The Lyra Companion

by Michael Stute

Table of Contents

Introduction

Lyra is a MIDI music editor that runs on all Tandy Color Computers. Lyra can also be thought of as an extended sequencer, without various abilities such as effects. Both tinkers and professional musicians use Lyra to transcribe and compose music using any of the modern day synthesizers. Whether you have an Akai or Zilg, Lyra will work with your synthesizer if it has MIDI capabilities.

At a first glance Lyra may seem a second-rate editor when compared to the thousand dollar giants available, but Lyra is a complete system that will allow you to be creative and flexible with your music. Entering sheet music into Lyra is a snap, and composing a song using Lyra will show you how composing should be.

In this book we will discuss how to edit music using the Lyra editor, how to transcribe music quickly an easily, and we will also learn about music theory. The theory lessons provided will allow you to learn to compose complete songs helped by Lyra. The information provided about music theory will apply to other music editors, but is intended for use with Lyra.

It is assumed you have no music knowledge at all, and have at least played around with the Lyra editor. No knowledge of the Lyra is necessary, but I suggest you read the short Lyra manual, and then load Lyra to play with it for awhile so you will see how easy Lyra is to use and understand.

Himself Surprised

Being an independent musician, as you might imagine, I lead a different life. As an independent, I do a variety of tasks for various members of the music industry, including writing complete songs, writing harmonizations, playing instruments for recording sessions, and transcribing songs. My best ability is my skill with the fretboard. I'm an excellent guitarist, but my most useful skill is a special type of transcribing, called "earscribing". The earscribing process involves listening to a recording of a musical piece and then placing the piece on paper in musical notation. I do this often, not only for myself, but for many bands, and a few publishing companies. But man can not live from transcribing alone!

I have written many songs--266 to date--ranging from wedding songs to string ensembles. But, by far my favorite is rock and roll. Although a soft string quartet piece may be engaging, a rock ballad is much more fun, and easier to sell! Local bands get first choice at my songs, and then a few

major song publishing companies which sell to thousands of bands. Although a few of my songs have been fairly popular, I've never written anything that has appeared in on top 100 popular songs. Several reasons for this exist. One, my songs often require more instruments than the average rock band can play without hiring some independent musicians (it's called making a market for yourself). Two, I save my best songs for my own albums.

I started my rock career as the lead guitarist for a band named *After Curfew* which I named. We produced one album, titled "After Curfew". The band had a short life, and after the break up, I retained the name. Since then I have produced two albums independently, the first being called "Electric Heartbeat", and the second, my latest, called "At the Strike of the Clock", which sold out in four months. Both are heavy electric rock with me doing all the guitar work, and my faithful MIDI instruments doing the rest guided by Lyra. On some songs, a friend shares the vocals, but I also do the singing. No, I'm not an expert singer, and on my next album I plan to let someone else sing for me. So how did I get interested in Lyra?

Since the CoCo appeared on the computer scene, I have owned one, and cut my musical teeth on Musica, a very early 4-voice music program from Lester Hands. Following, came Musica 2, which I passed up, and at last, Lyra. Long before I purchased Lyra, I already owned two synthesizers, both MIDI capable (back when MIDI was a toy). MIDI was new to me, but after a few months I could do what I wanted with Lyra and the CoCo 2. I soon became very proficient with Lyra, and learned all I could about MIDI by experimenting and doing some hard thinking (not to mention a few software-damaged synthesizers!). Along came the CoCo 3, and, much to my relief, Lyra worked fine with it. About the same time the CoCo 3 appeared, so did a good MIDI guitar controller which allowed me to play my synthesizers with my guitar. Newer versions of Lyra appeared, I had more powerful synthesizers, a MIDI guitar controller, and an array of MIDI controlled devices--simply put, my dream come true. I could now play the synthesizer using my guitar, but the best part of my setup was Lyra.

I write all my songs using Lyra, and have become so dependent on Lyra, I now find it difficult to hand-scribe a song. I began talking to other Lyra users, and began to realize very few users knew what Lyra was capable of doing. This prompted me to become a question answerer, sort of a "Dear MIDI". Finally, I began writing my Lyra knowledge down, and The Lyra Companion was born. After completing the first draft of the book, I contacted Mr. Hands, the author of Lyra, about his latest version, showing

him the things I thought could be changed. Much to my surprise, he wrote back and became interested in *The Lyra Companion.* I began reworking the book to include the new Lyra 2.60 features, and MusicWare has published it.

I hope you enjoy *The Lyra Companion* and find the information in it useful. It is my way of saying Lyra is a serious music application for beginners to learn with and professionals to use (even though we're still learning). Using the information I've presented you can create any type of song with many advanced techniques. One chapter covers advanced MIDI messages and events thoroughly so polished Lyra users can discover the world of MIDI while experiencing new methods of editing and controlling your equipment. Beginners can learn quickly and easily both Lyra and music from *The Lyra Companion.* The music theory lessons in the book take you from the very basics all the way to creating a song with harmonization. *The Lyra Companion* contains my efforts and knowledge of the MIDI world and Lyra which I am passing on to you.

NOTES

Chapter One

Lyra Basics

Before we start actually learning how to edit music, we need a general overview and to discuss the terms I will be using throughout the book. Lyra is very easy to learn with a minimum of training.

Loading Lyra

First, I suggest you load Lyra and use it as you read this book. To load Lyra, turn on the computer, and all peripherals. Place a Lyra backup into drive 0. (I cannot stress enough the importance of using a backup disk when you use Lyra. A little prevention will save your data.) With the Lyra disk in drive zero, type:

```
LOADM"LYRA"
```

and do not release the ENTER key. If you have version 2.52 or above you don't need to hold down the enter key. Shortly, an "OK" prompt will appear with no cursor. Lyra is now waiting for you to choose a color set.

Choosing a screen color

Two color sets are available with Lyra. Color set one presents you with a black foreground on a white background. Color set two allows a black foreground on a green background. The foreground consists of the staff, cursor, menus, scroll bars, and notes. I prefer the white background because it is more like actual paper and ink, but which color set you choose is completely up to you. Neither one is better, it is just a matter of personal preference. To choose the color set, simply type the number of the set: 2, for a green background, and 1 for a white background. After choosing the color set Lyra will continue.

If you have version 2.52 or above and a CoCo 3 a message will appear asking you to press any key and then enter "EXEC" to continue. After you press a key, you will see the normal Color BASIC "OK", and a flashing cursor. Simply type:

```
EXEC
```

and press the ENTER key. Lyra will now continue.

Lyra's title screen is displayed next, showing the author's name and copyright notice. Please note it is not legal to copy Lyra for any reason but your own use. Giving a copy to a friend is highly illegal, and punishable with a fine and/or time in jail.

