# C U E T R A X

## THE GRAPHIC MASTERTRACK EDITOR

**Steinberg**

**Operation Manual by Ernst Nathorst-Böös.**

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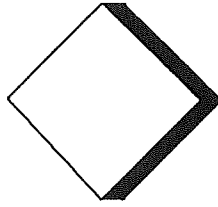
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# Installation

# Requirements

CueTrax requires you to have at least 2 MB of RAM in your computer. If you want to have many modules loaded at the same time you should definitely have 4 MB (or more on an Atari Falcon or TT).

Although a hard disk isn't an absolute requirement, we strongly recommend you to get one.

# The Disk

CueTrax comes as a module, an addition to Cubase that can be loaded into and out of memory at will, as all Cubase modules. CueTrax is disk copy protected, and the program will request that you insert the original disk at certain times, as described on the following pages.

**For a full description of how to handle Modules, see the Modules chapter in the main Cubase manual.**

On the disk you will find the file CUETRAX.MOD. This is the actual CueTrax Module. If any changes were made since this manual was written, a READ_ME text file will contain information about this. To read it, simply double click on it on the desktop.

# Cubase Versions

The module only works with Cubase version 3.1 or later. If you have an older version you need to install the one that comes with the Module, on a separate disk. Please See Appendix 1 to this manual.

If you have a version older than 3.0, you need to upgrade. Contact your dealer for more information.

# Copy Protection

The CueTrax Module employs disk-based copy protection. The main disk included in this package is a special key disk. You will need to insert this into your disk drive in the following instances:

❑ When you run the module for the first time (if you run it from a hard disk).
❑ Each time you run the module (if you run it from a floppy disk).
❑ If you moved or copied the module to another location on your hard disk.
❑ If you have run a hard disk defragmentation program.

**Do not ever load the module directly from the original disk. Always use a copy, as described below!**

# Copying Files

❑ If you have a hard disk, copy the file "CUETRAX.MOD" to your CUBASE.DAT folder.
❑ If you run Cubase from a floppy drive (we recommend you to use a hard disk!), copy "CUETRAX.MOD" to your CUBASE.DAT folder. If there is not room for it there, copy it to a separate floppy disk.

# Activating CueTrax

**If you have a Hard disk**
❑ Launch Cubase, as usual.
❑ When you see your normal DEF Arrangement on screen, pull down the Modules menu and select "Modules...". The Module selector appears.
❑ If the CueTrax Module has been found in the MODULES folder (if you put it there) it will appear in the list. If it isn't there, click the Add button, use the file selector to locate the CUETRAX.MOD file (insert the floppy if necessary) and click OK.
❑ Click the "Active" check box. Wait for the module to get loaded into memory. When you activate the Module for the first time, you will be requested to insert the original disk momentarily.

❏ If you have the Module in your MODULES folder, you can have it automatically loaded each time you launch Cubase. If you want this, click the "Preload" check box so that it gets activated.

**If you use floppy disks**
CueTrax can be used without a hard disk, but we don't recommend it. If you do, you will need to insert the original disk each time you activate the module.

**However, do not load the module from the original disk, always use a copy. The original key disk should only be inserted into the drive when asked for by the program!**

❏ Launch Cubase, as usual.
❏ When you see your normal DEF Arrangement on the screen, pull down the Modules menu and select "Modules...". The Module selector appears.
❏ Click the Add button, use the file selector to locate the CUETRAX.MOD file (insert the floppy if necessary) and click OK.
❏ Click the "Active" check box. You will be requested to insert the original disk momentarily.

Cubase is now running and the Module is loaded. Please proceed to the next chapter, "Overview of CueTrax".
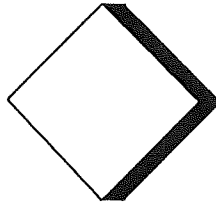
# Overview of CueTrax

# Introduction

CueTrax is a graphic tempo management tool for Cubase. It can be used for a number of purposes:

❑ Scoring for film and video, matching music to visual cues.
❑ Syncing Cubase to live music on tape.
❑ Restoring lost sync tracks.
❑ Creating music that contains many tempo changes, accelerandi or ritardandi.
❑ Working with material that contains both music (tempo based events) and for example sound effects (time based events).
❑ Creating tempo maps for music recorded without a metronome, and fit the music to the "barlines" in Cubase.

With CueTrax you also get a list editor. This is useful for some more detailed tempo editing and for those who simply feel more comfortable with cue list type editing.

# How CueTrax Operates

As you know, Cubase has a Master Track, a special "hidden" Track that contains all the tempo and time signature changes. CueTrax is a package of two *editors* for that Master Track. It replaces the regular Master Track editor; retains all its functionality, but adds a lot of its own.

There is one Master Track for each Arrangement. The Master Track does not have Parts, you always edit the entire length of the Song.

**For the tempo and time signature changes to have any affect on the arrangement whatsoever, you must have the Master button on the transport Bar activated!**
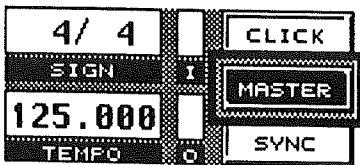
# Opening CueTrax

You can open the CueTrax *Graphic* Editor in three ways:
- By double-clicking on the Master button on the Transport Bar.
- By selecting Master Track from the Edit menu.
- By pressing [Control]-[M] on the computer keyboard.

If you want to open the CueTrax *List* Editor instead, you simply hold down [Shift] while doing any of the above.

You can have both editors open at the same time, and they will always be "in sync", just as when you have two MIDI editors open at the same time. However, since each takes up a fair amount of screen space, this feature will be most useful to those of you with larger monitors.

**To open the List Editor at the same time as the Graphic Editor, first switch over to the Arrange window (without closing the Graphic Editor) and then open the List Editor as described above. Do not try to open the List Editor from within the Graphic Editor.**

The List Editor is described on page 50.

# Overview of the Window

The CueTrax Graphic Editor is an editor window like any other in Cubase. The following parts of it will be familiar to anyone who has used the Arrange Window and Key Edit:
- The window has scroll bars (see the chapter "Overview of Cubase", in the main Cubase manual). These can be used to move around within the view – uing the left mouse button – and to change the magnification of "time" (horizontally) and the tempo graph (vertically) – using the right mouse button.
- The Function bar has pop-up Goto and Function menus, plus a pop-up Options menu.
- The central part of the Graphic Editor is of course the tempo graph.
- There are Snap and Quant(ize) settings, also located on the Function Bar.

❏ There is an Info Line which can be turned on and off with an "Info" button.

❏ By pressing the right mouse button you get a Toolbox. Most of its tools will be familiar if you have used the Continuous data display in Key or Drum Edit.

The central display in the Graphic Editor is divided into six sections. Some of these can be hidden using the group of four buttons on the Function bar.

**Info** **Time**
**HitPoint** **Time Sig**

Here are the graphic editor's areas, from top to bottom:
❏ Info Line (turned on off using the Info button).
❏ Meter Ruler (always visible).
❏ Time Signature Strip (turned on/off using the Time Sig button).
❏ Meter Hitpoint Strip (turned on/off using the Hitpoint button).
❏ Tempo display (always visible).
❏ Time Hitpoint Strip (turned on/off using the Hitpoint button).
❏ Time Ruler (turned on/off using the Time button).
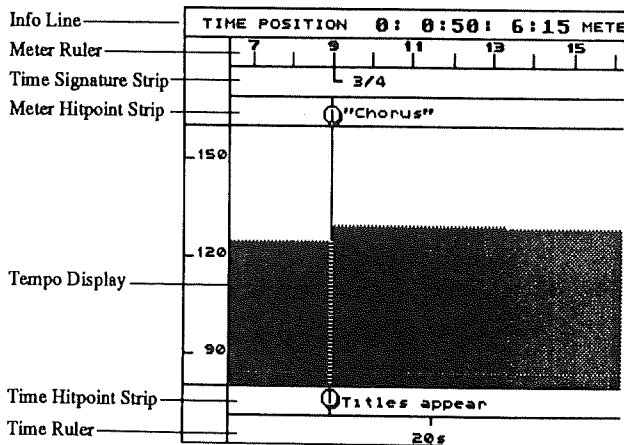
# The Tempo Display and the Rulers

## Tempo Display

In the middle of the window you will always find the Tempo display. This be-
haves very much like the Continuous Data Display in for example Key Edit.
For a basic introduction to Cubase's way of handling continuous data (tempo
belongs to this type of data), see the "Using the Editors" chapter in the main
Cubase manual.

