at the top of the page, just click on its thumbnail.

Editing a Modulator's Envelope Part

All Modulator Types except the basic LFO include an Envelope part. Editing an Envelope in the **Modulation Page** works just the same as editing the Volume Envelope in the **Volume Page**:

- The horizontal axis is Time, and the vertical axis is Modulation Depth.
- To add a point, click on a segment.
- To delete a point, Alt-click (Windows) or Option-click (Mac OS) on it.
- To move a point in Time or Level, drag it. Or, type into the number fields.
- To constrain a drag, use the Shift key.
- To replace your Envelope with a simple preset template, click on one of the **Create New Envelope** buttons.

  Note: For the Offset Modulator type, an additional **ADSR(%)** slider appears just above the **Create New Envelope** buttons. For details, see the section **Modulator Types**.

For further operating details, see **Working with the Volume Page**.

Editing a Modulator's LFO Part

All Modulator Types except the basic Envelope include an LFO part. Editing an LFO in the **Modulation Page** works just the same as editing the Comb Filter in the **Filter Page**:

- The horizontal axis is Time, and the vertical axis is Modulation Depth.
- To change the LFO period and depth, drag the handle in the graph, or type into the number fields.
- To change the LFO waveform, click one of the waveshape buttons below the large window: sine, triangle, square, inverted square, sawtooth, or inverted sawtooth.

For further operating details, see **Working with the Filter Page**.

To Zoom the Editing Window:

To manually zoom in and out, use the magnifying glass buttons in the upper right corner. If you drag a point off the right edge of the window, the display will automatically zoom out to fit.

A Modulation Tutorial

To add vibrato to an Instrument:

1. Find an unused Modulator slot in the lower rectangular window.
2. Click and hold on the pop-up menu that says **Not Used**, and then select **Pitch**.

   This will be your Modulator's destination. A thumbnail will appear beneath, and the Modulator Type pop-up menu will appear to the right.
3. Click and hold on the Modulator Type pop-up menu, and then select **LFO**.

   This will be your Modulator Type. The Modulator's LFO thumbnail will appear beneath the

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Pitch label.

4. Click on the LFO thumbnail to select the LFO for editing.

   The large editing window at the top of the page will now show the LFO's current settings.

5. In the large editing window, drag the LFO graph's control handle (the black square where the two red lines cross) to set a period of about 300 ms, and a depth of about 50%.

   Now when you play the Instrument in the **Player window**, you should hear a warbling vibrato. That's the effect of your LFO Modulator on the **Pitch**.

Many Instruments sound more natural if the amount of vibrato starts at zero, then fades in gradually over a period of a few seconds. That's one of the things the **LFO with Depth Modulator** modulator type is good for. Here's how to use it:

1. Click and hold on the Modulator Type pop-up window again, and this time select **LFO with Depth Modulator**.

   A second thumbnail will appear next to the LFO thumbnail – an Envelope thumbnail.

2. Click on the Envelope thumbnail.

   The large editing window will now show the Envelope instead of the LFO. This is the Envelope that controls how the **Pitch** LFO's depth will change over time. The default Envelope isn't very useful, however, so you'll need to create a better one.

3. Create a simple Envelope that takes 2 seconds to reach a maximum, and then another two second to return to zero:

   - Click the middle **Create New Envelope** button. Three Envelope Handles will appear in the graph, all at a level of 0%.
   - Drag the rightmost Envelope Handle out to the right, out to around 2000 ms.
   - Drag the middle Envelope handle up to 100%, and then out to the right to about 2000 ms.

   Now when you play the Instrument in **Player window** window, you should hear the warbling vibrato increase over two seconds, and then decrease to nothing in another two seconds. That's the effect of the **Depth Modulator** envelope on your LFO Modulator.

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Output Page

The audio signal from the **Volume Page** feeds the **Output Page**, which is the Instrument's final stage. It only contains two controls:

- The **Disable Reverb** button controls whether the Instrument will send a signal to Beatnik's global reverb processor. If this button is on, then the Instrument will always sound 'dry' no matter how the global reverb is set, and no matter which reverb type is selected for the Songs that use the Instrument.
- **Stereo Pan** position. This is set as a number, with **0** indicating center, **-64** indicating full **Left**, and **64** indicating full **Right**.

  There are three ways to set the Pan position:

  - Drag the slider control.
  - Drag in the large **Left** – **Right** display.
  - Type a number into the numeric **Stereo Pan** field.

  Notes:

  - If you want to use any stereo Samples in an Instrument, you'll probably want to avoid using the **Stereo Pan** control.
  - If you're going to mix mono and stereo Samples in the same Instrument, you'll probably want to avoid using the **Stereo Pan** control.
  - If you want to use the **Stereo Pan** control on an Instrument, you'll have to use mono Samples.

    This is all because whenever an Instrument is playing a stereo Sample, the **Stereo Pan** control is bypassed. As a result, bad-sounding artifacts can occur when a panned Instrument switches from a mono Sample to a stereo Sample, or vice versa.

(End of Instrument Editor window)

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Move Instrument dialog box

Lets you change an Instrument's number, which is the same as its MIDI Program number.

When the **Move Instrument** dialog box first opens, the Bank and Instrument Number will reflect the current location of the selected Instrument. To assign the Instrument to different Bank and/or Instrument number – effectively moving it to a new Instrument slot and MIDI Program number – just enter the Bank and Instrument number you want, and then click the **OK** button.

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Sample Menu windows

How to use the dialog boxes accessed from the Sample menu.

Topics:

Sample Editor window
Compression dialog box
Make Instrument dialog box
Make Song dialog box
Clear compression cache dialog box
Delete uncompressed originals dialog box

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Sample Editor window

A workspace where you can audition, inspect, clean up, and loop imported Samples.

Tip: If you decide to cancel all your **Sample Editor** window edits and revert to the previous version, there are two ways to do it:

- If you're working in the **Sample Editor** window when you decide to revert, go to the **File** menu and select the **Revert** command.
- If you've just closed your **Sample Editor** window and then decide to revert, then immediately click in the Session document window that contains the Sample you just edited, then go to the **File** menu and select the **Undo** command.

Notes:

- Most of the Sample editing functions are only available when a range of the Sample's waveform is selected – see **Making a Selection**.
- In the **Sample Editor** window, you're editing the Sample's uncompressed original version, not the compressed copy you made in the **Compression dialog box**. As soon as you exit the **Sample Editor** window, the Beatnik Editor will re-compress the revised Sample, using the same compression type you selected for that Sample.

Topics:

Making a Selection
Sample Editing Commands
Using the Onscreen Controls

See also: Looping Tips in **For Musicians**.

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Making a Selection

Most of the Sample editing functions are only available when a range of the Sample's waveform is selected. To select a range of the waveform, click the mouse at one end of the part you want to edit, then drag left or right to the other end, and release the mouse button. This selects the range and causes the Volume Handles to appear:

Tip: To extend or contract either end of the selection, you can Shift-click and then drag left or right.

Once you have a selection, you can apply the Sample editing command in the context, **Edit**, and **Sample** menus.

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Sample Editing Commands

In the **Sample Editor**, the context menu contains the following commands. Some of these commands are only available when a range of the waveform is selected. Most of these commands are also available in the **Sample menu**.

To access the context menu: for Windows, right-click; for Mac OS, control-click.

Note: Undo and **Redo** are also available in the **Edit** menu, and via keyboard shortcut (Windows: control-Z; Mac OS: cmd-Z).

Command	Use
Delete	Removes the selection from the Sample (cut).
Crop	Trims away all sound before and after the selection.
Normalize	Increases the selection's volume to the highest possible level before distorting.
Fade In	Creates a fade-in across the entire selection. **Note:** By contrast, the Fade-In Volume Handle lets you apply a fade-in that starts at the beginning of the selection, but is shorter than the selection. See **Using the Onscreen Controls**.
Fade Out	Creates a fade-out across the entire selection. **Note:** By contrast, the Fade-Out Volume Handle lets you apply a fade-in that finishes at the end of the selection, but is shorter than the selection. See **Using the Onscreen Controls**.
Zoom Normal	Resets the X and Y zoom levels.
Zoom Loop Start	Zooms in on the loop start.
Zoom Loop End	Zooms in on the loop end.
Jump Loop Start	If the loop start isn't visible, horizontally scrolls to it.
Jump Loop End	If the loop end isn't visible, horizontally scrolls to it.
Select All	Selects the entire Sample.

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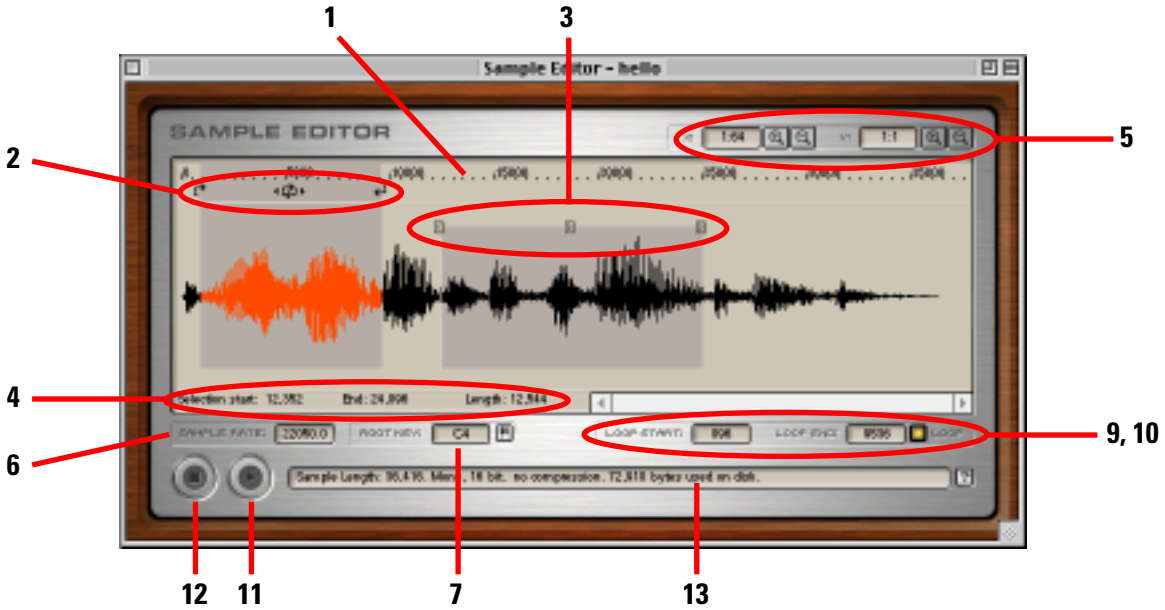
Using the Onscreen Controls

The **Sample Editor** window includes several graphic displays and controls:



Item	Use
1 Time Scale	Shows running time in sample numbers (not milliSeconds).
2 Loop Handles	The Loop Handles set the position of the orange Looping region. To move a Loop Handle, click on it and drag left or right. The middle Loop Handle moves the loop region without changing its length. **Note:** The Loop Handles only appear when the Loop button is on – see **10**. **Note:** The **Loop Start** and **Loop End** points are also displayed as numbers that you can edit directly – see **9**.

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3 Volume Handles	The Volume Handles are controls for applying a fade-in, fade-out, or volume change to the selection: **Note:** The Volume Handles are only available when a range of the Sample's waveform is selected – see **Making a Selection**. • **To apply a Fade-In to the start of the selection:** Click on the left Volume Handle, then drag to the right. Release the mouse button at the point where you want the fade-in to finish. If you want to fade in from the beginning of the whole Sample, be sure your selection begins at the very first sample. **Note:** By contrast, the **Fade-In** command applies a fade-in to the full length of the selection – see **Sample Editing Commands**. • **To apply a Fade-Out to the end of the selection:** Click on the right Volume Handle, then drag to the left. Release the mouse button at the point where you want the fade-out to start. If you want to fade out at the end of the whole Sample, be sure your selection ends at the very last sample. **Note:** By contrast, the **Fade-Out** command applies a fade-in to the full length of the selection – see **Sample Editing Commands**. • **To change the selection's volume:** Click on the center Volume Handle and drag up or down. • **To change the whole Sample's volume:** Use the **Select All** command, then click on the center Volume Handle and drag up or down. **Note:** By contrast, the Normalize command turns the selection's volume up to the maximum possible level before clipping – see **Sample Editing Commands**.
4 Selection Indicators	Displays the start, end, and length of the currently selected range of the Sample waveform – or, if there's no selection, the current cursor position. All numbers are in Sample numbers, not milliSeconds.
5 Zoom Controls	Displays the current waveform zoom levels: • To zoom the time axis (horizontal) in and out, use the **X** controls. At 1:1, each horizontal screen pixel shows one audio sample. • To zoom the volume axis (vertical) in and out, use the **Y** controls.

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6 Sample Rate field	Sets the playback sampling rate for this Sample, in samples per second. **Note:** Changing this number **will not** convert the data to a new sample rate and **will** change the pitch. This field is treated as an instruction for how fast to play the Sample data, so the higher the number, the higher the pitch and the shorter the sound. **Caution:** Be careful when changing the **Sample Rate**. If any Instruments use this Sample, then changing the **Sample Rate** will change those Instruments' pitch – which is usually a problem.
7 Root Key field **8 Root Key** button	Records the pitch (MIDI note number) that the Sample produces when played at its current **Sample Rate**. To set the **Root Key**, either click on the field and then type in a note name (followed by the **Enter** key), or click the button and select a note from the keyboard that appears. **Caution:** If the **Root Key** is not set correctly, then Instruments automatically built from this Sample will play out of tune. **Note:** The **Root Key** note is used whenever you make a new Instrument using this Sample, and allows the Beatnik Editor to automatically preserve correct pitch in Keymaps that it creates for you (see the **Make Instrument dialog box** and the **Make Song Using** command). **Note:** Changing the **Root Key does not** affect Instruments that already use this Sample. The **Root Key** note is only used when new Keymaps are created.
9 Loop Start and **Loop End** fields	Display the start and end of the Looping region, or **0** if no loop exists. Both numbers are in Sample numbers, not milliSeconds. To set either field, click on the field, and then type in a sample number (followed by the Enter key). **Note:** The **Loop Start** and **Loop End** points also appear in the waveform display as Loop Handles – see **2**. **Note:** The **Loop Start** and **Loop End** fields only apply when the **Loop** button is on – see **10**.
10 Loop button	Controls whether the Sample will loop when played. When the **Loop** button is lit, Looping is turned on. **Note:** To set the Looping region position, see the **Loop Handles** (**2**) or the **Loop Start** and **Loop End** fields (**9**)

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11 Play button	Plays the Sample. Use to check your work as you make edits. **Note:** The spacebar on your computer keyboard also acts as a Play / Stop button. **Note:** Playback always starts from the current sample cursor position (vertical white line), not necessarily from the start of the Sample. Every time you click in the waveform display, the cursor moves to that position.
12 Stop button	Stops playback of the Sample. **Note:** The spacebar on your computer keyboard also acts as a Play / Stop button.
13 Sample Info area	Displays additional information about the Sample: • **Sample Length –** In sample numbers, not milliSeconds. • **Channels – Mono** (1 channel) or **Stereo** (2 channels). • **Bit Depth –** Resolution of the Sample in bits, either **8 bit** or **16 bit**. Note that 8-bit sounds have noticeably lower fidelity than 16 bit sounds. • **Compression Type –** The Sample's current compression type, as set via the **Compression dialog box**. • **bytes used on disk–** The amount of disk space used by the Sample. Note that you can reduce this number with compression, or by reducing the bit depth or sample rate in a separate sample editing program.

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Compression dialog box

A workspace for choosing the best data compressor for one or more selected Samples.

Note: If you have audio production experience, you may find this use of the term **compression** confusing. Here, the word refers to audio **data compression**, which is the art of reducing the size of a sample file – and **not dynamic range compression** of audio signals, which may be more familiar to you.