At the top of the screen just below the word "Lyra" you will see your version number. At the time of this writing, the highest version has been 2.60 with an OS-9 Lyra in the works. If you have less than 2.52 I suggest you upgrade to the newest version. Lyra 2.42 and below only allows four voices through the TV play, while 2.52 and above supports eight voices through a monitor or TV speaker. The upgrade cost is well worth your money to receive the latest version. Any time the number just behind the decimal moves up, rush to get the next copy. If the number before the decimal moves up, it's everybody for himself! If the last moves up, a few changes have been made that you'd probably like, but are not totally necessary. This book was written using Lyra 2.60, but supports all functions of the older versions. Because the other versions only play 4 voices, some of the things contained herein may be limited or worthless to older versions of Lyra. The MIDI discussions will work on almost all versions of Lyra, except events (see Chapter 7) which are supported in Lyra 2.52 and above. The ability to use events alone is worth the upgrade price. Advanced editing discussions work with most versions of Lyra except some effects discussed. Now to get started.

What the version number means

Press any key or the joystick button. Lyra can use either a mouse or a joystick plugged into the right joystick port on the back of the Color Computer. A joystick will work as well as a mouse, and any time reference is made to a mouse or joystick, the other will work too. The Lyra editing screen now comes into view.

Using a joystick or mouse

The screen is very compact, and contains all the materials needed to create music. At the top of the screen you will see the words "FILE", "EDIT", "MIDI", and "PLAY", all in inverse video in a line. This is called the "menu bar". Each word stands for a pull-down menu that will appear as the cursor moves on top of it. We'll discuss each menu in the following chapters. Move the

Accessing the pull-down menus

mouse around slowly, and watch for the cursor. The cursor is a small black diamond that can move anywhere on the entire screen. Move the cursor on top of the word "FILE". What happens? The FILE menu appears, listing all choices available in a vertical column. Notice the "Save" option looks different from all the rest. This is called "half-tone", which is used to signify something throughout Lyra. In this case, the half-tone means that choice is not available. The current composition hasn't been named, and must be saved using the "Save As" option the first time. Remember when you see something in half-tone it usually means "not available currently" or "illegal". To make a choice from the menu, move the mouse down. As you roll the mouse down, different items will be highlighted. When you tap the mouse button (called clicking) which ever choice is highlighted will be executed. Moving the cursor to a position on the screen containing your choice is called pointing. You've already "pointed" to the menu bar and opened the FILE menu. To exit the menu with no choice, simply move the cursor out of the menu by moving left, right, or down until the pull-down menu disappears. You've already learned how Lyra works, now you just need to know how to use it.

What items displayed in 'half tone' mean

Exiting from a menu without making a selection

Just below the F in the word "FILE" is a number followed by a colon. This number signifies the logged drive. The logged drive is the disk drive that Lyra will look for its files. If a song is named, the name will immediately follow the colon. Right now the song isn't named so it remains blank. Moving to the right you'll see eight boxes with numbers in them.

Where the current filename is displayed

Each of the eight boxes just below the menu bar shows the state of a voice. A voice in Lyra is known as a track in the recording industry. Lyra can be considered an eight track sequencer because it can play eight separate notes at a time with each note stored in a voice. Each voice stores a series of notes to create a single melody of the song, and placing notes in several voices and playing them all at the same time allows complete songs with up to eight parts to be entered. As I said, Lyra allows you to use eight voices when you create music. Eight voices will cover just about any music application Lyra ever needs to

What the voice boxes do

perform. For obvious reasons the voices are numbered one through eight, and are called by their number. Voice one means the first voice and the square numbered 1 indicates its status. A voice can have three states: on, off, and current. Only one voice can be current for Lyra to work, but all eight can be on. On start-up, Lyra turns voice one to current, that is why it is in inverse video. The other seven voices are off. A solid black voice indicates it is current. If two voices are solid black, you can not edit the music, because two voices can not be current at the same time. Point to voice one, by moving the cursor on top of the box labeled "1". Click once, and watch as the box turns half-tone. Voice one is now on, but not current; no current voice is chosen. Point to voice two, and click once on it. It turns black as it becomes the current voice. Click again on voice two to leave it on, but not current. Click once again to shut it completely off, and watch as it turns white. Click twice on voice one; the first click shuts it off, and the second makes it the current voice. The current voice is always considered on, but only the current voice can be edited. Many voices can be used, but they must be edited one at a time.

The different states of the voice boxes

Changing the display states of each voice box

Below the voice boxes is the staff. The staff is a series of 10 lines separated by spaces, with a large space in the middle. These ten lines together are called a grand staff. The top five lines represent the treble clef, and the bottom five lines represent the bass clef. To the left of the screen on both staves are the clef signs, which indicate if the staff is the treble or bass clef. Don't worry about staves or clefs right now, we'll get to that in the first theory lesson. Following the clef sign is the time signature which is one number above another. A line follows the time signature and is called a bar. Directly above the bar is a number, which is the number of the bar. Each bar is numbered for your convenience. Editing takes place on the staff as you physically pick up a note from the bottom, and place it on the correct line or space of the staff.

Description of the music staff

Just above the notes at the bottom of the screen is a long line with two arrows pointing opposite directions at both ends. This is called the scroll bar. The music can be

The scroll bar and how it is used

scrolled (or moved) by clicking on the arrows. Notice a line just to the right of the arrow pointing left. That is the quick scroll bar. Clicking anywhere between the arrows will cause the music to jump quickly to a position proportional to the position of the scroll bar. When a song is only ten measures long the quick scroll area is invisibly divided into ten parts and the music takes rather short jumps. But a song with 100 measures divides the quick scroll area into 100 parts causing the music to take rather short hops if you click closely to the quick scroll bar. In large songs the quick scroll bar can easily place you near your desired measure, and then the arrow keys can be used to "fine tune", or pick the exact measure you want. Directly below the scroll bars lie the notes and rests.

The notes and rests menu

Lyra supports six different lengths of notes with corresponding rests. From left to right is a whole note, half note, quarter note, eighth note, sixteenth note, thirty-second note, and sixty-fourth note, followed by the corresponding rests in the same order. Any rest or note can be made a triplet and/or dotted to provide an additional 18 notes and rests. Those 24 note and rest values will allow you to create almost any rhythm. Now that you know how the screen is divided we can begin.

Trying out what you've learned with a Lyra song

Point to "FILE" in the menu bar to open the FILE menu. Choose the Load option. Shortly a window will appear with the names of all the songs on the disk. Choose any song that came with Lyra that you feel is interesting by pointing at it and clicking the button. (Note: On some older versions of Lyra this menu will not have an arrow in it. To choose a song roll the mouse down; the song names will become highlighted. When the song you wish to load is highlighted, click.) "Please wait..." will appear while the song is being loaded (version 2.52 and above). After Lyra has loaded the song it will be displayed and you should see notes in the staff. Try some of the things you've learned.

