

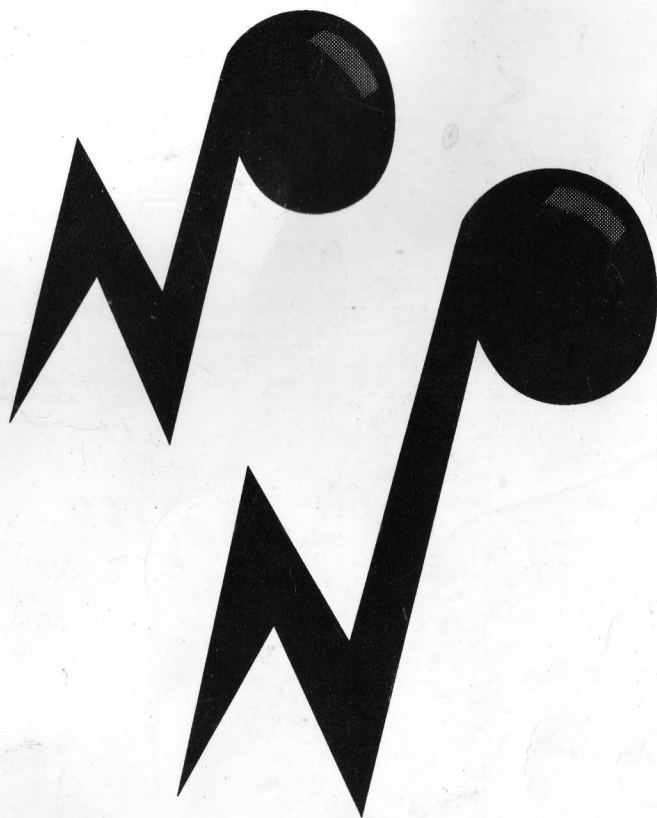
# Etracker

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## Instruction Manual

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*FOR THE SAM COUPE*

Most of you are probably sensible enough to realize that pirating SAM software will kill the machine. I know that a few people will feel the urge to copy ETracker because of its high price. ETracker is FRED's biggest and easily most expensive product so far - without a number of sales of ETracker we could lose a LOT of money, rendering FRED unable to continue to support SAM.

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## Etracker

Welcome to 'Etracker' - the most professional and comprehensive sound controller software for your Coupe. Many of you may already own 'The Sound Machine', and whereas it is an excellent introduction to music, Etracker allows you total control and flexibility over the sound chip in your computer. In addition to this, the Etracker program disk contains a BASIC interrupt driven example, so that you can hear your own compositions whilst your own BASIC programs are running.

### *So what does Etracker let me do?*

Those of you who have tried to understand the data on the sound chip in the Technical Manual, will rapidly have come to the conclusion that things can become very complicated very quickly, if you are trying to produce anything other than the most simple of tunes. Etracker gives you an easy-to-use, methodical approach to programming the sound chip, whilst still retaining full control over its many complicated features. Before we start, let's first clarify a few terms as used in Etracker.

- Song:** This is the actual tune that you want to play; but, in Etracker notation, it also includes the 'effect' that you want to put on each note (see later).
- Pattern:** Each song is composed by stringing blocks of music together, for example, if the chorus was put together in a pattern, then it could be used again and again within the song by merely indicating that this particular pattern should be played at the appropriate points in the song.
- Octave:** Musical notation dictates that the notes are arranged in groups of twelve. Each of these groups is called an octave. The sound chip has a range of eight octaves.
- Height:** This determines how 'high' or 'low' a note will sound when it is played. This is often referred to as the pitch of the note in musical notation. Male singing voices tend to be lower than female voices.

**Amplitude:** As a musical note is played, the volume of the note is called its amplitude. The amplitude can vary as a note is played (see 'Instrument' below).

**Instrument:** The Etracker instrument (known musically as an envelope) shows how the amplitude varies throughout a note. Changing the instrument can create many different types of instrument sounds.

**Ornament:** We can tell Etracker to play a particular note, with a particular instrument sound. An ornament changes the pitch during a note. So we can specify an ornament which can produce effects, such as a 'warble', on each sound. An ornament is NOT tied to any particular instrument, thus allowing mixing of ornaments and instruments to produce a virtually infinite number of variations.

**Module:** This term is used to describe everything - ie the song data, ornaments and instruments.

**Channel:** Whenever you want to play a note, you need a channel to play it. The sound chip has six sound channels, three for your left speaker and three for your right speaker. The channels are numbered A to F.

