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INTRODUCTION

Welcome to the world of computer music and the Vista Music Machine!

The Vista Music Machine and Melodize, Play, and Disco programs can be used to enter, modify, play, or, in some cases, create music for your enjoyment, amusement, and entertainment. Great musical skill is not necessary to use the Vista Music Machine and programs, although some elementary knowledge of music is helpful. All that is necessary is the Apple II computer, including keyboard and paddles, the Vista Music Machine synthesizer board, your home stereo or an amplifier and speakers, and your desire to hear the innovative music.

The principal benefit of the Melodize program is its simplicity. Notes, rests and other musical parameters are entered on a conveniently displayed musical staff formatted

like sheet music. The musical staff is shown at the top of the screen while the seven varieties of notes, rests and other composition necessities are shown below it. A variety of other functions, such as editing, selecting stereo mix, and modifying speed, are available and are entered through text commands at the bottom of the screen. Once entered, the music can be played back by entering a command on the Apple II keyboard. Music can be stored on and loaded from diskettes allowing you to keep a large number of songs available at your fingertips. All of these functions are explained as you continue reading this manual.

A minimum of 48K bytes of memory is required to use Melodize and its associated programs. Should Melodize be stopped accidentally, using RESET, the monitor command C00G {C zero zero G} is used to continue. The song data will remain intact provided Melodize was not in the process of editing the song data. Pressing RESET will generally not affect your song if Melodize was waiting for your next command or performing a playback of the song.

Since most people desire to use the Vista Music Machine and programs rather than read about them, this manual is organized to allow you to use the machine while reading the text. The organization of the manual is as follows:

SECTION 1 - Installation/Initialization. This section explains how to install the Vista Music Machine printed circuit board into your Apple II, and how to interconnect the board to your audio amplification device.

SECTION 2 - How to use Melodize. The step by step instructions for use of the Melodize program is covered in this section. It is designed to allow you to actually enter a simple song as you proceed with your learning exercise.

SECTION 3 - General Musical Information. This section covers some of the fundamentals of music and explains certain terminology necessary to understand sheet music and enter songs into the Vista Music Machine. It is recommended that if you are unfamiliar with music, other reference materials be obtained through local music stores or the public library.

SECTION 4 - Programs Description. This section explains the Vista Music Machine three key programs: 1} Melodize, which is used to enter songs into computer format, 2} Play, which is used to play the songs after they are entered, and 3}

Disco, which is simply a means of creating "albums" of songs which you can call up and have the computer randomly select for your listening pleasure.

SECTION 5 - Envelopes. One of the many features of the Vista Music Machine is the ability to modify the envelopes of the musical notes. This section explains how this is accomplished through the use of specific commands while creating a song. Because of the infinite possibilities available to the user, you will be provided with an explanation, and a sample, and wished good luck in exploring the many possibilities for creating unique sounds using your Apple II and Vista Music Machine.

SECTION 6 - Appendicies. Several useful tables and diagrams are included in the appendicies. These will provide a handy reference and quick reminder relative to the operation of your Vista Music Machine.

SECTION 1 - INSTALLATION / INITIALIZATION INSTRUCTIONS

The installation of the VISTA MUSIC MACHINE is simple. There are three separate sets of instructions: 1) the installation of the board into the computer, 2) the hookup to the external audio amplifier units, and 3) initial checkout using the pre-recorded songs.

COMPUTER INSTALLATION

Turn off the computer and wait several seconds before installing the board. The Vista Music Machine is set up to operate in slot ~~4~~ 4. Carefully pick up the board and insert the printed circuit board connector into the Apple II backplane connector number 5 (remember the backplane connectors start at 0).

There are two audio cables which exit the music board. These cables should be routed carefully out the back of the Apple II and brought close to the external audio amplification unit. You may need extension cables to run from the back of the Apple II to the audio amplifiers. The connectors are RCA Phono Jacks.

CONNECTION TO THE AUDIO AMPLIFIERS

The audio cables should be routed to the audio amplifier or stereo/hi-fi system you have in your home. Generally, on the back of the amplifiers are plugs for external audio inputs (external tape recorder/tuner jacks). As long as the input circuits are high impedance, the Vista Music Machine board and the amplifier will be compatible.

It is wise to remove power from the Apple II and the audio amplifier when connections are being made to avoid short circuiting of the audio output and any hum which may occur when the shielded portion of the connector has not contacted the shielded portion of the receptical. Because there are two connectors, one should go to the "right" channel and one to the "left" channel of the stereo amplifier.

The diagram in Figure 1 may be of assistance when hooking up the system.

INITIAL CHECKOUT

Ready for some music??? Simply load the Vista Music Machine diskette into the disk drive, turn on the computer, and proceed to RUN DISCO. DISCO is a program that will call up the PLAY program and randomly select one of several songs provided to you on your diskette as examples. The song will begin to play so be ready to adjust the volume and balance controls on your hi-fi/stereo to the desired levels.

You are now ready to enter your own musical scores into the Vista Music Machine.

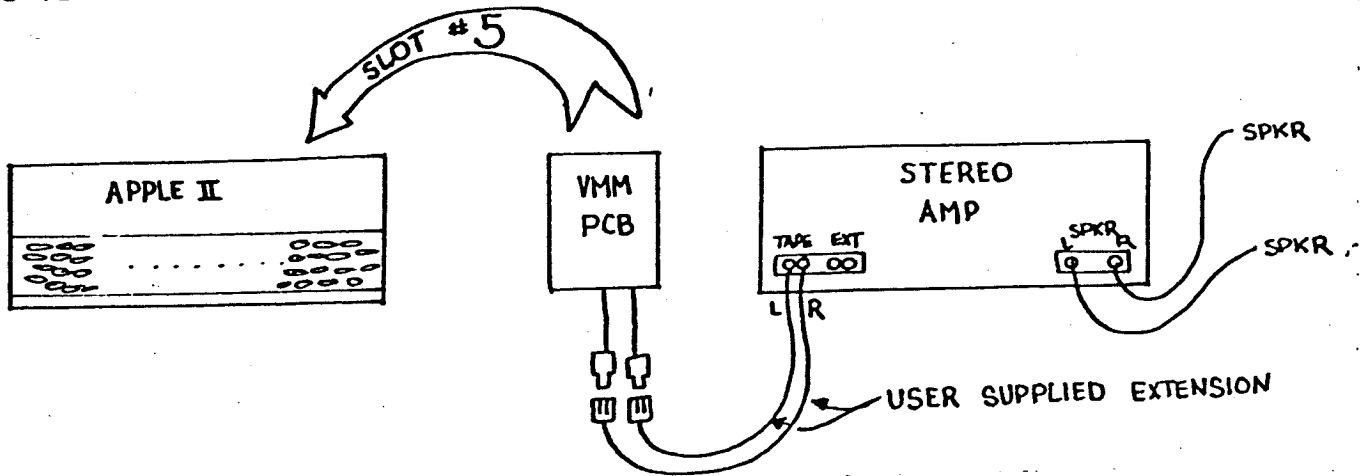


Figure 1 - Installation Diagram

SECTION 2 - HOW TO USE MELODIZE

The Melodize program is the key to the Vista Music Machine and is used to enter your music into the computer and prepare computer data files. The program is written to allow you to enter data via the Apple II game paddle's and thru the Apple II keyboard. The data you enter into the computer will be displayed in a combination high resolution graphics {top portion of the screen} and standard text {on the part of the screen}.

The following steps will familiarize you with the program, its capabilities, and allow you to enter your first musical score.

Step 1 - UNDERSTANDING WHAT YOU SEE

To use the Melodize program, you need to be acquainted with what is displayed on your screen {referred to as CRT}. To call up the program simply insert your Vista Music Machine diskette into the computer and enter "RUN MELODIZE". The screen will blankout and immediately follow with a high resolution graphics display {Figure 2}. The items seen in the lower part of the graphics are called Menu commands and items.

At the top of the graphics screen are the Treble Clef and Bass Clef staves, as indicated by the signs. Also found here are the time signature, 4/4, and eight asterisks. For simplicity, ignore those items right now; they will be explained in step 3 of this section. The music you enter will be displayed on these staves.

The bottom of the graphics screen shows the rests, notes, note duration signs, accidentals, musical note cursor movement direction, editing commands, tie, and a speaker with a right arrow under it. Through the use of paddle 1's knob, the menu selection cursor {the upward arrow} can be moved beneath the menu item desired. Once the proper menu item is selected, paddle 1's button is pushed, a small white box moves to the cursor location indicating that item is in use and enabled. {Caution: If the white box is not moved under the item you desire, you will perform the previous menu setting instead of what you expected.}

Turning paddle 2's knob, causes a saucer-like indicator {for note cursor} to move up and down on the staves so that notes may be located in any position needed. Pushing paddle 2's button causes the insertion of the selected menu item note on the line or space where the note cursor is located on the staves. Rests are entered using paddle 1's button and automatically appear in the proper position in the treble clef for simplicity.