Click on the voice box for voice one. The voice turns half-tone, and so do the notes in voice one! Click again on voice one, and watch as it disappears completely. If you've finished one voice and don't need to see it, you

Making use of display modes to highlight a voice

Never shut voice one completely off!

can shut it off and get it out of your way. Be careful though, voice one must never be completely shut off. You should only half-tone it, or some strange things will appear in the staff area, such as no bar lines! Turn voice one back on and move down to the scroll bars. Click on the right arrow several times. Each time you click on the right arrow, the music scrolls to the left, and displays the next note to the right. Now click somewhere near the right arrow in the quick scroll area. The music display will suddenly jump to a point near the end. Scroll left a couple of times using the left scroll arrow. You'd probably like to hear that song.

Playing music

Lyra always begins playing from your current position in the music. To hear the whole song we need to be at bar 1. Use the quick scroll bar to move the song back to bar 1. If you don't quite make it, use the left scroll arrow until bar one is displayed on the left of the staff. Playing the song through MIDI requires a little work, so for now we'll just use the monitor or TV speaker. Open the PLAY menu by pointing to the word "PLAY". Choose the TV play option and turn the volume up on your monitor or TV.

Connecting your MIDI synthesizer

Quite nice, wasn't it? If you have a MIDI synthesizer and a MIDI cable, you can go ahead and try MIDI play. Turn on your synthesizer and amplifier, and plug the five pin side of your cable into the MIDI IN interface on the back of your synthesizer. Connect the four pin end to the serial I/O interface on the back of the computer. When the cable is securely connected, open the PLAY menu and choose MIDI play. Be ready for an absolutely incredible MIDI demonstration.

Most likely the song was played with some strange instrument sounds because your synthesizer wasn't set up right. But that's no problem, you'll learn that a little later. That deals with MIDI channels, program choices, and Lyra Instruments. But first, what is MIDI?

What MIDI means

MIDI stands for Musical Instrument Digital Interface, which is a long term that means something simple. MIDI is a set of codes and parameters that allow computers to communicate with synthesizers. By communicating, they work together to produce music.

Suggestions for a starter synthesizer

A good beginners MIDI synth is a Yamaha DX100 which sells for roughly $400.00, but I have seen them for $270.00 at discount houses, and even lower at swap meets. This won't allow you to use more than one instrument per song, but it will at least get you started. If that's a little too expensive, I suggest an electronic keyboard, which is a mini-synth that is not programmable. Electronic keyboards usually come set with around 50 preset voices that you can use. Most also have around 10-20 preset drum rhythms that can be used, but the MIDI interface in these machines is very low quality that may only allow a single voice. A good "electronic keyboard" is a Yamaha PSS-480 that has 100 preset voices, and 100 preset rhythms with a fairly good MIDI interface. It sells for $249.00 at discount houses, and little more than that from the dealers. An ideal synthesizer that accepts all MIDI data is the Korg DS-8 which is velocity sensitive, 8 voice multi-timbral and polyphonic, and has built in effects. It has many features not discussed here. It retails for about $1,250.00, but can be purchased for as little as $750.00 to $900.00. Any synthesizer above $1,000.00 has just about everything you need to use Lyra to it's fullest. Here're some things you should look for:

What to look for when you're buying a synthesizer

8 Channels - Most MIDI interfaces use at least 16 channels, but there are exceptions. Make sure at least eight are supported.

Velocity Sensitive - This allows for volume changes in the music. Some keyboards are velocity sensitive from the keyboard, which is not necessary for Lyra, and is quite an expensive feature. Velocity sensitive through MIDI is all that is needed.

Multi-Timbral - Allows you to play different instrument sounds at the same time, giving you the effect of a full ensemble of instruments. Eight voice multi-timbral is best, but 4 or 6 will work, too.

There are a lot of other features available. Be careful though, because you can also be stuck with a bunch of added features you'll never use. If you're a keyboardist already, you can probably use more. But if you just want a MIDI synthesizer, the above features are all you'll need

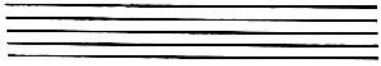
for a nice system. Look around and be patient with the market; eventually you'll find a good synthesizer for a decent price.

You need a little knowledge of music terminology, so please read the following section about music theory to learn what the terms mentioned mean, and how to use them. The theory lessons will be mixed in with the Lyra editing when they are appropriate. Even if you're an accomplished musician already, you should read them to catch the bits and pieces of Lyra information interspersed within the lessons. By reading and learning the theory presented, you'll have a good working knowledge of music that would make any college professor happy. But remember, it only scratches the surface, and is very general.

Chapter Two

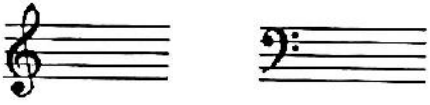
Notation and Terms

Music is written on a staff which consists of five lines separated by four spaces. The five lines are parallel, equally spaced, and placed in a horizontal position. A staff looks like this:



All staves have a clef sign that designates the range of the staff. Two clefs are used in modern music: the treble clef, and bass clef. The treble clef, or G clef, sometimes called Mrs. G clef, signifies the higher range by encircling the G note. The bass clef, or F-clef, is the lower clef and highlights the F note. Here're the clefs on a staff:

Treble staff=higher pitches
Bass staff=lower pitches



Treble Bass

All lines and spaces are named with the letters A-G, and correspond with the clef. Music has twelve pitches, seven natural pitches, and five sharps or flats depending on the key of the song. The lines of the treble clef are E, G, B, D, and F, with the spaces F,A,C, and E. The lines can be easily remembered using the phrase "Every Good Boy Does Fine", and the spaces simply spell FACE. The bass clef's lines are named G, B, D, F, and A, with the spaces A, C, E, and G. The lines can be remembered using "Great Big Dogs Fight Animals", and the spaces with "All Cows Eat Grass". These little phrases may seem childish, but when you're first starting, they are easier to remember than the line names. Once you've memorized the names, you can forget the phrases, but every once in while I catch my self going up the lines thinking, "Every -- Good -- Boy -- Does -- Fine", so it does stick with you.

Treble lines=EGBDF

Treble spaces=FACE

Bass lines=GBDFA

Bass spaces=ACEG

It is very important to know the names of the lines and

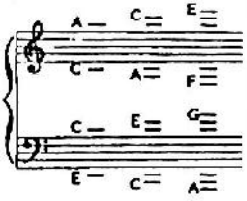
spaces, so work with them until you do. Lyra will help you with the names, because just above the clef signs is an indicator that always gives you the octave you're on, and the name of the note the cursor is resting on when the cursor is a note. It is possible to spell out words like EGG, CAGE, and BEAD using the musical note names, in fact, there's a story that goes along with that. A folk lore composer wrote a song called "The Cage Egg". The title seemed very inappropriate because neither cage nor egg ever appear in the lyrics. But the notes of the verses spelled out CAGE, and the notes of the chorus spelled EGG. After this was discovered, it all made sense.