There's quite a lot of terms to remember here. Don't worry if you don't understand them all yet, they will become much clearer (I hope!) as you work your way through this manual.

### ***So where do I start?***

You will have two dBCS for ETracker - a MASTER dBC and a PROGRAM dBC. The MASTER dBC is copy-protected and cannot be backed up. If it fails at any time, simply return the dBC and a SSAE for a free replacement. You are advised to back up the PROGRAM dBC and use the backup as a working copy.

OK, so we're ready to begin. Boot the MASTER dCB and select to load ETracker. Once loaded, you will be presented with the main screen. Now

insert the PROGRAM dBC. We will be seeing rather a lot of this main screen so let's have a look at it. The upper area looks like this:

POSITION	: 001	PLAY P.	A	: ON
PATTERN	: 1	PLAY S.	B	: ON
LENGTH	: 001	COPY	C	: ON
HEIGHT	: +00	TRANSPOS	D	: ON
LOOP	: 001	ORN.ED.	E	: ON
		INS.ED.	F	: ON
		DISK		
CURRENT	: 1	CLEAR		
PAT.LEN.	: 064	TEST		
OCTAVE	: 1	QUIT		

Before we explain what each of these mean, let's explain the method of controlling each of these options. The up and down cursor keys move the highlighted option (at the start the current selection is POSITION). Please note that you CANNOT highlight the OCTAVE option, if you press the down arrow whilst on the PAT.LEN. option, the OCTAVE option will be skipped and the PLAY P. option will be highlighted. The selected option then moves downwards in the normal manner.

The left column of options are all associated with the editing of music, and the middle column lets you set up test conditions, disk operations and gives you facilities for the creation of sounds.

Probably the easiest way to learn about a piece of software is by using it, and Etracker is no exception. Press the up cursor until the DISK option is highlighted, then press RETURN. The screen will clear and a black screen with several menus will appear. We will examine these in detail later. For the moment, you should notice that the LOAD option in the MODULE menu is highlighted and by pressing RETURN, you can select it. After a few moments a menu will appear. The file called ENOLA\_G should be highlighted. Press RETURN to load it. The file will be loaded and you will be returned to the main menu screen. Note that the disk option is still highlighted, just as you left it. Press the up cursor arrow until the PLAY S. (which stands for PLAY SONG) is highlighted. Press RETURN to select this option and you should get a small taste of what Etracker is capable of!

We are not going to go into a detailed explanation of the meaning of all of these numbers here, we are just going to have some fun by experimenting with the pre-programmed music. You will notice that there are six boxes at the bottom of the screen with numbers scrolling constantly in them. At the top right of the screen, the letters A to F appear, each with the word ON alongside them. Each letter corresponds to a CHANNEL, and each box represents what each of the channels are doing. The box layout to channel representation is as below :

A	B	C
F1	F2	F3
D	E	F
F4	F5	F6

Each of the channels may be toggled on and off by pressing a function key, and the key corresponding to each channel is also shown above. Try pressing each of the keys to hear the effect that it has on the music! Press the SPACE bar on the keyboard to stop the music when you are ready to continue.

You will have noticed that each of the options on the top left of the screen has a number alongside it. Use the up cursor key until the CURRENT option is highlighted. Now if you press the left or right arrows, you will increase or decrease the CURRENT number accordingly. This value indicates which pattern is CURRENTly being displayed in the boxes in the lower part of the screen. Set it so that the CURRENT pattern is 2. Now press the down cursor until the PLAY P. option is highlighted (PLAY P. stands for PLAY PATTERN). The current pattern (ie pattern 2) will be played, and, when complete, the pattern is repeated. Press SPACE to stop as usual.

Once the music has stopped, press the space bar again. This time no option will be highlighted, but a flashing cursor will appear in the top left box in the lower half of the screen ie the box corresponding to channel A. Use the up or down cursor keys until entry 000 is indicated in the blue band on the screen (this is the left most digit on the line). You will see, in box A, the entry C-5 5035. Ignoring the other digits for a moment, the final 5 in the number

corresponds to the speed, in frames per note. This number can be in the range 1,2,3...9,A,B,..F. The smaller the number the quicker the pattern will play. To change the number, move the cursor under the number 5, and press the key corresponding to the speed that you want. Then press SPACE to return to the options, and select PLAY P. to hear it. (SPACE to stop.)