Topics:

Working with the Compression Dialog Box
Setting a Compression Type
About Compression
About the Sample Cache

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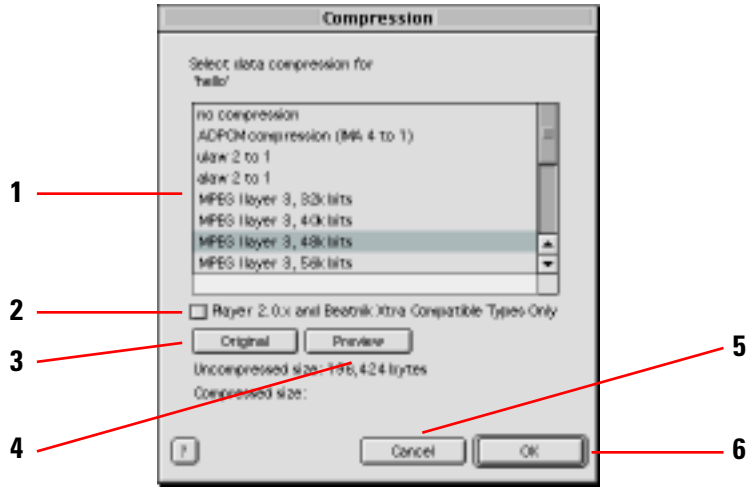
Working with the Compression Dialog Box

The Compression dialog box gives you tools for testing or 'previewing' various compression types on your selected Samples, comparing the original audio to the compressed versions, and assigning your preferred compression type to the Samples.

If the selected Samples have been previously compressed or previewed with the selected compression type, then the compressed size will appear below the list. Notice the difference in compressed and uncompressed size.



Item	Use
1 Compression Types listbox	To select a compression type, click on it. To avoid all data compression, select **no compression**. **Note:** The compression types listed here may vary from Sample to Sample because some of the compression types won't work for certain kinds of Samples – i.e. particular sampling rates, numbers of channels, and/or bit depths.

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2 Player 2.0.x and Beatnik Xtra Compatible Types Only checkbox	To ensure that your RMF files' MP3 compression will be backwards-compatible with more versions of the Beatnik Player for Web browsers and the Beatnik Xtra for Macromedia Director, be sure to check this checkbox. **Note:** Until such time as later versions of the Beatnik Player become well-distributed, Web developers who require compatibility with the installed base of Beatnik Players should use this option. Several new MP3 sample compression settings became available in version 2.0, some of which were not supported in the earlier versions. When this item is checked, the Compression Types listbox **(1)** will only offer those compression types that the Beatnik Player, versions 2.0.x, and the Beatnik Xtra are able to play.
3 Original button	Plays the original, uncompressed version of the Sample.
4 Preview button	Previews the effect of the selected compression type on the indicated Sample, without selecting that type. **Note:** If you entered this dialog with multiple Samples selected, a **Preview for:** menu will appear above the Preview button. Use this menu to indicate which of the selected Samples you want to preview **before** you click the **Preview** button. If the selected Samples haven't yet been compressed with the selected compression type, a **Compression Progress** dialog box will appear briefly. During preview playback, the **Preview** button will change to a **Stop** button. Use it to cancel playback before the Sample finishes playing.
5 OK button	Applies the selected compression type to the selected Samples, and closes the dialog box.
6 Cancel button	Closes the dialog box without applying the selected compression type.

Setting a Compression Type

To set the compression type for the selected Samples:

1. If your RMF file will be played in Web pages by the Beatnik Player for Web browsers, and it's important to you that it play with the maximum number of existing users' Beatnik Player installations, then check the **Player 2.0.x and Beatnik Xtra Compatible Types Only** checkbox.
2. Select a compression type from the list.
3. Click the **Preview** button and listen to the compressed Sample.

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- If this Sample hasn't been compressed with this compression type before, there may be a delay while the Sample is compressed and added to the sample cache (see **About the Sample Cache** below).
- Note the difference between the Sample's uncompressed and compressed sizes.
- You can preview as many different compression types as you like before settling on the one you want to use. If your disk fills up with too many compressed alternatives, use the **Clear compression cache dialog box** (see **About the Sample Cache** below).

4. Once you've decided which compression type to use, select it in the list and click the **OK** button.

In the Samples tabs of **Session windows**, a Sample's Compression type will appear after the Sample's name, in parentheses.

About Compression

Compression saves disk space and speeds your listener's download times by reducing the size of the Custom Samples in your exported RMF files.

In a Beatnik Editor Session, compression is treated as a property that's applied to a Sample for the RMF export – your original Sample remains uncompressed, and a compressed copy is generated for use in the RMF file export. That means it's safe to experiment with changing the compression type for any Sample as many times as you like – your original uncompressed Sample is always kept safe in the Session document.

> **Note:** By contrast, earlier versions of the Beatnik Editor would apply compression to the original Sample in the Session file, which could lead to a fidelity loss if you later changed your mind about the compression type.

Such experimentation is usually worth the effort, as different compression types are better suited for different kinds of sounds – some compression types can produce bad-sounding artifacts with some kinds of sound material. You'll want to carefully evaluate how good each compression type sounds to find the best balance between fidelity and file size for each Sample.

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The Beatnik Editor supports several different data compression algorithms, including MP3.

Compression Type	Description
No compression	Use the original Sample directly, applying no data compression.
ADPCM compression (IMA 4:1)	Adaptive Delta Pulse-Code Modulation, which reduces files to 25% of original size. Compatible with the International Multimedia Association (IMA) specification.
uLaw 2 to 1	Used on many UNIX-based computers. (Pronounced "mew-law")
aLaw 2 to 1	Used on many UNIX-based computers. (Pronounced "A-law")
MPEG Layer 3	The same compression type used in MP3 files, where the data compression ratio is user-controllable. Higher bit rates provide better sound quality, whereas lower bit rates provide quicker downloads – and you get to set that tradeoff.

About the Sample Cache

For faster comparison of different compression types, the Beatnik Editor preserves every compressed Sample version you've ever previewed in a disk file "cache," instead of re-compressing every time you ask for a preview. If the compression type you want to preview has already been made for that Sample, the cached version is instantly played.

The sample cache ordinarily grows until you close your Session file or quit the Beatnik Editor, at which time it's deleted. If you run out of disk space during a Beatnik Editor session, you can reclaim the cache disk space with the **Clear compression cache...** command.

> **Note:** Although not encouraged, you can also remove the original, uncompressed Sample from your session with the **Delete uncompressed originals dialog box**.

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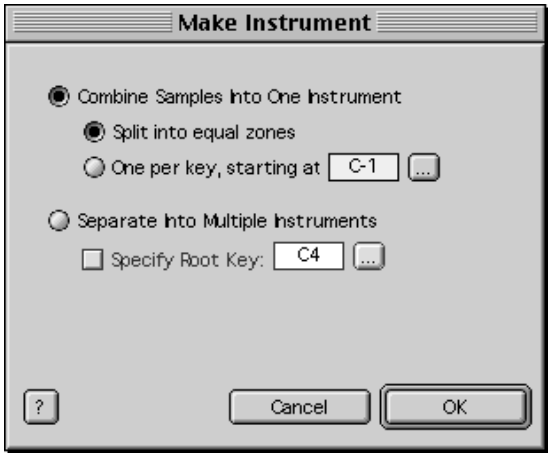
Make Instrument dialog box

Power-user shortcut for creating new Instruments from selected Samples.



Instruments can be complicated, and creating them from scratch can be tedious. For simple Instruments, the **Make Instrument Using** command automates the worst of this work: creating new Instruments and setting up their Keymaps.

> **Note:** Complicated or advanced Instruments will require further work in the **Instrument Editor window**.

Topics:

About the Make Instrument Using command
Creating a Single Instrument from Multiple Samples
Creating Multiple Instruments, Each with a Single Sample

About the Make Instrument Using command

The **Make Instrument Using** command behaves differently depending on how many Samples you've selected:

- **With just a single Sample** selected, the Beatnik Editor will go ahead and build you a new Instrument using that Sample for all 128 notes, without displaying any dialog box.
- **With more than one Sample** selected, the Beatnik Editor displays the **Make Instrument** dialog box because it needs to know what kind of Instrument you want to make – you might want to create just one Instrument using all the selected Samples, or you might want each Sample to go into a separate Instrument of its own – and how you want the Keymaps to be laid out in the resulting Instruments. When you click the **OK** button, the Beatnik Editor takes your instructions and creates the Instruments, all in a single step.

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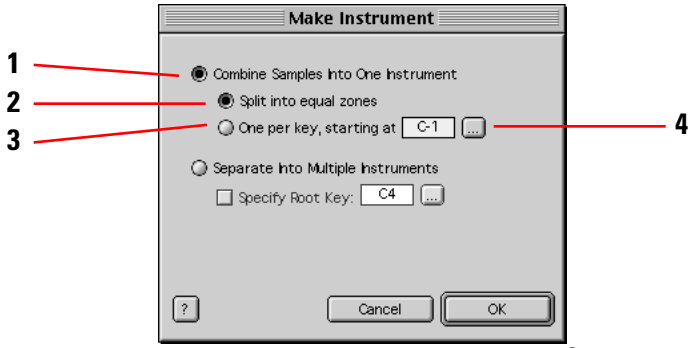
Creating a Single Instrument from Multiple Samples



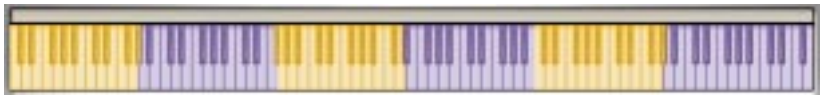
Note: If you have more than 128 Samples selected, only the first 128 will be used in the created Instrument.

To create one new Instrument using all of your selected Samples:

1. Click the **Combine Samples Into One Instrument** radio button **1**.

   This option will create one Keymap Zone per Sample. You have two options for how those Keymap Zone will be placed on the keyboard.

2. Pick one of the keymap layout options by selecting radio button **2** or **3**:

Option...	Produces Keymap Layout...
2 Split into equal zones	All 127 keys will be covered, with an equal number of MIDI key numbers in each zone.  This allows the Samples to be transposed by playing different notes, as in most multi-sampled musical instruments.
3 One per key, starting at:	Each selected Sample will be assigned to one MIDI key number, beginning with a key that you can specify and moving up the keyboard. No other MIDI keys will be covered. This prevents the Samples from being transposed, for example percussion, singing, spoken word, or music recordings.

3. If you selected **One per key, starting at:**, then click the **...** button **(4)** to pick the starting note.

   The **Select Note** dialog box will appear, with a keyboard you can click to pick your note.

4. Click the **OK** button to accept your settings and close the dialog box.

   The newly created Instrument will appear in the Instruments tab of your Session window, with the name **New Instrument**.

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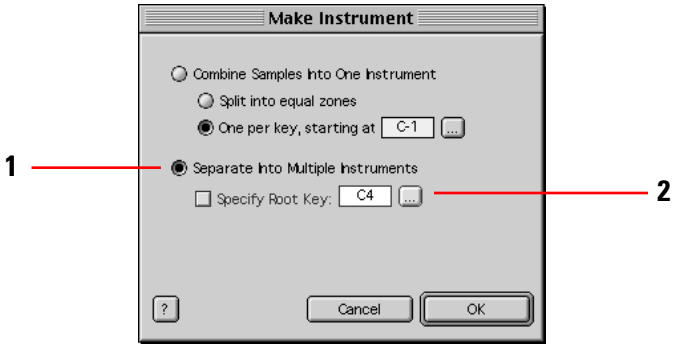
Creating Multiple Instruments, Each with a Single Sample



New in version 2.1: This dialog now includes a checkbox option for the **Specify Root Key** value. This allows you to preserve the Samples' original Root Keys in the newly created Instruments, if desired.

The **Separate into Multiple Instruments** option creates one new Instrument for each selected Sample. For example, with five Samples selected, you'd get five new Instruments. All created Instruments will use the same **Root Key**, which you can pick. If you want to assign a different **Root Key** to any of the created Instruments, you'll need to open them in the **Instrument Editor window**.

To create one new Instrument for each of your selected Samples:

1. Click the **Separate Into Multiple Instruments** radio button **(1)**.

   This option will create one new Instrument per Sample.

2. Click the **...** button to pick the **Root Key (2)**.

   The **Select Note** dialog box will appear, with a keyboard you can click to pick your note. All of the new Instruments will share this same **Root Key**.

3. Click the **OK** button to accept your settings and close the dialog box.

   The newly created Instruments will appear in the Instruments tab of your Session window.

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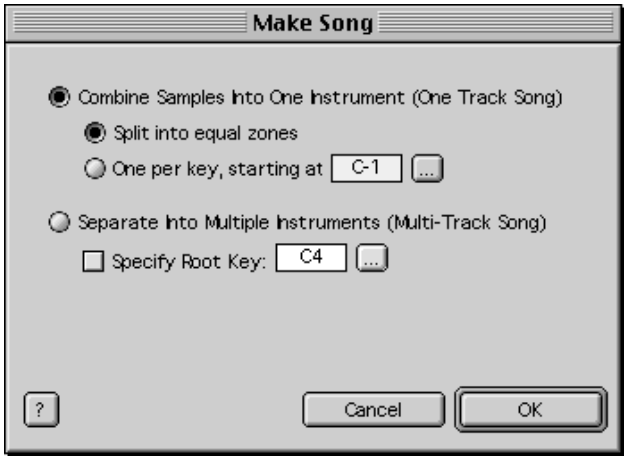
Make Song dialog box

Power-user shortcut for creating a new Song and Instruments from selected Samples.



The **Make Song Using** command always produces one Song that triggers all the selected Samples, and always produces one or more Instruments to link the new Song to the Samples. However, with more than one Sample selected, you have a few choices as to how the Instruments get created.

Instruments can be complicated, and creating them from scratch can be tedious. For simple Instruments, the **Make Song** dialog box automates the worst of this work: creating new Instruments and setting up their Keymaps.

> **Note:** Complicated or advanced Instruments will require further work in the **Instrument Editor window**.

Topics:

About the Make Song Using command
About the Created Song
Creating a Single Instrument from Multiple Samples
Creating Multiple Instruments, Each with a Single Sample

About the Make Song Using command

The **Make Song Using** command creates a new, simple Song and one or more new, simple Instruments that use the selected Samples. This is the same as the effect that would be produced by doing a **Make Instrument Using** followed by a **Make Song Using** with the new Instruments selected. However, the command behaves differently depending on how many Samples you've selected:

- **With just a single Sample** selected, the Beatnik Editor will go ahead and build you a new Instrument using that Sample for all 128 MIDI notes, and a Song that triggers that Instrument, without displaying any dialog box.
- **With more than one Sample** selected, the Beatnik Editor will still automatically create a Song to trigger the Samples, but it displays the **Make Song** dialog box with additional options for how to lay out the Samples into one or more new Instruments. You might want to create just

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one Instrument using all the selected Samples, or you might want each Sample to go into a separate Instrument of its own.

About the Created Song

The new Song will trigger every selected Sample. This may or may not meet your needs as a way to trigger the Samples in your final production, however it may at least make it easy to audition the Instruments and Samples as you're working in the Beatnik Editor.

The Song will contain one MIDI file Track for each created Instrument, and each Instrument's Track will contain one MIDI note for each Keymap Zone used in the Instrument. These notes will be same as the Keymap Zones' Root Keys, so the Samples will usually play at their natural pitches. All of the notes will begin at the same time, and will be the same length.

For example, if you select one Instrument using a single Keymap Zone, and a second Instrument that uses three Keymap Zones, the **Make Song Using** command will produce a Song with two tracks: Track 1 will contain one note (the Root Key of the one Keymap Zone), and Track 2 will contain three notes (the Root Keys for the three Keymap Zones).