Many instruments have a range limited to these two staves. By placing the treble clef above the bass clef in their natural positions we get a grand staff. Between the two staves are two spaces and a line. The line is a C, and since it is in the middle of the grand staff, it is called "middle C". Most piano music is written using only a grand staff, and so is most synthesizer music. Several types of music require lyrics with a separate melody, often written on a separate staff placed above the existing treble clef. Lyra allows eight voices or parts to be placed on the same staff, but also allows highlighting to keep the voices from getting too confusing. Here's what a grand staff looks like:

Grand staff=treble staff plus bass staff

Although the grand staff covers most pitches, many notes can be placed lower and higher than the range covered by the grand staff. Ledger lines extend the grand staff's range to allow notes of any pitch. When a note is placed above or below the staff where no line touches it, a ledger line is added for clarity. If a note extends more than one line beyond the staff, a second or third ledger line is necessary to show the note's actual position. Lyra uses ledger lines when a note is placed above or below the staff. Lyra's ledger lines extend three positions both above and below the staff. Here's what some ledger lines looks like:

Ledger lines extend the range of the treble or bass staves



What a scales is

The lines and spaces are used to determine a note's pitch. The higher a note is placed on the grand staff, the higher the pitch of the note sounds. Therefore, an E is higher sounding than a C. A scale is either an ascending or descending group notes that make a logical progression down the staff. Visually you can see how the music will sound by looking at the note's position and how the following notes are placed.

What an octave is

The staff can also be divided into octaves. An octave separates notes into groups of eight notes, hence, the name octave. The first and last note in each octave are related in pitch in the following manner. The last note is exactly twice as high as the first note. Look back at the note names, you'll see A through G are used for note names. Now let's look at one octave starting on middle C. Here's what it looks like:

We start on C, pass through D,E,F, and G. At G we begin to repeat the first names. Think of the list as a circle, and when G is reached, A starts the cycle again. Continuing, we hit A, B and the eighth note is again C, which completes the octave. The two C's are in different octaves, but the same note. If played together, they would sound rather pleasing with no discord, but no harmony either. Pitches are actually caused by vibrations in the air. A low note vibrates slowly while a high note vibrates quickly. Two notes an octave apart vibrate in the ratio of 2:1, meaning if the lower note vibrated at 60 vibrations per second, an octave above that vibrates at 120 vibrations per minute. The octave is the largest unit in pitch. Every octave is divided into the 12 notes. Lyra helps by stating the octave of each note. Directly above the G clef sign both the note name and octave are displayed, first the note and then the octave. For example, G3 means a G in the third octave; C2 means a C in the second octave. The lines and spaces on a staff represent different pitches, but all notes have a second aspect.

How Lyra displays the pitch of the cursor

Notes have two basic characteristics: pitch and length.

The position on the staff designates the pitch, how the note looks determines its length. The time signature determines note lengths, but for now we'll assume we're in common time (4/4). If you consider the notes used to create music you'll see they are fractions. The whole note (𝅝) equals 1 count; the half note (𝅗𝅥) equals one half count, the quarter note equals a quarter count, the eighth note, an eighth count; a sixteenth note, a sixteenth count; and similar for thirty-seconds and sixty-fourths. Notice that note lengths decrease in powers of two, not fifths or sevenths. There are two ways to modify a note's length: dotted rhythm, and triplets. When a dot is added to a note, the note is increased by half it's value. A dotted half note receives three counts instead of two, and a dotted quarter note receives a count and a half instead of one count. All notes can also become triplets. Three triplets replace a single note. For example, three quarter note triplets replace a half note, and three eight note triplets replace a quarter note. This method divides the count into three equal parts. Working with triplets can be a little difficult until you learn to deal with them effectively. Many musicians find it hard to deal with triplets when playing them against a four note beat, but your computer doesn't mind at all.

Dotting a note makes it longer by 50%

Triplet notes

Everything must be divided into a more measurable unit. Even though a song is read left to right, and top to bottom, dealing with a song note by note would be very difficult. Suppose you were teaching me your favorite guitar solo, to find my place you say go to note 334. Right. By the time I found that note, you'd be done. For that reason composers started to divide music into measures. Each measure contains the same amount of beats as every other measure. The time signature, which we'll cover later, determines how many beats per measure, and what note gets a full count. Flexibility in time signatures can add creativeness in a musician's repertoire.

What measures are for

A time signature may look like a fraction, but it's not. The top number indicates how many beats per measure, and the bottom note indicates which note gets a full count. 4/4 time is the most common time, and many musicians never bother writing in any other time, but

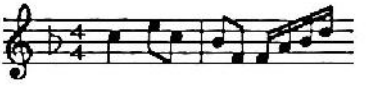
Time signature

two rules apply. The top number, or beats per measure, can be 2,3,4,6,9 or 12, and sometimes 5 or 7. The bottom number, or the note receiving a full beat, can be only the note values, such as 2, 4, 8, and 16. The most common time signature is 4/4, with four beats per measure and a quarter note receiving a full beat. Many musicians write only in common time, and hinder their creativeness. The time signature determines mainly how many beats there are in a measure, and how fast the song moves. If a song is written in 4/4 and then rewritten in 4/2, and both are played at the same tempo, the second version would be faster. Some common times are 2/2, 2/4, 3/4, 4/4, 6/8, and 12/8. Others acceptable are 2/8, 3/2, 3/8, 4/2, 4/8, 6/4, 9/8, and 12/16. Lyra never allows the top number to be larger than the bottom number, but there are ways around that. One last thing to remember: a note with a larger value than the bottom number of the key signature is illegal in a measure. A bar is placed across both staves when the correct amount of beats in a measure has been reached. The notes between the two bars are called a measure. There is only one exception to this rule.

