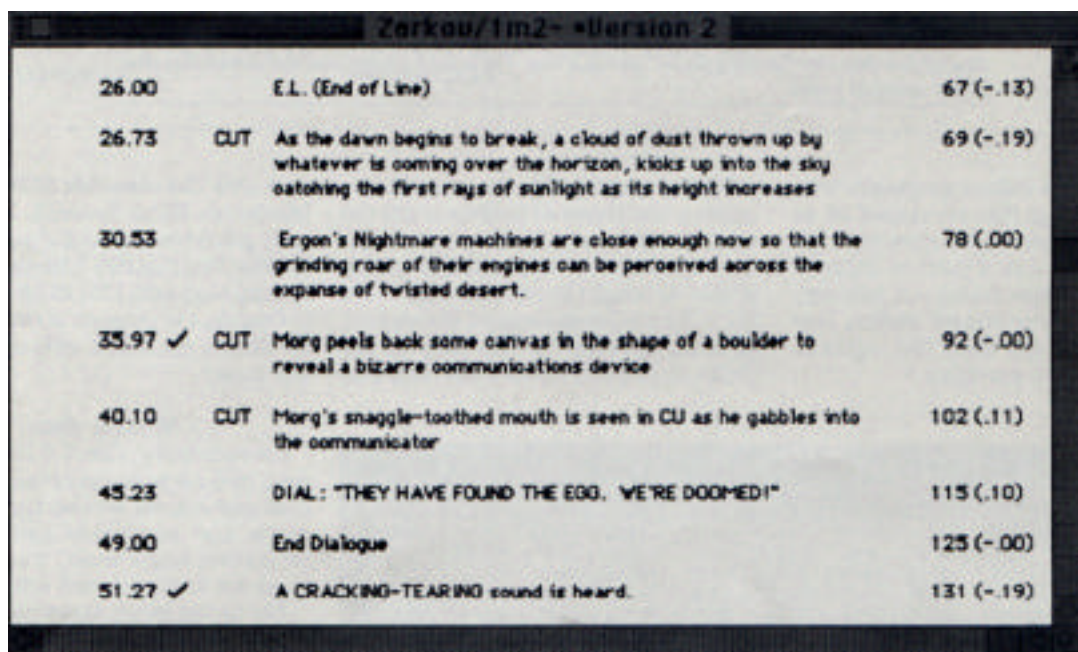


Software Hands-On: Cue 2.0

By Bill Cavanaugh

They say timing is everything. And to those who make their living by solving the problems of synchronized music/sound to picture, the tools and times have never been better.



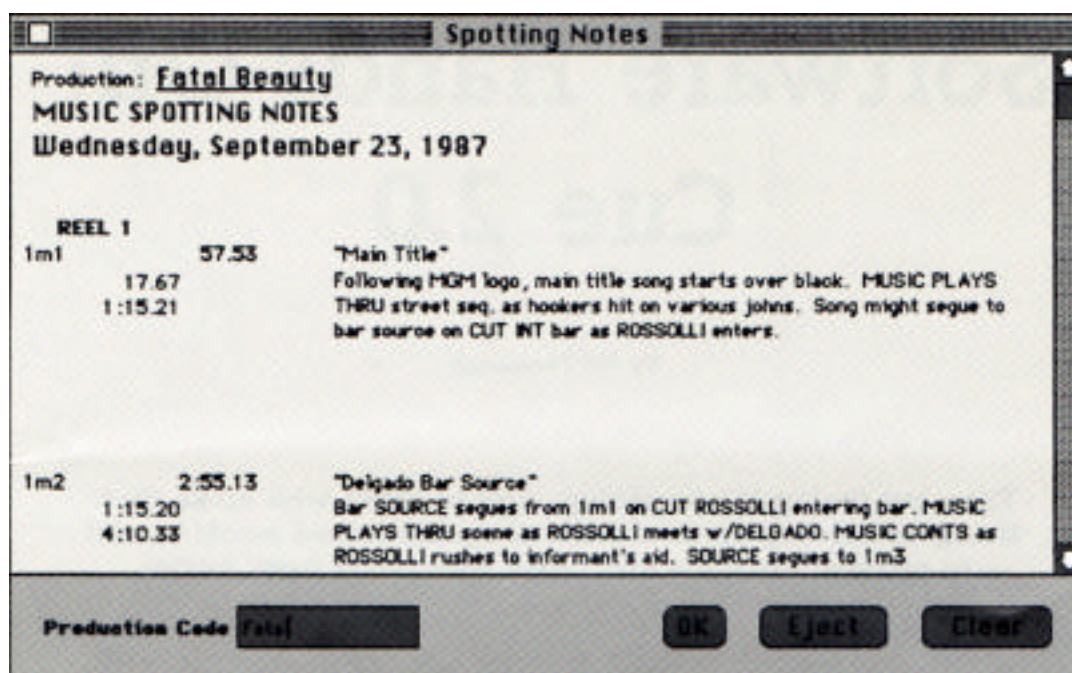
The screenshot shows a window titled "Zerkou/1m2~ *Version 2" containing a list of spotting notes. Each note includes a timecode, a type of cue, a description, and a frame number with a time offset.