The bottom of the CRT {in the non-graphics portion of the screen} contains the words "MEASURE," "PART," and "FREE" with a number. MEASURE indicates the measure being Melodized. PART indicates the part being entered. FREE indicates the amount of memory free for Melodizing.

The following will further explain the Menu commands and items found at the bottom of the graphics display.

REST

Rests are achieved by using the following two steps:

1. Locate the menu cursor under the note that corresponds to the duration of rest needed and push paddle 1's button to bring the white box to the menu cursor location.
2. Move cursor to the word "REST" and push paddle 1's button. Note that the white box will remain under the note duration selected.

For example, the music requires a quarter note rest. To reproduce this, the menu cursor is moved to a location under the quarter note and paddle 1 button is pushed to move the box to this location. The cursor is then moved to the word "rest", at the far left of the menu line, and the same button, paddle 1's, is pushed. A quarter note rest will appear on the Treble Clef; rests will always appear on the screen in the Treble Clef, even when notes are being entered in the Bass Clef.

NOTE DURATION CONTROL

The seven notes on the Menu are used to set note duration. The notes shown, from left to right, are: Whole Note, Half Note, Quarter Note, Eighth Note, Sixteenth Note, Thirty-second Note, and Sixty-fourth Note. When one of these notes is selected, by positioning the menu cursor underneath the symbol and pressing paddle 1's button, any previously selected note is turned off. The time duration of any selected note is determined by mathematical progression from the current value of a quarter note. {An explanation of quarter note duration is given in Step 3.}

The standard value for a quarter note is 240 time units. Since a whole note is equal to four quarter notes, a whole note is 960 time units. This setting gives the other notes the following durations: Half=480, Eighth=120, Sixteenth=60, Thirty-second=30, and Sixty-fourth=15. The time units are arbitrary and do not correspond to wall clock time - they only establish the relationship between the time duration of the notes and rests.

NOTE DURATION MODIFIERS

There are two note duration modifiers located on the menu selection line. The "." modifier causes the selected note duration to be multiplied by 3/2; this makes it one and one-half times its normal duration. For example, a dotted quarter note changes from 240 time units to 360 time units. The modifier "3", located adjacent to the ".", causes the selected note duration to be multiplied by 2/3. For example, a 240 time unit quarter note becomes 160 time units as a quarter triplet. When both "." and "3" are selected, the note duration remains the same as originally given; a 240 time unit quarter note followed by "." and "3" is still

a 240 time unit quarter note. Dotted sixty-fourth notes are not allowed.

The use of these modifiers is common in musical scores and adds emphasis on the notes.

The procedure for the addition of the modifiers is as follows:

1. Select the note desired by moving cursor and white box beneath the note using the paddle 1 for menu cursor placement and paddle 1 button for enabling the note selected.

2. Move the menu cursor underneath the modifier desired and push button on paddle 1 to cause the white box to appear beneath the modifier.

3. Using paddle 2 to located the note cursor at the desired line or space in the staves, push button on paddle 2. This will cause the modified note to appear on the stave.

ACCIDENTALS

The three accidental controls are sharp, flat, and natural, from left to right. When selected, using the same menu cursor technique, the next note entered is affected. The sign for these accidentals may or may not appear on the stave due to the Key Signature and/or any previous accidentals in the measure. The accidental controls are cleared when a note is entered. The accidentals affect only one note at a time - if two accidentals are needed then you must activate the accidentals twice.

The procedure for the addition of the accidentals to the music you are writing is the same as the procedure used for modifier selection. Note, however, that you may not enter double flats or double sharps using these commands.

CURSOR MOVEMENT

Note cursor movement on the staves either Right or Left is achieved by using the two note cursor movement direction commands, the arrows on the display. When either command is selected, the cursor will move one item at a time every time the paddle 2 button is pushed. If the cursor is already at the leftmost, or rightmost position on the screen when left, or right movement is selected, the screen is replotted to display the graphics data which may have been off the CRT. Cursor Left cannot be used to move past the start-of-part or start-of-subroutine marker. Cursor Right cannot be used to move past the end-of-part or end-of-subroutine marker. If either of these movements is attempted, a "beep" will sound indicating an error.

SOUND ACTIVATION

The symbol at the far right of the menu is a speaker with a right arrow under it. It is used to enable and disable note playback during Cursor Right. When enabled, notes will be heard when the cursor passes over them while using Cursor Right, and when deactivated using the Menu DEL command the note playback is disabled. Each note will be heard for as long as the paddle 2 button is depressed.

EDITING COMMANDS

"DEL" is used to delete the item currently pointed to by the note cursor; end markers cannot be deleted. One item is deleted each time paddle 2's button is pressed. After the note or rest is deleted the note cursor will jump one space indicating the next potential note/rest to be deleted. This command is handy for erasing improper notes/rests.

"INS" is used to turn on and off the "insert flag". This flag is represented on the screen as a square under "INS." When the insert flag is on, items are inserted before the item where the note cursor is located, not the same position as that item. Note that the "insert flag" is assumed to be on, even when not indicated by the square under "INS", if the item pointed to by the cursor is an end marker.

TIE

When TIE is selected, the current note duration is added to the item pointed to by the cursor. A "beep" and Cursor Left will occur if the cursor item is not a note or a rest.

The equipment used for entering any tune is the two paddles and the keyboard. Paddle 1 controls the menu cursor location. Moving the knob on this paddle, moves the menu cursor right and left on the menu select line for item selection. Pushing the button moves a small white box to the cursor location enabling use of the items selected.

Paddle 2 controls the location of the note cursor on the staves. Moving the knob, moves the saucer-like note cursor up and down on the two staves. Pressing the button causes the note/rest/modifiers/accidentals to appear on the staff where indicated.

The keyboard is used to enter the non-menu commands which are discussed later.

YANKEE DOODLE

Figure 3A shows a 4-measure musical excerpt in 4/4 time. The treble staff contains chords: G4-A4-B4 (quarter), G4-A4-B4 (quarter), G4-A4-B4 (quarter), and G4-A4-B4 (quarter). The bass staff contains a simple bass line: G2 (quarter), B1 (quarter), D2 (quarter), and G2 (quarter).

FIGURE 3A SAMPLE SHEET MUSIC

FIGURE 3B SAMPLE "MELODIZE" INPUT

Figure 3B shows a 4-measure musical excerpt in 4/4 time. The treble staff contains a melody: G4 (quarter), A4 (quarter), B4 (quarter), G4 (quarter), F4 (quarter), E4 (quarter), D4 (quarter), and C4 (quarter). The bass staff contains a bass line: G2 (quarter), B1 (quarter), D2 (quarter), and G2 (quarter).

Figure 3B shows a 4-measure musical excerpt in 4/4 time. The treble staff contains a melody: G4 (quarter), A4 (quarter), B4 (quarter), G4 (quarter), F4 (quarter), E4 (quarter), D4 (quarter), and C4 (quarter). The bass staff contains a bass line: G2 (quarter), B1 (quarter), D2 (quarter), and G2 (quarter).

Figure 3B shows a 4-measure musical excerpt in 4/4 time. The treble staff contains a melody: G4 (quarter), A4 (quarter), B4 (quarter), G4 (quarter), F4 (quarter), E4 (quarter), D4 (quarter), and C4 (quarter). The bass staff contains a bass line: G2 (quarter), B1 (quarter), D2 (quarter), and G2 (quarter).

For purposes of demonstration, try entering the music in figure 3 as you read the procedure. The procedure is as follows:

1. Assuming a cold start (i.e. your Apple II has been off), insert your Vista Music Machine diskette into your disk drive and turn on the Apple II power switch. This will load the DOS and ready your machine for action.

2. Enter the command "RUN MELODIZE" which will load the program required for melodizing or entering musical scores into computer language.

3. The screen will display the Melodize graphics already explained (refer to Figure 2): the two staves and the menu selection line.

4. Using the keyboard, type in "NEW", followed by depressing the RETURN key. The NEW command clears the memory and reserves all the space for the new song. The screen will then begin displaying a series of questions at the bottom in the test area. For now, just hit RETURN after each question appears. In step 3 of this manual you will find out how to respond to the questions for more sophisticated tunes. (Note: The first question is "NUMBER OF PARTS".)

5. Using paddle 1's knob, place the menu cursor under the right pointing arrow and press the button until you hear a 'beep'. The right pointing arrow will allow the saucer-like note cursor (on the staves) to move to the right. Continue pressing the button several times. As the button is depressed you will see the note cursor moving towards the right of the screen—each press of the button represents a variable you may adjust. For now, it is sufficient to know that they represent Key signature, Time signature, and eight others, as shown by the asterisks. As you press the button and the cursor lands on the asterisks a series of words/numbers will appear on the bottom of the screen in the text; ignore these for now, they will be explained in detail later. You are ready to Melodize; the Key is "C" and the time is "4/4".