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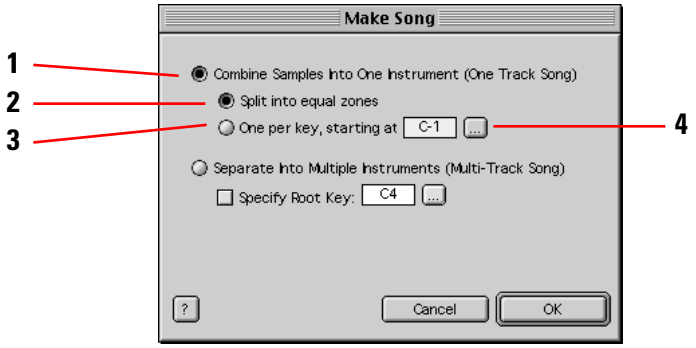
Creating a Single Instrument from Multiple Samples



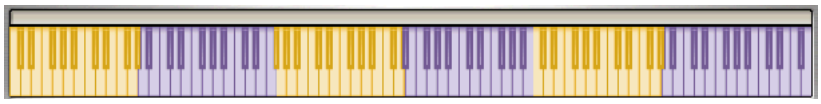
Note: If you have more than 128 Samples selected, only the first 128 will be used.

To create one new Instrument using all of your selected Samples, and a one-track MIDI Song to trigger all the Samples in that Instrument:

1. Click the **Combine Samples Into One Instrument (One Track Song)** radio button **(1)**.

   This option will create one Keymap Zone per Sample. You have two options for how those Keymap Zones will be placed on the keyboard.

2. Pick one of the Keymap layout options by selecting radio button **2** or **3**:

Option...	Produces Keymap Layout...
2 Split into equal zones	All 127 keys will be covered, with an equal number of MIDI key numbers in each zone.  This allows the Samples to be transposed by playing different notes, as in most multi-sampled musical instruments.
3 One per key, starting at:	Each selected Sample will be assigned to one MIDI key number, beginning with a key that you can specify and moving up the keyboard. No other MIDI keys will be covered. This prevents the Samples from being transposed, for example percussion, singing, spoken word, or music recordings.

3. If you selected **One per key, starting at:**, then click the **...** button **(4)** to pick the starting note.

   The **Select Note** dialog box will appear, with a keyboard you can click to pick your note.

4. Click the **OK** button to accept your settings and close the dialog box.

   The newly created Instrument will appear in the Instruments tab of your Session window, with the name **New Instrument**, and the newly created Song will appear in the Songs tab.

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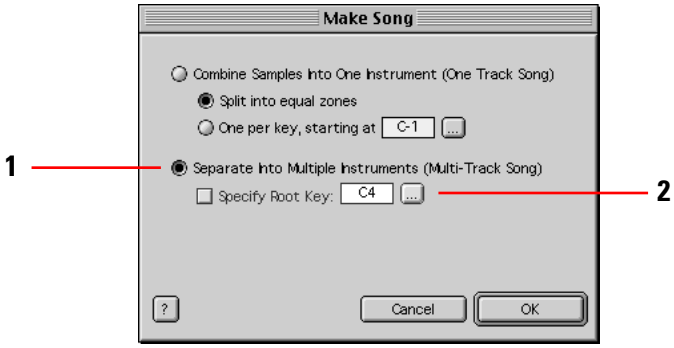
Creating Multiple Instruments, Each with a Single Sample



New in version 2.1: This dialog now includes a checkbox option for the **Specify Root Key** value. This allows you to preserve the Samples' original Root Keys in the newly created Instruments, if desired.

The **Separate into Multiple Instruments** option creates one new Instrument for each selected Sample. For example, with five Samples selected, you'd get five new Instruments. All created Instruments will use the same **Root Key**, which you can pick. If you want to assign a different **Root Key** to any of the created Instruments, you'll need to open them in the **Instrument Editor window**.

Note: If you have more than 15 Samples selected, only the first 15 will produce new Instruments and be used in the created Song. This is because MIDI channel 10 is reserved for percussion, leaving only 15 available MIDI channels for triggering the Instruments.

To create one new Instrument for each of your selected Samples, and a multi-track MIDI Song to trigger all the Samples in that Instrument:

1. Click the **Separate Into Multiple Instruments (Multi-Track Song)** radio button **(1)**.

   This option will create one new Instrument per Sample.

2. Click the **...** button to pick the **Root Key (2)**.

   The **Select Note** dialog box will appear, with a keyboard you can click to pick your note. All of the new Instruments will share this same **Root Key**.

3. Click the **OK** button to accept your settings and close the dialog box.

   The newly created Instruments will appear in the **Instruments** tab of your Session window, and the newly created Song will appear in the **Songs** tab.

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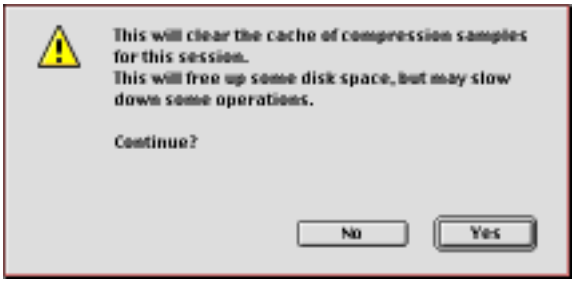
Clear compression cache dialog box

Deletes unneeded temporary compressed audio files from the Beatnik Editor's disk cache.



Every time you preview a new compression setting for any Sample, a new compressed copy of the Sample is generated and saved in a temporary cache folder on your hard drive. If this process goes on long enough, it can eat up more of your free disk space than you might like. Clearing the compression cache recovers this free space.

Two things to remember:

- **Clearing the cache is safe**

  The original, uncompressed Samples stay in your Session document and aren't affected in any way.

- **Even if you never clear the cache, it won't hurt your RMF files in any way**

  The cache doesn't affect the size of your exported RMF files in any way.

  Note: To remove your original, uncompressed Samples rather than the extra compressed copies, see the **Delete uncompressed originals dialog box**.

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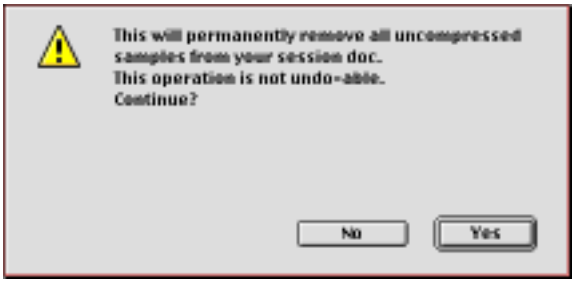
Delete uncompressed originals dialog box

Deletes the original, uncompressed versions of all compressed Samples in your Session document. This means committing to your current Compression settings.



Uncompressed Samples can be very large. Once you've settled on a compression type for each of your Samples, you can use this command to shrink the size of your Session file by deleting the original, uncompressed version of all Samples for which you've selected a Compression type.

> **Note: Beatnik recommends extreme care when using this command.** If you delete your only copies of the uncompressed Samples, and then later decide to change the compression technique, you'll have to first decompress the compressed copies, and then re-compress them. With most compression techniques, this will result in a significant loss of fidelity.

Two things to remember:

- **If you can afford the disk space, you should always keep your uncompressed original Samples in your Session document.**

  Retaining the uncompressed originals preserves flexibility in the future, and once the originals are gone there's no way to recover the lost fidelity.

- The sizes of the uncompressed originals don't affect the size of your exported RMF files in any way.

  Shrinking the Session file by deleting the large original Samples won't make your RMF files any smaller.

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Window Menu windows

How to use the windows accessed from the Window menu.

Topics:

Player window
JavaScript window
Session windows

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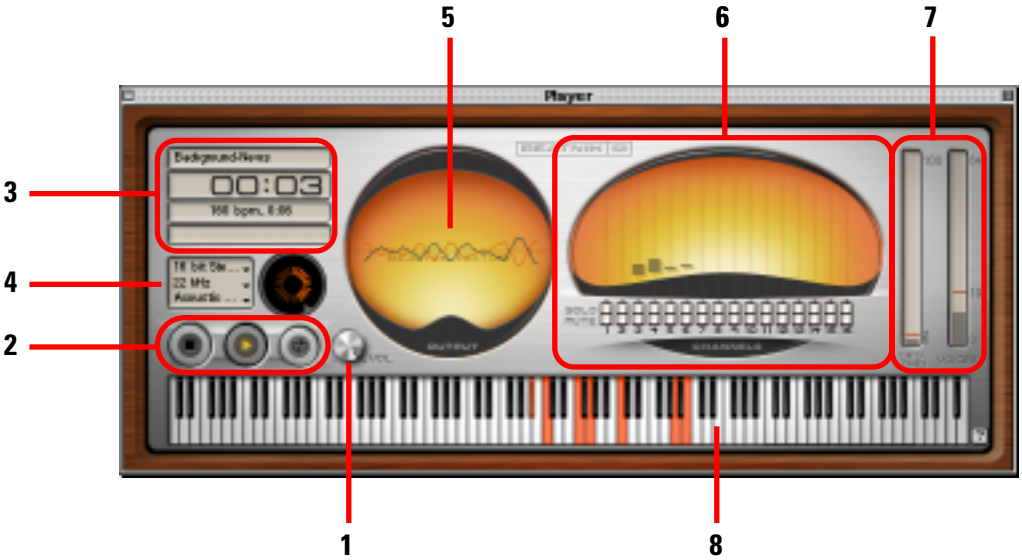
Player window

Playback controls, a Keyboard for auditioning Instrument, and Synthesizer status displays.

Note: If channel 1's **Mute** button is pressed, it'll prevent **The Onscreen Keyboard** from playing.

Notes for Live MIDI input users:

- If a MIDI channel's **Mute** button is on, then live MIDI notes arriving on that channel won't be heard. The channel **Solo** buttons also affect Live MIDI Input.
- When you select a new Instrument in a Session window, the Instrument name will appear immediately in the **Keyboard Instrument** display; however, the Instrument will not be activated until you click a note on the onscreen keyboard. As a result, any Live MIDI Input notes received on channel 1 during that interval will sound with the previous channel 1 Instrument.



Topics:

1 Volume Control
2 Transport Controls (Play, Stop, Loop)
3 Song and Instrument Info
4 Editor Play Settings
5 Output Meter
6 MIDI Channels Display and Mute & Solo Buttons
7 CPU & Voice Meters
8 The Onscreen Keyboard

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Volume Control

An overall output volume control for the Beatnik Audio Engine at the heart of the Beatnik Editor.

> **Note:** Don't make any volume balancing decisions in the Beatnik Editor based on audio playing from another application – even the digital audio tracks of a MIDI sequencer driving the Beatnik Editor's **Live MIDI Input** – because different applications may operate at different loudness levels. For precise mixing, and to make sure your RMF files will repeat your mix correctly when it's played, place volume controller events (MIDI Continuous Controller number 7 for each MIDI channel) in the event list for each Track in your MIDI file.

Item	Use
Volume Control	Sets your listening level. **Note:** This volume control is dependent on your computer's hardware and software volume controls. If those other volume controls are turned all the way off, you won't hear any of the sound the Beatnik Editor is generating. See **Troubleshooting**.

Transport Controls (Play, Stop, Loop)

Controls that act like a CD player's Play, Stop, and Loop buttons – except that they apply to the selected Song, not a CD.

> **New in version 2.1:** The Song Position Dial behavior has been changed. Clicking a position on the dial now makes the current Song start playing from that position.

Item	Use
Play Button	Click to start the selected Song. When a Song is playing, you can 'scrub' back and forth with the round **Playback Position** indicator.
Stop Button	Click to stop playback.
Loop Button	Click to make the Song repeat continuously when played – every time it reaches its end, it'll start over from the beginning. To turn looping off, click again.

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Song and Instrument Info

Information about the selected Song and its playback state.

Item	Use
Song Title	Title of the selected Song.
Time Display	The current playback position, in minutes and seconds. This resets to zero whenever the Song restarts or loops. When the **Loop** button is on, a loop icon also appears to the left of the time display.
Tempo and Length Display	The selected Song's playback speed in Beats Per Minute (BPM), and overall length in minutes and seconds. **New in version 2.1:** The Tempo Display is now updated continuously.
Playback Position Display	Draws a circle as the Song plays from beginning to end – when the circle completes, the Song is over. **Note:** You can 'scrub' the Song back and forth by dragging the triangle.
Keyboard Instrument Display	Name of the currently selected Instrument for MIDI channel 1. Notes played on **The Onscreen Keyboard** always use this Instrument, because it always plays channel 1.

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Editor Play Settings

These controls let you listen to your music and sound material under the same conditions that your playback environment will use – the Beatnik MIDI Synthesizer's sample rate, bit depth, number of channels (mono or stereo), and reverb type. These settings affect all audio generation in the Beatnik Editor – playback of the current Song, notes played on **The Onscreen Keyboard**, notes arriving over the **Live MIDI Input**, and digital audio files generated with the **Export as Audio...** command.

> **Note:** The settings you make here are **not** saved in your RMF files. These are playback settings only, and used only while working in the Beatnik Editor.

Item	Use
Bits and Channels control	Sets the playback bit depth, and whether the Beatnik MIDI Synthesizer runs in mono or stereo. Stereo sounds better than mono, and 16-bit sounds better than 8-bit. Options are: **8-bit mono** **16-bit mono** **8-bit stereo** **16-bit stereo** – for Beatnik Player for Web browsers
Sample Rate control	Determines the Beatnik MIDI Synthesizer's playback sample rate. Higher sample rates sound better. Available sample rates: **11 kHz** **22 kHz** – for Beatnik Player for Web browsers **44 kHz**
Reverb Type control	Selects which of the available reverb types to use. Each reverb type has a different character; for descriptions, see **Effects: Reverb and Chorus**. **Note:** Changing the reverb type here **doesn't** affect the reverb type stored in each Song and RMF file – see the **Song Settings dialog box** for details. **Note:** Four of the Beatnik reverb types depend on the Beatnik Audio Engine's stereo mode, and so will not be available when the Beatnik Editor is running in mono: Early Reflections, Basement, Banquet Hall, Catacombs.

Output Meter

A graph of the actual sound being generated by the Beatnik MIDI Synthesizer.

Item	Use
Output Meter	The waveform displayed is similar to what would be shown on an oscilloscope connected to your computer's audio output, updated 24 times per second.

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MIDI Channels Display and Mute & Solo Buttons

Display of note activity for each of the 16 MIDI channels, and buttons to **Mute** (silence) and **Solo** (highlight) the channels independently, like you'd find on a sound mixing board. Recall that the Beatnik MIDI Synthesizer is organized as 16 MIDI Channels, each of which can independently play several notes at once using a given Instrument.

New in version 2.1: The Mute and Solo button behavior has been changed:

- To change multiple buttons at once, click on one button and then drag across the rest of the desired buttons.
- To turn all 16 Mute buttons on or off at once, click the word **Mute**.
- To turn all 16 Solo buttons on or off at once, click the word **Solo**.

Note: The **Mute** and **Solo** buttons control the triggering of MIDI notes on the indicated MIDI channel – not the channel's audio output. As a result, when you turn a Mute button off the channel's sound will not return immediately – only when the next MIDI note occurs on that channel. In some cases this lag can be fairly long, for example in pieces using slow tempos or long notes. The lag may be especially noticeable if you're using music pre-mix samples (such as beat loops) which won't retrigger until the MIDI file loops.