**The Tempo Display always contains one Tempo Event at the beginning of
the Song. You can't move or delete the first tempo Event. Likewise the
Time Signature strip always contains one Time Signature event at the be-
ginning.**

Since the Tempo Display can be scrolled and the window resized, you might
not always see the entire tempo graph.

❏   If the display is "white", this is because the tempo graph is below the win-
    dow (scroll down).
❏   If the entire display is grey, this is because the top of the graph is above
    the window (scroll up).

More on working with tempi on page 14.

## The Rulers
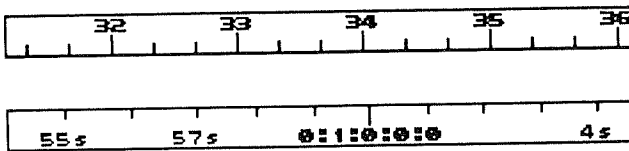


CueTrax' Graphic Editor has two rulers, one above and one below the Tempo
Display. The upper shows *meter* (bars, beats etc.) and the lower – which can
be turned on/off using the Time button, see above – shows time in one of a
number of formats, displayed on the pop-up Options menu.

The formats are made up as follows:

| | |
|---|---|
| SMPTE/EBU | **hours:minutes:seconds:frames:subframes** |
| 1/1000 sec | **hours:minutes:seconds:thousands of seconds** |
| Frames | **frames** |
| 16mm Film | **feet'frames** |
| 35mm Film | **feet'frames:sprockets** (4 sprockets per frame) |

For SMPTE/EBU and Frames, the number of Frames per second is set in the Synchronization dialog box, reached from the main Options menu.

How detailed values are displayed of course depends on how far zoomed in you are.

## The Song Pointer

The CueTrax Graphic Editor has a Song pointer as all other graphic editors in Cubase. To Position the Song Pointer, simply click on either Position Ruler.

## Position Boxes

| ⊞ **Goto** | ⊞ **Function** | ⊞ **Options** | | |
|---|---|---|---|---|
| **0: 0:42:10: 6** | | **23. 2.192** | **143.380** | |
| Mouse Time Position | | Mouse Meter Position | Mouse Tempo | |

The Mouse Pointer position is always shown on the Status bar, to the left as a time position and to the right as a meter position. These two position boxes are also used when moving and duplicating objects, as in all Cubase Editors and in the Arrange window.

**Please note that these two boxes always show the position at the closest Snap value. Since the Snap value is used when positioning events, these boxes will always tell the position that an event will *actually* appear on when you move it or draw it in. This also means that when you are zoomed in very far, you will probably want to set Snap to Off to be able to position accurately.**

# Meter or Time Based Display

Normally, the meter ruler will be linear, that is, there will be equal distance between all bars on the screen. If there are tempo changes, the time ruler will be non-linear to match. If you watch the accelerando below you will see that the meter ruler is linear but the tick marks on the timing ruler gets more and spread apart as the tempo increases.
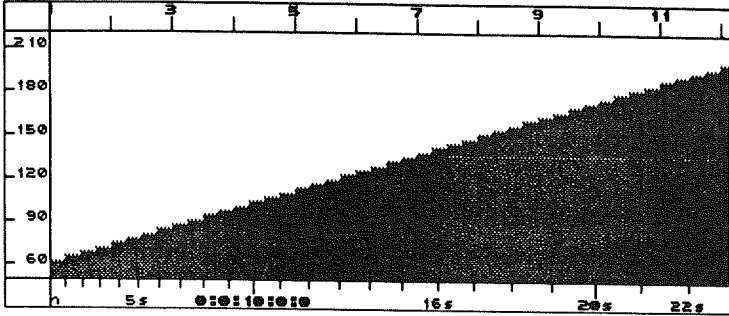


There will be cases where you want the Meter ruler to be linear and the Time ruler to adapt to this, and there will be cases where you want the opposite (for example when working with film or video). For this purpose, the display can be switched using the bottom item on the pop-up Options menu. This item always tells you what kind of display you are about to switch *to*.
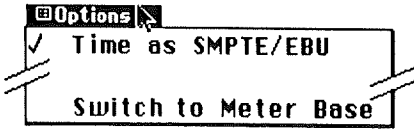


After switching, you may have to change the horizontal magnification of the window to make the window show the range you are interested in.

# Hitpoints

| ⊙)"Chorus" | ⊙)Main Theme | ⊙)Rit & Fade |
|---|---|---|

CueTrax also adds so called Hitpoints to Cubase. These are used to match time positions to meter positions, for example to make a certain musical cue fit a scene in a film or video.

Hitpoints come in two flavours, meter and time based. "Meter Hits" are shown on the upper Hitpoint strip and "Time Hits" are shown on the lower. You can hide all Hitpoints by using the Hitpoint button on the Status Bar. Utilizing Hitpoints, tempo changes can be created which make the music fit any type of cue. More on working with Hitpoints on page 28.

# Toolbox

The CueTrax' Graphic Editor has a Toolbox, just as all Cubase's main windows:
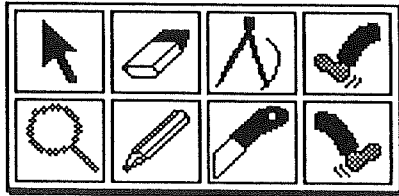
**The Magnifying Glass is not used in CueTrax and is therefore always greyed out.**

## The Goto Menu

This works exactly as the Goto menu in the other editors, although it has slightly fewer options. See the "Using the Editors" chapter in the main Cubase manual.

# Working with Tempi and Time Signatures

For the Tempo and Time Signature changes to have any effect on play-back, you must turn on the Master button on the Transport Bar.



When you first open Cuetrax' Graphic Editor, for a new song, it will only contain one tempo, displayed as a grey box continuing for ever to the right. From here on there are a number of ways to insert tempo changes and edit them:

# Recording Tempo Changes In Real Time

## Using the Mouse
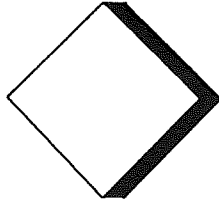
To record tempo changes using the mouse, proceed as follows:
☐ Select a Snap value (using the Snap pop-up on the Function bar) to decide for a spacing between the events. Do not use a higher value than needed, since this will make it harder to perform detailed editing on the recording afterwards. Often quarter notes will suffice, but experiment to find a value that suits you.
☐ Activate playback from any position in the Song.
☐ Position the mouse pointer over the tempo scale to the left of the tempo graph. Watch the Tempo box on the Status bar, it will show the Tempo of the mouse position, see Appendix , page 11.
☐ Click the mouse button to insert one tempo event, or drag up and down to create accelerandi or ritardandi.

❏ When the mouse button is down you record tempo changes, when it is up you don't. Use this is as a way of punching in/out. The display does not get updated while the mouse button is down.
❏ When you are ready, stop playback.

**The recording you make overwrites any earlier recordings at the same positions (CueTrax always records in" Replace Mode").**

# Using the Computer Keyboard

You can use the [+] and [–] keys on the numeric keypad to change the tempo while the music is playing back. This can also be used to record tempi, as described in the chapter "The Options Menu", in the main manual. Please note:

**This type of recording can only be done from the Arrange window, in other words, with the CueTrax Editors closed.**

This type of recording does not use the Snap value, which means it does not create evenly spaced events and is therefore harder to edit.

# Using Human Sync

This is also done from the Arrange window and is described in detail in the chapter "The Options Menu", in the main manual.

As above, this type of recording does not use the Snap value, and is therefore harder to edit.