6. Using the knob on paddle 1, move the note cursor beneath the note duration needed to enter the first note of the example in Figure 3. Push paddle 1's button to move the white box, thereby activating the selected note duration.

7. Using paddle 2's knob, place the saucer-like note cursor on the line corresponding to the first note of the example sheet music. Push paddle 2's button. The note is now entered on the staves in graphics and you will hear the corresponding tone. {If a mistake was made in either of these last two steps, resulting in the wrong location or duration of the note, move the cursor beneath the CURSOR LEFT ARROW in the menu selection line and push the button on paddle 1 to move the saucer-like note cursor back one space. You can now try again to enter the note and the wrong note will be replaced by what you will now enter.}

8. Continue entering the notes in the same manner.

9. When you have completed entering the notes, type "PLAY" on the keyboard. This command allows the song to be played for your examination. The text area of the screen will then show the following : "SET SPEED {XXX} AND PRESS BUTTON". The paddle 1 now doubles as a speed control and a start switch| A number will appear beneath this line displaying the current speed position your paddle 1 is commanding. Turn the knob on paddle 1 until the number 175 appears on the screen and push the button. The 175 is a nominal speed. The paddle has a range of 1 to 255 with 255 being the slowest position.

10. The tune you just entered will now be heard. You can vary the speed while it is playing by turning the knob on paddle 1.

Congratulations| You have just Melodized your first tune| You could continue entering songs without any further knowledge as long as each song was in the KEY of C and 4/4 time. However, since you probably don't want to do this forever and it is a very limited use of the capabilities available, you are now ready for Step 3.

STEP 3- USING MORE OF THE MELODIZE CAPABILITIES

The basic procedure as outlined in Step 2, is the same no matter how complex the tune. The functions of the paddles and keyboard always remain the same. However, there are several more commands available to change the sound quality, the key, the time, the note duration, and other composition items. The commands which facilitate these

changes are called NON-MENU because they have to be entered manually through the keyboard instead of selected from a menu|

The first four procedural items given in step 2 do not change. The questions which appeared on the screen and were answered with a return are discussed below:

1. "NUMBER OF PARTS"

The answer to this question may be any number from 1 through 9, as there are 9 voices available on your Vista Music Machine. If you hit the RETURN key at this point, the computer assumes there is only 1 part and proceeds with the next question.

The Melodize program handles multi-note chords by dividing the chords into parts. Assume a full duration chord consisting of three notes is to be entered. You will have to enter one note in part 1, one note in part 2, and one note in part three. This same procedure is followed for entering all parts. See Figure 4 for a graphical explanation.

A caution is necessary at this point. You will be able to hear the music you enter only as far as there are measures containing some entry on each part corresponding to the number of the parts you have indicated in your answer to this question. In other words, if you answer the question with the number 5, you will not be able to hear any individual part in the playback mode until you have entered all 5 parts. Since you will be asked this question each time you enter a new part, you can enter 1 or just hit the return the first time, 2 the second time, 3 the third time, and so on. This allows you to hear the first part after you have entered it, the first 2 parts after entering the second, the first 3 parts after entering the third, etc. As you will find, this facilitates editing parts as you enter them.

2. "SUGGESTED SPEED"

The answer to this question is a number from 0 to 255; 0 is the fastest and 255 is the slowest. Generally, 150 to 175 is a good range. With practice you will be able to determine the speed which is appropriate for the tune you are entering. In addition, during playback, you can vary the speed by utilizing the Paddle 1 knob until it sounds like what you want. Once you find out the speed you desire, you can edit the previous speed entered before saving the song.

3. "TITLE LINE 1"

When a playback is accomplished, the high resolution graphics will disappear and a low resolution color graphics display will be displayed {this is to save processor time}. At the bottom of the color graphics display are several "title lines" for your personal use.

You can use this line for typing in copy, like the name of the tune you are entering. This line will appear beneath the graphics displayed during playback. Using the keyboard, enter what ever you desire to be displayed.

4. "TITLE LINE 2"

This line is also used for keyboard entry of copy to appear on the screen. This could be used to give credit to the original composer of the music you are entering.

5. "TITLE LINE 3"

Same as 1 and 2.

6. "TITLE LINE 4"

Same as previous.

The next thing that will appear is the words "KEY C" beneath the third line. If you wish to change the key of the music you are going to enter, type "KEY:". After this command, you may type a number from 1 to 6 and either the letter S, for sharps, or F, for flats. For example, if you wish to enter a tune having three sharps in the Key Signature, you would type "KEY:3S" and hit return. Three sharp signs will appear on the staves on the appropriate lines.

The note cursor will then move to the Time Signature location and the words "TIME 4/4" will be displayed. If you wish to change the time, type "TIME:" and enter the time you desire after the colon and press RETURN.

The note cursor will then move to the first of the eight asterisks located on the bottom of the treble cleff stave. To get to the area of the staves where music is entered you must push paddle 2's button several times. You will note that each push moves the note cursor to the next asterisk. As you pass over the asterisks with the note cursor the text line will flash certain variables and associated values. To change the value for any of the eight, follow the same procedure as given for changing the Key and

Time; type the word, a colon, and the number you desire. An explanation of each of the asterisks follows:

1. The first asterisk represents the time unit value given to the quarter note. The word QUARTER 240 will appear on the display. If you wish to change the value of the quarter note, which changes the value of all notes, type "QUARTER:f". The quarter note value can be any number from 1 to 65535; the normal value is 240 which is entered already for you.

2. The second asterisk stands for GAP. In playing a musical instrument, the release of the note (i.e. finger off the key) defines how fast the note will decay before the next note is played. The Melodize program can release notes but you must specify the time between the beginning of the next note and the release of the preceding note. This time is called GAP. GAP:65535 is used when no automatic release stage is desired. See the envelope section of the manual for details.

3. Asterisk three is TRANSPOSE:0. This sets a transpose value which is added or subtracted from all notes during playback. For example, TRANSPOSE:24 causes all the notes to be raised in pitch by one octave. Later on you will learn how to apply this command at any point in the musical score. Numbers from 0 to 127 indicate a rise in pitch by 0 to 127 quarter steps. Numbers from 128 to 255 indicate a drop in pitch by 0 to 127 quarter steps. You may vary this value from 0 to 255.

4. The fourth asterisk stands for ATTACK. ATTACK 8192 will appear on the screen at this point. This indicates the time it will take for each individual note to reach the current volume. See the envelope section for details.

5. The DECAY setting is represented by the fifth asterisk. This indicates the amount of time each note will take to go from maximum loudness to 0. See the envelope section for details.

6. The sixth asterisk is VOLUME. VOLUME 55000 will appear and is the maximum loudness level reached during the attack stage. In other words, when the note reaches this level, the DECAY stage will start. See envelope section for details.

7. The seventh asterisk represents SUSTAIN with an initial value of 0. This is the length of time each note will hold the maximum loudness before starting to decay. See the envelope section for details.

8. The last asterisk is RELEASE which sets the point in time when the note will begin to fall towards 0.

CAUTION: This command must be used extremely carefully and it is strongly suggested that the song be saved before experimenting with it|

{Note: there are nine voices and they are numbered 0 through 8}.

STEREO

This command establishes which voices will be routed to which output channel on playback. The Vista Music Machine can send a maximum of three voices to any one channel (i.e. 3 to the right, three to the left, and 3 to both, or the middle). The command is STEREO:3,1,1,m,r where $\$$ may be either L for left, R for right, or M for middle. The sequence is the part number.

Example: given a song with four parts the command might be STEREO:3,1,1,m,r which would send parts 0&1 to the left channel, part 2 to the middle (both), and part 3 to the right.

EDIT

The EDIT command is used to call up the song so that you can perform certain editing functions on it. You must load the song into Melodize and then by entering EDIT the program will ask for a new NUMBER OF PARTS?, SUGGESTED SPEED?, and TITLES?. The EDIT commands allow a song to be entered and additional parts added, or additional work to be performed on the song. Remember, if additional parts are added, be sure and change the STEREO setting.

INTEGER

Used to exit the MELODIZE program and return the computer to BASIC.

GOTO

Quite often it is handy to go between parts of the song, but in the same measure number. The GOTO command allows you to go instantly between parts at the same measure number. The format is GOTO:f where f is a number between 0 and 8.

SPEED

This command must be used very carefully as it effects the timing of the notes, rests, and quarter functions. The command is of the format SPEED:fffff/{fffff} where fffff can be any number 1 through 65535. Normally, the number will be small and in the range of 250/50 where the numerator represents a number by which note/rest time periods are multiplied and the denominator divides that resultant number. Be sure that whatever you may use turns out to be an integer (i.e. no remainders||).

will stop at the end of the part or subroutine. The deletions only occur on the PART you are currently editing.