| Timecode | Cue Type | Description | Frame / Time Offset |
|----------|--------------------|--|---------------------|
| 26.00 | E.L. (End of Line) | | 67 (-.13) |
| 26.73 | CUT | As the dawn begins to break, a cloud of dust thrown up by whatever is coming over the horizon, kicks up into the sky catching the first rays of sunlight as its height increases | 69 (-.19) |
| 30.53 | | Ergon's Nightmare machines are close enough now so that the grinding roar of their engines can be perceived across the expanse of twisted desert. | 78 (.00) |
| 35.97 ✓ | CUT | Morg peels back some canvas in the shape of a boulder to reveal a bizarre communications device | 92 (-.00) |
| 40.10 | CUT | Morg's snaggle-toothed mouth is seen in CU as he gabbles into the communicator | 102 (.11) |
| 45.23 | DIAL: | "THEY HAVE FOUND THE EGG. WE'RE DOOMED!" | 115 (.10) |
| 49.00 | End Dialogue | | 125 (-.00) |
| 51.27 ✓ | | A CRACKING-TEARING sound is heard. | 131 (-.19) |

"Accelerando/Ritardando," "Click Tap" display. "Accelerando/Ritardando" makes a number of tempo decisions that speed up or slow down the click track between designated points. "Click Tap" allows the user to tap out the entire click track manually.

Opcode Systems' software program Cue 2.0 ("The Film Music System") will save the user a lot of time, to say the least. It goes a long way toward bringing together the hardware/creative resources for solving the vast number of problems that face anyone who works with sound and picture. Although it doesn't do everything (you still have to write the music and create the sounds), this comprehensive program is a large quantitative leap over the 1.5 version, other software programs or click books. It frees the user from much of the time consuming tedium, giving more time for creativity. Written by Rick Johnston, Cue 2.0's application begins with spotting notes

and continues through the audio recording process.



"Spotting Notes" Each reel number appears in bold The top line lists the cue number, length and title. Below that are the cue start and stop times in the cumnt ";Absolute Format" and the description from the "Spotting Notes" dialogue box. The bottom section lists the cumulative time of aR specified music

A "hands-off" description of all that this program can do is difficult because of the sheer quantity of options available. This task was put to Bob Walter, who wrote the manual as a "hands-on" tutorial. It works just as well for reference. In a continuing age of equipment without manuals or with unintelligible rags that are passed off as manuals, this one is a welcome tool. It's comprehensive with a dash of levity to keep your eyes from drying out, although the "Squeezing the Weasel" section may be the result of too many late nights in front of the word processor.

Getting started with the program requires a few pieces of hardware, not the least of which are a Macintosh 512k Enhanced computer and a graphics quality printer. Although Opcode notes that a Mac 512 is the minimum required, please note up front, however, that this program has problems in pre-Enhanced Mac 512s (the ones with the older 64k ROMs and MFS [Macintosh Filing System]). It does run quite glitch-free on the Enhanced 512s or the Mac Plus (the HFS [Heirarchical Filing System] Macs with 128k ROMs). According to Opcode, the program is compatible for the SE and the Mac II, although I did not test those.

What it does

Fundamentally, Cue 2.0 inputs timing data, then calculates and manipulates

that data and outputs several types of documents that are highly useful in postproduction audio/music. The document types are hard, soft and active.