# About Editing Tempo and Time Signature Events

## The Tempo graph

The Tempo graph behaves just as the Continuous data display of Key and Drum edit. This means that one event is shown as a rectangle and that the last event stretches forever to the right. If you feel insecure about how continuous events are handled, please review this section in the chapter "Using the Editors", in the main manual.

## Time Signature Events
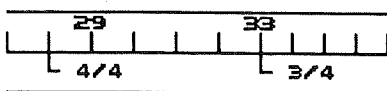


Time Signature Events are displayed as small "brackets" above the tempo graph, visible if the Time Sig button is activated on the Function bar. The events themselves can be selected, moved, copied, etc and the values for them are edited on the Info Line, as described in the chapter "Using the Editors", in the main manual.

## Selecting

Selecting in the tempo graph is done as everywhere else in Cubase:
❑ Clicking on one event selects it.
❑ If you hold down [Shift], you can select more events.
❑ If you press the mouse button somewhere in a free (white) area and drag, you make up a rectangle. This rectangle should stretch over the *beginning* of all the events you wish to select.
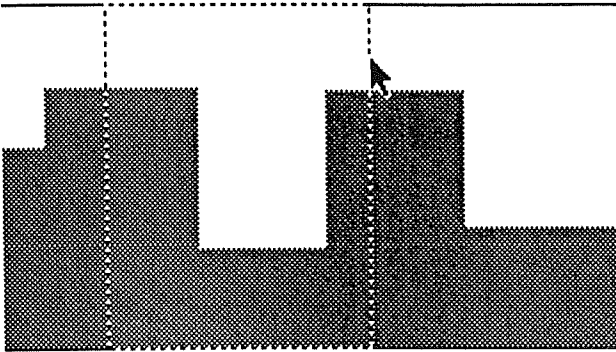
Making up a rectangle like this...
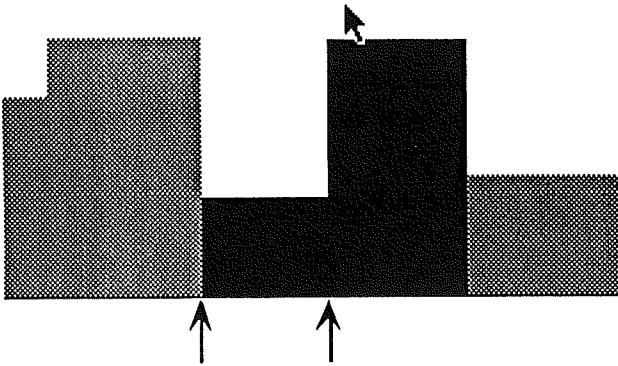
...selects these two events, since they both begin within the range (see the arrows).

❑ You can click on one event and then use the [←] and [→] keys to step through them and hold down [Shift] to select.

❑ You can use Select All ([Command]-[A]) to select all events, not just the tempo ones.

❑ To deselect, simply click on some free (white) area in the display.

Selecting Time Signature events (and "Hitpoints", see next chapter) is done in exactly the same way. However, there is one special procedure in the CueTrax Graphic Editor:

# Selecting Events of Different Types at the Same Time

The CueTrax Graphic Editor displays data of several different types: Tempo Events, Time Signature Events and Hitpoint Events. To select more than one type, first make your selection in one area (for example in the Tempo Display) using any of the methods above then hold down [Shift] and continue selecting in the next area (for example among the Time Signatures), again using any method.
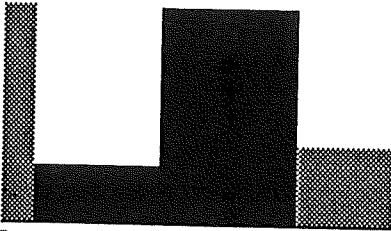


To select for example some Tempi and a Time Signature, first select the Tempi, then hold down [Shift]...
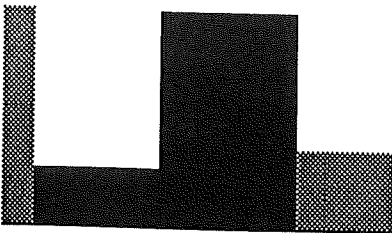


...and click on the Time Signature Event.

The only exception to this is Select All, which (as stated above) selects *all* events, regardless of type.

# Editing On the Info Line

```
TIME POSITION  0 :  0 : 15 :  5 : 54  METER POSITION  9 . 1 .  0  TEMPO 1
```

When you select one and only one event its settings appears on the Info Line.

❑ All types of events have a Time and a Meter position. You can edit either to move the event.
 **The Time Position is always edited in time code (SMPTE) format; as hours:minutes:seconds:frames:subframes.**
 **Tempo Events can not be moved using the Info line.**

❑ Tempo Events have tempo as the parameter. This can be edited just like any value in Cubase. If you have the display switched to the Time based mode (see page 12), the curve will get "compacted" or "expanded" as you change the tempo.

❑ Time Signature Events have a numerator and a denominator which can be changed individually to produce any time signature from 1/2 to 16/16.

❑ Hitpoints' value (their name) is described on page 31.

**Moving Time Signatures using the Info Line can be a bit confusing at first. Here's why: If you move a Time Signature so that it winds up on the same position as an existing Time Signature, that event will be deleted. If this is not what you want, either double click on the position value on the Info Line and type in the desired position or move the event using the mouse, see page 22.**

**You can not move the first Time Signature Event.**

# Redrawing the Tempo Curve

If you select the Pencil from the Toolbox and drag over an existing tempo curve, you will change the values of the tempo events you pass over. A box on the status bar, just to the left of the Quant value, will show you exactly which tempo the current mouse position represents, see page 11.

To for example change the value of one event, you can position the Pencil anywhere "over it", move up and down until you see the right tempo, and then simply click to set the event to that tempo.
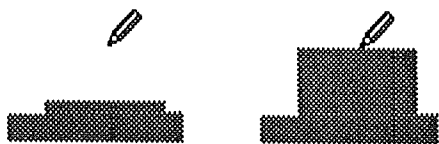
Clicking in the graph changes the Tempo of the event to the position of the pointer.

To change the tempo of several events at the same time, you simply drag over them with the mouse button down. If you drag faster than the program can redraw the screen, don't worry, your movement is tracked anyway and the values are smoothed at the end of the draw.

Please note that this only changes the values of existing events, it does not input new ones. To do this, you must hold down [Alternate], see below.

If you have the display switched to the Time based mode (see page 12), the curve will get "compacted" or "expanded" as you change the tempi.

# Drawing New Events

## Tempo Events

If you hold down [Alternate] and draw using the Pencil, you are inputting new tempo events. This can be used to input single tempi or to create continuous curves.

To create one single event, first set the Snap value (you can only input events at the closest Snap position), position the pointer (watch the tempo indicator on the Status Bar), hold down [Alternate] and click once.

To create several events at the same time, hold down [Alternate] and drag. The events will be spaced according to the Snap value. If you drag faster than the program can redraw the screen, don't worry, your movement is tracked anyway and the values are smoothed at the end of the draw.

If you have the display switched to the Time based mode (see page 12), the curve will get "compacted" or "expanded" as you input new tempi.

## Time Signature Events

To draw in Time Signature events, simply select the Pencil and click once in the Time Signature strip. You can also drag to input several Time Signature events at the same time. To for example input a Time Signature change at every bar, set Snap to "1" and drag across the time Signature Strip. Then select each one and set its value using the Info Line.

# Moving Events Using the Mouse

If you have one or more events selected (even of different types) you can move them using the mouse, just as with any object in Cubase (select the arrow pointer from the Toolbox). Only horizontal movement matters.

If you are only moving one tempo event, its position is indicated by a vertical line.

If the selection contains several tempo events, a rectangle encompassing the area from the start of the first selected event to the start of the last selected event guides you. The movement snaps to the closest Snap value.

**A block of Tempo Data that you move, always *replaces* any existing tempo data on the position you move it to.**

**You can not move the First Tempo and Time Signature Events.**

# Duplicating Events

If you hold down [Alternate] and move events, you are duplicating them. Everything else is as when moving.