SUBROUTINE

The SUBROUTINE command is used to create a subroutine. Similar to BASIC, the Vista Music Machine has the capability of making musical subroutines. This is especially useful when you are entering a song with identical and repetitive parts. By simply creating a subroutine and entering the musical scores into that subroutine, they can be called as many times as you like thus saving a significant amount of entry work and memory space. To create a subroutine enter SUBROUTINE:ff where ff can be from 0 to 99.

CAUTION: the program will renumber the subroutines in sequential order after a SAVE or LOAD command so it may not always be wise to skip numbers - if you do then keep track| Subroutines may call other subroutines. The subroutines are executed by CALLs to the subroutines placed in the basic musical scores.

CALL

The use of a CALL is for executing a musical subroutine in the body of the music. When a subroutine is created and checked out, place the note cursor at the location where you want the CALL made. Enter CALL:ff {ff being the number of the subroutine desired}. Depressing paddle 2's button will place an asterisk on the musical score representing the Call to the subroutine. After execution of the subroutine, the musical score will begin immediately after the asterisk location. Even though the asterisk appears within a measure, it is ignored as far as measure count is concerned. The CALL commands cannot be entered until after the subroutine is completed.

{Note: a good use of a temporary subroutine is to silence other parts of the music during checkout| Simply insert a CALL to a subroutine containing all rests at the beginning of the part you wish to silence|}

MEASURE

Handy during editing, by using this command you may place the note cursor at the beginning of any measure you wish within your selected part by typing MEASURE:ffff where fffff represents 0 - 65535.

PART

The part command will place the note cursor at the beginning of the part number specified by the argument of the command. The format is PART:f where f represents 0-8.

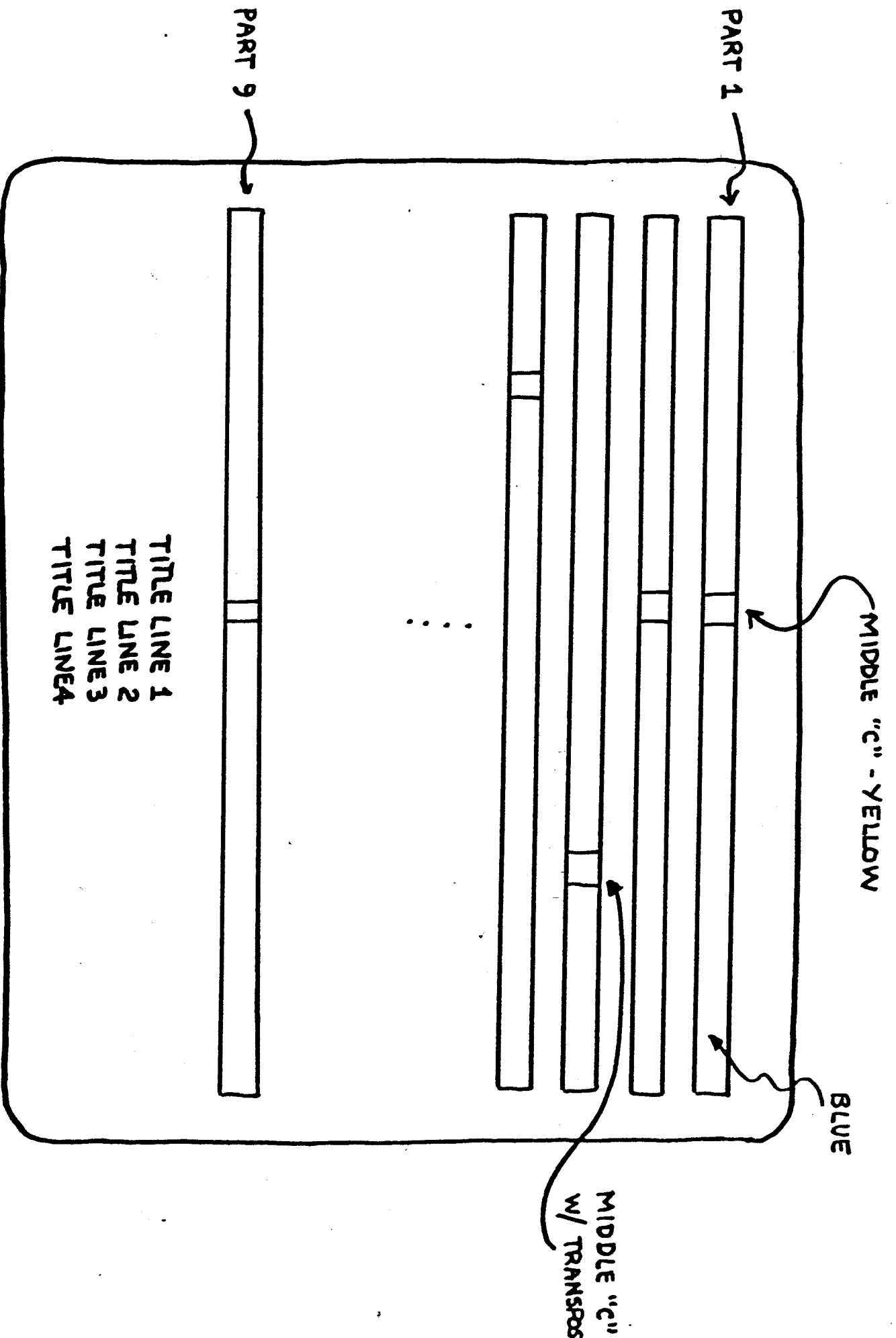


FIG. 5

The following represent additional features you will need to operate the Melodize system:

NEW

The command NEW wipes the data portion of the Apple II memory clear and readies the memory for insertion of new song data. CAUTION: use of this command deletes all the work currently in the computer unless you have SAVED it onto disk.....be careful| You should always exercise this command when you are about to enter new song data into the Vista Music Machine.

SAVE

This command will save your song data to the disk drive you select. The file names should be relatively short and of course different for each song. You may specify which disk the data is to be saved on by entering ".df" after the Save command. Note that the Vista Music Machine will preface the file name with a "M:" to identify it on the disk as music. When loading the files into the Melodize program, don't use the "M:" prefix as the program will automatically adjust for the prefix.

LOAD

When you are ready to do additional work on a song, the LOAD command will automatically obtain the data using your specified file name {without the "M:" prefix|} and ready it for additional editing.

PLAY

As you progress through the building of the musical scores, you may want to listen to the tune. The Melodize program allows this to be done directly, without having to exit and use the PLAY program provided separately. Simply type in PLAY followed by a return. The computer will respond with a desired speed and using paddle 1's knob you'll set the speed. To begin the song depress paddle 1's button. When the song is completed, the Vista Music Machine will return to high resolution graphics mode for additional work. Note that during playback the graphics is low resolution color graphics {Figure 5}.

DELETE

This command refers to the number of items located on the staves to the right of the note cursor to be deleted. The command requires an argument consisting of the number 1 thru 255. The command format is DELETE:fff. The deletions

SECTION 3 - GENERAL MUSICAL INFORMATION FOR THE NOVICE MUSICIAN

This section cannot possibly teach anyone music, however, it is included to provide some rudimentary understanding for those persons unacquainted with music, and as a refresher of the basics for those persons who have forgotten what they did know. If more information is desired, there are several books on composing music available at music stores and the public library.

Separate texts on reading music are generally unavailable, since it is assumed that this art is developed while learning to play an instrument. However, if you have the time or inclination, there are some "self-teaching" books, geared to playing a particular musical instrument, which can be obtained at any music store. If you elect to pursue this line, the most general information can be obtained from books geared to playing the piano. In addition, one particularly useful book that covers the basics of music is *The ABC of Music*, by King Palmer, Funk & Wagnalls, 1968, which is available at many libraries.

The following paragraphs will provide a simple explanation of the musical notations shown in Figure 6.



Figure 6 - Musical Notations

NOTATION. Music is written by utilizing two sets of lines. Each of the sets includes five lines with four spaces in between. The top set of lines is termed the "treble clef"; the notes appearing there are the ones generally sung by women's voices. Each line indicates the note that will appear on the line; the spaces also indicate location for specific notes. Reading the lines, from bottom

to top, the notes are : E G B D F . {An easy way to remember this sequence is by the sentence, "Every Good Boy Does Fine;" the first letter of each word is a note.} Reading the spaces, from bottom to top, the notes are: F A C E. {Notice that those notes spell the word "face".}

The bottom set of lines is called the "Bass Clef;" the range of notes appearing there are the ones generally sung by men's voices. Reading the lines, from bottom to top, the notes are: G B D F A. The spaces are: A C E G

Since only seven letter names are used for the notes, A B C D E F G, if a series of notes is to be continued, it is necessary to repeat the letter names: A B C D E F G A B C D E F G. Limiting musical notations to two sets of lines does not limit music to eighteen notes. Therefore, notes can be added outside the two "clefs" or staves. Notes above or below the lines in the two clefs can be determined by alphabetic progression forward or backward respectively using the short lines that are temporarily added to the staff. This is shown in Figure 7.