The timing inputs essentially consist of time in hours, minutes seconds and subseconds as expressed in various visual and musical formats. More specifically, any visual format means 35mm or 16mm film footage/frames; basic hours:minutes:seconds; and SMPTE time code in 24, 25- and 30-frames-per-second (fps) formats The 30fps SMPTE format is further broken down into B&W non-drop, drop frame (29.97fps) and the obscure "Color" mode which displays in 30fps but actually runs at 29.97fps The musical format is in measures and/or beats with tempos expressed in beats-per-minute or frames/fractions-per-click. The timing input format is chosen in the "Set Time Formats" dialogue box. (A dialogue box is a temporary window that requests information. As soon as the information is input, the window closes automatically, and the screen reverts to the same place in the file it left.)

The screenshot shows a window titled "Click Book (Tempo Format: 24 fr.)". It contains a grid of time codes for 10 cues (rows 10-170) across 10 frames (columns 0-9). The time codes are in the format HH:MM:SS.FF. Below the grid are control buttons: "Tempo" with a value of 120, "Find Click #" with a value of 1, "Find Time" with a value of 0.0, and "Preu" and "Next" buttons.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|
| | n/n | 0/12 | 1/8 | 2/4 | 3/0 | 3/12 | 4/8 | 5/4 | 6/0 | |
| 10 | 6/12 | 7/8 | 8/4 | 9/0 | 9/12 | 10/8 | 11/4 | 12/0 | 12/12 | 13/8 |
| 20 | 14/4 | 15/0 | 15/12 | 16/8 | 17/4 | 18/0 | 18/12 | 19/8 | 20/4 | 21/0 |
| 30 | 21/12 | 22/8 | 23/4 | 24/0 | 24/12 | 25/8 | 26/4 | 27/0 | 27/12 | 28/8 |
| 40 | 29/4 | 30/0 | 30/12 | 31/8 | 32/4 | 33/0 | 33/12 | 34/8 | 35/4 | 36/0 |
| 50 | 36/12 | 37/8 | 38/4 | 39/0 | 39/12 | 40/8 | 41/4 | 42/0 | 42/12 | 43/8 |
| 60 | 44/4 | 45/0 | 45/12 | 46/8 | 47/4 | 48/0 | 48/12 | 49/8 | 50/4 | 51/0 |
| 70 | 51/12 | 52/8 | 53/4 | 54/0 | 54/12 | 55/8 | 56/4 | 57/0 | 57/12 | 58/8 |
| 80 | 59/4 | 60/0 | 60/12 | 61/8 | 62/4 | 63/0 | 63/12 | 64/8 | 65/4 | 66/0 |
| 90 | 66/12 | 67/8 | 68/4 | 69/0 | 69/12 | 70/8 | 71/4 | 72/0 | 72/12 | 73/8 |
| 100 | 74/4 | 75/0 | 75/12 | 76/8 | 77/4 | 78/0 | 78/12 | 79/8 | 80/4 | 81/0 |
| 110 | 81/12 | 82/8 | 83/4 | 84/0 | 84/12 | 85/8 | 86/4 | 87/0 | 87/12 | 88/8 |
| 120 | 89/4 | 90/0 | 90/12 | 91/8 | 92/4 | 93/0 | 93/12 | 94/8 | 95/4 | 96/0 |
| 130 | 96/12 | 97/8 | 98/4 | 99/0 | 99/12 | 100/8 | 101/4 | 102/0 | 102/12 | 103/8 |
| 140 | 104/4 | 105/0 | 105/12 | 106/8 | 107/4 | 108/0 | 108/12 | 109/8 | 110/4 | 111/0 |
| 150 | 111/12 | 112/8 | 113/4 | 114/0 | 114/12 | 115/8 | 116/4 | 117/0 | 117/12 | 118/8 |
| 160 | 119/4 | 120/0 | 120/12 | 121/8 | 122/4 | 123/0 | 123/12 | 124/8 | 125/4 | 126/0 |
| 170 | 126/12 | 127/8 | 128/4 | 129/0 | 129/12 | 130/8 | 131/4 | 132/0 | 132/12 | 133/8 |

The "Click Book." Although one of Cue's main purposes is eliminating the need for a traditional click book, sometimes it's useful to consult one.

As the timing format is chosen, times can be entered in either absolute or relative time. Absolute time is the actual SMPTE time code location on a tape where the cue begins and ends, and relative time is the duration the cue itself.

Although any given project most likely will be in no more than one or two formats (e.g., film that is transferred to videotape and/or back), Cue 2.0 can input data in any of the above formats and translate it into the set format. For example, if Cue 2.0 was formatted for SMPTE : 30 non-drop, you could enter information in measures/beats or feet/frames, and Cue 2.0 could translate this information to display it in SMPTE 30 non-drop. If an updated

version of your cue appears with changes that range from a few frames added or removed to whole scenes changed, Cue 2.0 can adapt your previous work with very little effort on your part. Or, if the timings are all the same, but the timecode numbers have been changed, the program allows for global adaptation.