Now, just as a final experiment, we need to really mess about with this song. You won't be able to hear the song properly after this, but don't worry, you can always re-load it from the disk. Whilst in the options menu, use the up cursor keys until the POSITION option is highlighted. Use the left cursor until the POSITION number is 001. Now press the down arrow once, so that the PATTERN option is highlighted. Use the left or right cursors until the PATTERN number is 2. Press the down arrow once more so that the LENGTH option is selected. Press the left arrow so that the LENGTH parameter is 001. Now use the down arrow to select PLAY S. and press return to hear the tune (it will simply be a repeated pattern 2). Now press SPACE to stop the sound, and use the up arrow to select the HEIGHT option. The height number should be 00. You can use the left and right arrows to modify the HEIGHT variable. Try the values -05 and +05, and then select PLAY S. after each one to see the effect that it has on the music. And this is only the start!!!

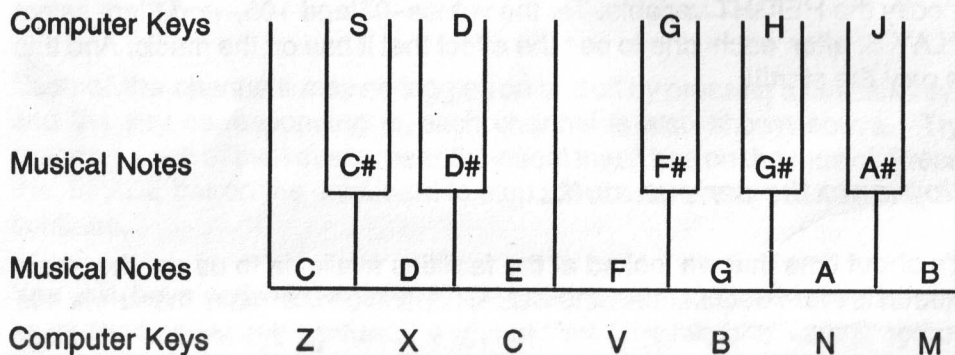
### ***Now onto the serious stuff...***

It's about time that we looked at the facilities available to us on the main screen in more detail. Select the CLEAR option on the main menu via the cursor keys, and press M for Module - clearing the Module will clear everything in Etracker, and reset all of the variables). Now select the DISK option. You will see the DISK control screen.

There are four headings on the screen. They are Module, Instrument, Ornament and Others. Each of the first three options have the same sub-headings, and these are Load, Save and Delete. So, to load an instrument (which is what you want to do), we first press the right cursor, to select the Instrument heading, then press RETURN on the Load option under this heading. The process is exactly the same for the Modules and Ornaments. The Others heading simply gives you the option to return to the main screen without doing anything, or to get a little information about the programmers. So, we have selected Instrument Load. After a few moments of disk activity,

a menu will appear with all of the available instruments on the disk in it. Use the up and down cursor keys to select the sound that you want. There are four example sounds on the Etracker disk. Select the ST\_NOTE instrument and press RETURN. A request will appear at the bottom of the screen asking for the Instrument Number. We shall place this sound into instrument position 1. After pressing 1 you will be immediately returned to the main screen. Select the DISK option again. Then use the right cursor to select the ORNAMENT menu and select LOAD. Again a requester will appear, this time with only one name in its window. Select this ornament, and, when the request for the ornament number appears, type 1.

Now we are going to create a simple tune. The computer keyboard has certain of its keys laid out like a musical keyboard. For those of you who don't know what a musical keyboard looks like, here it is, with the corresponding keys on your computer keyboard.



Whilst you have this keyboard in front of you, let me introduce you to two new terms that you will need later. The distance between any two nearest notes is called a semitone. For example, one semitone above note 'F' is 'F#' but one semitone below 'F' is 'E'. Do you see how this works? See if you can tell what the nearest semitones above and below 'G#' are. (Out of interest, G# is said as 'G Sharp'.) The final term that you need to know is that the distance of two semitones is called a tone.

Enough of the theory, let's start to enter the tune. Now, press the SPACE bar so that you are in the top left hand box in the lower part of the screen (the box corresponding to channel A - hereafter called box A). The first thing

that we must do is to select the OCTAVE that we want. You may remember that we couldn't highlight the octave from the upper part of this screen, but we can change it by pressing SYMBOL in conjunction with one of the function keys F1 to F8 (for octaves 1 to 8). Octave 8 is the highest and octave 1 is the lowest. Choose octave 4 (SYMBOL + F4). Now, using the table from above, enter the notes as follows so that box A looks like this.