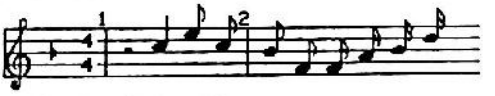
Common time signatures

Sometimes a song doesn't have the correct amount of beats in the first measure, this is called a pick-up. In most cases you'll find the notes needed to complete the first measure in the last measure. The song started in the middle of a measure, and ended in the middle of a measure. In modern forms of music, this rule is not always followed. To enter this type of song in Lyra, you must start with the first measure and add rests to each voice to make a complete measure. In the last measure, you must append rests to the end of the notes to create a full measure. Here's an example of the beginning of such a song:

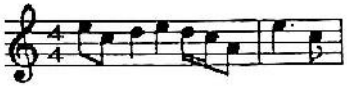
The pick-up "measure"



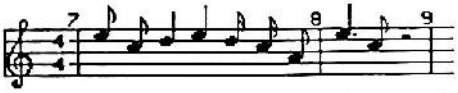
Notice it only has two beats in the first measure. Here's what it would look like in Lyra:



do you see how the rests were inserted before the notes? The ending measures might look like this:

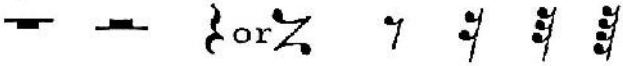


In Lyra, it would look like this:



Rests

The last subject we need to discuss is rests. Every note length is also a rest length. A rest occurs when the music halts shortly while no note is played in a particular musical part, but the count continues; in other words, it's a silent note. Rests can be dotted and made triplets just like a note. Rests can be used anywhere a note can, and must follow the rules that notes must follow. In notation terms, a rest is usually placed in the middle of the staff right on top of the C in the treble clef, or on top of the E in the bass clef. In Lyra placing all rests in the correct position makes the music hard to read; you'll learn more on this later. Rests have different shapes than the notes. They look like this:



Whole Half Quarter Eighth 16'th 32'nd 64'th

That concludes theory lesson one. Please review the previous material if you didn't understand a particular part, or if some new information confuses you.

Chapter Three

Controls and Options

Lyra is a top quality program capable of all but a few very obscure music techniques. In addition, many new techniques can be developed with Lyra. The basics of Lyra editing must be covered before we can cover the advanced techniques.

Putting notes on the staff

With Lyra newly loaded, we can begin. Move to the bottom of the screen and point at the quarter note. Click once. Now move the cursor back onto the staff. The cursor now becomes the note you chose. Place the note on the treble staff and click. Move the cursor to the right. The note stayed were you placed it. Place another note below and to the right of the first one. (Note: In versions below 2.60, in order to place a note on the staff, you must be near the preceding note, but only when you're placing notes in the first voice of your song.) Now place a third quarter note on the staff. You should now have three quarter notes on the staff. Suppose you

Inserting a note between two existing notes

wanted to insert a note between the first and second notes. It is a simple procedure. Place the cursor between the two notes at the correct pitch and click the button. The notes to the right move over a space, and the new note is placed between the first and second notes. Additionally, a bar should have appeared after the last note. You completed a measure and Lyra obediently added the bar for you. Now use the right scroll bar to move the music display all the way to the end. Place four more notes to complete a second measure. Select an eighth note this time, and place five notes anywhere on the staff. Next, select a half note, and place it after the last eighth note. We've just made a mistake. We placed four and a half beats in a measure that can only hold

Deleting a mistake

four! We need to delete one of the eighth notes. To delete a note, you must place the cursor above, below, or directly on top of the note to delete and press the delete key (D). Delete the first eighth by moving the cursor so it is vertically even with the note, and then press the D key. The note disappears, and the others are moved over

to the correct place. Now choose a whole note, and place two whole notes on the staff at any pitch. We're ready to try another voice.

Adding notes to a new voice

Select voice two as the current voice. If you have version 2.52 or above, you can select a voice by simply typing the number of the voice you want. In this case tap the 2 key. Older versions of Lyra require you to change the voice by clicking on it until its voice box turns black. If the display has been scrolled past the last note of the current voice, you must scroll back to the left until at least one note can be seen highlighted. Place two whole notes somewhere on the staff in the new voice. To do this, you'll need to scroll the music back to the beginning. First, place one whole note on the staff, and then move the cursor to the right until it rests in the middle of the second measure. Click to place the next whole note at that position. What happened? The note jumped left into the correct position. After voice one has been placed on the staff all other voices will work in this way. Once the two whole notes are placed on the staff, select a sixteenth note from the bottom. In the next measure place 16 of the 16th notes, and continue on into the next measure. Notice as you place the notes, the bar marking the end of the measure keeps jumping right to allow room for another note. Secondly, when you reach the edge of the screen, you'll need to scroll the music right to see the last note. After you've filled the last two measures, keep adding sixteenth notes. When you reach the right edge, all editing stops. Why?

Voice one must always have as many or more beats than the other voices

Lyra uses voice one for many editing functions, and it should always contain the most beats. Other voices can have less beats, but they can only equal voice 1, not exceed voice 1, or Lyra will produce undesirable results, as the above example. To correct this situation, choose voice one again, and enter another whole note. Now finish the measure with sixteenths in voice 2. At other times, you might be adding to a voice and just scrolled using the right scroll bar to the new position, but when you click nothing happens. To correct this problem, click once on the left scroll bar to back the music up one note. Now place the note as usual.

Bar lines are placed automatically and don't use up memory

Bar lines will automatically be added as you edit. If you place too many beats in one measure, the bar lines will no longer work. For example, placing a dotted half note in a 2/2 measure. Furthermore, the bar lines do not affect memory or the playing of the songs. You can change the time signature and the bar lines will automatically readjust themselves to the correct places. Note that a song written in 4/4 time, and then switched to 3/4 time will sound exactly the same, but will only mess up the bars. For a song to use another time signature, it must be rewritten in the new time. This isn't Lyra's inability, but music's strict rules. How can a four beat whole note fit in a three beat measure? Note lengths must be changed.

Modifying note lengths with dots and ties

Note lengths can be changed in two ways. Dotted notes can be placed on the staff by aligning the cursor with the desired note, and pressing the period (.) key. Any note can be dotted, as well as rests. The second way is to tie notes together with the tie key (T). For example, suppose you wanted a dotted 32'nd note on the G note (G3). You could place a 32'nd at G3, and then place a 64'th directly after it. Position the cursor so it is even with the 64'th note, and press the "T" key. A tie will appear between the two. Don't confuse ties with slurs. Slurs are used for a smooth change from one pitch to another, ties simply cause two notes to be played as one, only if they're on the same pitch. Some newer synthesizers will accept the tie as a slur because they interpret it as a slur when two different pitches are tied. You'll have to try it and see. About 95% of the time it won't work. Lyra also supports one more way to modify a note length.

The difference between ties and slurs

Modifying note lengths with the triplet key

Triplets can be added using the triplet key. In any version of Lyra below 2.52, the triplet key is "3", but 2.52 and above, the key is "#", or SHIFT-3. You shouldn't consider adding a triplet as a modification, but as an entirely new note. Any note can be made a triplet except the whole note, which music dictates as illegal. Of course triplets are used in groups of three, and a missing triplet rest or note can throw the auto-measure feature off completely. When you use triplets be very careful to complete each group of triplets. Triplets don't have to be in groups of three notes, but all the values added up should equal three notes. Pitches can also be modified.