Item	Use
MIDI Channels Display	Shows the number of notes currently playing on each of the 16 MIDI channels, updated 24 times per second. This includes all playing Songs, **Live MIDI Input**, and notes played on **The Onscreen Keyboard**. **Note:** If a channel's **Mute** button is pressed, you won't see (or hear) any note activity on that channel. The **Solo** buttons may also prevent notes from sounding.
MIDI Channel Mute Buttons	Each MIDI channel has a **Mute** button. Muting a channel prevents it from playing notes. You can mute any number of channels at the same time. **Note:** The **Mute** buttons affect all notes on the indicated MIDI channel, irrespective of source: Song playback, **Live MIDI Input**, and **The Onscreen Keyboard**. **Note:** If channel 1's **Mute** button is pressed, it'll prevent **The Onscreen Keyboard** from playing.
MIDI Channel Solo Buttons	Each MIDI channel also has a **Solo** button. Soloing a channel prevents all other channels from playing notes, so that only the soloed channel is audible. You can solo any number of channels at the same time. **Note:** The **Solo** buttons affect all notes on the indicated MIDI channel, irrespective of source: Song playback, **Live MIDI Input**, and **The Onscreen Keyboard**. **Note:** Mute overrides solo – that is, even if you solo a muted channel, it won't resume playing new notes

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CPU & Voice Meters

This section shows overall activity of the Beatnik MIDI Synthesizer, in terms of **CPU Load** and total number of active **Voices**.

Item	Use
CPU Load Meter	Shows roughly what percentage of your computer's CPU (Central Processing Unit, also known as the microprocessor) is being used, updated 24 times per second. If no other programs are running on your computer at the same time, this will give you a pretty good idea how CPU-intensive it is to play a given Song on a computer with a similarly powerful processor. The red line indicates the highest peak so far. To clear this peak indicator, click on the meter. **Note:** For a more accurate measurement, point at the CPU Load meter and select **Intensive Calc** from the context menu. **To access the context menu:** for Windows, right-click; for Mac OS, control-click. **Note:** Playing the same Song on a less powerful machine will take a higher percentage of the CPU. **Note:** In addition to the number of voices being played, the **Editor Play Settings** directly affect the CPU Load figure – that is, the reverb setting, choice of mono or stereo, the sample rate and the bit depth.
Voices Meter	Shows how many of the Beatnik MIDI Synthesizer's 64 voices are being used, updated 24 times per second. The red line indicates the highest peak so far. To clear this peak indicator, click on the meter. **Note:** The **Voices** meter may disagree with the number of lit-up keys on the onscreen Keyboard. That's because the keys lights up only during the Note On portion of a note, but the note will occupy its voice until its volume envelope fades to complete silence. If the Instrument has a long release time, that can take a while.

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About Voice Availability

The Beatnik Audio Engine's 64 voices are organized as three separate pools:

- 56 voices are available to play notes for Songs, incoming **Live MIDI Input**, and **The Onscreen Keyboard**. This 56-voice limit is also present in the Beatnik Player for Web Browsers.
- 1 voice is reserved for auditioning Samples.
- The remaining 7 voices are reserved for playing sound effects.

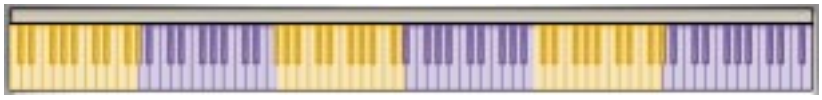
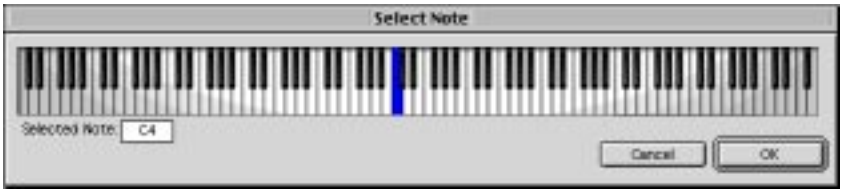
The Onscreen Keyboard

The onscreen Keyboard displays MIDI note events as lit-up keys, and you can click on the Keyboard to play notes on MIDI channel 1 (as you'll need to do when selecting or editing Instruments).

Note: If channel 1's **Mute** button is pressed, it'll prevent **The Onscreen Keyboard** from playing.

Note: If you have a MIDI keyboard and your computer has a hardware MIDI interface installed, you may prefer to play notes on your own keyboard rather than pecking out musical lines one note at a time on the onscreen Keyboard; see **Live MIDI Input**.

Note: The Beatnik Editor uses three different keyboard displays, for three different purposes:

Keyboard appearing in…	Is for…
Player window	Playing notes, and showing what MIDI notes are playing
Keymap tab of the Instrument Editor 	Displaying and editing an Instrument's Keymap Zones
Select Note dialog box 	Selecting a MIDI note number for use as a setting parameter

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Playing Notes on the Onscreen Keyboard

To play a note using the onscreen Keyboard, just click on the key you want to play. To hold a note, hold the mouse button down after you click the key.

You also have control over the notes' Instrument and velocity, and a simulated Sustain pedal:

- **Instrument –** The notes you play on the onscreen Keyboard always use the currently selected Instrument. To play a particular Instrument, go to the **Instruments** tab of your Session window and select the Instrument. The onscreen Keyboard will continue to use that same Instrument even when the **Instruments** tab isn't visible.
- **Velocity –** You can also control the velocity of each note you play on the onscreen keyboard. In many Instruments, velocity is linked to brightness, volume, or intensity, giving the Instrument a more dynamic character. Clicking at the top of a key produces a lower velocity; clicking at the bottom of the key produces the maximum velocity (127); and clicking anywhere between the extremes produces a proportionate velocity.

- **Sustain –** The **Shift** key on your computer keyboard acts as the onscreen Keyboard's sustain pedal. For example, if you press and hold the **Shift** key, then click three different notes on the onscreen Keyboard, you'll notice that the notes sustain until you release the **Shift** key and then click on another note.

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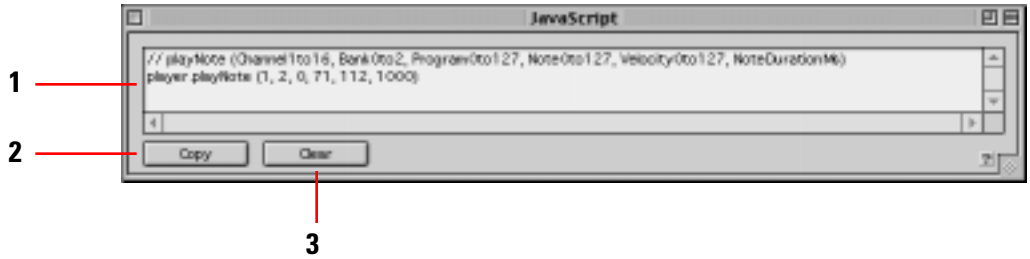
JavaScript window

Echoes your actions in JavaScript source code – for cut-and-pasting into Web page code – as a convenience for Web page authors.

Note: Musicians and sound designers not involved in Web page coding details probably won't need to use the JavaScript window.



Every time you take any action in the Beatnik Editor that can also be done in a Web page JavaScript program with Beatnik's Music Object programming interface, the equivalent JavaScript source code is added to the **JavaScript** window. You can copy this source code from the **JavaScript** window, and then paste it into your Web page source code using a text editor. The JavaScript window will accumulate all your actions up to a maximum of 32,768 characters of code, at which point the oldest entries will begin to 'scroll off the top' and disappear.

Note: When a Percussion Bank instrument is selected in a Session document window, clicking notes on the Player window keyboard produces `playNote()` commands in the **JavaScript** window with program numbers over 127. While program numbers over 127 would not be valid in a MIDI sequence, and could not be sent over a MIDI wire, in Beatnik's Music Object programming interface for the Beatnk Player (for Web browsers) or for the Beatnik Xtra (for Director and Shockwave) they select Percussion Bank instruments. For example, program 128 selects Percussion Instrument 0, program 129 selects Percussion Instrument 1, and so on, up to program 255 which selects Percussion Instrument 127.

Item	Use
1 Source Code Area	JavaScript source code appears here as text that you can copy or cut to the clipboard. To copy or cut, use the **Edit menu** commands, the **Copy** button **(2)**, or the context menu commands. **To access the context menu:** for Windows, right-click; for Mac OS, control-click.
2 Copy button	Click to copy the selected JavaScript source code text to the clipboard. If nothing's selected, copies all source code text in the **JavaScript** window.
3 Clear button	Click to clear all source code text in the **JavaScript** window.

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About JavaScript Source Code

Every entry in the **JavaScript** window consists of two lines: first a JavaScript comment identifying the meaning and value range of any function parameters, and then the actual source code – a Music Object function call with its parameters filled in to reflect your most recent action taken.

For example, if you go to a Session window and select Custom Instrument number 7, the **JavaScript** window will emit the following JavaScript code:

```
// setProgram( MidiChannel0to16, BankNumber0to2, ProgramNumber0to127 )
player.setProgram( 1, 2, 7 )
```

Note: Getting Beatnik interactive audio working in a Web page involves a good deal more than just pasting these lines into a JavaScript file. At a minimum, you'll also need to change the word `player` to match the name of your Music Object instance; typically a lot more work than that will be required. You'll certainly need a good general understanding of the Beatnik Music Object interface – be sure to read the **Web Authoring Documentation** on the Beatnik Web site before you start writing JavaScript to control the Beatnik Player:

http://www.beatnik.com/to/?music-object-doc

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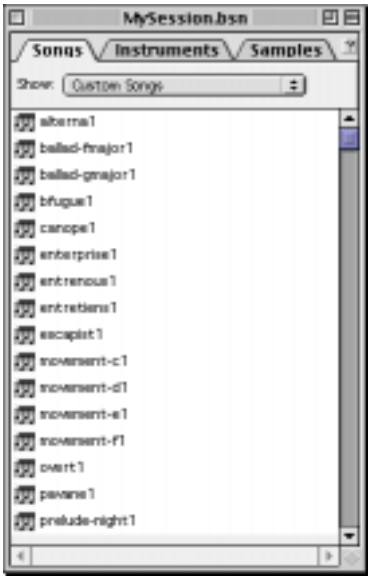
Session windows

Each Session window represents one Beatnik Editor Session file – a holder for the Songs, Instruments, and Samples you intend to use in the RMF files you'll make.

Tip: When you first create a new Session file, it may look empty. To the contrary, every Session file includes a large collection of built-in Beatnik Songs, Samples, and Instruments – it's just that they're temporarily hidden. See **Within Each Tab, 'Show:' Displays a Category of Items**, below.



Topics:

- **Basic Operation**
- **The Songs Tab**
- **The Instruments Tab**
- **The Samples Tab**

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Basic Operation

A Session is a workspace where you build Custom Instruments, audition imported Songs, and manipulate imported Samples. For easy importing, you can drag audio and MIDI files from the desktop directly into any Session window. To show more or fewer items, you can resize the window.

New in version 2.1: New **Get Resource Usage** command in the context menu displays the selected Song, Instrument, or Sample's total size in bytes.

The displayed size includes all dependent objects. For an Instrument, this will be the Instrument resource plus all Samples used in the Instrument. For a Song, the size will include all Instruments it uses, plus all the Samples used by those Instruments.

Subtopics:

Working with Multiple Sessions
Tabs for Songs, Instruments, and Samples
Within Each Tab, 'Show:' Displays a Category of Items
Working with Listed Items

Working with Multiple Sessions

You can keep multiple Session documents open if you want to. With more than one Session window open, you can freely drag, copy, and paste Songs, Instruments, and Samples between windows.

Each Session will have its own separate Undo history, so the **Undo** and **Redo** commands always apply just to the Session you're in at the time. Also, the onscreen keyboard in the **Player window** always only uses Instruments from the Session you're in at the time (that's why keyboard playback may pause momentarily when you move between open Sessions).

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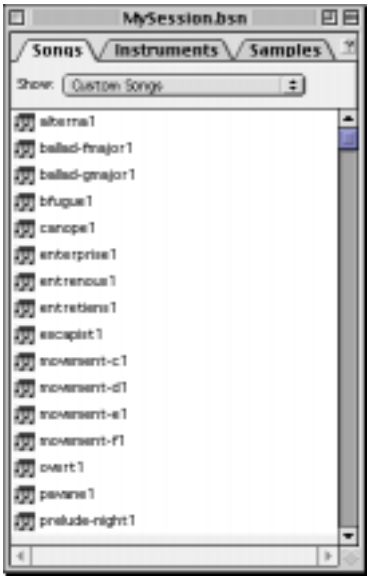
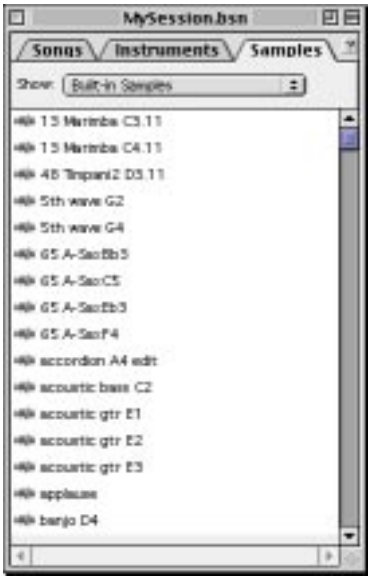
Tabs for Songs, Instruments, and Samples

The Session document window organizes your music and sound resources under three tabs, like the tabs on file folders: a **Songs** tab, an **Instruments** tab, and a **Samples** tab. These tabs select which kind of resource will appear in the list beneath – to see what's inside any tab, just click on it:



Songs

Instruments



Samples

Within Each Tab, 'Show:' Displays a Category of Items

To help you focus on the right things at the right times, all three tabs include a **Show:** pop-up menu that controls what categories of items appear in the list – for example, in the **Samples** tab

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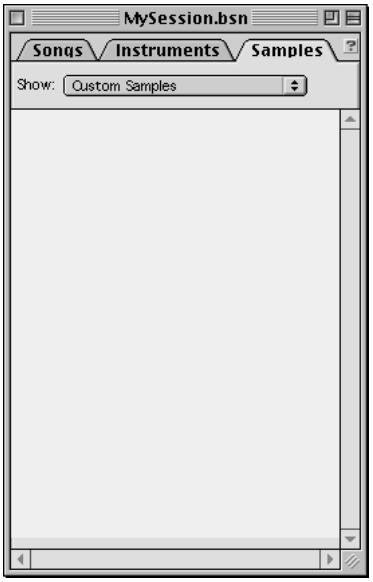
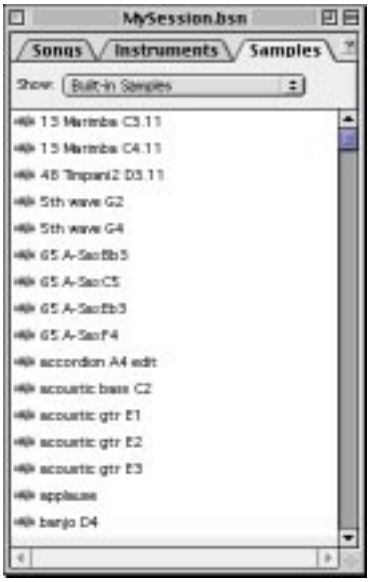
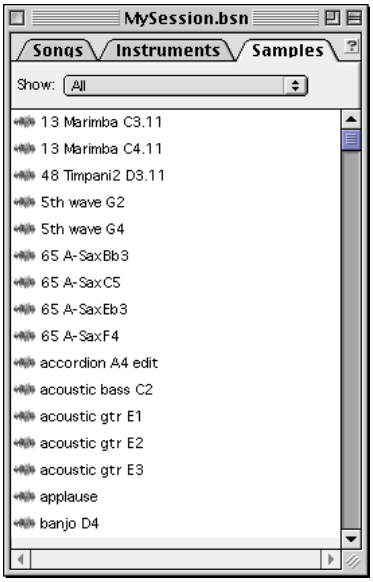
you can view just **Custom Samples**, just **Built-In Samples**, or **All Samples**:



Custom Samples



Built-In Samples



All Samples
(Custom + Built-In)

Besides your own music and sound elements, every Session document also gives you access to the music and sound resources in the built-in Beatnik Bank – the same resources available in every Beatnik Player for Web browsers.

By default, the **Show:** menu focuses on the categories containing the content you've created. That's why a Session looks empty when you first create it – there aren't any Custom Songs, Custom Instruments, or Custom Samples yet.