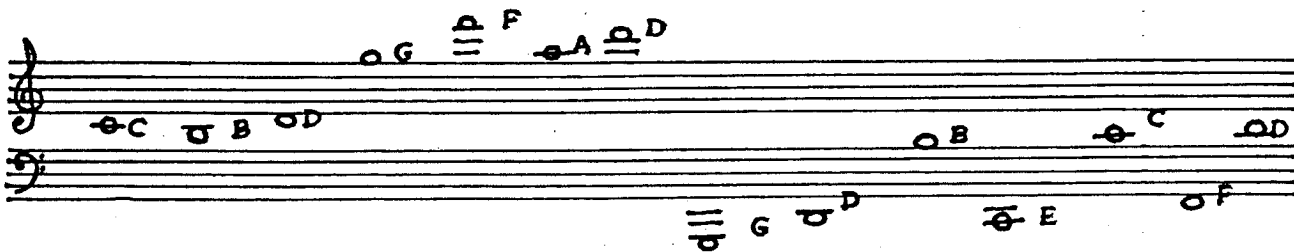
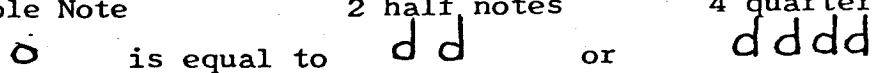


Figure 7 - Notes Above the Staves

KEY SIGNATURE. Looking to the right of the Clef indicators, the next thing illustrated is the Key Signature. Either one of the two signs may appear immediately after the clef. The two signs are {indicating a sharp} or {indicating a flat}. When one or more sharps or flats are found in this location, they effect every note on the lines or spaces on which they are placed. For instance, if one flat is indicated, the flat is always "B" and everytime the note B is played the pitch of that note will be lowered a semitone, or made FLAT. {By the way, when one flat is indicated, the tune is said to be written in the key of F.} If no sharps or flats are indicated, the tune is said to be written in the key of C.

TIME SIGNATURE. One characteristic of a melody is the beat, either strong or weak, which divides it into units. These units are called Measures; the end of a measure is shown as a vertical line across the staff. The kind of measure chosen is shown by the figures placed on the staff, directly after the Key Signature. These figures are called the TIME SIGNATURE. The upper number shows the number of beats in a measure, and the lower number indicates the value of the beats. In the illustration shown in Figure 6, the TIME SIGNATURE is 4/4. This means that there are 4 beats in a measure and that each note receives 1/4 of a measure of time. In 2/2 time, there are two beats in a measure and each note receives 1/2 of a measure of time. The most commonly used time signature is 4/4; in fact since it is so common, this time signature is indicated by a "C".

NOTE DURATION. If you think of notes as musical symbols for mathematical figures, it is easy to see the relationship between notes. In modern music there are six varieties of notes: whole, half, quarter, eighth, sixteenth, and thirty-second. Table 1 shows the shape of each kind of note and its value relationship to the other.

A Whole Note 2 half notes 4 quarter notes
 is equal to or or
 8 eighth notes 16 sixteenth notes

 or or
 32 thirty-second notes

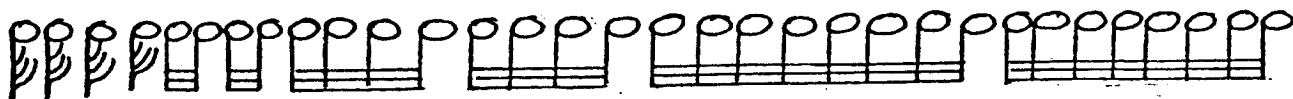



Table 1 - Note Relationships

The duration of a note can be changed by placing a dot after it. This dot, increases the note's value by one-half. Two dots increase the note's value by three-quarters as shown in Table 2.

○. is equal to ○ plus d
 ○.. is equal to ○ plus d plus d
 d. is equal to d plus d
 d.. is equal to d plus d plus d
 d. is equal to d plus d
 d.. is equal to d plus d plus d

Table 2 - Note Duration Modifiers

Another manner of changing note duration is through the use of a Triplet. The sign , placed over a group of three equal notes, means that they are to be performed in the same time as two notes of similar value. For example, equals .

PITCH. The pitch, or tone, of individual notes may be altered higher or lower one-half tone or a whole tone. Three signs are used to indicate a change in pitch: b - flat; ♯ - sharp; ♮ - natural.

If the tone of a note is to be raised by one-half, a sharp is indicated either in the key signature, changing all of the same notes in the score, or directly in front of an individual note. If the tone is to be lowered by one-half, a flat is indicated in either of those ways.

When the pitch of a note is changed in disagreement with the key signature, it is called an Accidental. For instance, as already explained, the key of F has one flat, B. The signature for this key is a b on the the treble and bass clefs. If the composer of the music decides to change the pitch of one or more of the B's in his music, the change would be an accidental. To alter the tone one-half step higher, the note would be preceded by a natural sign; the B would become a B. The occurrence of an accidental changes the tone of the note it precedes and all of the same notes which follow it until it is changed again.

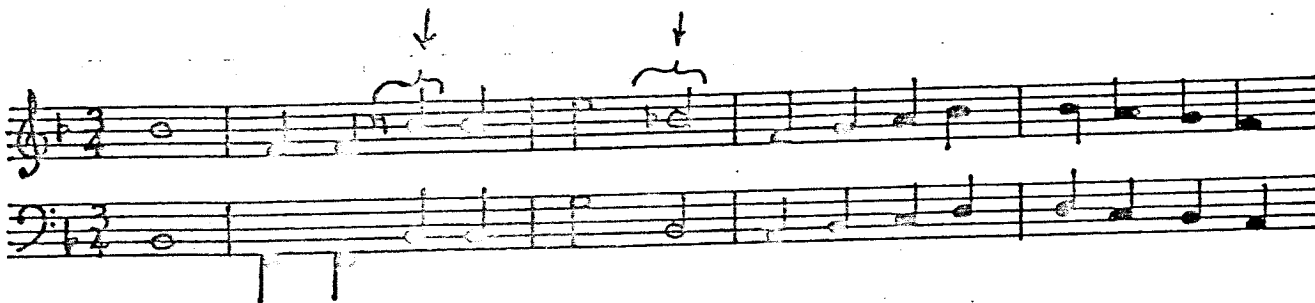



Figure B - Accidentals

In the example, Figure B, the first B is flat, as indicated by the KEY SIGNATURE; the second and third B's are naturals, indicated by the sign; and the fourth note and all subsequent notes are flat again, indicated by the sign.

To raise the pitch of a note one whole tone, double flats, bb, or double sharps, , can be used. The end result of double sharps or flats is to change the indicated note to the next note up the scale or down the scale

respectively. For example, a double flat B is really the note A; a double sharp F is really G.

RESTS. Silence in music is achieved through use of Rests. Each rest is equivalent in value to a note. The signs for the rests are shown in Figure 9, below.







-  A whole note rest (Hangs from line)
-  A half note rest (Sits on line)
-  A quarter rest
-  An eighth rest
-  A sixteenth rest
-  A thirty-second rest

Figure 9 - Rests

Dots may be used after rests in the same manner as used with notes. A pause . placed over or under a note or rest indicates that it is to be prolonged; the duration of the pause is determined by the performer.

PHRASING MARKS. When two or more similar notes are joined by a short curved line , called a Tie, the first note must be sustained for the length of all the notes, and the tied notes must not be sounded.

When a curved line is placed over or under two or more notes of different pitch, it is called a Slur. The Slur indicates that the notes are to be played as smoothly as possible.

A Dot placed over or under a note is called a Staccato Mark, and means that the note is to be short and crisp; like plucking a stringed instrument.

The notes of a chord are sometimes played in rapid succession from the bottom to the top with each note being held as it is played. This is called Spread and is indicated in either of the following two ways:



SOME BASIC CHORDS. Music may be played by using chords in the bass clef. Music written for the guitar, organ, or piano, for instance, indicated the chords to be played over the Treble Clef staff. One chord is played for each beat in the measure. The same chord is repeated until a new chord is indicated in the music; in other words, one chord may

SECTION 4 - PROGRAM DESCRIPTIONS

The Vista Music Machine is supplied with three basic programs: 1) the Melodize program for entering data, 2) the Play program for playing the songs once they have been entered, and 3) the Disco program which automatically plays user developed "albums" or collections of songs. This section provides a brief description of the programs.

MELODIZE

The Melodize program is an interactive, operator oriented program which uses the facilities of the Apple II low and high resolution graphics, game paddle's, and keyboard to allow the loading of musical scores into the computer.

Melodize is a standalone program brings up a high resolution graphical depiction of sheet music and a menu of options selected through the use of the game paddles. Using a combination of the game paddles and the keyboard, the operator can visually see the music being placed onto the CRT "sheet music". Using the keyboard to enter alphanumeric commands, virtually any piece of music can be melodized and new musical scores can be developed.