Adding accidentals (flats, sharps, and naturals) to a note

Flats, naturals, and sharps are all supported by Lyra. To sharp a note, horizontally align the cursor with the desired note to sharp, and press the "S" key. To make a note flat, press the "F" key after lining the cursor up with the note. Natural notes can be used with the "N", in the same way, but only after it has been sharped or flatted, or the key signature changes it. The key signature affects how sharps and flats appear displayed. Any note placed on the staff is placed within the key; for example, suppose the B is flatted in the key signature and you place a B on the staff. The B will automatically be made flat. Now suppose you made the B natural by using the natural key ("N"); a natural sign would appear. If you change a note's pitch that the key signature already has changed, no sign will appear because it is assumed the note was already modified.

How the key signature takes care of most flats and sharps

Changing a note's pitch

We've covered how to delete, insert, and modify a note's pitch or length, but how do we totally change a note? To change a note completely, select the desired note length from the bottom. Position the cursor vertically on the correct pitch, making sure it still horizontally lines up, and click the button. If the note was a sharp, a flat, a triplet, or tied, you will have to add those traits if you want them again. That's the very basics of editing a Lyra song.

The Pull-down Menus

Before we begin another theory lesson, let's just go through all Lyra's pull-down menus and find out what they do. Each pull-down menu has options which will appear when you've selected the menu. The BREAK key will abort a command after you've chosen it.

Description of the FILE pull-down menu

The menu system of Lyra has changed a lot over the years, so I can't possibly cover all the various schemes. I will describe Lyra 2.60's menu system, and at the end, mention some of the various differences. The first menu is the FILE menu, which covers disk access. Through the FILE menu, you can save and load songs, append a file to the current song, delete a song, load and save instrument tables, choose the default drive, and exit Lyra.

The New option

The first option is **New**. **New** will clear the current song after asking if you're absolutely sure. If you're not sure, save it first, because once it's gone, it's gone for good. To answer the question, type "Y" for yes, and "N" for no.

The Load option

Load, which is directly below **New,** loads a song from disk into Lyra's memory. After you choose this option, the disk will spin and Lyra will find all files with the extension of "LYR", which is a Lyra song. If that extension doesn't exist on any files, you'll have none to choose from. After Lyra has scanned the disk, it will provide you with a list of all the songs available. Some errors may occur at this point. If you've provided Lyra with a damaged disk it might say, "Damaged Directory". Errors will appear in a dialogue box, and disappear when you press any key. If no errors occur, the list of songs will be listed in three columns. Notice at the bottom a list of the drives are presented. By clicking on them a new drive will be searched for Lyra songs. Simply use the arrow pointer to point at your choice and then click the button. After the file has been loaded, it's name will appear above the treble clef sign on the left side of the screen. The key and time signatures will be adjusted, and the beginning of the song displayed. These are all saved with the song.

The Save option

The **Save** option will save a song, but only if it is already named. If a song has been named, its name will appear just above the treble clef, along with the drive it came from. If a song hasn't been named, only the default drive will appear, and the Save option will be half tone. To save an unnamed song, choose the **Save As** option. **Save As** allows you to enter a name to save the song under. Song names can be eight characters in length, and contain letters and digits. You've noticed Lyra uses lower case in its menus haven't you? I was surprised to see how many people didn't realize they could use lower case in Lyra. Sure, just press SHIFT-0 to turn on the lower case set. Now any letter used with SHIFT will be uppercase, and any letter used without SHIFT will be lowercase. Use lowercase in your song names, it adds professionalism. If you provided Lyra with a song name that already exists, it will ask if you want that file over-written (2.52 and above); answer "Y" to overwrite the current file, and

Using lower case letters in Lyra

"N" to cancel the save. The **Save** option doesn't ask for a song name, it uses the song's name, and automatically writes over the current file. Several other things are saved with the song. The current voice states, the note length table, the MIDI instrument table, MIDI volume table, synthesizer description, and annotation. These will all be loaded when you load the file.

The **Append** command can be used to link several files together. There are many uses for the **Append** command and we'll discuss them all later. **Append** will add just the notes from the specified file to the current song, but you must be very careful. Please read "Using Append" in the advanced editing section in Chapter 5, before you try to use **Append.**

The Append option

Following **Append** is the **Delete** command. This command can be used to delete an old Lyra song file from the disk. The delete command will display a list of the songs on the disk, and you must use the arrow to point to the song you wish to delete. Instrument tables (discussed below) can not be deleted using this command. You'll have to use the BASIC "KILL" command to remove an instrument table file.

The Delete option

The next two commands are **Load instr** and **Save instr.** These two commands will load or save the MIDI instrument table and synthesizer description. If you have more than one synthesizer you can create an instrument table for each song containing the voices you need, and simply save each instrument table. Once you've created the correct instrument table, you can load the song, and then the instrument table that corresponds with the synthesizer. This is much easier then going through the song, or instrument table and changing each parameter!

The Load instr and Save instr options

Using **Set Drive** will allow you to specify any drive as the default drive so Lyra will automatically look on that disk first. Lyra will not use RAMdisks, but will use double sided DOSes if the DOS is in a modified disk controller ROM chip.

The Set Drive option

The last command in this menu will exit Lyra, and return to Color Basic. By clicking on **Quit,** Lyra ask you confirm you want to quit. If you type "Y" for yes, Lyra

The Quit option

will exit without saving your song. If you haven't saved your song, type "N" for no, and Lyra will take you back to editing. Now save your work! Once Lyra has been exited, the only way to get back in is to reload it. All exits are final! If you didn't save your work you'll have to reenter all your work during the last session. **Quit** is the last command in the FILE menu, which brings us to the EDIT menu.

The EDIT menu

The EDIT menu contains commands that will help you enter songs. Several commands are only used once at the beginning of a song, but many can make editing a song incredibly simple. We'll start at the top with **All Voices On**, and follow the list down to the bottom.

The All Voices On option

All Voices On turns all eight voices on, and selects voice 1 as the current voice. Using this command is a quick way to turn on all eight voices, and prepare to enter a new song. The older versions of Lyra need this command for speed, but with 2.52 and above, quickly tapping the key 8, 7, 6, 5, 4, 3, 2, or 1 is another quick way to accomplish the same thing.

The Time Signature option

The **Time Signature** command should be used once at the beginning of each song to set the correct time signature. You can only change the time signature when the music is at bar 1. To enter the time signature, click on this command, and enter the two numbers that correspond with the time signature. If you enter an illegal number Lyra will respond with "Overflow", and the time signature won't be changed. Time signatures are discussed in chapter 2. A few of the time signatures used in modern music can't be entered directly into Lyra, but can be simulated with various tricks we'll discuss later.

The Key Signature command

All musical keys are supported by the **Key Signature** command, and will allow you to set the key signature to the desired key. Key signatures are discussed in Theory Lesson 2. The Lyra manual states, "This command effects the entire score and can be changed only at the start of the music."; this is partially incorrect. The key signature does effect the entire score, but it can be changed anywhere in the song. Many songs have key changes that Lyra can accommodate very well which is discussed in Chapter 5.