Here's the full list of **Show:** item categories for each tab:

Songs tab	Instruments tab	Samples tab
All	**Bank 0 Melodic - General MIDI***	**All**
Custom Songs	**Bank 0 Percussion - General MIDI***	**Custom Samples**
Groovoids*	**Bank 1 Melodic - Beatnik Special***	**Built-in Samples***
Imported RMF	**Bank 1 Percussion - Beatnik Special***	
	Bank 2 Melodic - Custom Melodic	
	Bank 2 Percussion - Custom Percussion	
	See also: **Instrument Bank Organization**.	

***** Built-In resources

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Working with Listed Items

You can rename, copy, paste, and delete items in any Session window, and apply commands to selected items.

> **Note:** There are a few restrictions on working with Built-In items. None of the Built-In items can be modified, and Groovoids and Built-in Samples can't be copied. However, you can copy Built-In Instruments and use them as a basis for your own Instrument designs.

To Select items:

- To select a single item, just click on it.
- To select multiple items, shift-click on them.
- To add single items to the selection, or to remove them, use control-click (for Windows) or cmd-click (for Mac OS).

To Rename an item:

- **Mac OS:** Click the item name, then when the name box appears, type a new name.
- **Windows:** Click the name to select it, then click again and let the mouse hover there for a moment. When the name box appears, type a new name.
- Or select the item, and then select the **Rename** command from the **Edit** menu or the context menu.

  To access the context menu: for Windows, right-click; for Mac OS, control-click.

To Copy one or more items:

- Select the items, and then select the **Copy** command from the **Edit** menu or the context menu.

  To access the context menu: for Windows, right-click; for Mac OS, control-click.
- Or select the items, and then type control-C (for Windows) or cmd-C (for Mac OS).

To Delete one or more item:

- Select the items, and then select the **Delete** command from the **Edit** menu or the context menu.
  To access the context menu: for Windows, right-click; for Mac OS, control-click.
- Or select the items, and then type the **Delete** key.

To apply any other command to one or more items:

1. Select the items.
2. Select a menu command.

   Commands are available in the application menus and the context menu. The available commands depend on the items you've selected; for example, Sample menu commands are only

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available when Sample items are selected.

To access the context menu: for Windows, right-click; for Mac OS, control-click.

See also: Commands in **Song menu**, **Instrument menu**, and **Sample menu**.

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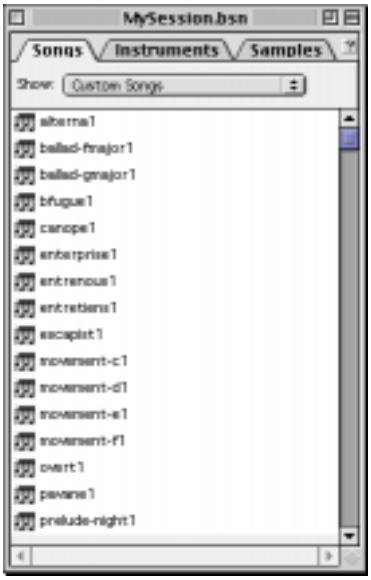
The Songs Tab

Displays the Songs in the current Session, in alphanumeric order.



The **Show:** pop-up menu controls what kinds of Songs will appear:

Show:	Displays
All	All Songs. This means all three categories below.
Custom Songs (default)	Songs that you (or other Beatnik users) create. **Note:** In a newly created Session, this category will be empty.
Groovoids	Built-in Songs supplied by Beatnik – typically, short music or sound effects sequences intended for quick and easy Web site sonification. Groovoids can't be edited.
Imported RMF	RMF files that you've imported into the Session for playback. Imported RMF Songs can't be edited.

Working with Songs

- To play a Song, double-click it.

  The Song name and tempo will appear in the **Player window**, and the Stop and Play buttons will control playback of the Song.

- To edit Song Info for a Custom Song, select it and choose an editing command from the **Songs** menu.

  Note: The **Song Info** for Groovoids and Imported RMF Songs can't be edited.

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- To rename a Custom Song, use your operating system's standard mouse technique.

  Windows: Slow double-click.
  Mac OS: Click and wait.

  Note: Groovoids and Imported RMF Songs can't be renamed.

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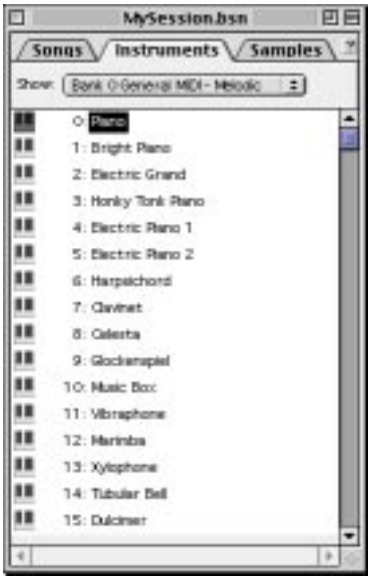
The Instruments Tab

Displays the Instruments in the current Session, in numeric order.



New in version 2.1: New **Show Empty Instrument Slots** command in the context menu turns display of empty slots on and off.

The **Show:** pop-up menu controls what kinds of Instruments will appear:

Show:	Displays
Bank 0 Melodic - General MIDI	Melodic instruments and effects conforming to the General MIDI standard.
Bank 0 Percussion - General MIDI	Percussion instruments and effects conforming to the General MIDI standard.
Bank 1 Melodic - Beatnik Special	Beatnik extensions to the General MIDI melodic instruments.
Bank 1 Percussion - Beatnik Special	Beatnik extensions to the General MIDI percussion instruments.
Bank 2 Melodic - Custom Melodic (default)	Melodic Instruments that you (or other Beatnik users) create. **Note:** In a newly created Session, this category will be empty.
Bank 2 Percussion - Custom Percussion	Percussion Instruments that you (or other Beatnik users) create. **Note:** In a newly created Session, this category will be empty.

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Working with Instruments

- To apply a command from the **Instrument menu** or context menu to an Instrument, select the Instrument and give the command.

  To access the context menu: for Windows, right-click; for Mac OS, control-click.

  Note: Some Instrument commands are only available for Custom Instruments.

- To edit a Custom Instrument using the **Instrument Editor window**, double-click the Instrument.

  Note: General MIDI and Beatnik Special Instruments are Built-In, and so can't be edited.

- To rename a Custom Instrument, use your operating system's standard mouse technique.

  Windows: Slow double-click.
  Mac OS: Click and wait.

  Note: General MIDI and Beatnik Special Instruments are Built-In, and so can't be renamed.

Note: When you copy a Custom Instrument, a dialog box appears, offering the option of also copying the Samples used in that Instrument.

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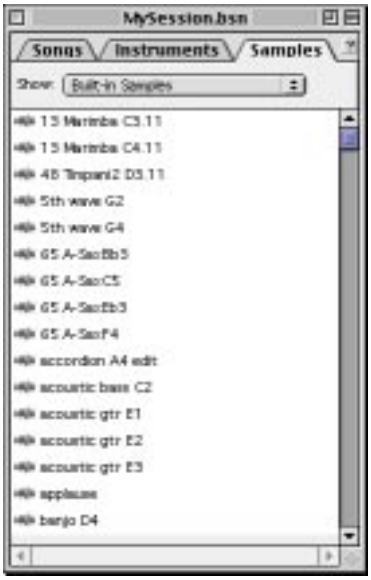
The Samples Tab

Displays the Samples in the current Session, in alphanumeric order.



The **Show:** pop-up menu controls what kinds of Samples will appear:

Show:	Displays
All	All Samples. This means both categories below.
Custom Samples (default)	Samples that you (or other Beatnik users) create, imported from sound files created in other applications. **Note:** In a newly created Session, this category will be empty.
Built-in Samples	Beatnik's built-in Samples. Built-in Samples can't be edited.

Working with Samples

- To apply a command from the **Sample menu** or context menu to a Sample, select the Sample and give the command.

  To access the context menu: for Windows, right-click; for Mac OS, control-click.

  Note: Some Sample commands are only available for Custom Samples.
- To edit a Custom Sample using the **Sample Editor window**, double-click the Sample.

  Note: The Built-In Samples can't be edited.
- To rename a Custom Sample, use your operating system's standard mouse technique.

  Windows: Slow double-click.

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Mac OS: Click and wait.

Note: The Built-In Samples can't be renamed.

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Help Menu windows

How to use the Windows accessed from the Help menu.

Topics:

Help Contents dialog box
About Beatnik Editor dialog box

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Help Contents dialog box

Opens the Online Help's Table of Contents.

Note: The Online Help system requires the use of your Web browser – either Microsoft Internet Explorer, or Netscape Navigator or Communicator. For minimum versions, see **System Requirements**.

Note for Windows Users: To open the **Help Contents** dialog box at any time, press the **F1** key.

The Beatnik Editor's Online documentation system uses your preferred Web browser to display both context-sensitive Help for every window and dialog box, and the HTML version of this full User's Guide. Selecting the **Help Contents** menu item opens the User's Guide to the Introduction page.

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About Beatnik Editor dialog box

Contains the program version and legal notices, and handles Registration.

Note: When first installed, the freely distributable Beatnik Editor is fully functional – except that the **File** menu commands **Open**, **Save**, **Save As...**, **Export RMF...** and **Export as Audio** are disabled. These features – which are essential for using the Beatnik Editor in professional Web and multimedia development – are reserved for users who purchase a Registration Key.

The **About Beatnik Editor** dialog box includes the software version number, legal notices, and the registration status of your copy of the software:

- If you've already registered your copy of the Beatnik Editor, the **About Beatnik Editor** dialog box includes your name, email address, and serial number.
- If your copy of the Beatnik Editor hasn't been registered yet, the **About Beatnik Editor** dialog box notes that the program is **Unregistered**, and includes a **Register** button.

Registering the Beatnk Editor

To register your copy of the Beatnik Editor:

1. Using your Web browser, purchase a Registration Key from the Beatnik Web site:

   http://www.beatnik.com/to?editor

   Follow the instructions on the Web page, and you will receive a Registration Key – a sequence of numbers, letters, and dashes that looks something like this:

   TX6F-H3RRTF8-Q32U-X9M2D

2. Launch your installed copy of the Beatnik Editor.

   A new **Untitled Session** document window appears.

3. Open the **About Beatnik Editor** dialog box. This step depends on your operating system:

   - On Windows, go to the **Help** menu and select **About Beatnik Editor**.

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- On Mac OS, go to the Apple menu and select **About Beatnik Editor**.

4. In the **About Beatnik Editor** dialog box, click the **Register** button.

The **Registration** dialog box appears.

5. In the **Registration** dialog box, enter your **User Name**, **Email Address**, and **Registration Key**.

Be sure to enter exactly the same **User Name** and **Email Address** that you used when purchasing the Registration Key, and type the exact **Registration Key** you received. If even one letter is different, the program will not register successfully.

6. Click the **OK** button.

If the Beatnik Editor detects a problem with your information, it will ask you to re-check your entries. Otherwise, your copy will be registered and the **Export RMF...** and **Export as Audio...** commands will be enabled.

If you run into difficulty registering the Beatnik Editor, then contact Customer Support via the Beatnik Web site:

http://www.beatnik.com/?editor-support

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Troubleshooting

How to diagnose and repair any problems you may encounter while using the Beatnik Editor.

Mac OS Users: Netscape is default browser, but the Beatnik Editor's Online Help uses Microsoft Internet Explorer

This can happen because most of the Mac OS 'default browser' settings apply only to the **http:** protocol, whereas the Online Help system uses the **file:** protocol.

To set Netscape as your default browser for the **file:** protocol:

1. From the Apple menu, launch the **Internet** Control Panel. The Control Panel will open a dialog box.
2. If you don't see an **Advanced** tab next to the **News** tab, turn Advanced Mode on.

   Go to the **Edit** menu and select the **User Mode...** command. Then, in the dialog box that appears, select **Advanced** and click the **OK** button.
3. Click on the **Advanced** tab, and then click the **Helper Apps** icon.
4. Scroll the list of handlers down until you come to a line containing **file** in the **Type** column, then select that line. It should show Microsoft Internet Explorer as the current file handler.
5. Set your preferred browser as the handler for the **file** type.

   Click the **Change...** button, then click the **Select...** button. In the navigation dialog box that appears, locate the browser that you want to use to read the Beatnik Editor Online Help, then click the **OK** button.
6. Close the **Internet** control panel.

Mac OS Users: Your MIDI or Digital Audio file doesn't appear in the Import dialog box

On Mac OS, the Beatnik Editor won't recognize files with bad – that is, missing or incorrect – type and creator codes if the filenames don't end in a recognized extension. Change the filename to end in **.wav**, **.aif**, **.aiff**, **.au**, **.mp3**, **.mid**, **.smf**, **.midi**, **.rmi**, or **.rmf** as appropriate.

Mac OS Users: Make sure you're using Sound Manager 3.1 or later

Earlier versions of Sound Manager are not compatible with the Beatnik Editor.

Mac OS Users: Turn off RAM Doubler and Virtual Memory

The RAM Doubler utility and the Mac OS Virtual Memory feature can interfere with the Beatnik Editor's timing and operation, degrading the audio output and risking crashes.

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If a sample won't loop…

Is the loop start point set to 0? All Beatnik playback software treats a sample start point of 0 as an order to not loop the Sample. Open the Sample in the Sample Editor and change the loop start to 1.

Mac OS Users: If you're using OMS…

Make sure you are using version 2.1 or greater.

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Removing the Beatnik Editor

How to remove or 'uninstall' the Beatnik Editor, in case you should ever need to.

The steps needed to remove the Beatnik Editor depend on your operating system:

Removing Under Windows
Removing Under Mac OS

Removing Under Windows

The Beatnik Editor follows the standard Windows program removal procedure. You have two choices.

Either:

- Go to the **Start Menu** and select **Programs -> Beatnik Editor -> Remove Beatnik Editor**

or:

- In **Control Panel**, use the **Add/Remove Programs** icon as detailed below:

1. On the Windows desktop, double-click the **My Computer** icon to open it.

   The **My Computer** window will appear, with a folder icon labelled **Control Panel**.

2. Double-click the **Control Panel** icon to open it.

   The **Control Panel** window will appear, with an icon labelled **Add/Remove Programs**.

3. Double-click the **Add/Remove Programs** icon to open its **Properties** dialog box.
4. In the **Add/Remove Programs Properties** dialog box, select **Beatnik Editor** from the scrolling list of installed programs.
5. Click the **Add/Remove...** button (Windows 95/98/NT) or **Change/Remove...** button (Windows 2000) to remove the Beatnik Editor from your computer.

Removing Under Mac OS

1. Throw away the Beatnik Editor application folder, called **Beatnik Editor**.

   If you aren't sure where this folder is, go to the Apple menu and select a search utility such as **Sherlock** or **Find File**.

2. Throw away the Beatnik Editor preferences file.

   This file is called **Beatnik Editor Prefs**, and it's located in the **Preferences** folder (which is inside the **System Folder** of your startup drive).

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Compatibility Info

Covers the Beatnik Editor's compatibility with various music and sound standards.