# Cut, Copy and Paste

CueTrax supports full Cut, Copy and Paste of all types of event. Cut and Paste works just like in any other part of Cubase.

**If, as a result of the Paste, one Tempo or Time Signature Event will wind up on the same position as the other, the previous event will get replaced.**

**A Block of Tempo Data that is pasted in, always replaces any tempo data at those positions.**

# Deleting Events

❑   To delete events using the mouse, select the Eraser and click or drag over the events.
❑   To delete using the computer keyboard, first select the events you want to delete, then press [Backspace].
❑   You can also use the "Delete" item on the Edit menu to clear the selected events.

**You can not delete the first Tempo and Time Signature Events.**

# Repeat

This function on the pop-up Function menu can be used to block-duplicate a number of events one or more times. It operates on all events, Tempo changes, Time Signature changes and Hitpoints at the same time.

❑ Set up the Left and Right Locator (on the Transport bar) to encompass the section you want to repeat.
❑ Set the Song Position to where you want the first block of events to appear (you can click on the Time or Meter Rulers to do this).
❑ Select Repeat from the pop-up Function menu.
❑ In the dialog box that appears, set the number of times you want the block repeated.
❑ Click OK.

The copies will now appear. They are lined up "edge to edge", starting at the Song Position.

# Creating Accelerandi and Ritardandi

The Compasses in the Toolbox (see page 13) can be used to create continuous tempo changes, accelerandi and ritardandi (deaccelerandi). The Compasses tools is described in detail in the chapter "Using the Editors", in the main manual.

❑ To fit *existing* events under the line (to create a ramp), position the mouse, press the mouse button and drag to create a line. Release the mouse. The events are made fit under the line.
❑ To create new events, hold down [Alternate] before pressing the mouse button. New events that fit "under the line" are created, spaced according to the Snap value.

Please note that if you have the display switched to Time Base (see page 12) the ramp will appear "bent" since the meter scale is compacted/expanded. If this is confusing, switch over to meter base.

# Reducing Tempo Events

As a result of a tempo recording, using for example Human Sync, you may have an overly dense tempo curve, which might make the screen redraw sluggish and the tempo curve hard to edit.

Reduce, found on the pop-up Function menu thins the data at its densest points, making the spacing more even. Applying it repeatedly will make the the data consecutivley "thinner".

Reduce only works on the *selected* events. Select a section of the tempo Curve and invoke Reduce.

# Smoothing Tempo Events

This function evens out a tempo curve with "transients" (jumps), without inserting or deleting events. Instead, existing Tempo events are averaged to make the curve smoother.
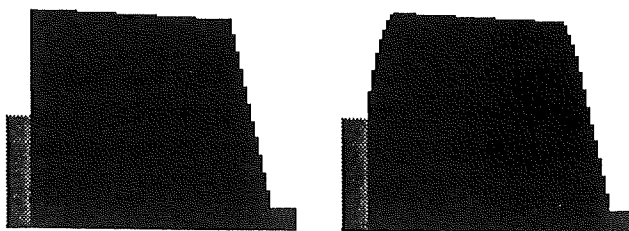
Before Smoothing...        ...and After.

# Processing Tempo Events



The Process dialog, located on the pop-up Function menu, is the equivalent of a so called fit time calculator. It is used to numerically change a set of tempi by a specific amount or to fit a certain cue. Since this function uses numbers, it might feel involved when you first try it. We will try to guide you through it. Here's the main procedure:

❏ The Process dialog adjusts existing tempi so that a region of bars (for example eight bars) will fit a certain time span (for example "6 seconds and ten frames").

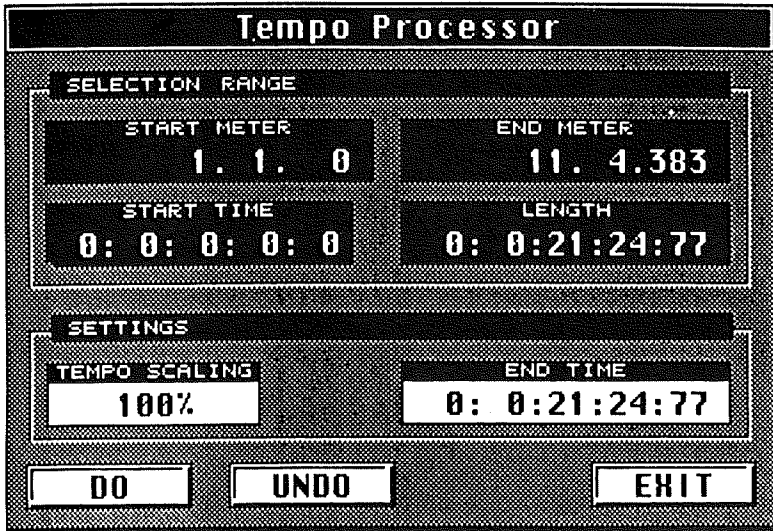❏ Since the function does not create any tempi of its own, you have to put them in before you start. If you want a smooth tempo change, create a ritardando or accellerando. If you want more direct changes, only input one or a few events. Also note that the adjustment is made overall for all the tempi in the range, which means they keep their relative tempo differences. In other words, a steep ritardandi will still be a steep ritardandi after the processing.

❏ The Adjustments themselves are made in a dialog where you can change only two things: either you simply set an overall scale factor (for example 70% of the original tempo) or you set an end *time* for the range, so the number of bars that you selected will now end at precisely that position.

Here are the details:

❑ To use this function, select one or more tempi that make up a range of bars, *but do not include the last tempo in the Song!* (if the last tempo is selected, Process will be greyed out on the menu). All the tempi *within* the selected range will get processed, whether they are all selected or not.
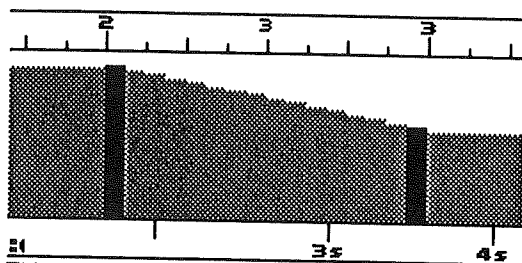


This selection will Process all Tempi between bar 2 and 3.

❑ Select Process from the pop-up Function menu. A dialog box appears.
❑ The Start and End Meter values are only display values. They show you the range of the selection you made.
❑ The Start Time and Length are also just display values. Start Time shows you the Time position of the beginning of the selection. Length shows you the current length of the selection. This last value will change when you...
❑ ...set the amount of change either by adjusting End Time or the Scaling factor. In either case the other value and the Length value will get updated to show you how the change will affect the bars the selection encompasses.
❑ When you are done with all the settings, click Do. The changes take effect immediately and you can see them in the window behind the dialog box. You can also click Undo to revert back to what you had before Do.
❑ When you are ready, click Exit.

A more intuitive way of fitting tempi to time based cues is using Hitpoints, see page 28.
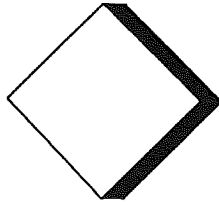
# Working With Hit-points

This chapter describes how Hitpoints are used and how they can be applied to different situations, such as Fit Tempo operations and sync to existing music on tape. The following text will first described how Hitpoints are handled, and then applies this to real life situations.

# What are Hitpoints?

Hitpoints are actually only positional references, markers of important positions. They are used to define relations between time and meter in order to "match tempo" (see below) or to create tempo maps that fit certain cues.

There are two types of Hitpoints, *Meter Hits* and *Time Hits*. Meter Hits are found on a strip above the Tempo Display and Time Hits are found on a strip below (see page 8). If these Strips are not visible, there is a Hitpoint button on the Transport bar that reveals them.

**HitPoint**

Meter Hits always appear on meter positions (bars, beats etc) and Time Hits are always on time positions (for example displayed as time code).