000	C-4	0000
001	D-4	0000
002	E-4	0000
003	F-4	0000
004	G-4	0000
005	A-4	0000
006	B-4	0000
007	C-5	0000
008	---	0000

Note that before entering note 007, you need to change the octave. When you are satisfied that this is OK, press the SPACE bar to return to the top menu once more. You should also check that channel A is ON as indicated in the top right of the screen, and, if it is not press F1 to switch it on.

So, are we ready to play our music now? Not quite. Select the PAT.LEN. (Pattern Length) option. Use the left arrow to decrease this variable to 008 (as there are 8 entries, 0 to 7 in box A). Also select the LOOP option, and decrease this entry to 001. Now select PLAY S.

Nothing happened, did it? Well, do you remember that we loaded in a instrument before trying this example? Well, what we haven't done is to tell Etracker that we want to play our notes with this particular instrument! Press the SPACE bar to halt the playing (of no notes!), and press SPACE again to get the flashing cursor in box A again. Now use the up arrow until the cursor is on line 000. Use the right arrow until the cursor is flashing under the first of the four zeros following the note and octave. Now press number 1. This first digit tells Etracker which instrument that you want the notes to be played with - in our case instrument number 1. Now press SPACE and select PLAY.S to hear your tune.

That seems quite easy, so let's try to modify our tune. Press the SPACE BAR once more so that the cursor appears in box A on line 000. Move the cursor so that it is on the zero next to the 1 that we put in the instrument column last time. Press 1. Now press SPACE to return to the top menu and select PLAY S. to hear it.

Can you hear the different effect that this has had on each sound? What we have done is to tell Etracker that not only do we want to play each note with the sound corresponding to instrument one, but we also want to modify the instrument by ornament number 1 that's what the second column of numbers means. You will probably have noticed by this point that we do not need to use an instrument or ornament number for every note. A zero in either of these positions means to leave the current instrument and ornament unchanged. (A full description of the instruments and ornaments may be found in the sections on those editors.)

You can continue to change the notes in this simple example as much as you like. If you want to put more than eight notes, then you will need to select the PAT.LEN. (Pattern Length) option in the upper part of the screen and alter this to the number of notes that you have - you won't be able to put more than 64 notes here though!

This would seem to be a good time to summarise what you have learnt through the above example.

### **Main Screen Commands Summary**

The main screen is divided into two halves, upper and lower. The lower half is used for the editing of the song. Each song is made up of blocks of music called patterns. Each pattern may be edited in each of its six channels via the lower part of the screen, but more of that later. The sequence in which the patterns are played is defined in a table, which may be up to 255 entries in length. Each option in the upper half of the screen may be selected (with the exception of OCTAVE) by pressing the up and down cursor keys. Those options with an associated option variable (whose contents are shown as the yellow number on the right of the option) may have their variable changed by use of the left and right cursors, when that particular option is selected. Those options that do not have an associated variable, may be chosen by pressing RETURN when they are highlighted. One more

definition before we start, we will be continually referring to something called a 'song table'. This is simply a list of the patterns, in the order in which we want to play them. There is also another entry for each element in the song table, and this is the HEIGHT (see later) of the current table entry.

### **Example Song Table**

Table position	:	1	2	3	4	5	6	7	8	9
Current Pattern	:	1	5	4	5	3	2	3	4	6
Pattern Height	:	+00	+05	-03	+01	+00	+00	-01	-03	+00

**POSITION :** This indicates the position in the song table that we are currently considering. As this value is changed, the current contents of the song table at this position will be shown alongside the PATTERN option. The table can have 255 entries numbered from 1 to 255. As the song is played, the table is stepped through, starting at position 1. You can place any pattern in any position in the song table, and you may play the same pattern in several places in the song table if you wish.

**PATTERN :** This indicates the pattern that is in the song table at the position indicated by the POSITION variable. By selecting a given position, and then indicating a pattern, you can define the order in which the patterns are played in your song. You can have up to 32 different patterns, which are numbered 1 to 9 and A to W.

**LENGTH :** Although you can define a song table up to 255 patterns in length, you may well want to enter a shorter song. You can tell Etracker which entry is the last one of the song by changing the LENGTH variable. So, when a song is played, the pattern corresponding to each song table entry will be played until the position indicated by the LENGTH variable is met. This song table entered pattern WILL be played, and the end of the song is at the end of this pattern.