Melodize stores the musical data; not only the note/rest descriptions, but information as to the envelope waveforms, subroutine instructions, transpose instructions, and a host of other musical characteristic data in the memory as the songs are Melodized. Once the process is completed, the operator can store these data/instruction files onto diskettes for future use.

Melodize also has a playback capability for assisting in the Melodizing process. The playback uses a low resolution graphical display containing one horizontal line across the face of the CRT for each voice or part which has

span several measures without the need to indicate it. The chords consist of three or four notes played together as one.

The following chart illustrates the notes in some of the basic musical chords:

| | | | | |
|----|---|----|-----------|------|
| C | = | C | E | G |
| F | = | F | A | C |
| G | = | G | B | D |
| Bb | = | Bb | C | E |
| Eb | = | Eb | G | Bb |
| Ab | = | Ab | G | Eb |
| A7 | = | A | C \flat | E G |
| D7 | = | D | F \flat | A C |
| C7 | = | C | E | G Bb |

been entered. These lines represent the musical scales and the bright spot {normally found in the middle representing middle-C}. As the musical score is played back, the horizontal lines will physically represent the notes being played by colored blocks moving back and forth as the notes are changed. Further, the color of the blocks directly represents the volume level of that particular note {see the data appendix for specific values}.

PLAY

Play is a smaller program which is supplied to allow the playback of songs already entered without having to use Melodize {a much larger program}. Play also provides low resolution graphical display of the musical scores as they are executed. The reason for the low resolution graphics is to save processor time.

DISCO

Disco is a program which serves to allow the operator to build albums or, in this case, collection of musical files, that can be randomly selected and played automatically without someone in attendance at the keyboard.

To create or modify an album, simply load DISCO into the computer and enter "RUN 1000". The program beginning at 1000 allows the operator to enter songs into a file which can be referred to later. If the operator desires to change the album {either deleting songs or adding songs}, then the command "RUN 2000" will allow the albums to be looked at and appropriate calculations to be performed.

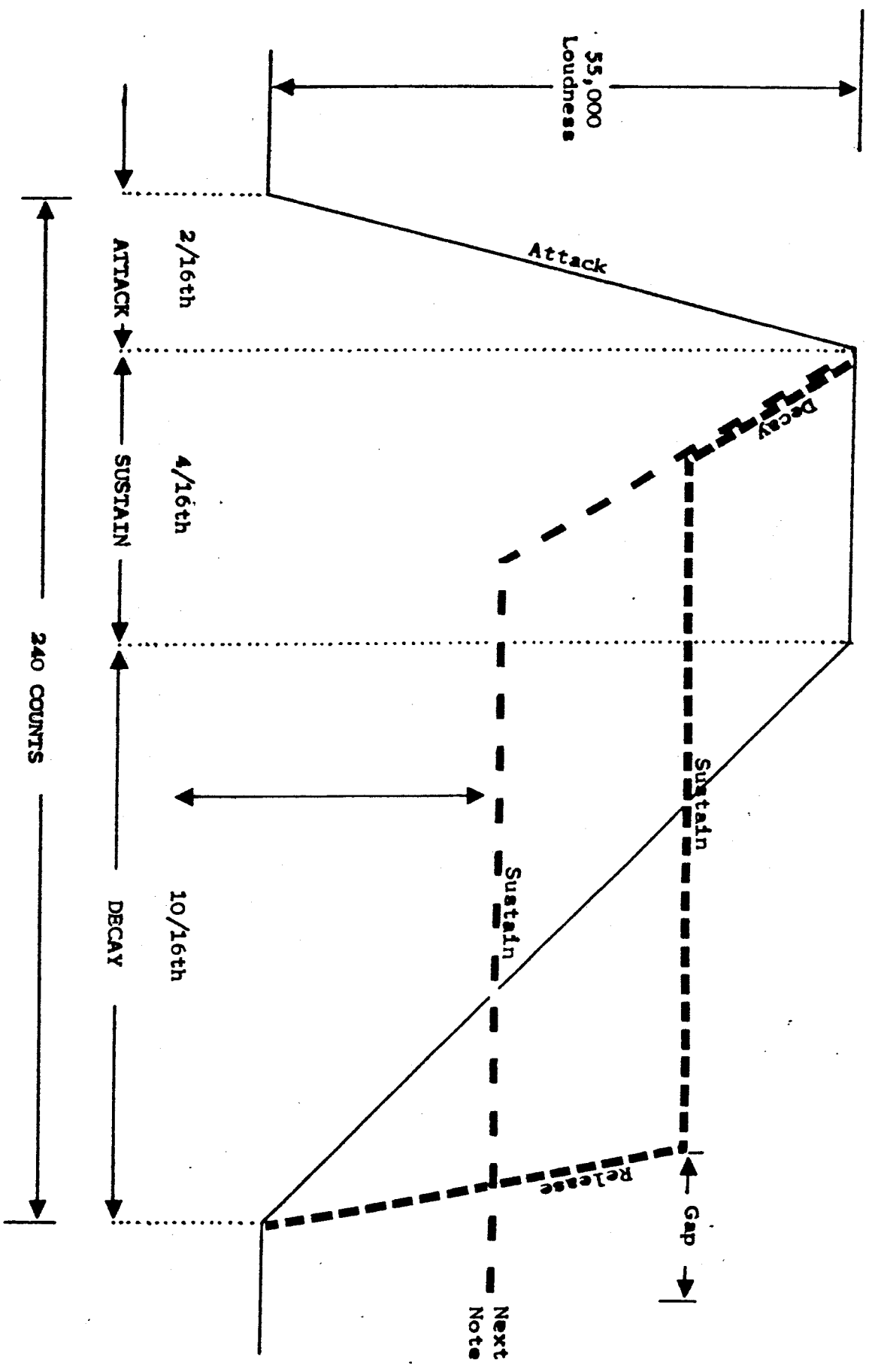
SONG FILES

The Vista Music Machine will automatically preface the song file names with a "M:" to aid you in determining what is on the diskette and to aid the PLAY program in finding the musical files.

SECTION 5 - ENVELOPES

This portion of the manual provides a simple explanation of envelope specification capability of the Vista Music Machine. The subject of envelope specification is complex and will require a considerable amount of experimentation. It is up to the user of the system to explore the full potential of the envelope capability. The following explanation plus the appendicies, should provide a good starting point for the user.

The basic terminology you will to understand follows:



55,000/16th = 3667
 SO..... ATTACK = 7334
 SUSTAIN = 20,000
 DECAY = 36,670
 GAP = 65,535 (no effect)

1) ATTACK - The time it takes for the volume of a note to rise from the previous value to the desired or specified volume is called "attack". The timing of the attack is specified to the computer by dividing the desired volume by the fraction of the duration of the entire quarter note where the attack is to occur.

For example, if you desire a relatively fast attack $\{1/16\text{th}$ of the note duration}, then the command to the computer would be "attack:55000/{240/16}" where 55000 represents the maximum specified volume and 240/16 represents $1/16\text{th}$ of a quarter note time period. In simple English, you divide the maximum volume setting by the number of time periods in which you desire the attack to take place. You will note that $55000/\{240/16\}$ mathematically equals 3667. You may enter either the full formula or you may enter the number that formula equals. The program will take either format; it's probably easier, however, to enter the equation and let the computer do the math. The minimum attack speed is 0, which is very slow, and the maximum is 65535, which is very fast.

2) DECAY - Once the note has risen to the desired volume {unless a sustain is specified}, the note will begin to decay {i.e. return towards zero volume or quiet}. For example, the above note is allowed to decay to quiet in the remaining $15/16\text{ths}$ of the note time duration, the command to the computer would be "decay: 55000*/{240*15/16}" or decay:244.

3) SUSTAIN - To maintain the note at some arbitrary volume level for some portion of the duration of the note, the command is simply "SUSTAIN:40000" where 40000 is the desired sustained volume level. Note that the SUSTAIN command can be used at any volume level between 0 and the maximum specified. Assume a maximum level of 55000 is specified and a sustain of 40000 is specified, the envelope would show a rise from the previous value to maximum volume of 55000 in the time specified for the attack. Then the volume would drop from 55000 to 40000 in the time specified by DECAY, and the volume will maintain itself at 40000 until the next note occurs. The minimum is 0 and the maximum is 65535, as in attack.

4) RELEASE - This command specifies the rate at which the sound level will fall from the current level. Note this is only a rate parameter and does not specify the point at which the release will take effect. To establish the setting, you must divide the current sound level {i.e. either the maximum setting or the sustain level} by the period of time desired for the sound to fall. An example would be "RELEASE:45000/120" which translates to be "the sound will begin to fall from the 45000 level towards zero

and will take 120 time periods."