Topics:

Supported File Formats

MIDI Implementation Chart

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Supported File Formats

The Beatnik Editor can import music and sound data saved in the following file formats:

File Format	Supported Subtypes	Filename Extension
RMF Beatnik's Rich Music Format (musical notes and/or digital audio)	all	.rmf
MIDI Standard MIDI* File (SMF) (musical notes)	all	.mid, .midi
WAV Windows WAV format (digital audio)	u-law, stereo A-law, mono A-law, stereo IMA ADPCM 8kHz, 4-bit, mono IMA ADPCM 8kHz, 4-bit, stereo IMA ADPCM 11kHz, 4-bit, mono IMA ADPCM 11kHz, 4-bit, stereo IMA ADPCM 22kHz, 4-bit, mono IMA ADPCM 22kHz, 4-bit, stereo IMA ADPCM 44kHz, 4-bit, mono IMA ADPCM 44kHz, 4-bit, stereo	.wav
AIFF Audio Interchange File Format (digital audio)	8-bit, mono, signed 8-bit, stereo, signed 16-bit, mono, signed, byte-swapped 16-bit, stereo, signed, byte-swapped	.aif, .aiff
MP3 MPEG I Layer 3 (digital audio)		.mp3
SDII Digidesign Sound Designer II (digital audio)		.sd2
AU Sun Audio (digital audio)	8-bit, mono, signed 8-bit, stereo, signed u-law, mono u-law, stereo A-law, mono A-law, stereo Java/Web, mono	.au

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MIDI Implementation Chart

Model: Beatnik PlatformDate: April 2, 2000
Software Wavetable SynthesizerVersion: BAE 1.5.2

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	x	1 - 16	
	Changed	x	1 - 16	
Mode	Default	x	Mode 3	Can't change
	Messages	x	x	
	Altered	**********		
Note Number		x	0-127	
	True Voice	**********	0-127	
Velocity	Note on	x	O	
	Note off	x	x	
After Touch	Key	x	x	
	Channels	x	x	
Pitch Bend	Pitch Bend	x	*1, *2	Resolution 12 bit
Change Control	0	x	*1, *2	Bank Select (MSB Only)
	1	x	*1, *2	Modulation
	6	x	*1, *2	Data Entry
	7	x	*1, *2	Volume
	10	x	*1, *2	Panpot
	11	x	*1, *2	Expression
	64	x	*1, *2	Hold1 (Sustain)
	85, 86, 87	x	*1, *2	Beatnik Loop & Mute (files only)
	90	x	*1, *2	Master Reverb Type
	91	x	*1, *2	Reverb depth (>15 = on for reverb types 1–7)
	93	x	*1, *2	Chorus Send
	98, 99	x	*1, *2	NRPN (LSB, MSB)
	100, 101	x	*1, *2	RPN (LSB, MSB) – Reserved
	121	x	*1, *2	Reset All Controllers
	123	x	O	All Notes Off
Program Change		x	*1	
	True Number	**********	0-127	
System Exclusive		x	x	
System Common	Song Position	x	x	
	Song Select	x	x	
	Tune Request	x	x	
System Real Time	Clock	x	x	
	Commands	x	x	
Aux. Messages	Local On/Off	x	x	
	All Notes Off	x	O (123)	
	Active Sensing	x	x	
	System Reset	x	x	
Notes	*1 O x can be selectable O : Yes x : No *2 See **For Musicians** for details on Beatnik's response to Controllers.			
Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO				

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Versions and Updates

The Beatnik Editor's Version History, and how to get the latest update.

This User's Guide describes version 2.1 of the Beatnik Editor, which was released in June of 2001. For full details of the changes introduced at each release, see the **Version History** section below.

Got the Latest?

If you're reading this much later than June, 2001, and you think it might be time for an update:

1. First, check your Beatnik Editor version. You should be using version 2.1 or higher.
2. Then, visit the **Beatnik Editor Web site** to check for any newer version:

http://www.beatnik.com/to/?editor

Determining Which Version You Have

To check your Beatnik Editor version number, launch the program and check the **About Beatnik Editor dialog box**.

Here's how:

If you're on...	Then do this...
Windows	Go to the **Help menu** and select the **About Beatnik Editor Windows only** command.
Mac OS	Go to the Apple menu and select the **About Beatnik Editor...** command

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Version History

This section of the User's Guide records the changes that have been made at each major and minor release of the Beatnik Editor, beginning with version 2.0. There's a section for each major release and its related minor releases.

The current release of the Beatnik Editor is version 2.1. If you're using an earlier version of the Beatnik Editor, you should update to the latest.

Version 2.1

Beatnik Editor version 2.1 is a minor maintenance release with a few new features, released in June of 2001. To date there have been no maintenance releases for version 2.1.

What's New in Version 2.1

General Changes

- **Player Window: New controls**
  - Mute and Solo button behavior changed:

    To change multiple buttons at once, click on one button and then drag across the rest of the desired buttons.

    To turn all 16 Mute buttons on or off at once, click the word **Mute** to the left of the buttons.

    To turn all 16 Solo buttons on or off at once, click the word **Solo** to the left of the buttons.
  - Song Position Dial behavior changed:

    Clicking a position on the dial makes the current Song start playing from that position.
  - Tempo Display is now updated continuously.
- **Session Window: New context menu commands**
  - **Make Instrument Using** and **Make Song Using** command dialogs now include a checkbox option for the **Specify Root Key** value. This allows you to preserve the Samples' original Root Keys in the newly created Instruments, if desired.
  - **All Tabs:** New **Get Resource Usage** command in the context menu displays the selected Song, Instrument, or Sample's total size in bytes.

    The displayed size includes the uncompressed sizes of all dependent objects; for an Instrument, this will be the Instrument resource plus all Samples used in the Instrument. For a Song, the size will include all Instruments it uses, plus all the Samples used by those Instruments.
  - **Instruments Tab:** New **Show Empty Instrument Slots** command in the context menu turns display of empty slots on and off.
- **Sample Editor Window: New sample rate menu**

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- Added a new Sample Rate menu to make it easier to pick a standard sample rate (48000, 44100, 36000, 22050, or 11025 Hz). To set a different sample rate, select Other and type in a number in Hz.

- **Make Instrument and Make Song dialog boxes: New option**
  - Added a new checkbox to the **Specify Root Key** field. This gives you the option of preserving the Root Keys of your samples when creating a new Instrument or Song from them via the **Make Instrument Using** and **Make Song Using** commands.

Mac OS Changes

- **No Sequencer Needed for Live MIDI Input** – You no longer need to use a MIDI sequencer to route a connected MIDI controller (such as a keyboard) to the Beatnik Editor's Live MIDI Input. Just select the device in the **Preferences** dialog.
- **Pop-Up Help** – Now displays 'ToolTip' style pop-up help tags for onscreen items, similar to the Windows version.
- **Minimum System Requirements changed:**
  - Mac OS 8.5 no longer supported; 8.6 minimum
  - PPC 604e processor no longer supported; 604 minimum
  - Minimum processor speed increased to 180MHz
  - Hard Disk use reduced from 15 MB to 8 MB
  - Web Browser minimum version reduced from 4.5 to 4.0 (for online help)
  - Added Microsoft Internet Explorer and AOL browser (for online help)

Windows Changes

- **Minimum System Requirements changed:**
  - Minimum processor increased from Pentium 133 to Pentium Pro 200
  - Hard Disk use reduced from 15 MB to 7.3 MB
  - Web Browser minimum version reduced from 4.5 to 4.0 (for online help)

Bug Fixes

- When the Player Window is set to 8-bit audio output, the list of available audio file export formats should not have included the MPEG formats.
- The commands **Make Instrument from Sample** and **Make Song from Sample** were disregarding the sample's Root Key.
- Attempting to export a single Sample as an RMF file could cause a crash.

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Version 2.0

Beatnik Editor version 2.0 was released in September of 2000. Version 2.0 was the first release of the Beatnik Editor that supported both Windows and Mac OS. There was one maintenance release, version 2.0.1, to address a problem when Registering with an email address containing the underscore character (_).

What's New in Version 2.0

Topics:

Summary of Changes
Tips for Version 1 Users
Changed Key Commands

Summary of Changes

The Beatnik Editor software has been completely rewritten for version 2.0, with a new look and feel, and major improvements in technology and user interface:

- **Cross-Platform** – The Beatnik Editor is now available for both Mac OS and Windows.
- **Revised Session window** now includes tabs for all Songs, Instruments, and Samples in a project. You can keep multiple Session documents open at once, and you can drag, copy, and paste your Songs, Instruments, and Samples between Sessions. In fact, you can now copy and paste multiple objects at once.
- **Revised Export RMF command** makes RMF creation a single-step process:

  – With multiple Songs selected, Export RMF now creates one RMF file per Song.

  – With Instruments selected, Export RMF automatically creates a Song to trigger them, and includes it in the RMF file.

  – With Samples selected, Export RMF automatically creates Instruments from the Samples, per your instructions, and a Song to trigger them, and includes everything in the RMF file. No more MIDI file import step.

  Now GrooveGram-style RMF files are practically automatic – just load the RMF file, loop it, and add some JavaScript buttons to Mute and Unmute the Tracks.
- **New support for RMFX files** – just select the RMFX option in the Export RMF dialog box. No need for complex template Session files or cumbersome hand operations any more. (An RMFX file is an RMF file containing one or more Instruments, but no Songs – useful for sounds that will be triggered interactively with the Music Object but not used in stored Songs.)
- **New Sample Editor** with visual editing of sample waveforms and loop points. Commands include Cut, Paste, Clear, Crop, Gain Change, Normalize, Fade In, and Fade Out.
- **New JavaScript window** to help streamline the Sonification process. It shows the equivalent JavaScript code for actions that you take in the Beatnik Editor. You can copy the code in this window, and paste it right into your HTML editor.

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- **New Make Using… shortcut commands** to streamline common operations:

  – Make Instrument Using Samples automatically builds one or more Instruments from one or more selected Samples, including creating the Keymap and laying the Samples out per your instructions.

  – Make Song Using Samples goes a step further, and creates not just the Instruments, but a simple Song that triggers them when the RMF file is played.

  – Make Song Using Instruments does the same thing in cases where you already have an Instrument built.
- **Improved Undo / Redo** – Every edit operation is Undo-able and Redo-able. The undo history is effectively infinite (limited by memory, disk, etc.). Each window has a separate **Undo** trail.
- **Improved MIDI Sequencer Link** – The Beatnik Editor is now **always** responsive to external MIDI input, so there is no longer a Link to Sequencer command. You can always play from an external MIDI keyboard instead of the onscreen keyboard, if you prefer. You can always audition your current Instrument Bank by playing a song from your sequencer (or from any Standard MIDI File player, such as the Windows Media Player).
- **Improved Song Info features** (formerly 'Copyright') – You can now apply the same Song Info settings to multiple Songs at once, in a single operation. You can also set up a default set of values for all the Song Info fields, then in a single step apply them all – or only some of them – to a Song whenever you want.
- **Improved Instrument Editor** now combines Keymap, Filter, Volume Envelope, Modulation, and Output controls into one window with multiple pages and graphic editing. You can now drag Samples into the Keymap from a Session window, and your Instruments can now use up to five Modulators (previous limit was three).
- **Improved Compression features** – A new caching system makes it easier to compare different compression types for a given Sample. Also, the original, uncompressed version of every sample is kept, so you can always switch to a different compression type later with no loss in fidelity. You can also apply the same compression type to any number of Samples at once, in a single operation.
- **Improved Export Audio File feature** lets you save linear audio versions of your Songs in WAV, AIFF, and MP3 formats (in addition to the original Sound Designer II on Mac OS).
- **Improved MPEG compression** – The new MPEG encoder and decoder run much faster and sound much better.
- **Improved Modulation Editor** – Modulation options are now presented as four basic Modulator Types – LFO, Envelope, LFO with Depth Envelope, and Offset Modulator – and the controls that are irrelevant for each type are kept from view.
- **Improved window behavior** – The Sample Editor and Instrument Editor windows are modeless – that is, you can leave them open while doing work in other windows, and you can keep as many Sample Editors and Instrument Editors open as the available memory will allow. Also, when the Beatnik Editor starts up, it now automatically returns to the state it was in just before the latest shut down. This includes which Session documents were open, selected items, window positions, MIDI channel Mute and Solo buttons, and so forth.

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- **Improved documentation** – Revised and expanded Beatnik Editor User's Guide, now supplied both in printable PDF and online HTML formats. Also new onscreen ToolTips (Windows only).

Tips for Version 1 Users

If you've been working with earlier releases of the Beatnik Editor, you should be aware of a few significant workflow changes introduced in version 2:

- **Full-Time Live MIDI Input**

  The Beatnik Editor's MIDI Input feature now operates all the time – there's no longer any need for the Link to Sequencer command. Just select the right MIDI Input source in the Preferences dialog box.

- **Total Undo**

  Whereas the Beatnik Editor version 1 had limited **Undo** functionality, version 2 offers total **Undo** all the way back to your most recent **Save** or **Save As…**. Also, there are now multiple **Undo** histories. That is, every window you open maintains its own independent **Undo** history. This means that while you're in a **Sample Editor** or **Instrument Editor**, you can **Undo** your changes all the way back to the original, unedited version without affecting any of the work you're doing at the same time in other windows.

  Important Notes:

  - When you close a **Sample Editor** or **Instrument Editor** window, all the edits you made are rolled into one single **Undo**-able step in the Session document's **Undo** history. For example, if immediately after closing a **Sample Editor** you click in your Session document and then **Undo**, you'll get the Sample as it was before you started editing it – not the Sample as it was before your most recent edit inside the **Sample Editor**. The same also holds true for changes to Instruments.
  - You can now Revert a **Sample Editor** or **Instrument Editor** window, with same effect.

- **Multiple Sessions**

  Whereas the Beatnik Editor version 1 operated on one Session document at a time, version 2 is able to keep as many Sessions open as the available memory will allow. You can drag, copy, and paste Custom Songs, Custom Instruments, and Custom Samples between your open Session documents. Dragging or pasting also offers the option of bringing any dependent resources along – for a Song, its Custom Instruments and Custom Samples can also be cloned; and for an Instrument, its Samples can also be cloned.

  > **Important Note:** When dragging or pasting into a Session document would result in more than one Instrument with the same MIDI program number, the Beatnik Editor will renumber the colliding Instruments and alert you. **If you see this message, you should carefully verify that any Songs being added still play correctly** because the Beatnik Editor will not update the Song's MIDI Program Change events to use the altered Instrument numbers. If the Song is now playing with wrong Instruments, you will need to use your MIDI sequencer program to set the program numbers manually in your original sequence, then save a revised MIDI file and **Re-Import MIDI** (see **Song Settings dialog box**).

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Changed Key Commands

Menu	Beatnik Editor 1.0 command	Beatnik Editor 2.0 command	Description
File	**J**	**I**	Import
	P	(none)	Link to Sequencer (**P** is now Compression)
Edit	**1, 2, 3**	(none)	Minimum, Medium, and Maximum volume commands have been removed
Song	**Y**	(none)	Changed 'Copyright' to 'Song Info' (**Y** is now Redo)
Instrument	**K, M, G, F**	(none)	Changed to page select buttons in Instrument Editor window
	I	(none)	Instrument Settings moved into Instrument Editor window (**I** is now Import)
Window	**4, 5, 6**	(none)	Songs, Instruments, and Samples are now tabs in the Session window
	7, 8	(none)	Keyboard and Realtime windows are now combined in the Player window
	9	(none)	Help window moved to Help menu

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5.1 Cumulative Remedies. The remedies under this Agreement shall be cumulative and not alternative and the election of one remedy for a breach shall not preclude pursuit of other remedies unless as expressly provided in this Agreement.

5.2 Governing Law. This Agreement shall be governed in all respects by the substantive laws of the State of California, United States of America (excluding conflict of laws rules), without regard to the U.N. Convention on Contracts for the International Sale of Goods. Any dispute regarding this Agreement shall be subject to the exclusive jurisdiction of the California state courts in and for San Mateo County, California or, if there is federal jurisdiction, the United States District Court for the Northern District of California, and the parties agree to submit to the personal and exclusive jurisdiction and venue of these courts.

5.3 Notices. All notices, statements and reports required or permitted by this Agreement shall be in writing and deemed to have been effectively given and received; (i) five (5) business days after the date of mailing if sent by registered or certified U.S. mail, postage prepaid, with return receipt requested; (ii) when transmitted if sent by facsimile, provided a confirmation of transmission is produced by the sending machine and a copy of such facsimile is promptly sent by another means specified in this Section 6.3; or (iii) when delivered if delivered personally or sent by express courier service. All notices to Beatnik must be sent to the attention of Beatnik's General Counsel at the address first set forth above.