**HEIGHT :** Although you set up the tune that you want in a given pattern via the notes that you require, you may be playing the same pattern at different points in your song table, but you may, for example, wish the same pattern to be played in a different key. Select the POSITION in which you want the change to occur, and then change the HEIGHT at that position in the song table. When this position is reached the pattern corresponding to this entry in the song table will be raised or lowered by the number of semitones indicated by the HEIGHT variable. Positive heights indicate a raising of

pitch and negative heights a lowering. Please note that the patterns will only be modified under the PLAY S. option, not under the PLAY P. option. (See also TRANSPOSE.)

**LOOP :** As the tunes from Etracker are ideally suited for games, it is useful to be able to repeat the tune. When the final song table pattern (ie the one in the position indicated by the LENGTH variable) is reached, the tune will loop back to the song table entry indicated by the LOOP variable. So, suppose you have a song table with five entries, and at the end of the song you want to repeat from the third position. You simply change the loop variable so that it contains three, and Etracker will do exactly what you want. This could be very useful if the patterns corresponding to the first two entries of the song table contained the introduction to your song, which, of course, you only ever want to hear once!

**CURRENT :** This variable indicates the current pattern being displayed in the lower part of the screen. You will need to change this variable to be able to edit new patterns. This value changes along with the position and pattern values as the song is being played and the current pattern is constantly changing.

**PAT.LEN :** Each of your patterns may be between 1 and 64 elements in length. Each of the patterns that make up your song may be of different lengths, each determined by the PAT.LEN. variable which is changed when the pattern whose length you are considering is the CURRENT one.

**OCTAVE :** This is the only option in the upper half of the screen that you cannot select via the cursor keys. It indicates what octave the keyboard will correspond to if the current pattern is being edited. The octave variable contents may be in the range 1 to 8, and its value is selected by pressing SYMBOL at the same time as one of the function keys - F1 to F8.

**PLAY P. :** This option allows you to play the current pattern repeatedly. It is useful when you are working on a pattern and you need to be able to hear it, but you haven't placed it into the song table yet.

**PLAY S. :** This allows you to play the whole of the song as determined by the variables described earlier. As the song is playing the current sound in each channel scrolls by vertically in each of the boxes in the lower half of the screen. This option will play the song from the current value of the position variable.

This will allow you to copy either whole patterns, or parts of patterns from

place to place. Upon selecting this option, you are prompted for:

- the pattern that you wish to copy from (source);
- the pattern that you wish to copy to (destination);
- the first position in the source pattern;
- the last position in the source pattern;
- the start position in the destination pattern;
- the source channel;
- the destination channel.

N.B. When entering the positions in the source or destination patterns, you MUST enter a two digit number, ie if the start position is three, then the number should be entered as 03. If you make a mistake at any time within this option, you can abort by pressing the Escape key.

**TRANSPOS :** There is an operation in music which allows you to move a passage of music up or down by a number of semitones. This action is known as transposing the music. The TRANSPOS(E) option of Etracker allows you to do just this. Just as in the copy option, you are prompted for details:

- the pattern that you wish to copy from (source);
- the pattern that you wish to copy to (dest.);
- the source channel;
- the destination channel;
- the first position in the source pattern
- the last position in the source pattern
- the start position in the destination pattern

In exactly the same way as in the COPY option, you can use the Escape key to abort at any stage. You must also be careful when selecting the positions in the patterns and the number of semitones to transpose by, to enter a two digit number (ie 03 rather than 3).

**ORN. ED. :** This option is the ornament editor - see the detailed section later in this manual.

**INS. ED. :** This option is the instrument editor - see the detailed section later in this manual.

**DISC :** This option brings up a new screen which allows you to LOAD,

SAVE and DELETE any of your modules, instruments or ornaments from disk drive 1. Each option is selected using the cursor keys from pull down menus. Each option brings up a list of the relevant files off the disk. Every musician is different and has a different style and way of composing music. Whilst editing music (on the bottom half of the screen) you can choose to have automatic cursor progression i.e. after pressing a key, the cursor moves to the right (except when inputting a note or the forth figure). This option is not selected upon loading so to enable it, select the DISK option, press RETURN then select the TOGGLE item from the OTHERS menu and press RETURN. If you preferred it the original way, just select TOGGLE again.