5} GAP - The GAP command specifies to the computer how much time before the occurrence of the next note the RELEASE command should take affect. For example, command the computer to release the note 1/16th of the note duration time before the beginning of the next note. The command would take the form of "GAP:55000/30" where 55000 is the current sound level and 30 represents 30 time counts before the occurrence of the next note.

6} VOLUME - Volume is not a loudness control like a conventional audio device. It is the maximum loudness level reached during the attack stage. The maximum ATTACK loudness is also defined as the point the DECAY stage takes over. To make the note appear to be loud to the ear, it is necessary to SUSTAIN the note for some duration duration.

Several examples of the various waveforms are provided in the appendicies of this manual. Here are some tips:

1} It will be handy to build up a library of sample envelopes to refer to when Melodizing music.

2} The use of timing diagrams will be helpful in understanding the relationships between the various specifications.

3} Always set the speed and/or quarter note duration before setting the envelopes since use of SPEED/QUARTER commands will modify the envelopes.

GOTO:£ Same as PART:£. If used after MEASURE:£ will display same measure in different part.

INS Insert note{s} ahead of cursor

KEY: Followed by a number from 1 to 9 and either F for flat or S for sharp. Changes Key Signature

LENGTH Used to enter notes and rests of non-standard duration.

LOAD Used to load a song from disk.

MEASURE:£ Used after PART:£. Displays specific measure indicated.

NEW Indicates new tune, previous tunes not saved will be erased from memory.

PART:£ Displays part called out by number at first measure.

PLAY Plays all parts recorded.

PLAY{:F} Same as PLAY but without graphics

POKE Used to insert non-standard items.

QUARTER:£ Changes time unit value for quarter notes. {All other notes affected by this change.}

RELEASE:£ Sets the point in time when the note falls to 0 value.

REST Provides a rest of the same duration as the note indicated.

SAVE:{Title} Transfers song entered to disk.

SPEED:£ Changes time duration of all notes.

STEREO:3, Followed by letters {L,R, & M}. Used to select stereo speakers.

SUBROUTINE:£ Facilitates composing a subroutine.

SUSTAIN:£ Used to set the length of time each individual note is held.

TEMPO Sets dynamic tempo during playback.

TIE Ties note where cursor located to next note entered.

TABLE I - TERMS

| | |
|----------|------------------------------------------------------------------------------------|
| ATTACK | Sets time period for loudness to increase from 0 to current volume level. |
| CALL:£ | Places asterisk on staff indicating a subroutine. Does not affect rest of measure. |
| DECAY | Sets time period for loudness to decrease from current volume level to 0. |
| Del | Delete note where cursor located. |
| DELETE:£ | Delete specified number of items from cursor location to the right. |
| EDIT | Allows editing/correcting of previous part or addition of new part. |
| GAP:£ | Sets length of time between release of 1 note and attack of next note. |

TIME:£ Changes Time Signature

TRANSP0SE:£ Sets transpose value which is added or subtracted from notes during playback.

VOLUME:£ Used to change volume levels of specific parts.

l Cursor left

r Cursor right

TABLE II - VOLUME SETTINGS AND COLOR EQUIVALENTS

The low resolution color display used during playback has the feature of graphically displaying the note with respect to middle-C. Further the color of the notes as they are display represent the volume levels. There are sixteen {16} settings. This table is to be used as a guide for understanding the low resolution graphics display as well as a guide for establishing a volume setting for the PARTs you are entering {i.e. you may want to soften the sound of the bass cleft while keeping the treble cleft relatively loud.

| LOUDNESS SETTING | COLOR |
|------------------|-------------|
| 0-4095 | Black |
| 4096-8191 | Magenta |
| 8192-12287 | Dark Blue |
| 12288-16383 | Purple |
| 16384-20479 | Green |
| 20480-24575 | Grey |
| 24576-28671 | Medium Blue |
| 28672-32767 | Light Blue |
| 32768-36863 | Brown |
| 36864-40959 | Orange |
| 40960-45055 | Grey |
| 45056-49151 | Pink |
| 49152-53247 | Light Green |
| 53248-57343 | Yellow |
| 57344-61439 | Aqua |
| 61440-65535 | White |

When the volume setting is requested in the beginning of a song, this table can be used to set the desired relative volume level of the PART you are entering. Using any number within the range specified {0-65535} will modify the volume level of the output of the Vista Music Machine. Obviously the setting of your amplifier will necessary to maintain a tolerable level within your building!

TABLE III - GRAPHICS MENU COMMAND SUMMARY

The following commands are MENU-COMMANDS because they are graphically depicted on the CRT when using Melodize.

COMMAND MENU

DESCRIPTION

Cursor placed under these figures establishes the notes to be placed onto the staves. The difference between the notes represent the different time duration of the notes. In addition there are rests and duration modifiers which can be added to the notes/rests.

The cursor placed under these accidentals allow a note to be made sharp, flat, or natural respectively. With the menu cursor and white box these accidentals can be added to the notes as they occur in the musical score as required.

The INSertion and DELetion commands are used to add or delete notes/rests/ or other instructions into the staves. By activating these commands with the menu cursor and the white box, the menu item selected can be added or deleted.

The tie command allows two or more notes to be tied together which is a technique for making more interesting musical arrangements.

The speaker symbol and the small right hand arrow are used to activate the playback with sounds feature of Melodize. if this command is selected then as the note cursor is passed over the notes on the staves in a forward or rightward direction, the notes will be played back through the system. This is very useful for "troubleshooting" or creating new music.

TABLE IV - DELAYED EXECUTION COMMANDS SUMMARY

Note that the following commands are placed into the music data file and are executed when the song is played back.

COMMAND

DESCRIPTION

KEY:JL-bHJS or FH or KEY:C

The KEY command changes the key signature or the key of the song. The nominal condition is the key of "C" where no sharps or flats are required. There may be up to 6 sharps or flats specified. If KEY:3F is requested then all notes to the right of the point this command was entered will be changed accordingly. If the KEY command is used mid PART, an asterisk will appear on the musical score as a reminder. If you forget what the command is, placing the note cursor on the asterisk will cause the program to display the command in the text portion of the CRT.

QUARTER:JL-b5535H

The QUARTER command will change the time duration of all notes entered after the command is inserted. Note that the standard duration for a quarter note is 240 time periods. Therefore by changing the quarter note duration to 120 time units will change the corresponding notes to one half of their original value. This command may be inserted at any location in the part being entered and an asterisk will occur at the point of insertion.

TIME:JL-l9H/JNOTED

The argument of this command specifies the time to be used for the notes in the song being entered. Normally a 4/4 time is used. However, if you desire to change the time the following instructions are necessary. The JL-l9H means the number of notes to occur in a measure. The number below the slash specifies the note duration. If no TIME has been specified then the program assumes a 4/4 time.

CALL:JD-99H

This command is used to CALL a subroutine at any point with the PART. When a subroutine is finished, place the note cursor at the point where the subroutine is to be used. Enter CALL:f where f refers to the number of the subroutine. An asterisk will appear at the point specified by the note cursor. When the song is played back the subroutine will be retrieved and played. When the subroutine is completed, the next note played will be the one following the asterisk in the musical score.

TRANSPOSE:JD-255H

The TRANSPOSE command allows all the notes following the command to be transposed up or down the musical scale the number of quarter-tones specified by the argument to the command. 24 steps equals one octave. The command arguments range from 0 to 255 where 0-127 specify the number of quarter tones to be raised and 128 to 255 specify the number of quarter-tones to be lowered.

VOLUME:JD-65535H

The VOLUME command changes the current volume setting. This command may be inserted anywhere in the part being entered and an asterisk will appear to remind you of the command entry. Note this is not a true volume control but a relative volume setting. See TABLE I for volume references.

DECAY:Jvalued

The DECAY command changes the delay setting. When it is placed into the music mid measure an asterisk occurs.

GAP:Jvalued

The GAP command changes the current GAP setting. When placed into the music mid measure an asterisk will appear.

RELEASE:Jvalued

This command changes the current RELEASE

"TRANSPOSE:X"

HIGHER TONAL VALUES
(∅ through 128)

Tone is Raised by 1/3 with each successive number

LOWER TONAL VALUES
(129 through 256)

Tone is Lowered by 1/3 with each successive number

TRANSPOSE:∅ - THE NOTE ENTERED

| Transpose Value | Result |
|-----------------|------------------------|
| 3 | - 1 note |
| 6 | - 2 notes |
| 9 | - 3 notes |
| 12 | - 4 notes |
| 15 | - 5 notes |
| 18 | - 6 notes |
| 21 | - 7 notes |
| 24 | - 8 notes - 1 octave |
| 48 | - 16 notes - 2 octaves |
| 72 | - 24 notes - 3 octaves |
| 96 | - 32 notes - 4 octaves |
| 120 | - 40 notes - 5 octaves |

| Transpose Value | Result |
|-----------------|------------------------|
| 131 | - 1 note |
| 134 | - 2 notes |
| 137 | - 3 notes |
| 140 | - 4 notes |
| 143 | - 5 notes |
| 146 | - 6 notes |
| 149 | - 7 notes |
| 152 | - 8 notes - 1 octave |
| 176 | - 16 notes - 2 octaves |
| 200 | - 24 notes - 3 octaves |
| 224 | - 32 notes - 4 octaves |
| 248 | - 40 notes - 5 octaves |

setting. Insertion mid measure causes an asterisk to appear.