The idea is that you set out Time Hits and use various tools to find a relation between their positions (defined in *time*) and important musical positions (defined in *bars and beats*). This relation is created in one of two ways: by linking Time and Meter Hits, or by using the Tempo Match/Tempo Scan function.

# Setting Out Hitpoints

## Using the Mouse

The obvious way of setting out Hitpoints is using the Pencil in the Tool box. This works just as with Time Signature changes (see page 22), just select the Pencil from the Tool box and click or drag in a Hitpoint Strip. The Snap values restricts your input as usual.

**Please note that when settings out Meter Hits, you may want to turn off Snap completely.**

If you hold down [Alternate] while dragging, you get two linked Hitpoints, but more about that on page 35.

# Via MIDI

You can use MIDI to input *Time Hits*, whether Cubase is playing or not.

Activate "Capture MIDI Notes" on the pop-up Options menu. Now, all MIDI notes coming in while the CueTrax Graphic Editor is open will be converted to Time Hits.

Since you don't have to be in play or record you can do this even when syncing to time code running very slow or even at still frame (using VITC time code converted to MIDI Time Code, for example). This will allow you to input Hits "manually" with very high precision.

# Using Fill

To create evenly spaced Meter Hits, there is a special item on the pop-up Function menu, called "Fill meter hits". This will fill the Meter Hit strip with Hitpoints, between the Left and Right Locator, spaced according to the Snap value.

# Mirror

By slecting this function, the selected Hitpoints will get mirrored onto the "other side". A Time Hit will get a Meter Hit at the corresponding position, and vice versa.

Ⓞ Hitpoint  ●Hitpoint   12

●Hitpoint   11   ◐Hitpoint   13
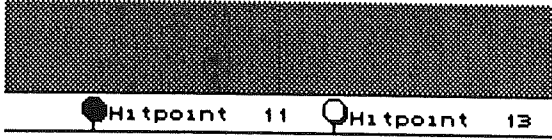
Selecting two Hitpoints and then Mirror...

Ⓞ Hi ◐Hitpoi ●Hitpoint   12

●Hitpoi ◐Hitpoi ◐Hitpoint   13
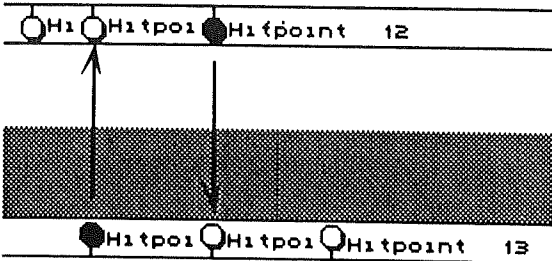
...creates two new Hitpoints.

# Editing Hitpoints

## Moving and Naming Using the Info Line

Just as with Tempo Events and Time Signatures, Hitpoints can be edited one by one on the Info Line, always in time code format (see page 31). Apart from moving them this way you can also give a Hitpoint a name. Just double click on the default name at the far right end of the Info line and type in a new one.

| METER POSITION | 28 . 3 . 96 | TIMEHIT | Slow wipe |
|---|---|---|---|

The right end of the Info line shows the type of Hitpoint and its name.

# Moving, Duplicating, Deleting etc.

Just as with Time Signatures and Tempo Events (and many other objects in Cubase) you can use the Tools in the Toolbox and the computer keyboard to select move, duplicate, cut, copy, paste and delete Hitpoints. This is all described in detail in the previous chapter.

Also, the Repeat function described on page 24 of course applies to Hitpoints too.

There are some additional editing techniques that apply only to Hitpoints. These are described in the following paragraphs:

# Kicking

The Kickers in the Tool Box can be used to move one Hitpoint one Snap value in either direction (depending on which tool you selected).

If – as a result of a kick – a Hitpoint winds up on the same position as another one, you will only see one of them. You can always use the List Editor to check for "double" Hitpoints.

# Pasting Events

If you have Copied or Cut *notes* or *control change messages* (for example sustain pedal) from a MIDI Editor, these will be pasted in as Time Hitpoints, starting at the Song Position.

# Keep Linked and Keep Selected

These two functions on the pop-up Function menu can be used to conditionally delete Hitpoints.

Keep Linked deletes all Hitpoints that are not *linked* (see below).

Keep Selected deletes all Hitpoints that are not selected.

## Quantizing

Meter Hits can be Quantized. This is probably most useful together with the Mirror & Link function as described on page 36. Combining these two functions allows you to for example easily insert small tempo changes to make some Hits perfect after using Match to find an adequate tempo.

❑ Set a Quantize value using the Quant pop-up menu.
❑ Select the Meter Hits you want to Quantize (if you want to Quantize them all you use Select All, since no other events than Meter Hits are affected by this operation).
❑ Select Quantize Meter Hits from the pop-up Function menu.

# Playing Back via MIDI

You can get audible feedback on the position of a Hitpoint. While this is probably most useful for Time Hits, it can be used on Meter Hits too.

To set up MIDI playback of Hitpoints, select "Edit Hitp Note" from the pop-up Function menu. If you are familiar with the Metronome dialog, this one will be self explanatory.
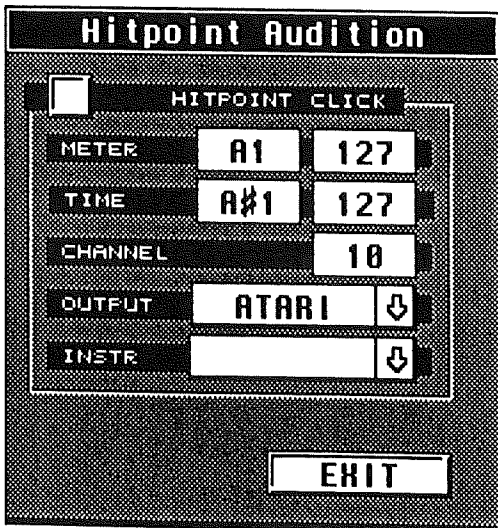
The Meter and Time Hitpoints can be set to play one key each with a certain velocity (to the right of the key number). Both share a MIDI Channel and Output setting, which – as always – can be defined via an Instrument.

# Linking

Linking Hitpoints is a way of telling CueTrax which Meter and Time Hits belong together. The program can then use this information to change tempo (and insert tempo changes if needed) to make certain meter and time positions line up. The practical uses of this are described on page 42 and page 43.
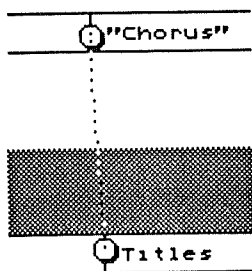

Linked Hitpoints

## Show Hitpoint Links

To make the links between Hitpoints visible, you must make sure that Show Hitpoint Links on the pop-up Options menu is ticked. If it isn't, select it.

## Manual Linking

To manually Link two Hitpoints, proceed as follows:
❑ Select the Arrow pointer.
❑ Position the mouse inside a Hitpoint.
❑ Press the mouse button and drag down or up depending on where you started (from Meter to Time or vice versa). A line will follow the pointer.
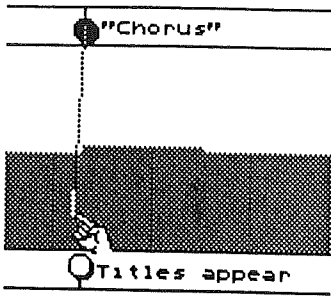
❑ Drag until the mouse pointer is positioned inside a Hitpoint on the "other side". The Hitpoint "lights up" to show you when you have the pointer inside it.

❑ Release the mouse.

# When Drawing

If you hold down [Alternate] while drawing a Hitpoint you automatically get a linked Hitpoint right above/below it.

### Breaking Links

If you want to break a Link between two, select the knife from the Toolbox and use it to click on or drag over the lines. Do not click on the Hitpoints themselves.

Also, if you delete a Hitpoint, its link to any other Hitpoint will of course vanish.

# Link One By One

This item on the pop-up Function menu, automatically links the first Meter Hit with the first Time Hit, the second Meter Hit with the second Time Hit, etc.