5.4 Export Restrictions. User will comply in all respects with all laws, regulations, rules and treaties applicable to any materials or technology provided hereunder, including without limitation, all export restrictions. User will comply with the Export Administration Regulations or other United States laws and regulations with respect to export in effect from time to time. By downloading, using or installing the Software, you warrant that you are not, and are not located in, under the control or, or a national or resident of any country, subject to United States export restrictions that prohibit the license of the Software to you.

5.5 Assignment. User shall not assign or otherwise transfer any of its rights, obligations or licenses hereunder without the prior written consent of Beatnik, including any assignment by operation of law as a result of the merger or acquisition of User. Subject to the foregoing, the provisions of this Agreement shall apply to and bind the successors and permitted assigns of the parties.

5.6 Headings. The descriptive headings of this Agreement are intended for reference only and shall not affect the construction or interpretation of this Agreement.

5.7 Severability. If any provision set forth in this Agreement is determined by any court to be unenforceable, invalid or illegal, such provision shall be interpreted to have the broadest application as shall be enforceable, valid and legal, provided, however that if such provision cannot be interpreted to be enforceable, valid or legal to any extent, such provision shall be severed. The invalidity, illegality or unenforceability of any particular provision of this Agreement shall not affect the other provisions hereof, which shall continue in full force and effect.

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5.8 Waiver of Rights. The failure of either party to require performance of any of the terms, covenants, or conditions of this Agreement or to exercise any right hereunder in any instance(s), shall not be construed as a waiver or relinquishment of the future performance of any rights.

5.9 Entire Agreement; Conflict. This Agreement, together with all exhibits and schedules hereto, constitutes the complete, final and exclusive statement of the terms of the Agreement among the parties pertaining to the subject matter hereof and supersedes all prior agreements, understandings, negotiations and discussions of the parties. No modification or rescission of this Agreement shall be binding unless executed in writing by the party to be bound thereby.

5.10 Legal Expenses. The prevailing party in any legal action brought by one party against the other and arising out of this Agreement will be entitled, in addition to any other rights and remedies it may have, to reimbursement for its expenses, including court costs and reasonable attorneys' fees.

5.11 Government End-Users. The Software and accompanying documentation are deemed to be "commercial computer software" and "commercial computer software documentation", respectively, pursuant to DFAR Section 227.7202 and FAR Section 2.212, as applicable. Any use, modification, reproduction, release, performing, displaying or disclosing of the software and accompanying documentation by the U.S. Government shall be governed solely by the terms of this Agreement and shall be prohibited except to the extent expressly permitted by the terms of this Agreement.

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Online Resources

Links to useful information and content on the Beatnik Web site.

Customer Support	If you run into difficulty installing, registering, or using the Beatnik Editor, and can't find an answer in the Online Help or User's Guide, then contact Beatnik Customer Support via the Beatnik Web site: **http://www.beatnik.com/to/?editor-support**
Documentation Updates	Every once in a while you may want to check for updates to this User's Guide or other Beatnik Editor documentation: **http://www.beatnik.com/to/?editor-doc-download**
Software Updates	Every once in a while you may want to check for updates to the Beatnik Editor software: **http://www.beatnik.com/to/?editor**
Beatnik for Beginners	Come learn what Beatnik interactive audio is all about: **http://www.beatnik.com/to/?beginners**
Beatnik Discussion Forums	This is the best place to keep in touch with other beginning and intermediate Beatnik Editor users, and to ask questions as you start learning: **http://discussion.beatnik.com/**
Beatnik Knowledge-base	Online database of tips, techniques, and user experience for all Beatnik technologies: **http://www.beatnik.com/to/?guru**
Beatnik Village Mailing List	The Beatnik Village mailing list is the best way to keep in contact with advanced Beatnik Editor users: **http://www.beatnik.com/to/?beatnik-mailing-list**
Beatnik Sonified Show-case	A gallery of some of the best interactive audio work being done with Beatnik technologies: **http://www.beatnik.com/to/?showcase**
Sonify Your Web Site	Adding interactive music and audio to your own Web sites is a snap with Beatnik's information and tools. You can program it yourself in HTML and JavaScript, or use authoring tools that support Macromedia Dream-Weaver, Macromedia Director, Adobe GoLive, and NetObjects Fusion. For a comprehensive guide to Beatnik technologies and tools, visit: **http://www.beatnik.com/to/?products**
Beatnik Central	To learn about all things Beatnik, visit the main Beatnik Web site: **http://www.beatnik.com**

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Built-In Instruments

This section lists the Instruments in the General MIDI and Beatnik Special banks.

Beatnik playback software generally includes two Built-In Instrument banks: Bank 0 contains General MIDI Instruments, and Bank 1 contains Beatnik Special Instruments. Every Instrument bank contains both Melodic Instruments and Percussion Instruments. In most cases, these Built-In instruments are kept in a disk file named **patches.hsb** (or some variation on that name).

This section lists all the Melodic and Percussion Instruments in the Built-In General MIDI and Beatnik Special banks.

Topics:

Built-In Melodic Instruments

Built-In Percussion Instruments

Note: Bank 2 is reserved for Custom Instruments in RMF files.

Built-In Melodic Instruments

Melodic instruments are selected by MIDI Bank Select and Program Change messages.

MIDI Program Number	Bank 0: General MIDI (Melodic)	Bank 1: Beatnik Special (Melodic)
0	Piano	Soft Piano
1	Bright Piano	Reflection Piano
2	Electric Grand	Flange Piano
3	Honky Tonk Piano	Octopus Piano
4	Electric Piano 1	Flange Electric Piano
5	Electric Piano 2	Tremolo Electric Piano
6	Harpsichord	Chorus Harpsichord
7	Clavinet	Ondioline
8	Celesta	Curious Chime
9	Glockenspiel	Swirly Bell
10	Music Box	Echo Bell
11	Vibraphone	Vibraphone 2
12	Marimba	Soft Marimba

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13	Xylophone	Percolator
14	Tubular Bell	Reverse Bell
15	Dulcimer	Percussive Piano
16	Hammond Organ	Rot. Speaker Organ 1
17	Perc Organ	Bright Perc Organ
18	Rock Organ	Growl Organ
19	Church Organ	Chorus Church Organ
20	Reed Organ	Sawteeth
21	Accordion	Expressive Accordion
22	Harmonica	Corny Harmonica
23	Tango Accordion	Squeeze Box
24	Nylon Str Guitar	Acoustic Bass Gtr
25	Steel String Guitar	Mute Guitar 2
26	Jazz Electric Gtr	Chorus Jazz Guitar
27	Clean Guitar	Tremolo Guitar
28	Muted Guitar	Echo Mute Bass
29	Overdrive Guitar	Grungey Guitar
30	Distortion Guitar	Flange Guitar
31	Guitar Harmonics	Flange Guitar Stab
32	Acoustic Bass	Dark Syn Bass
33	Fingered Bass	Jungle Bass
34	Picked Bass	Jungle Bass 2
35	Fretless Bass	Chorus Bass
36	Slap Bass 1	Synth Slap Bass
37	Slap Bass 2	Lowrider
38	Syn Bass 1	OB Bass
39	Syn Bass 2	OB Bass 2
40	Violin	Synth Violin
41	Viola	Robot Threat
42	Cello	Formula 1
43	Contrabass	Deep Bass Stab
44	Tremolo Strings	Trill Strings
45	Pizzicato Strings	Cello Stroke
46	Orchestral Harp	VibHarp

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47	Timpani	Tuned Drum
48	Ensemble Strings	sfz Strings
49	Slow Strings	Moving Strings
50	Synth Strings 1	Heads of Space
51	Synth Strings 2	Slow Synth Strings
52	Choir Aahs	Slow Choir Aahs
53	Voice Oohs	Pulsing Voices
54	Syn Choir	Cloudscapes
55	Orchestra Hit	Hype Orch Hit
56	Trumpet	Accent Trumpet
57	Trombone	Accent Trombone
58	Tuba	Mellow Trombone
59	Muted Trumpet	Muted Trumpet 2
60	French Horn	French Horn Swell
61	Brass Ensemble	Brass Ensemble 2
62	Syn Brass 1	Syn Brass 3
63	Syn Brass 2	Syn Brass 4
64	Soprano Sax	Lyrical Sax
65	Alto Sax	Accent Sax
66	Tenor Sax	Slow Sax
67	Baritone Sax	Staccato Sax
68	Oboe	Lyrical Oboe
69	English Horn	Soft Lead Synth
70	Bassoon	Staccato Bassoon
71	Clarinet	Smooth Clarinet
72	Piccolo	Accent Piccolo
73	Flute	Lyrical Flute
74	Recorder	Mello Breath
75	Pan Flute	Peruvian
76	Bottle Blow	Breath Echoes
77	Shakuhachi	Apparition
78	Whistle	Humorous Whistle
79	Ocarina	Strobes
80	Syn Square Wave	Teletronic

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81	Syn Saw Wave	5th Pulse
82	Syn Calliope	Moon Jelly
83	Syn Chiff	Ricochet Pad
84	Syn Charang	Rock Radiation
85	Syn Voice	Solo Vox 2
86	Syn Fifths Saw	5th Saw Drone
87	Syn Brass and Lead	Lead Synth 2
88	Fantasia	Fantasy Bells
89	Warm Pad	Slow Warm Pad
90	Polysynth	Polysynth 2
91	Space Vox	50's Sci-Fi
92	Bowed Glass	Watery Glass
93	Metal Pad	UFOs
94	Halo Pad	Soprano
95	Sweep Pad	Refractions
96	Ice Rain	Comet Tails
97	Soundtrack	Soundtrack 2
98	Crystal	Friendly Data
99	Atmosphere	Analog Sequence
100	Brightness	Luminous Voice
101	Goblins	Goblins 2
102	Echo Drops	Tick Blok
103	Sci Fi	Droplet
104	Sitar	Droplet 2
105	Banjo	Video Game 1
106	Shamisen	Video Game 2
107	Koto	Digi-Dodo
108	Kalimba	Fairy Godmother
109	Bag Pipe	Alarm
110	Fiddle	Hoverbug
111	Shanai	Crickets
112	Tinkle Bell	Beatnik
113	Agogo	Teletype
114	Steel Drums	Carriage Return

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115	Woodblock	Typewriter Key
116	Taiko Drum	Cash Register
117	Melodic Tom	Thru Phone Chirp
118	Syn Drum	Whipped
119	Reverse Cymbal	Pop Click
120	Guitar Fret Noise	Metal Chirp
121	Breath Noise	Poing
122	Seashore	Metal Spray
123	Bird	FlyBy 1
124	Telephone	FlyBy 2
125	Helicopter	Cosmic Ray
126	Applause	SampHold
127	Gunshot	SampHold 2

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Built-In Percussion Instruments

Percussion instruments are usually accessed by means of MIDI notes played on the Drum Channel (MIDI channel 10). The table below shows what instrument is produced by each MIDI note. By default, the General MIDI percussion instruments (Bank 0) are used for the Drum Channel. To use the Beatnik Special percussion instruments on the Drum Channel instead, send a MIDI Bank Select message on channel 10, with bank number 1.

Ordinarily the Drum Channel is in Percussion Mode, where there's a different instrument for each MIDI note number (pitch), all playing at natural pitch. However, the Drum Channel can also be put into Pitched Percussion Mode (so can all of the MIDI channels). In Pitched Percussion Mode, sending a MIDI Program Change message selects any one of the percussion instruments, as listed in the table below, and sending MIDI note messages of different pitches will play the selected instrument at corresponding pitch transpositions.

> **Note:** In the Beatnik Special Bank, percussion instruments 0–45 (C-1 – A2) repeat instruments 46–90 (A#2 – F#6).

MIDI Note or Program Number	MIDI Note Name	Bank 0: General MIDI (Percussion)	Bank 1: Beatnik Special (Percussion)
0	C-1	(Empty)	tablaesque_lo
1	C#-1	(Empty)	tablaesque_hi
2	D-1	(Empty)	nine_inch_kick
3	D#-1	(Empty)	hippishake
4	E-1	(Empty)	ScienceTom
5	F-1	(Empty)	click
6	F#-1	(Empty)	rvs cymb pan long
7	G-1	(Empty)	rvs cymb pan med
8	G#-1	(Empty)	rvs cymb pan short
9	A-1	(Empty)	woodstick
10	A#-1	(Empty)	electrobrite
11	B-1	(Empty)	Slo Laser
12	C0	(Empty)	Ufo-by
13	C#0	(Empty)	air snare
14	D0	(Empty)	weird snare
15	D#0	(Empty)	flange snare

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16	E0	(Empty)	ping drum
17	F0	(Empty)	itchy-scratch
18	F#0	(Empty)	itchy-scratch 2
19	G0	(Empty)	hi_metallic_snare
20	G#0	(Empty)	noise echo
21	A0	(Empty)	buzzy hit
22	A#0	(Empty)	rez hat
23	B0	(Empty)	bucket hit
24	C1	(Empty)	icecube
25	C#1	(Empty)	explosive kick
26	D1	(Empty)	mutant cowbell
27	D#1	Hi-Q	Temple Bell
28	E1	Slap	Hi Temple Gong
29	F1	Scratch Push	Thuddy Kick
30	F#1	Scratch Pull	LoBell
31	G1	Sticks	sinechirp
32	G#1	Square Click	hollow_metal_hit
33	A1	Metronome Click	woodblock
34	A#1	Metronome Bell	reverse cymbal
35	B1	Low Kick	tablaesque_slap
36	C2	Kick	sonarblip
37	C#2	Rimclik	sinehit
38	D2	Electric Snare	sineblock
39	D#2	Handclap	Krelltone
40	E2	Acoustic Snare	sine_kick
41	F2	Tom Low	hi-tone*
42	F#2	Closed Hi-Hat	hi-click
43	G2	Tom Hi	Gate-tone
44	G#2	Pedal Hi-Hat	chem-tone
45	A2	Tom Hi	dub_kick

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46	A#2	Open Hi-Hat	tablaesque_lo
47	B2	Low Mid Tom	tablaesque_hi
48	C3	High Mid Tom	nine_inch_kick
49	C#3	Crash Cymbal 1	hippishake
50	D3	High Tom	ScienceTom
51	D#3	Ride Cymbal 1	click
52	E3	Chinese Cymbal	rvs cymb pan long
53	F3	Ride Bell	rvs cymb pan med
54	F#3	Tambourine	rvs cymb pan short
55	G3	Splash Cymbal	woodstick
56	G#3	Cowbell	electrobrite
57	A3	Crash Cymbal 2	Slo Laser
58	A#3	Vibraslap	Ufo-by
59	B3	Ride Cymbal 2	air snare
60	C4	High Bongo	weird snare
61	C#4	Low Bongo	flange snare
62	D4	Mute High Conga	ping drum
63	D#4	Open High Conga	itchy-scratch
64	E4	Low Conga	itchy-scratch 2
65	F4	High Timbale	hi_metallic_snare
66	F#4	Low Timbale	noise echo
67	G4	High Agogo	buzzy hit
68	G#4	Low Agogo	rez hat
69	A4	Cabasa	bucket hit
70	A#4	Maracas	icecube
71	B4	Short Whistle	explosive kick
72	C5	Long Whistle	mutant cowbell
73	C#5	Short Guiro	Temple Bell
74	D5	Long Guiro	Hi Temple Gong
75	D#5	Claves	Thuddy Kick

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76	E5	High Wood Block	LoBell
77	F5	Low Wood Block	sinechirp
78	F#5	Mute Cuica	hollow_metal_hit
79	G5	Open Cuica	woodblock
80	G#5	Close Triangle	reverse cymbal
81	A5	Open Triangle	tablaesque_slap
82	A#5	Shaker	sonarblip
83	B5	Jingle Bell	sinehit
84	C6	Bell Tree	sineblock
85	C#6	Castanets	Krelltone
86	D6	Mute Surdo	sine_kick
87	D#6	Open Surdo	hi-tone*
88	E6	(Empty)	hi-click
89	F6	(Empty)	Gate-tone
90	F#6	(Empty)	chem-tone
91	G6	(Empty)	dub_kick
92 – 93	G#6 – A6	(Empty)	(Empty)
94	A#6	Brush Snare High	(Empty)
95	B6	Brush Snare Low	(Empty)
96 – 127	C7 – G9	(Empty)	(Empty)

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Live MIDI Input

How to work with the Beatnik Editor's continuous MIDI Input.