SUSTAIN:Jvalueh

This command changes the current SUSTAIN setting and an asterisk occurs in the measure where the command was placed.

ATTACK

The ATTACK command sets the current setting for ATTACK. When placed into the measure an asterisk will occur.

TABLE V - IMMEDIATE EXECUTION {KEYBOARD} SUMMARY

Note that the following commands are executed by the Melodize program immediately and the action taken made visible to the user.

COMMAND

DESCRIPTION

GOTO:JD-BH

The GOTO command allows you to transfer between the various parts of the melody you are entering. The GOTO command automatically places the note cursor at the same measure number in whatever part your GOTO argument {i.e. the number in the brackets} specifies.

INTEGER

The INTEGER command is used to exit the Melodize program when you are finished entering data or editing data. This command can be abbreviated using "INT".

MEASURE:JD-65535H

The MEASURE command is used to move your note cursor to the measure number specified in the command argument. Using this command you may transfer the note cursor to any measure within the current part you are working with. The program will accept any number between 0 and 65535.

PART:JD-BH

The PART command is similar in function to the measure command except it allows transfer to the beginning of any part number selected in the command argument. Note that the note cursor will appear at the beginning of the selected part.

PLAY PLAY:F

The PLAY command is used to play back the tune you are entering using Melodize. When the command is executed the program will request that you set the speed using the paddle controls. Note that if you desire to delete or eliminate the low resolution graphics display the alternate command PLAY:F can

be used. When the command has been executed and the melody played back, the Melodize program returns you to the point in the Melodize program from where you left automatically.

SAVE: [SONG NAME],[DISK SPECIFICATION]

The SAVE command is used to save the melody just entered to the disk. The song names must follow the same limitations as required by the Apple II DOS with the exception that the song name may be no longer than 28 characters. Note that this command will automatically preface the song name with a "M:" such that it can be identified as a song when you CATALOG the disk.

You may also specify the disk drive to save the song to by adding the disk specification following a comma. This command would take the form of "SAVE:SONG NAME,Df where f means the number of the disk drive.

DELETE: [1-255]

The DELETE command is used to delete from 1 to 255 items to the right of the current note cursor location on the part or subroutine you are using. This command functions like the DEL graphics menu command with the exception several can be done at one time and the "beep" doesn't sound as the items are deleted. If you have 300 items to delete then the command must be used twice (i.e. DELETE:255 RETURN followed by a DELETE:45 RETURN).

EDIT

The EDIT command is used to modify the song as it was originally entered. When you enter the EDITing mode, the program will ask for number of parts and titles and then proceed to place the note cursor at the beginning of PART 0. If your intention was to add a part simply use the PART command to transfer to the beginning of the next part and proceed with entry of the data. Note you must always modify the STEREO command to reflect the new part or it will not play.

LOAD:PSONG NAMEH,{DISK SPECIFICATION}

The LOAD command is used after a NEW command as is used to load a previously saved song into Melodize. The command is the same as that used in BASIC with the exception the SONG NAME must be less than 28 characters. Note that the "M:" prefix should not be added to the song name. The program will automatically search the disk for the "M:" prefix plus the song name. Further you may use a disk specifier of the form ".Df" where f is the disk number. The disk specification must follow the song name.

NEW

This command is used to clear the memory in preparation for the new song to be Melodized. When NEW is executed the Melodize program begins asking the questions required to enter a song including number of parts, titles, key, time, transpose, quarter note, envelope specs, etc.

SPEED:PL-65535H

The SPEED command is used to change the duration of all notes in every part and subroutine. The argument {i.e. 1 to 65535} must be an integer and will be used to multiple the time durations of all notes by. This command should be used with great care. Save the song before trying this command.

STEREO:3,STRINGH

The STEREO command specifies to the Vista Music Machine board where to route the different voices on the two audio output ports. Note that no more than three voices can be routed to any channel. The STRING argument takes the form L,L,L,M,M,M,R,R,R meaning that voices 1-3 go to the left channel, 4-6 are routed to both or middle position, and 7-9 are routed to the right channel.

SUBROUTINE:PD-99H

The SUBROUTINE command is used to begin the creation of a subroutine or call a

subroutine for viewing/editing. Once the command is executed the screen will be cleared and a fresh set of graphics available for note entry. The argument is used to refer to the subroutine by in the CALL command. To end the entry of a subroutine simply use a GOTO or PART command.

INTEGER

The INTEGER command is used to exit the Melodize program. The abbreviation INT may be used.

TABLE 6 - SAMPLE ENVELOPES

As mentioned earlier, the use of envelope commands will require experimentation on the behalf of the user. Provided below are three sample envelope settings and a graphical description of the envelope.

PING OR STRING-LIKE ENVELOPE {ATTACK-DECAY}

The attack-decay envelope is characteristic of string instruments where there is no appreciable sustain or release capabilities. This envelope is automatically created when the NEW command or when a new part is added to an EDIT command. Assuming that we know the shortest note in the song to be a 16th note then the shortest note duration is 60 time units {i.e. 240 = 1/4 note then 60 = 1/16 note}. Therefore lets allow the note to rise to max volume in one fourth of the note duration and lets allow the note to decay in three fourths of the note duration time. Since the normal setting of the quarter note is 240 and the normal volume setting is 55000 then the settings would be:

ATTACK:55000/15

DECAY:55000/45

SUSTAIN:0

GAP:65535

RELEASE:55000/45

The envelope would look {under an scope} like:

SUSTAINED , {ATTACK-DECAY-SUSTAIN-RELEASE} ENVELOPE

This envelope is more like the organ or piano wherein the

note can be sustained and released by manipulation of the keys/pedals according to the musical score and expressionism the musical desires. Lets assume the maximum volume has been set to 55000 and that the standard quarter note is being employed. A typical setting would be:

ATTACK:55000/20

DECAY:15000/50

SUSTAIN:40000

RELEASE:40000/75

GAP:75

With these settings we have speified that 1} the note shall ATTACK {rise} from the preceeding level to 55000 in 20 time units, 2} the DECAY shall allow the volume to drop towards the desired sustain level of 40000 in 75 time units and the difference between the maximum and sustained is {55000-40000 = } 15000, 3} once the decay period has timed out the volume will remain SUSTAINED at a level of 40000, 4} the RELEASE of the note is to begin at 75 time units before the beginning of the next note and the point where RELEASE begins is a volume of 40000, and 5} finally the GAP between notes is to be 75 time units.

The envelope would graphically look like:

Note: This was established for a quarter note. If a half note is played then the SUSTAIN portion of the envelope automatically increases by 240 time units since a half note is 240 time units longer than a qaurter note {the sustain duration is not specified directly - only as a function of the time remaining from the other key parameters}}. Obviously if shorter notes are played then the envelope is modified accordingly.

ORGAN-LIKE {ATTACK-SUSTAIN-RELEASE}

This envelope is like a simple organ. It is very much like the one above but the SUSTAIN is not used. Due to the low resolution graphics a very small decay should be used (i.e. DECAY:1}. Again assuming a quarter note and 5500 nominal volume, the command settings would be:

ATTACK:55000/20

SUSTAIN:54999

DECAY:1

RELEASE:55000/75

GAP:75

The envelope would take on the following graphical presentation:

TIPS & SUGGESTIONS

1. Each part of the song should end with a rest to allow the envelopes to decay towards zero. Otherwise you could get some remnants of decaying envelopes resulting in a sound after the song is completed. It is suggested to make the rest in the highest-numbered part to be longer than the other to assure all parts have decayed.

2. The envelopes are nominally established for the quarter note since it is the most common. Therefore when shorter or longer notes are played the envelopes will change slightly. This is normally no problem.

3. Multi-channel envelopes can be written and if the envelopes are carefully constructed a built-in time decay can be designed allowing an echo or other interesting results to occur.

4. You might consider entering one part of melody as a complete subroutine and then one the second time the subroutine is called modify the envelopes to provide not only a different sound but perhaps a transposed {i.e. higher octave} difference sound.

5. The envelopes can be dynamically modified during the play of a song by inserting the commands into the tune. This can have interesting effects.

6. It is recommended to graphically design the envelope you desire before entering the commands to assure you have the correct sounds. As you have read the command settings are somewhat dependent on each other and certainly dependent on the volume and quarter note settings.

7. Using the A-D envelopes and offsetting the attack timing slightly you will hear a slight shift in frequency as each of the two parts peak {i.e. reach the maximum attack level}. This can make for very interesting sounds.