SMPTE time code entries, as well as any format entries, are made with the "Input" window. SMPTE numbers can be typed in or grabbed "on the fly" when Cue 2.0 is locked to moving videotape or extracted from a freeze frame using Vertical Interval Time Code (VITC). Using VITC requires encoding of the videotape with VITC and a VITC-to-LTC converter. By offering a SMPTE clock adjust feature that offsets the entry numbers, the program compensates for various VTRs' placements of the noise bar when a frame is frozen on screen.

The timing information is displayed in a window called "Cue Sheet" This primary screen for the program is displayed in a "what-you-see-is-what-you-get" format. The window can be printed as one of several hard documents available. The page, production name, cue title and tempo information are displayed across the top, with the time of the cue start just below. Under that is the optional preface for cue description and the time display for the beginning of any warning clicks that were programmed in. Further down are six vertical columns with the timing specifics for the given cue.

From left to right, the first two are timing information (e.g., your choice of SMPTE numbers, real time or film footage) with either column being in absolute or relative times. The next two columns are displays for "Key Hit" information and "Cut" indication. In the center of the page is Column Five for scene description, dialogue notation, displays of meter and/or tempo changes and the total time of your cue. The sixth column displays click information in either bar/beat or click format. This column shows, at the given tempo, the position of your clicks/beats relative to your first two timing columns and can display the beat divisions of your sequencer, e.g., x/a480 per quarter note for Mark of the Unicorn's Performer.

Once all of your timing data has been entered, Cue 2.0 allows you to search for a tempo that will hit all points in the cue that you have designated as "Key Hits." The tempo options, which are set in the "Set Tempo Formats" dialogue box, are clicks in 24, 25, 29.97, 30 frames per second and beats per minute. The standard 24fps click format further subdivides eighth notes into fractional tempos of eightieths. The search can be conducted between a range of tempos to the nearest quarter, eighth or triplet note with a variable margin of frames before and after the hit. The search result yields a display of tempo options and the number of attendant hits. A zoom feature allows the user to zoom in on a selected tempo and see exactly where the key hits are falling in relation to the selected tempo and the exact click. The displayed click is subdivided into hundredths of a click. After a suitable

tempo has been found, it is entered in the "Set Tempo" dialog box.

If a simple tempo search doesn't yield enough "key-hitting," then the entire cue can be offset. For example, (if the hit tolerance is two frames, and every hit is hitting within one frame, but one hit is missing by three frames, the entire cue could be offset by a single frame, which would bring all hits within the two-frame tolerance.

If a tempo/offset combination cannot hit all of the hits when using a single tempo, an accelerando or ritardando can be used for "Retiming" between those hits that need to be brought into line. The program allows you to calculate the "Retimings" between a starting click number and an ending time, and takes into consideration the creative options of a desired ending tempo or ending click number. The retiming feature generates a custom click that varies in ways that most "live" musicians can play to easily. Tempo changes are immediately displayed in the "Cue Sheet" window.

| tempo: | hits: | tempo: | hits: | tempo: | hits: |
|--------|-------|--------|-------|--------|-------|
| 9-0 | 8 | 10-4 | 3 | | |
| 9-1 | 4 | 10-5 | 6 | | |
| 9-2 | 4 | 10-6 | 4 | | |
| 9-3 | 6 | 10-7 | 3 | | |
| 9-4 | 6 | 11-0 | 4 | | |
| 9-5 | 5 | | | | |
| 9-6 | 4 | | | | |
| 9-7 | 2 | | | | |
| 10-0 | 5 | | | | |
| 10-1 | 6 | | | | |
| 10-2 | 9 | | | | |
| 10-3 | 7 | | | | |

"Hits and Misses" (the "zoom" feature). 9-0 and 1-2 are promising because they are respectively hitting eight and nine out of 12 "Ky Hit" points within two frames of the nearest quarter note.

Meters are also variable and multiple within a cue. Against a base meter, changes can be inserted between designated points. However, as of this release, the click doesn't automatically follow changes in the denominator. For example, when a meter changes from base of 4/4 to 7/8, the click stays in quarters, giving you seven quarter notes. Solving this problem requires doubling the tempo for the duration of the meter change. With x/16 meter against a x/4 base, you must double the tempo twice for the entire inset. Although not a major or unworkable problem, this anomaly is scheduled to be

"corrected" in the next release. Meter changes are immediately displayed in the "Cue Sheet" window.