**CLEAR :** This option will allow you to clear or erase all or some of your musical data from memory. Upon selection, this option brings up a menu which allows you to clear a channel in the current pattern; the whole of the current pattern; the whole of the song data; or the whole of the module. The required option is selected by pressing the first letter of the desired choice. Please note that this process is irreversible. You may press the Escape key to abort this option. Remember, if you LOAD a new module without first clearing the old one, the POSITION parameter will remain unaltered.

**TEST :** The test option operates in an identical way to the play song option, except that the song is played from the beginning, not from the current table position, and, whilst the song is playing, there is a 'Spectrum Analyser type screen and a scrolling message from the authors of Etracker.

**QUIT :** Just as you might expect, this option quits from Etracker.

That's all of the upper screen options covered. On the extreme right of the upper screen, you will see six letters A to F down the screen. Alongside each of these is indicated whether this particular channel is ON or OFF. You can toggle each of the channels by pressing the function feys F1 to F6 (F1=A, F2=B... etc).

The lower screen is divided into a series of boxes as shown below. We already know that each of these corresponds to a single channel of the sound chip, and that the channel to box relationship is as follows

A	B	C
D	E	F

You will also notice that in each box there is room for nine rows of numbers, and that the centre line is highlighted in blue. This is the 'current line' - the line that is either being currently edited or being played, depending upon the mode that you are in. You can edit this line by pressing the space bar, which will remove the highlighting from the upper half of the boxes, on the current line. You can use the cursor keys to move through the current pattern, and also from window to window. Note that when you enter a number or a letter, the cursor does NOT automatically move, as it does not know where you want to go. You have to make it move yourself by using the cursor keys. Note also that you can only edit the current pattern. If you want to edit any other pattern then you must make it the current one via the option on the upper half of the screen. Now let's consider one of these lines in detail, as shown below.

| 000 | --- 0000 | --- 0000 | --- 0000 |

The first three digits constitute the current entry in this pattern. This number always starts from zero and can go up to 64, according to the pattern length, set by the PAT.LEN. variable. This number is always identical in both the upper and lower windows. The next three positions, initially indicated by '---', are where the note is placed. Example notes are C-4, G#2 etc, and these notes are interpreted as Note C in octave 4, Note G sharp on octave 2. As described earlier, the octave is changed using SYMBOL and a function key, and the notes are laid out on two rows of the keyboard in the fashion of a musical keyboard, using keys Z to M and S to J. If you press RETURN when in this field, you will clear the current note.

The only unexplained number remaining is the four digit number just to the right of each note. Each of these numbers refers to a different parameter which will affect every note from thereon ie, any zeros in this column mean, 'use the same parameter settings as before'.

The first number indicates the INSTRUMENT that is to be used. This value only applies to the channel that it is entered on, otherwise you wouldn't be able to play more than one sound at a time. You should set the instrument on the first note that you wish to play with that sound. The instrument number can be 1 to 9, or A to V. At the start of a song the instrument is undefined.



current sound with. Again it only affects the current channel. The ornament number can be in the range 1 to 9, or A to V. Again, the ornament is undefined at the start of a song.

The third and fourth numbers are grouped together, in that the third number is a sound chip COMMAND, and the fourth number is the COMMAND PARAMETER. Valid commands are in the range 0 to 7, and an explanation of each of the commands follows:

Command Number	Explanation
0	No change.
1	Turn on or off envelope generator. The sound chip has two envelope controllers. Channel B controls the frequency of the envelope that modulates channel C, and channel E controls the frequency of the envelope that modulates channel F. The parameter defines the envelope shape that you want to turn on. The invalid parameters (0,D,E or F) all switch the envelope generator off. The envelope types are shown in Appendix A.
2	Turn on or off instrument inversion. An odd parameter turns the inversion on, an even parameter turns the inversion off.
3	Set the delay of the tune in frames. Etracker uses the interrupt that occurs at the start of each television frame to generate the sounds. Etracker will default to waiting for six frames to appear before moving to the next line in the current pattern. By using command 3, you can set the parameter to between 1 - 9, A - F.
4	Set the amount of volume reduction. The parameter can be in the range 0 to F. 0 gives the loudest sound, and F is silent.