NOTES

Chapter Four

Keys and Notation Definitions

All songs are written in a particular key, although key changes within a song are allowed. A song written in one key may sound gloomy and foreboding, while the same song in another key might seem bright and happy. The key a song is written in is not a key on a synthesizer or piano. It is the "key tone" of the song. A simple example will illustrate a key tone.

Use a good clear program on your synthesizer (a program is an instrument sound), or a piano. Now place your finger on any white key near the left side. Start playing up the keyboard hitting each white key, but no black ones. After you've played all the way up the keyboard once, return to the left somewhere and start again. This time concentrate on the notes, and stop where it feels most natural. Do this several times. Repeat the whole process two or three more times. Do you stop on the same note each time? You should, and that note is C. When playing, using the white keys only, you're playing in a key that is built around the note C. The central tone is the key tone of the scale. By moving this key tone to another note we achieve another key. For ease of use, a key signature was invented, and has been around for hundreds of years.

A key signature tells you what notes to flat or sharp

The key signature appears at the beginning of each staff of music. Some forms of music notation provide the key signature only once at the beginning of the song, but most show the key signature just to the right of every clef sign. The key is denoted by a group of sharps or flats in a strict order. Those sharps or flats tell you what notes are to be sharped or flatted in the music to make the correct key. A key could be written using accidentals throughout the music only, but a key signature is much easier to use. By using the sharps or flats properly, any tone can be made the key tone. Only sharps or flats, never both, appear in the key signature.

A sharp (#) or flat (b) symbol appears in music when an

accidental is needed. An accidental is a note that is sharp or flat, and not designated by the key signature. An accidental also occurs when a note in the key signature that is sharp or flat is made natural. An accidental changes all the notes on the same pitch within the measure, but not in Lyra. Lyra requires you to keep track of the accidentals within a measure, and change all the notes of the same pitch to match the accidental.

What an accidental is

Lyra handles accientals a little differently

The fifteen key signatures can be used to create various moods in music. MIDI allows any song to be played in any key with the built-in transpose option. Try playing the same song in some different keys to see how it affects the music.

Changing key can change mood

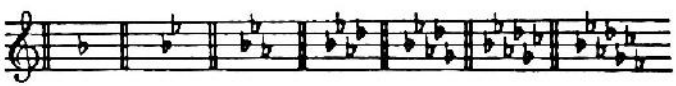
Let's start with the key signatures using sharps. We start by adding the first sharp to the note F. That makes the key of G. Next, we add a sharp on the C, which makes the key of D. When sharps are used, the key tone or key can be determined by adding half a step to the last sharp in the key signature. The sharps can be added only in one order; F, C, G, D, A, E, and B. This yields the keys of G, D, A, E, B, F#, and C#. Here's what they look like on a staff:

How the sharp keys are constructed

After adding seven sharps we've sharped everything we can, and created seven additional keys.

The flats also yield seven new keys by flatting all seven notes. To determine the key of a signature containing flats, you must remember that one flat is the key of F. Any key signature containing more than one flat can be determined by simply looking at the second to the last flat in the key signature, which is the key. The seven new keys are created by adding flats in a strict order: B, E, A, D, G, C, and F, which yields the keys of F, Bb, Eb, Ab, Db, Gb, and Cb. Here's what they look like on the staff:

How the flat keys are constructed

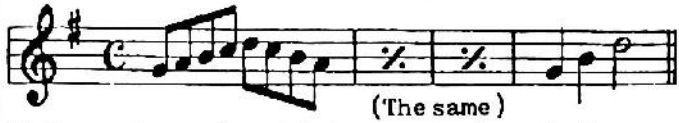


That adds another seven key signatures to the list, making the total fifteen.

The key signature is actually just a notation that is used to represent the key of the song. There are many other musical notations we haven't learned yet. There are so many musical notations you will probably never encounter all of them, but you should know the most common. Musical notation is international and has been used for centuries.

What the simile notation means

The first confusing notation you might see is the simile symbol. The simile symbol means to "repeat the measure before, or two measures before". When it is placed in the center of a measure it means to repeat just the previous measure. When it is used to copy two measures, it is placed on the bar line of two measures. The actual notation looks like this:



Another use of simile

Simile marks are found in instrumental works but very seldom in vocal music. "Simile" also appears in another way that composers use frequently. In this form the composer starts writing a particular phrase using all formal notation to indicate a style. He then writes simile above the next measure, and drops all the formal notation, placing only the notes on the staff. In this case, simile means to continue playing in the same style.

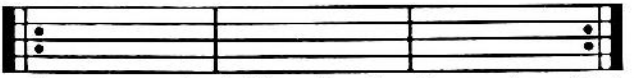
Some examples of the use of simile

In *Jesu Joy of Man's Desiring* by Bach, one part consists almost completely of eighth note triplets. Usually when this song is printed, in the first four or five measures the "3" is printed above the triplet patterns. The next measure simply says simile and no more "3" markers are printed. This means that all groups of three eighth notes are triplets in that part, even though the "3" is not printed. Sometimes "simile" will replace even the notes! In the *Overture of 1838* by Yngwie Malmsteen there is a section of the song that consists of an arpeggio based on the chord pattern of the song. This arpeggio is printed only in four measures on a separate staff. The simile is printed, and the notes, even the staff, disappear in the next line. This is fine if you're a good musician, but if you're a beginner, and you can't figure out the chord progressions, the song probably will never sound totally

correct. Using simile in this manner is not a good practice, causing some people to suffer needlessly because of some lazy transcriber's work.

Repeat bars

To repeat series of measures, a composer uses repeat bars. Repeat bars consist of an opening bar and a closing bar. All measures between the two bars are repeated once unless otherwise noted. Sometimes a composer may open a repeat and write "Repeat 3 times", "Repeat 3x", or "3 times" which all mean to repeat the passage three times. An opening repeat bar followed by a closing repeat bar looks like this:



Repeats with different endings

To allow more flexibility, "endings" can be added to repeats. Endings at the end of a repeat signify a different musical passage should be played on the next repeat. If the passage is repeated twice, two different endings can be used, one for the first time, and one for the second. On the second time through, the first ending is skipped, and the second ending is played. A bracket above an ending defines which measures are included in the ending, and a number above the ending designates which time through to use the ending. Sometimes several numbers are placed above the ending meaning that ending should be used more than once on the different times through the repeat. On the last ending, no closing repeat bar is used meaning the music should continue past the repeat. Repeats also occur from the end of a song in two ways.