This is most useful when you have tapped in the Time Hits and used "Fill Meter Hits" to create Meter Hits. This will be the situation, for example when syncing to existing music on tape or when restoring a lost sync track (see page 43).

## Mirror & Link

This function takes all the *selected* Hitpoints and copies them "to the other side" (Hits to Meter and vice versa) and also links each pair.

This function is very useful when you have certain visual cues indicated as Hitpoints and wish to find corresponding meter positions to fit them to. By using Mirror and Link, moving or quantizing the resultant Meter Hits and then using Straighten up, the tempo is adapted in a few simple operations. For more details, see page 42.
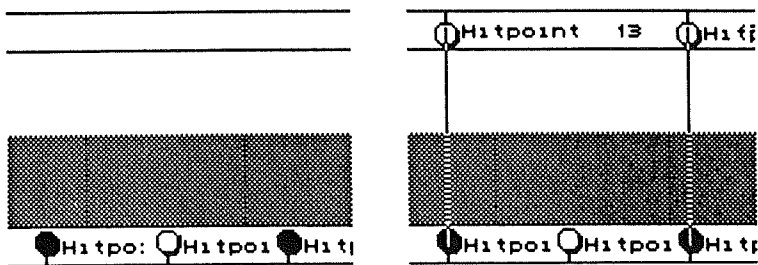


# Working With Tempo Matching

The Tempo Matching feature of CueTrax is best suited for finding suitable tempi for shorter spots or a smaller section of a larger piece.

## Show Hitpoint Match

When this options is turned on on the pop-up Options menu, lines will extend from the Time Hits up over the Tempo Graph and onto the Meter Hit strip.

When these lines are dotted, the Time Hits currently do not match any certain meter positions, when they are solid, they match.
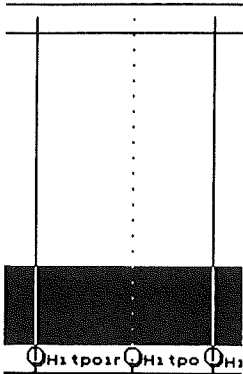
In this example, the Time Hit in the middle doesn't match, but the other two do.

# About Matching

So how do you tell the program what "matching" means, in your particular case? There are two settings for this, the Snap value and the Tolerance pop-up (in %) just beside it.

| SNAP | 4 | 12 % |
|------|---|------|

If you for example set Snap to 4 and Tolerance to 12%, this means that all Time Hits that wind up within 12% from a quarter note are considered Matching and will be shown in solid black.

# Finding Matches

Let's say you have a short video spot for which you want to find *one* tempo that fits as many visual cues as possible. You have a video tape recorder with time code that you can feed to Cubase to achieve synchronization. Proceed as follows:

❑ Activate the Master Track by clicking on the Master button on the Transport bar.

❑ Use the Synchronization dialog to set things up so that Cubase starts exactly where the music should start in the spot.

❏ Set up a few Time Hits to match the important visual cues. Use the Hit-point MIDI playback function (see page 33) to verify that the Hits actually happen when they should.

❏ Decide for a Snap setting and a Tolerance. Raising the Tolerance will give you a larger number of Matches, but they will be of lower precision. However, you might gain from increasing the Tolerance initially to find as many matches as possible. You can later link the Time Hits to absolute Meter positions and then use Straighten Up to automatically create a perfect fit. See page 39.

❏ The method works best if you don't have any tempo changes at all during the section which you try to fit. Set the Tempo to the lowest you could possibly be satisfied with.

❏ Raise the Tempo gradually, by using the Pencil directly in the graph. Zoom in vertically if you need higher precision. You can also use the Info Line.

❏ Watch the Tempo Match lines as you change the tempo. Whenever one of them turns solid, you have found a match. Change the tempo up and down until as many of the Hits match as possible. Also note where they match. For example, if you have Snap set to "4", a match on the second quarter in a bar may not be as "useful" to you as a match on the down- or up-beat.

❏ Experiment with different Snap and Tolerance settings.

❏ Play back the Song and monitor the MIDI playback of the Hits and how they relate to the metronome to get a feel for how the music should be written to fit.

# Using Auto Tempo Scan

If adjusting the Tempo as in the Process above feels like to much work, CueTrax can do it for you.

❏ Set things up just as described above and set the Tempo to the lowest you could possibly be satisfied with (CueTrax always raises the Tempo when trying to find matches).

❏ Select the Tempo Event you want to vary to find the match (auto-scan can only vary one Tempo event at a time).

❏ Also select (hold down [Shift]) the Time Hits that you want to find a Match for. The function will only check the *selected Time Hits* for a match, no other Hits.
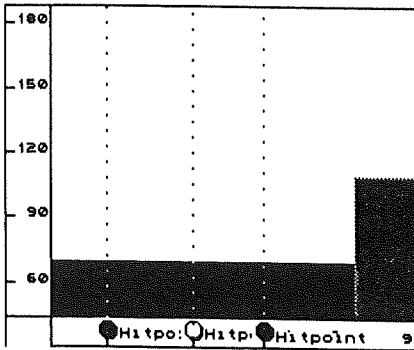
To use Tempo Scan, exactly one Tempo Event and at least one Time Hit must be selected.

❏ Select Auto Tempo Scan from the pop-up Function menu.
❏ The program now raises the tempo gradually and looks for matches.
❏ If it finds a match for *all* selected Hitpoints, it stops. You will have to select Auto Tempo Scan repeatedly to step through all the possibilities.
❏ If no match can be found for all selected Hits, the program will show you the last of the best match that could be found. If you for example have three Hitpoints selected and the program can only find a match for two of them, it will show this.

**The more Hitpoints you have, the longer the scan will take. Please be patient...**

## Proceeding From Here

If you have found a tempo that you would like to use, but not all Hits match, or you think you have raised the Tolerance too far, you can automatically insert tempo changes to create a perfect match:

❏ Use Tempo Match (with or without Auto Tempo Scan) to find a tempo that gives an adequate match, as described above.
❏ Select Show Hitpoint Links from the pop-up Options menu. The Tempo Match lines disappear.
❏ Select all the Time Hits involved.
❏ Select Mirror & Link from the pop-up Function menu.

❏   Set Quant to the appropriate value. If your match is for example to down-
    beats, set it to "1".
❏   Use Quantize Meter Hits to move the Meter Hits exactly to the down-
    beats.
❏   Select Straighten Up from the pop-up Function menu.

A dialog box will ask you if you are prepared to insert Tempo changes. Click
OK. You will now find that the tempo varies (probably just slightly) between
the Hits.

# Working With Straighten Up

Straighten Up is a function, and as all others in CueTrax it is located on the pop-up Function menu. Straighten up adjusts and inserts tempi to make Linked Time and Meter Hits match, so that musical positions (Meter Hits) happen at specific time cues (Time Hits).

## Show Hitpoint Links

To display the Links between Hitpoints (instead of the Tempo Match lines) activate Show Hitpoint Links on the pop-up Options menu.

## How Straighten Up Works

When you have input and adjusted your Hitpoints and select Straighten Up, all Hitpoints are examined, one pair at a time, starting from the beginning of the song.

To make the two Hitpoints match in time and meter, Tempo events just *before* the pair are adjusted. Visually, this turns any diagonal link-line into a solid vertical one.

If there isn't enough tempo changes for Straighten Up to make a pair match, it will ask for permission to insert additional tempo events.

In some cases a perfect match can not be found (for "mathematical" reasons). In this case, the line remains dotted, but it may be straight on screen anyway. This slight mismatch (which is always in the millisecond range) probably won't be noted.

If you have cross-linked Hitpoints, the program will be unable to straighten up and will inform you via a dialog box.

# Working with Visual Cues

If you are working with music for film or video, for example with Cubase synced to time code from a video, Straighten Up is an invaluable tool for making cues match the picture. Here's a general outline of how to work with Hitpoints and Straighten Up:

❑ Set up synchronisation to the video.

❑ Activate the Master Track and open CueTrax Graphic editor. Set an approximate initial tempo for the music you have in mind.

❑ In the Synchronisation dialog box, find a reasonable starting point, for example two bars before the music should actually start.