5 Turn on or off extended noise, even parameters turn this on, odd parameters turn it off. When this command is used in channels A,B or C, it relates to the first noise generator, and if in channels D,E, or F, it relates to noise generator 2. The extended noise only affects instruments that have a cleared noise mask. In these cases, the instrument will generate noise with the frequency of that of the control channel. N.B. If the extended noise is OFF, and instruments with different noise frequency are chosen, only the last noise in the group is active.

6 This command allows you to stop the current sound from a particular channel. The instrument and ornament data within that channel is also reset. This command does NOT use any parameters. This command is used to stop a instrument with a never-ending repeat in it.

7 No change.

### Ornament Editor

An ornament is a changing pitch effect that can be superimposed onto a n instrument to allow many variations of the sound without having to create many instruments. These ornaments can be created by using the the ornament editor (ORN.ED) from the main menu. The newly created ornaments can then be saved to disk for use later.

Upon selecting this editor, Etracker will present you with the ornament editor screen. This consists of two columns. The left column is numbered 0 to 255. This allows ornaments of up to 256 elements in length to be created. The second column is the pitch variation that will occur in that element - these are all set to zero initially to give a constant pitch sound. The current element is indicated by the blue band on the screen. Different elements may be selected by using the up and down cursors.

To create the ornament, select the element which you would like to change and then use the following keys :

W	Increase pitch by 1	S	Decrease pitch by 1
E	Increase pitch by 12	D	Decrease pitch by 12
T	Reset the current element to 0		

You do not have to fill all 256 elements of the ornament. When you have completed the design of your ornament, move to the final element and press 0. You will notice a purple symbol has been placed on that line on the right hand side of the screen. This is the 'End of Ornament' marker. You can place this on any line, and your ornament will stop playing there. You can hear what effect your ornament will have on a sound by pressing the space bar at any time. Don't forget to set the end of ornament marker first though!

You can also cause an ornament to play repeatedly. When your ornament is first called, it will play from element 0. It will either stop when it reaches the end marker, or, if you set the two loop back markers, it will loop forever between them. To set the markers, you move the cursor to the element that you wish the ornament to loop back FROM, and press 3. You then move the cursor so that the current line is the one that you wish the ornament to loop back to, and press 4. Two markers will have appeared on the right hand side of the screen, indicating that a loop has been set. Press SPACE to hear the ornament. As you now have an infinite loop, press any key (other than RETURN or SPACE) to stop the sound. You may then press RETURN to go back to the main screen.

If you wish to clear the whole of the current ornament, press F7. You will be prompted to make sure that this is what you want to do as this is irreversible. If you wish to move to another ornament, press F8. This will be shown instead of the current ornament. If you wish to store this ornament as a different one rather than the current one, then press F9.

If you wish to save the ornament, you can select the DISK option from the main menu, and then select the SAVE option under the ORNAMENT menu. You will be prompted for a filename or given the opportunity to overwrite one of the other ornaments on the disk, if any!

## ***The Instrument Editor***

Instruments are the sounds that Etracker uses to play the songs that you write. Upon selecting the instrument editor option (INS.ED.) from the main menu, you will be given the facility to design your own instruments.

The instrument editor screen is very similar to the ornament editor (described earlier). The current line is highlighted in the centre of the screen. The current line can be changed by using the up and down cursor keys. There are several columns on screen. We shall now consider each one separately.

The first column is the instrument position. This number always goes from 0 to 255, allowing you 256 positions in which to layout your instrument. The instrument will always try to play from position 0 and will end when it reaches position 255, or an end marker (see later).

The second column (headed 'M') is the 'sound mask' column. The sound mask determines whether or not that particular instrument element will be heard. The mask can be toggled on and off using key '1'. The default is for all positions to be ON. A sound mask is ON (ie the sound will be OFF) when a diamond is present in this column.

The third column is a graphical representation of the instrument through the left half of the stereo field. You can define a instrument so that it will only be heard through the left speaker, only the right speaker, or partly through both. This can give the effect, to the listener, of a sound 'moving' from one side of the room to the other! This column only shows the left channel volume, and it is controlled by using the 'Z' and 'X' keys - Z to decrease volume and X to increase it.

The fourth column is completely analogous to the third column, except this time it controls the volume of the instrument in the right half of the stereo field. The positional volume is controlled by the 'C' and 'V' keys, C to decrease, V to increase.