The "Cue Sheet" window is only one soft, printable window. Others include: "Custom Score" paper (printed vertically or horizontally), a "Master Cue List" (the so-called "Bible"), an ASCAP/BMI-type "Performing Rights" document, a "Spotting Notes Sheet" and a "Custom Title Page" that allows for the import of graphics from programs like "MacPaint"

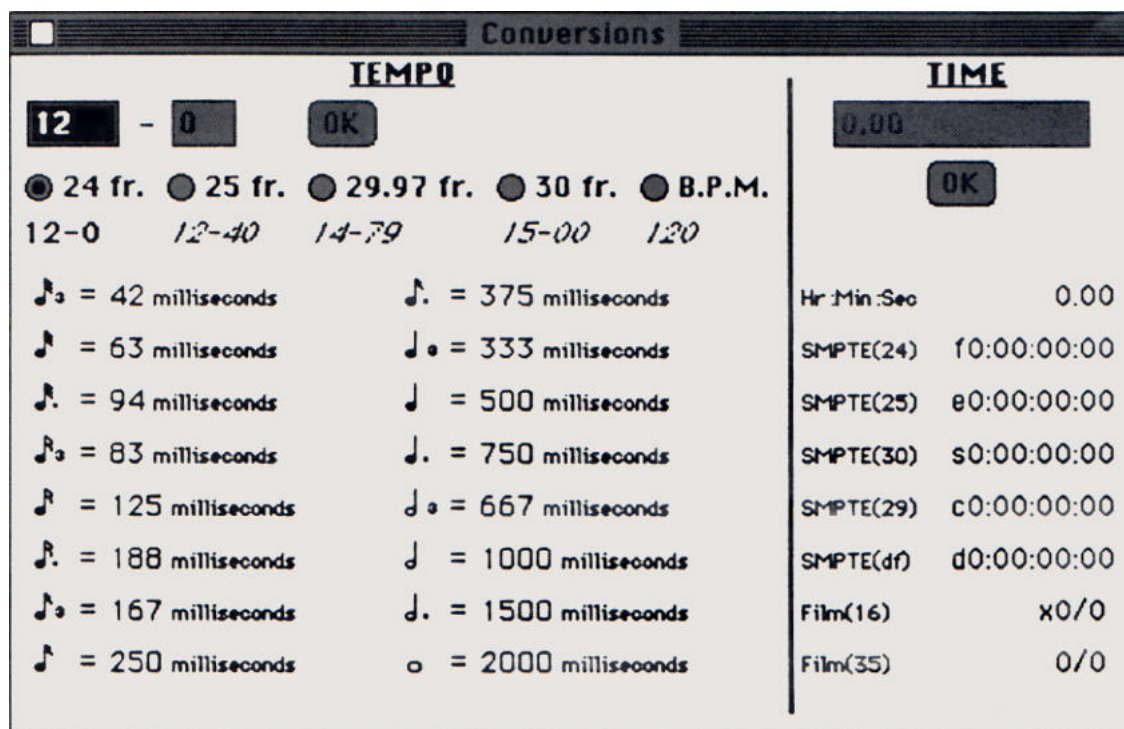
All of these pages share their data, which saves time and reduces the risk of error that can occur in any duplication of effort. More specifically, most information is entered only once, and this data is displayed on every page that uses it, in both soft and hard copy. For example, if a music editor or composer pulls down the "Operations" menu for the "Set Cue Info" dialogue box and enters the production title, cue number, cue title, composer's name, publisher's name and affiliation, orchestrator's name and whether the cue has yet been written, orchestrated, copied or recorded, he does this only once. The timing information entered in the "Cue Sheet" window is automatically displayed in the "Clicks Window," which, in turn, is printed over each music system on the custom score paper. This "Clicks Window" information is the musical display of the "Cue Sheet" window's data. The combination of the "Cue Sheet's" timing data and the "Clicks Window" data is finally activated in the document called "Playback"