❑ In the same dialog, to make the Time Ruler in Cubase display the actual time code on the tape, set the Time Display to the same value as the Song Start. Also set Bar Display to for example -2, so that position 1.1.0 in the Song is where the music should actually start.

❑ Draw in, or use MIDI to insert a Time Hit where the music will start.

❑ Draw a Meter Hit on Bar 1, and link it to the Time Hit.
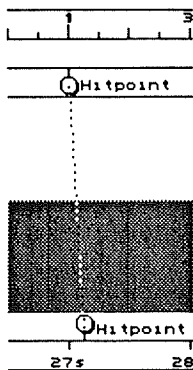


❑ Now select Straighten Up, and the tempo will get adjusted so that these two points line up. If the tempo was changed too much, you might have to repeat the procedure, set a new Song Start and Time Display in the Sync dialog, and move the Time Hit accordingly, then Straighten Up again.

❑ When the beginning of the Song is adjusted to taste, you can begin inserting Time Hits for important visual cues. We suggest you name them for future reference.

❑ The next step is to create corresponding Meter Hits. This can be done manually (draw and link) or using Mirror and Link.

❏ Move the Meter Hits around to fit the music and use Straighten Up to examine what kind of tempo changes were needed. Please note that Straighten up only inserts one tempo change for each linked pair. If you want a gradual tempo change between two pairs, draw in an accelerandi/ritardandi, and Straighten Up will scale the entire section to fit.

❏ Keep adjusting the Hitpoints, insert new Tempo changes (accelerandi or ritardandi for example) where needed, and use Straighten Up to restore the Time/Meter relations.

❏ Don't worry about making last minute changes. If you for example receive a new copy of the video where a few frames have been cut out, just move your Time Hits accordingly and straighten up again. Changes you make in the beginning of the Song won't affect tempi at later positions, since each matched pair of links creates a new fixed "reference" between time and meter.

During the course of this procedure, you can of course switch back to the Arrange window and record and edit music to fit the cues.

## Synchronising To Existing Music and Recovering Lost Sync Tracks

It is not uncommon to have to synchronise MIDI sequencing to existing music. To do this, you need CueTrax and a tape with the music on one track and time code on another.

Anyone who has been in the unfortunate situation of losing a time code track, for example by accidentally erasing it, know how time consuming it can be to restore it.

The procedure below lets you do both these things very easily:

❏ Start by striping the tape with fresh time code, if necessary. This code should start a few bars before the music and extend well after it.

❏ Activate the Master Track by clicking on the Master button on the Transport bar.

❏ Set up synchronisation to this time code, and verify it works as expected.

❑ Try to set an approximate initial tempo. You can for example turn off sync, and guess at a tempo. Start the sequencer in time with the metronome and adjust roughly.

❑ In the Synchronization dialog, set a Songstart position approximately (for example) two bars before the music starts. Turn on sync again.

❑ In the same dialog, to make the Time Ruler in Cubase display the actual time code on the tape, set the Time Display to the same value as the Songstart. Also set Bar Display to for example -2 (if the music starts two bars after the Songstart), so that position 1.1.0 in the Song is where the music will actually start.

❑ Use MIDI to insert a Time Hit where the music starts. Verify its position by making it play back for example a drum sound via MIDI.

❑ Draw a Meter Hit on Bar 1, and link it to the corresponding Time Hit.
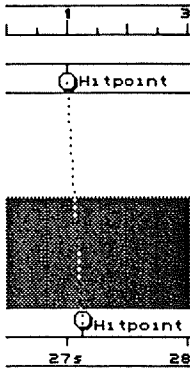


❑ Now select Straighten Up, and the tempo will get adjusted so that these two points line up. If the tempo was changed too much, you might have to repeat the procedure. Note down the position of your Time Hit. Select a new Songstart and Time Display in the Sync dialog, and move the Time Hit accordingly. Then Straighten Up again.

❑ When the beginning of the Song is adjusted to taste, you can begin inserting Time Hits. We suggest you use MIDI to input them, and start out with one or two Hits per Bar. Of course, the tighter you place the Hits, the tighter your sync will become, but editing will also be more difficult and each Straighten Up will take more time to perform.

❑ Use Fill to input Meter Hits at the same spacing as the Time Hits (set Snap to for example whole notes or half notes). Make sure the first Time Hit and the first Meter Hit indicate the same position in the song; for example,

the first Time Hit should be where the downbeat of bar 1 is *on the tape* and the first Meter Hit should be on position 1.1.0 in Cubase.

❏ Select Link One By One from pop-up Function menu.

❏ Select Straighten Up from the pop-up Function menu (Straightening Up might take some time).

❏ Play back the Song in sync with the tape.

❏ If you don't like what you got, move the Time Hits around and try Straightening Up again.

❏ Remember, Straighten Up only scales the tempo changes between two Hitpoints. If you need a gradual tempo change between two Hits, use the Line Tool to create an accelerando or ritardando that can be scaled to fit.
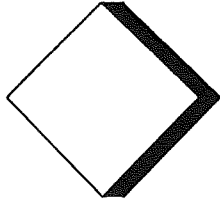
# Time Locked Tracks and "Freely Recorded" Music

CueTrax interacts with Cubase's Time Locked Tracks in a special and very useful way. If you change the tempo in CueTrax, notes on Time Locked Track will get *moved*, bar-wise, so as to make them still appear on the same time positions. You can use this to your advantage:

❑ To "reposition" events in music recorded without a metronome, so that they fit the meter positions in Cubase.

❑ To match music to for example sound effects or other audio events that occur on fixed time positions, rather than meter positions.

# About Working With Time Locked Tracks

Time Locked Tracks are desribed in general in their own chapter in the main Cubase manual. Please just observe the following points:

❑ The time it will take to recalculate Time Locked Tracks depends on the number of Tempo changes in your Arrange window. When you work with CueTrax it is common to have very large amounts of Tempo Events. This will lead to noticeable recalculation times (sometimes *very* long) in two cases: when you adjust the Tempo curve and when you use Straighten Up.

❑ Try to avoid to edit a Part on a Time Locked Track in a MIDI Editor, at the same time as you are changing the tempo in CueTrax. The reason is that if a tempo change happens to move an event so that it winds up on a position before the *beginning* of its Part, this event will be lost!

# Working With Time Based Events

If you already have events on Time Locked Tracks which indicate important positions (Hits) in the music, you can use these as a basis for your tempo changes:

❑ Time Lock the Tracks that have events which happen on "fixed" Time Positions.

❑ Open a MIDI Editor and select the events you want to use as Hitpoints in CueTrax. Note down the position of the first of the selected events.

❑ Open CueTrax and set the Song Position to the position of the first event you copied.

❑ Select Paste. The events are now Pasted in as Time Hits and can be used as a basis for Tempo Matching or Straighten Up, as described in the previous chapter.

# Repositioning "Freely Recorded" Music

Many musicians find it constraining to record in time with a metronome. With CueTrax you can record in "free time" and later adapt the recording to Cubase's meter positions:

❑ Turn off the Metronome and perform a recording. If you plan to preserve the feeling in the recording, make sure you get a take that contains all the tempi just as you want them.

❑ For safety, make a copy of the Track and Mute it.

❑ Open the recording for editing, for example in Key Edit. Select all events and drag them so that the first event winds up on position 1.1.0. (This assumes the Part begins on 1.1.0. If it doesn't you can either move the Part or use the Pencil in the Arrange window to adjust the beginning of it).

❑ Select a number of events on easily defined meter positions. For example if the piece contains a relatively simple bass line (mainly happening on quarter notes and eighth notes), select the notes in this bass line. If it is a more complex piece you might have to work a bit on the selection, or maybe only do a bit at a time. Try to not select notes that are more tightly spaced than quarter notes. (It pobably isn't necessary and linking them will take more time.)

If selecting notes in the actual recording doesn't work for you, you might try recording a special Track with a drum sound, where you simply tap the beat while listening to the recording. Then you can use this track for reference instead of the notes in the actual recording.