Notes:

Beatnik Editor version 2.0 Users: You no longer need to use a MIDI sequencer to route a connected MIDI controller (such as a keyboard) to the Beatnik Editor's Live MIDI Input. Just select the device in the **Preferences** dialog.

Beatnik Editor version 1 Users: The Beatnik Editor's MIDI Input feature now operates all the time – there's no longer any need for the Link to Sequencer command that appeared in earlier versions. Just select the right MIDI Input source in the Preferences dialog box.

If you don't have any Session documents open, Live MIDI Input won't work. That's because the Beatnik Editor keeps all its Instruments in Session documents, and it can't play MIDI notes when it doesn't have any Instruments to play them on.

Mute Buttons Affect Live MIDI In. In the **Player window**, if a MIDI channel's **Mute** button is on, then live MIDI notes arriving on that channel won't be heard. The channel **Solo** buttons also affect Live MIDI Input.

Instrument Changes Require a Click on the Onscreen Keyboard. When you select a new Instrument in a Session window, the Instrument name will appear immediately in the **Keyboard Instrument** display of the **Player window**; however, the Instrument will not be activated until you click a note on the onscreen keyboard. As a result, any Live MIDI Input notes received on channel 1 during that interval will continue to sound with the previous channel 1 Instrument.

Topics:

About Live MIDI Input

Setting Up for Live MIDI Input

- **Mac OS**
- **Windows**

Working with Live MIDI Input

- **About MIDI and Instrument Programs**
- **Coping with Latency**

About Live MIDI Input

The Beatnik Editor's Live MIDI Input feature gives you a way to send notes, Controller messages like pitch bend, Program Changes, and any other MIDI messages to the Beatnik MIDI Synthesizer inside the Beatnik Editor. This means you can use MIDI to audition and play Beatnik Instruments and control the mix and reverb, at the same time you're editing your Samples and Instruments in the Beatnik Editor. When you realize that live MIDI input can also come from a

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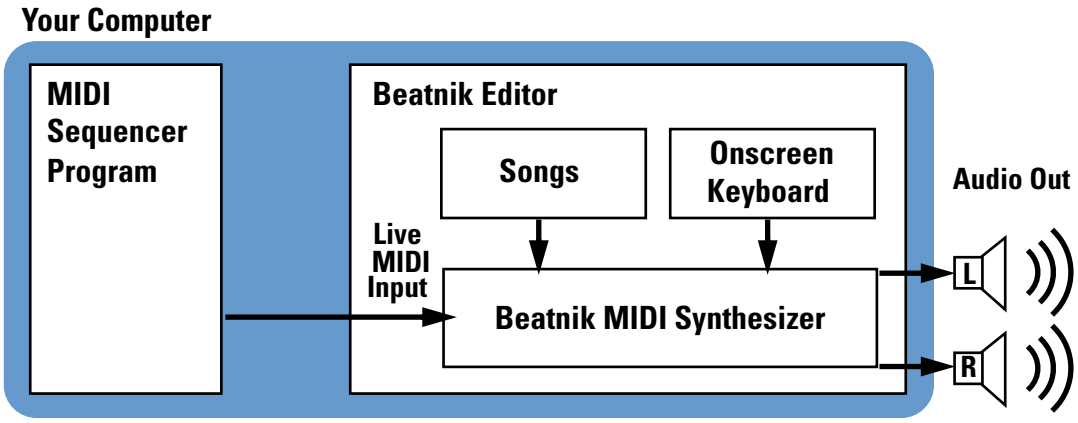
MIDI sequencer program, you'll see that the Beatnik Editor is an environment where you can develop your notes, your patches, and your mix all at the same time – so music-making is easier, and you're much more productive.

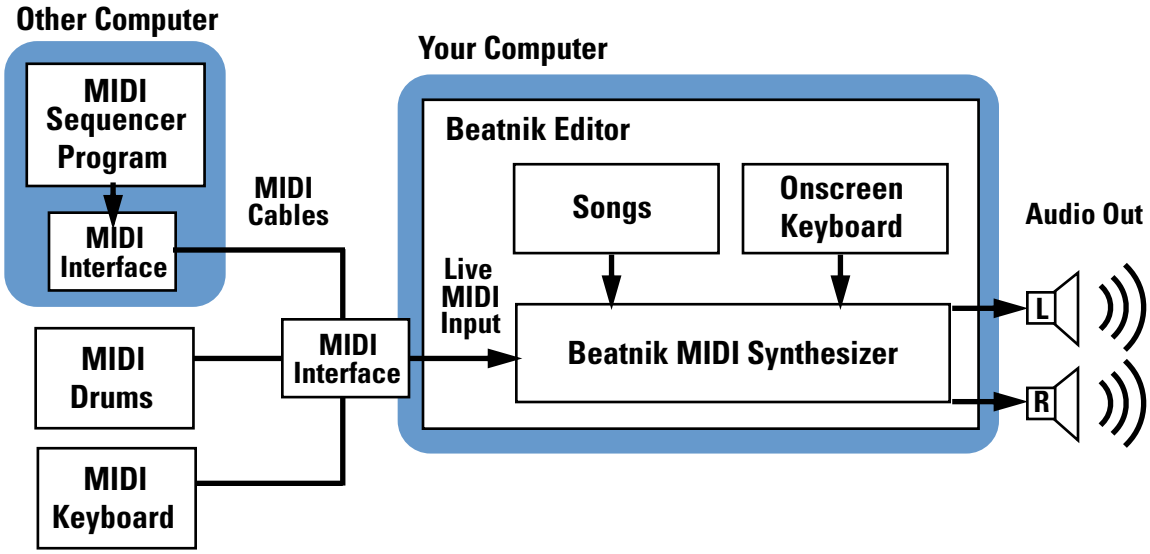
These incoming MIDI messages can come from many different sources, falling into two main groups:

- Pieces of software running on the same computer – usually a MIDI sequencer program.
- External MIDI sources – Keyboard devices, other controllers, and other computers.

Connecting with pieces of software running on the same computer doesn't require any MIDI interface hardware, just some MIDI system software to connect the two programs (see **Setting Up for Live MIDI Input**, below).



If your computer has the right MIDI interface hardware, MIDI input can also come from any external MIDI device – a MIDI keyboard, a MIDI electronic drum set, or a MIDI program running on a second computer with its own hardware MIDI interface. This is the way you play the Beatnik Editor's synthesizer from an external keyboard, not just the onscreen keyboard in the **Player window**.



Often you'll want to use both approaches at the same time. The preferred set-up for many com-

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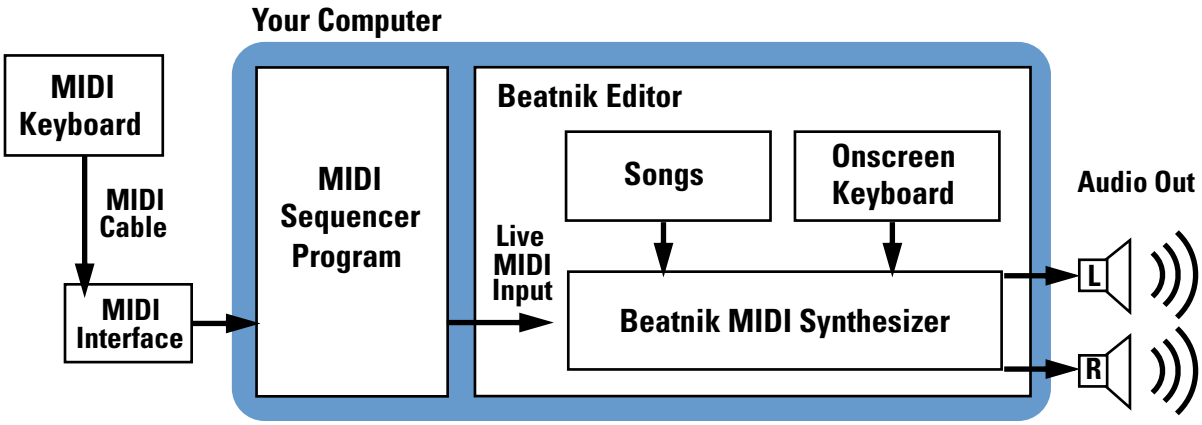
posers and arrangers is to run both the Beatnik Editor and a MIDI sequencer program at the same time, on the same computer, and use a MIDI keyboard for easier note entry. This approach also requires a hardware MIDI interface:



Setting Up for Live MIDI Input

To use Live MIDI Input, you'll need to install the appropriate system MIDI software drivers, and then in the Beatnik Editor **Preferences dialog box** select your desired MIDI input source. This procedure depends on your operating system, and on which MIDI hardware and software you have.

Mac OS

The Beatnik Editor's Live MIDI Input feature, like all MIDI software for Mac OS, requires the use of a separate MIDI routing software package: the Open MIDI System (OMS), and for users of Mark of the Unicorn's Performer, the FreeMIDI package. These packages allow MIDI sequencers, or other programs, to recognize the Beatnik Editor and send MIDI event streams to it.

To set up a Mac OS computer for Live MIDI Input in the Beatnik Editor:

1. If your situation requires a hardware MIDI hardware interface, get one.

Many different models and brands are available. See your favorite computer or music store for a consultation.

2. Get the appropriate system MIDI routing software for your computer:

We support the Open Music System (OMS). Users of Mark of the Unicorn's Performer will also need FreeMIDI. They can both be downloaded from the Web.

- OMS is available at:

http://www.opcode.com/downloads/

For best results, make sure to get version 2.1 or greater.

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- FreeMIDI is available on your Performer CD, or at:

http://www.motu.com/english/download/

If either of these sites are inaccessible, do a Web search using your favorite search engine.

3. Install your software and optional hardware from steps 1 and 2, following their provided instructions.
4. In the Beatnik Editor, go to the **Preferences dialog box** and in the **Choose MIDI Input Device** listbox, select **OMS**.
5. If you want to feed the Beatnik Editor's Live MIDI Input with a MIDI sequencer program running on the same computer, see also **Linking to Your Sequencer**.

Windows

Note for Windows 2000 and NT Users: You should be prepared for a certain amount of irregularity in live MIDI event timing, as these operating systems are optimized for server processes, not real-time media presentation.

To set up a Windows computer for Live MIDI Input in the Beatnik Editor:

1. If your situation requires a hardware MIDI hardware interface, get one.

   Many different models and brands are available. See your favorite computer or music store for a consultation.

2. If you want to feed the Beatnik Editor's Live MIDI Input with a MIDI sequencer program running on the same computer, get an inter-application MIDI connection driver.

   Beatnik recommends you use MIDI Yoke:

http://www.midiox.com/myoke.htm

3. Install your software and optional hardware from steps 1 and 2, following their provided instructions.
4. In the Beatnik Editor, go to the **Preferences dialog box** and in the **Choose MIDI Input Device** listbox, select the appropriate item.

   On a typical Windows machine equipped with a Sound Blaster Live! Card, this is often **SB Live! Midi UART**. If you're using MIDI Yoke, select that instead.

5. If you want to feed the Beatnik Editor's Live MIDI Input with a MIDI sequencer program running on the same computer, see also **Linking to Your Sequencer**.

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Working with Live MIDI Input

Live MIDI Input is very simple to use. Whenever the Beatnik Editor is running, the external MIDI source feeds the Beatnik MIDI Synthesizer, subject to the controls in the **Player window**:

- The Beatnik Editor's MIDI Input is available at all times; that is, whenever the Beatnik Editor is running, the Beatnik MIDI Synthesizer will respond to the live MIDI input source you've selected in the **Preferences dialog box**.
- Live MIDI input can access all 16 MIDI channels, providing that the **Player window**'s channel **Mute** buttons are off.
- The channel **Solo** buttons in the **Player window** also apply to live MIDI Input.
- The **Player window**'s sampling rate, channels (mono/stereo), and reverb controls also affect notes arriving from the live MIDI input.
- **Selecting Channel 1 Instruments:** When you select a new Instrument in a Session window, the Instrument name will appear immediately in the **Keyboard Instrument** display of the **Player window**; however, the Instrument will not be activated until you click a note on the onscreen keyboard. As a result, any Live MIDI Input notes received on channel 1 during that interval will continue to sound with the previous channel 1 Instrument.
- When playing the Beatnik Editor Instruments live from a MIDI keyboard, you'll notice some latency – when you press a key, there's a short delay before the note triggers, usually at least 20 milliseconds. This latency can be very irritating when trying to play complex musical passages. Unfortunately, latency is unavoidable due to the system software that routes MIDI messages between applications, and the Beatnik Editor's audio output buffering that prevents the sound from breaking up when your computer is very busy. See also **Coping with Latency**, below.

  Tip: Rather than playing the Beatnik MIDI Synthesizer in real time, we recommend you do your live MIDI playing and sequence recording on instruments other than the Beatnik Editor. Then, once the MIDI performance is recorded in the sequencer, assign the same track to play back through the Beatnik Editor.

About MIDI and Instrument Programs

If you're new to MIDI and music on computers, you may want to read the following description of how MIDI programs and MIDI channels relate to the musical Instruments you hear when a song is played.

- In MIDI, Instruments are called Programs, and every one of the 16 MIDI channels can have a different Program at any given time. To select the Instrument for a channel, you'll need to send the Beatnik Editor a MIDI Program Change event on that channel. The Instruments are numbered 0 through 127, as they appear in the Instruments window.This is how all of MIDI works, not just the Beatnik Editor.
- In MIDI, Instruments are grouped into Banks of up to 128 Instruments each, and MIDI Program Change events always select an Instrument from the current Bank. All Beatnik playback software includes three different Banks:

  Bank 0 is Beatnik's General MIDI Bank

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Bank 1 is Beatnik's Special Bank
Bank 2 is the User Bank, containing any Custom Instruments you make

To access these Banks in your sequences, you'll need to send a MIDI Bank Select command (controller 0) to the Beatnik Editor. For further details, see the heading **Program Change and Bank Select** in the section **For Musicians**.

Coping with Latency

As mentioned above, there will be a noticeable delay between the Beatnik Editor's receipt of a MIDI note and the time you hear the corresponding note. This can present some difficulties, so here are a few tips on making the best of the situation:

- When recording a MIDI performance into your sequencer, if you want to play on the Beatnik Editor MIDI synthesizer despite the delay, then make sure your metronome or click track is also assigned to the Beatnik Editor MIDI synthesizer – otherwise, your live performance will be recorded out of sync with the other tracks.
- Another recording trick: Try reducing the tempo of your sequencer to a very slow speed while recording your performance, then restore the proper tempo when you're ready for playback. If this works for your playing style, it will minimize the effect of the latency, making it much easier to stay in time.
- Sync is also an issue when playing your sequence back. Because of the latency, if you play a MIDI sequence with some tracks assigned to the Beatnik Editor synthesizer and other tracks assigned to other MIDI instruments, then the tracks assigned to Beatnik will play late – out of sync. So, if exact synchronization is important to you, don't drive both the Beatnik Editor synthesizer and other MIDI instruments at the same time, from the same MIDI sequence.

  Note: Some MIDI sequencers offer instrument-by-instrument lag correction – for example, Cubase's 'delay' setting. If you really want to align the Beatnik Editor synthesizer with other MIDI instruments (and your music has a constant tempo), this feature can be used to compensate for the latency.
- With enough practice and patience, many musicians have been able to learn to do a pretty good job of compensating for the latency.

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