"Playback" is a window from the "Reelworld" pulldown menu. It is the feature of Cue 2.0 that communicates with the outside world. It plays back the custom click track either from the Mac internally or locked to picture via MIDI timecode. The screen is an animated graphic window that displays the current position in SMPTE time, time for the next punch, current bar/beat, frame format, lock indicator, an analog stopwatch with a relative minute sweep, and streamers and punches in sync to picture. These streamers and punches can be superimposed on your video screen using something like the Video Streamer made by CB Electronics of England. Or, because Cue 2.0 sends out MIDI start messages at the beginning of each streamer, a triggered relay closure device can be used with a MIDI-controlled relay box such as J.L. Cooper's MIDI Mute. Streamers can be varied in length between two and four seconds. All of this should help the live conductor to conduct in the "Free-timing" mode. To facilitate the "Free-timing" mode, the click can be programmed to turn on and off at necessary places in the cue sequence. Cue 2.0's click feature generates a MIDI clock for external control of sequencers and MIDI notes for an external custom click sound. Cue 2.0 also receives MIDI start messages.

Although Cue 2.0 is not a sequencer in the common and current understanding of the term, it can sequence, in sync, up to 40 "MIDI Events." These events are entered via the "Input Window" and are listed in the "Cue

Sheet" window and the "MIDI Event List" window.

In the "MIDI Event" window, each event is listed with its MIDI note number, description, MIDI channel, up to five separate MIDI notes for each event, velocity level for those notes, and a column for duration. This information is ideal for cuing sound effects at a precise moment via a MIDIED sampler or an event controller that can see MIDI. The MIDI notes can be typed in or entered singly or as chords via the sampler's keyboard to ensure the proper velocities for each of the notes. This helps shape those simultaneous, multiple key-based sounds.



"Conversions" window lets the user convert a tempo or time into all possible formats without having to change the "Cue Sheet."

Additional Hardware

To use Cue 2.0's MIDI Time Code implementation, a Mac-compatible MIDI interface and a SMPTE-to MIDI Time Code converter are required. Several such devices are currently available. Relative to Cue 2.0, the SMPTE-to-MIDI Time Code converter that is easiest to use is Opcode's own Timecode Machine. Currently, other workable devices include the Southworth JamBox/4+ and J.L. Cooper's PPS1.

According to Opcode, to get the JamBox/4+ (as of this writing) to work properly with Cue 2.0's MIDI Time Code implementation, there are several procedures the user must perform. This is the result of different

interpretations of the MIDI Time Code standard. According to Opcode, this problem is being corrected by Southworth.

The J.L. Cooper PPS1 is fairly simple to use, but there are still quirks. Earlier versions of the PPS1 seem to have problems locking to SMPTE Time Code. The updated version locks to SMPTE Time Code but seems either to get confused, or it confuses Cue 2.0 on what frame format is being used when a SMPTE Time Code on a master tape is read backward at the higher rewind speeds. This problem can be overcome by stopping the playback of the master code source and restarting it.

Cue 2.0 acts as a software controller for the Opcode Time Code Machine, the Garfield Masterbeat and Time Commander, and the Southworth JamBox/4+ SMPTE Time Code converters.

If you are a sequencer-based composer and can't afford two computers, fear not. All timing information and tempo mapping can be transferred to the Southworth JamBox/4+, the Roland SBX-80, or to the Garfield Time Commander. The timing and tempo information can also be saved under a different filename as a version 0.03 MIDI file, which will be transferable as a tempo map to sequencers that can read this version of the MIDI file.

Additional Features

Another feature of Cue 2.0 is a custom "tapped" click, which is literally tapped out on the Mac keyboard and either averaged over 17 taps or taken in total from a cue that is locked to picture.

This software supports the use of modems, which speeds up communication between its users. This can be particularly convenient when transmitting data from coast to coast.

Normal Mac file-saving techniques are enhanced here with an optional autobackup feature and files that save three versions of the same cue, each differing in tempos, meter changes, offsets and warning clicks.

The program includes a "Conversions Window" which displays note durations from a whole note down to a 32nd note triplet, at any given tempo, in any tempo format. The window also displays exact times in all formats for a given time entry.

Conclusion

Although many approaches to post-production timings exist, Cue 2.0 is designed to work in any familiar format; with any working method. Even if your work habits dictate no change from the click book and click paper

technique, the program offers the old-timers what they need for their familiar tried and truly tedious method. There is a click book display.

Differing working methods aside, Cue 2.0 should be a welcome weapon in the arsenal of all music editors, sound editors, composers, arrangers and especially those who do all of the above on any given job. It will save the user more than time.

Cue 2.0 is well written; it works; and those who buy it won't feel that they are also beta-testing it for Opcode.



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