❑ When you have the selection right, Copy the events (using Copy on the Edit menu). Close the Editor.

❑ Open CueTrax. Position the Song Position on 1.1.0. (Pasting always happens at the Song Position!)

❑ Paste. All the notes will now appear as Time Hits.

❑ Use the Pencil to draw in Meter Hits on the musical positions that the Time Hits refer to.

**Since the tempo is completely wrong at this point, the Meter ruler and the Time ruler will not match up at all. This might lead to some confusion at**

first. What you are supposed to do is to tell the program what meter positions the Pasted Time Hits refer to. If the bass for example played on straight quarter notes only, draw in one Meter Hit on each quarter note.

❑   When you are done and have one Meter Hit for each Time Hit, use Link One By Oneon the Pop-up Functions menu to link all the Hitpoints together.

❑   Select Straighten Up, and when the dialog box appears, verify that it is OK to insert new Tempo Events.

❑   Play back the Track and examine it in Key or score Edit to check that everything actually wound up as you intended.

When examining the recording in one of the editors, you will note that the events have been moved to the correct musical (meter) positions. This allows you to use Cubase's different tools (such as quantizing) in a predictable way and to format the recording for printout in Score Edit. But, since a number of tempo changes have been created, the piece still plays back as it originally did.

If you are happy with the piece is it is now, you should possibly turn off Time Lock for the Track before you proceed with further editing (maybe you should make a copy first?).

If you want to hear how the piece plays back at a fixed tempo, simply turn off the Master Track. And if you like, you can continue to use CueTrax to edit the tempo further.
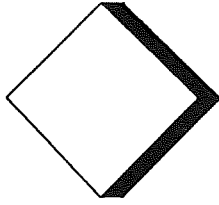
# CueTrax' List Editor

| METER | TIME | TYPE | VALUE |
|---|---|---|---|
| 1. 1. 0 | 0: 0: 0: 0: 0 | TEMPO | 126.090 |
| 1. 1. 0 | 0: 0: 0: 0: 0 | TIMESIGN | 4/ 4 |
| 8. 4.357 | 0: 0:15: 4:67 | TIMEHIT | Titles appear |
| 9. 1. 0 | 0: 0:15: 5:54 | TEMPO | 127.440 |
| 9. 1. 0 | 0: 0:15: 5:54 | METERHIT | "Chorus" |
| 12. 1. 0 | 0: 0:20:21:73 | TEMPO | 126.540 |
| 16. 4.288 | 0: 0:30: 6: 2 | TEMPO | 126.540 |
| 16. 4.325 | 0: 0:30: 7:13 | TIMEHIT | Panorama |
| 17. 1. 0 | 0: 0:30: 8:79 | TEMPO | 126.508 |
| 17. 1. 0 | 0: 0:30: 8:79 | METERHIT | Main Theme |
| 17. 1. 96 | 0: 0:30:11:76 | TEMPO | 126.476 |
| 17. 1.192 | 0: 0:30:14:73 | TEMPO | 126.443 |
| 17. 1.288 | 0: 0:30:17:70 | TEMPO | 126.411 |

CueTrax includes a list editor for Tempi, Time Signatures and Hitpoints. This can be used as a replacement for the Graphic Editor, or as a complement.
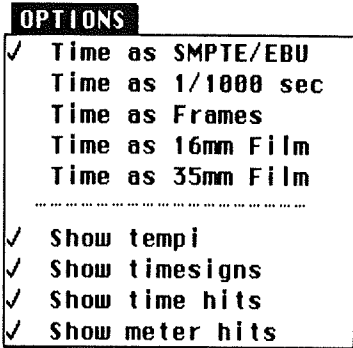
You can open the List Editor in three ways:
❑ Hold down [Shift] and double-click on the Master button on the Transport Bar.
❑ Hold down [Shift] and select Master Track from the Edit menu.
❑ Hold down [Shift] and press [Control]-[M] on the computer keyboard.

You can have the List and the Graphic Editors open at the same time, and they will always be "in sync" just as when you have two MIDI editors open at the same time. However, since each takes up a fair amount of screen space, this feature will be most useful to those of you with larger monitors.

**To open the List Editor at the same time as the Graphic Editor, first switch over to the Arrange window (without closing the Graphic Editor) and then open the List Editor as described above. Do not try to open the List Editor from within the Graphic Editor.**

The List window is very straightforward to use. If you are familiar with the CueTrax Graphic Editor and Cubase's List Edit for MIDI data, using this editor will be a snap.

# Options

```
██OPTIONS██
✓  Time as SMPTE/EBU
   Time as 1/1000 sec
   Time as Frames
   Time as 16mm Film
   Time as 35mm Film
  ................................
✓  Show tempi
✓  Show timesigns
✓  Show time hits
✓  Show meter hits
```
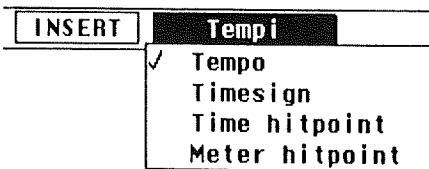
Using the upper part of the pop-up Options menu at the top of the window, you can select a format for the Time Positions of the events (as described on page 10).

Using the lower part of the same menu, you can hide/show any of the four possible Event types.

# Creating Events

If you want to create a new event, proceed as follows:
❑  Select an Event type from the pop-up menu to the right of the Insert button.

```
┌─────────┐ ██Tempi██
│ INSERT  │
└─────────┘ ✓  Tempo
            Timesign
            Time hitpoint
            Meter hitpoint
```

❑  Set the Song Position on the Transport Bar to where you want your new Event.
❑  Click the Insert button.

**If an event of the same type already exists on that position, it will get overwritten.**

# Moving Events

This is done by adjusting the position values in the list, as on the Info Line in the Graphic Editor (see page 20). You can move an event by either giving it a new Meter Position or a new Time Position (in SMPTE format only).

**You can't move Tempo events, and not the first Time Signature Event.**

# Deleting Events

❏ To Delete Event(s), first select it/them. You can use [Shift] to select several Events at the same time.
❏ Press [Backspace] or [Delete].

**You can't delete the first Tempo/Time Signature Event.**

# Cut and Paste

Events that you have selected (see above) can be cut or copied. When you Paste they will get inserted as a block, starting at the Song Position.
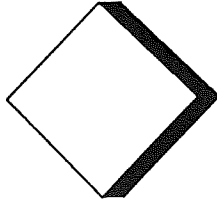
# Moving Data Between Arrangements

As you know, you can have several Arrangements open at the same time. Each Arrangement has its own Master Track, which CueTrax is an editor for. To move Tempo Events, Time Signatures and Hitpoints between Arrangements, you can use two techniques: Copy and Paste or Import/Export. If you feel you don't understand Copy and Paste in general, please look up the chapter "The Edit Menu" in the main Cubase manual.

# Using Cut and Paste

To Copy and Paste between Arrangements, proceed as follows.
❏ Select the events you want to move, in the Graphic Editor or in the List (it doesn't matter which). For details on selecting, see page 17.
❏ Select Cut or Copy.
❏ Select another Arrangement, either an open one, one that you create using New on the File menu or one that you open from disk (as an Arrangement file or as a Song, it doesn't matter which).
❏ In the new Arrangement, open either of CueTrax editors.
❏ Set the Song Position to where you want to insert the block of data, and select Paste from the Edit menu.

**If, as a result of the Paste, one event will wind up on the same position as an existing, the existing event will get replaced.**

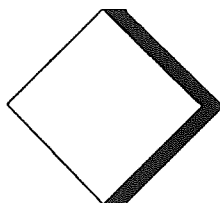**A Block of Tempo Data that is pasted in always replaces any tempo data at those positions.**

# Using Import and Export

If you want to move an entire Master Track between Arrangements, you use Import and Export on the pop-up Function menu in the CueTrax Graphic Editor.
❏ Export presents you with an ordinary file selector where you can define a name and location for your Master Track file. Master Tracks have the suffix ".MTK".
❏ Import loads a Master Track from disk which simply replaces the current Master Track.

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