The fifth column is the 'noise mask'. This is completely unconnected with the sound mask, described earlier. If the noise mask is set, then this element of the instrument will not be played with a 'pure' note from the sound generators, but from the noise generator. The noise mask is off in all positions normally, and this 'normally off' position is indicated by a diamond (ie the OPPOSITE of the sound mask). The noise mask can be toggled using

the '2' key. However, even the noise generators can be controlled as to their frequency, and this is also indicated in the fifth column by green bars. The sound chip's white noise generators (two in number, one left and one right) have three 'in-built' frequencies, but they can also be controlled by one of the tone generators instead. The fifth column allows you to select one of these in-built generators. Use the 'N' and 'B' keys to decrease/increase the white noise control frequency. You will see that a small green bar will appear in the fifth column. If there are no bars, the noise control frequency will be 31.25KHz (at its highest); with one bar, its 15.6KHz; and at two bars, its at 7.8KHz - of course, in each of these cases, the frequency will only have an effect if the noise mask is ON! The noise frequency is controlled using the keys 'B' and 'N'.

The final column is the frequency deviation. You can deviate the frequency of the instrument from its base frequency by an amount in the range -1920 to +1920. This deviation is entirely independant of any ornament that may be in effect. If the deviation causes the absolute frequency to overflow or underflow then the actual frequency played will 'wrap-around' - ie max\_frequency+1 will be played as frequency 1. The deviation controls are:

T	:	Deviation = 0	M	:	Change deviation sign
W	:	Increase deviation by 1	S	:	Decrease deviation by 1
E	:	Increase deviation by 16	D	:	Decrease deviation by 16
R	:	Increase deviation by 128	F	:	Decrease deviation by 128

The end marker, loop back markers and instrument control keys (F7, F8 and F9) work in an identical manner to the ornament editor and are only listed here for convenience - for a full explanation, see the ornament editor.

0	:	Set End Marker
3	:	Set end of loop marker
4	:	Set start of loop marker
F7	:	Clear instrument
F8	:	Get instrument
F9	:	Store instrument
SPACE	:	Play instrument
RETURN	:	Return to main menu

## The Compiler

Once you have created your musical masterpiece, you will want to use it in conjunction with your own programs. To do this you need the compiler program on your Etracker disk. Once you have saved your music, as a MODULE onto a disk, load up the compiler from your Etracker disk. You will be presented with a screen which is very similar in layout to the DISK option from the main Etracker menu. There are four menu options on screen:

DISK	-	for LOADING and SAVING your files;
COMPILER	-	to COMPile and MERGE your music with the Etracker player;
OTHERS	-	to get a DIRectory of the disk, or to get information about the authors;
QUIT	-	as its name suggests, to get out of the compiler program.

You select these options by using the cursor keys and RETURN as before. Select the DISK LOAD option and select one of the modules from the menu. Now select COMPILER COMP. to compile your music. After a moments delay, your music will be compiled and the length of your code will be shown (Notice that, although your original music was around 78K in length, the compiled code is only a few K in length!). Now press SPACE to return to the menu. Now select COMPILER MERGE. This will join (or merge) your compiled music with a music player. You will be prompted for an address. This can be any value in the range 0 to 65535. Unless you understand how the memory is allocated in the Coupe, then we suggest that you ALWAYS use the address 16384. But for those of you who need to know, this value is the offset from a 16K page boundary.













Now all you have to do is to save your compiled, merged music to disk. There are two ways to use your music from within your own BASIC programs. The first is to use the simple routine as shown in the BASIC.PLAY program on your disk. You will be prompted for the start address that you entered at compilation time, and the name of the file. Your music will then be played by the loop, whose timing is controlled by the PAUSE statement. The other example on the disk is far more useful. The INT-MUSIC program on your disk

allows you to play music under interrupts - for those who don't know the value of interrupts, the music will play without any intervention by you, once you have initiated it. You can play your own music in this manner by using a modified version of the INT-MUSIC program.

And that's it! You should now be capable of producing music on your Coupe to rival that of any game that you have seen. The only limitation is your musical ability. You now own a fantastically flexible tool, it's up to you to use it to its fullest capabilities.

Adrian Parker, November 1992

### Envelope Type

Parm	Shape	Resolution	Inversion
1		3 bits	OFF
2		3 bits	OFF
3		4bits	OFF
4		4 bits	OFF
5		4 bits	OFF
6		4 bits	OFF
7		3 bits	ON
8		3 bits	ON
9		3 bits	ON
A		4 bits	ON
B		4 bits	ON
C		4 bits	ON



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