The "da cap" notation

If the piece should repeat from the end back to the start, a *D. C.* symbol is used. *D. C.* can be thought of as "return to the beginning and do it again". The *D. C. (da capo)* may also be used with a repeat bar. Usually there is a notation above the staff written *fine* that indicates where the music ends after repeating the beginning.

The "dal segno" notation

The *D. S.* symbol *(dal segno)* is commonly used today. Dal segno can be thought as "return to the sign". If the *D. S.* is used, a symbol is placed somewhere within the music signifying where to return. The *D. S.* can also be used with a coda, which means ending. *D. S. al coda* means "return to the sign and play until you reach the

coda marker, and then play the ending". The sign most often used to show where to return to looks like this: 𝄋. The coda symbol looks like this: 𝄌. A *D. S. al Coda* means go back to the (𝄋), when you reach the (𝄌), play the coda.

Music written on more than two staves

Some music is written on more than just a grand staff (the treble and bass staves). If more than one staff is used, they are connected with a brace or bracket to show that the music is played simultaneously. The composer has written it on several different staves for clarity reasons. For instance, a vocal part would be lost and hard to read if it was written on the same staff with the piano or guitar parts, so the composer will usually add a staff above the main grand staff, and write the vocal melody separately on that staff. No need to worry, Lyra can keep all eight voices on the same staff without ever getting confused.

The staccato notation

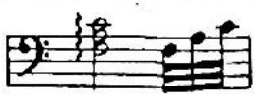
One notation used heavily today is the notation for staccato. A single dot just above or below a note means it is played staccato. Staccato can roughly be translated as "detached," so the note should be played short, but still take up the correct time in the beat. Dots are used also in an older notation. A series of dots (more than one) means something entirely different.

Using dots to indicate repeated notes

By placing a series of dots below or above a note, the composer is using musical shorthand, and is a lazy composer. In this notation, the note should be subdivided into as many parts as there are dots. Four dots would denote four subdivisions, while six dots would denote six subdivisions.

Arpeggios

Sometimes a composer will use another shorthand technique used to denote arpeggios. An arpeggio is a chord with the notes of the chord being played one after the other in an ascending or descending sequence. To indicate arpeggios, the composer can write the chord as normal and place a wavy line vertically along the left side of the notes, as in the following example:



These notes are all equal and should be played from

bottom to top tied together to form a chord.

Changing octaves

If the composer wants a part to be played an octave higher, he will use the octava sign *(8va)*. The octava sign will be followed by a dashed line signifying where the octave change will end. Some other composers choose to write the *loco* symbol, to return the passage to the normal octave. When the dotted line ends, or *loco* is reached, the music returns to the normal octave.

Tempo markings

Tempo markings in music are usually written out in Italian and appear above the staff. Tempo changes in music are relative. When a composer writes *Andante* he means moderately slow, which is completely up to the conductor or musician to define. Here's a scale of common tempo markings:

SLOW	FAST
Grave	*Allegretto*
Largo	*Allegro*
Lento	*Presto*
Adagio	*Prestissimo* (Very fast)
Andante	
Andantino	
Moderato (middle)	

A metronome marking may used to indicate an absolute tempo. It is usually written as a note followed by an equal sign and a number at the top of the music. The number is the number of beats per minute.

Changes in tempo

Changes in tempo are relative to the beginning tempo, and are also marked by Italian words. *Accelerando, Stringendo,* and *Piu mosso* all increase the speed, while *Allargando, Rallentando (rall.), Ritardando (rit.),* and *Meno mosso* all decrease the tempo. *A tempo* means to return to the tempo previously set. *Ad libitum* allows the musician to take it at the speed he likes and feels most comfortable. Translations from the music to Lyra should be at your discretion. Dynamic changes almost leave the definition up to the musician, too.

Volume markings

Only eight dynamic markings are used to set the volume of the music. All dynamic markings consist of one of the following:

ppp pianississimo - very, very soft, almost inaudible

pp - pianissimo - very soft
p - piano - soft
mp - mezzo piano - medium soft
mf - mezzo forte - medium loud
f - forte - loud
ff - fortissimo - very loud
fff - fortissisimo - very, very loud (turn it up and break the knob off!)

All volume changes are relative to the natural volume of the group playing the music. *mf* on your synthesizer would be louder if you have a complete 18 speaker stack as opposed to a practice amp! Changes in volumes appear written below the staff. You may have noticed the piano in the above list, which brings up an interesting point.

Yes, a piano is indeed named after a volume. Why? The real name of a piano is pianoforte, which translates to soft-loud. The piano was the first keyboard instrument that was able to play both soft and load, depending on how the musician hit the keys. Therefore, it was named soft-loud.

Volume changes

Volume changes usually have a diagram to show the action, but older music may use a marking only. Here're the most common volume changes:

LOUDER
Crescendo (Gradually increase volume)
Sforzando (Force the tone)
Rinforzando (Reinforcing the tone)
Forzando (Forcing the tone)
SOFT
Decrescendo (Gradually decrease volume)
Morendo (Fading away)
Perdendosi (Losing itself)

Stylistic notations

Stylistic marks such as *Majestically, Con spirito,* and *Animato* don't strictly apply to electronic music. When markings like this are present in music, that should help determine the instruments that will help portray that style. The correct instruments, along with a few tricks found in the editing section should allow any style to come alive through MIDI.

Miscellaneous terms

Some odds and ends remain undiscussed. *A poco a poco* means "little by little". *Assai* means "very", and is usually used with tempo changes. *Con* means "with", and is used mainly for volume and tempo. *Ma, Mezzo, Non,* and *Troppo* mean "but", "medium", "not", and "too much" respectively. By combining a few of these we can come up with a phrase like, *A poco a poco mezzocrescendo,* which means "Get a little louder slowly".

Most instrumental music notation is written in Italian, but in vocal music the musical terms are usually written using the same language as the lyrics.

More musical terms exist and could not possibly be covered here. If you still feel vague about some of the information, re-read it for further understanding.

NOTES

Chapter Five
Advanced Editing I - Transcribing

Learning to use the Lyra editor shouldn't stop after reading the Lyra manual written by Lester Hands. The manual provided with Lyra is an introductory instructional manual that covers Lyra's basic functions, but Lyra is capable of much more. With a large repertoire of editing techniques, both transcribing and composing a song can proceed at a good pace. Many techniques discussed in this book also have examples that will let you practice what you've learned. I strongly encourage you to immediately try procedures using the examples. Any technique discussed in this section of the book can also be applied to composing, and used along with the techniques discussed in the Chapter 8.

Lyra's block functions speed transcription because music repeats itself

Because a large part of music is repetition, the block functions speed up the process of transcribing or composing music by allowing large parts of the song to be copied anywhere else in the song. Some parts are simply several measures played over and over again. For example, consider any modern song played on the radio. It may start with an introduction, which usually isn't repeated, and then proceed into the main lines of the music or chorus, which repeat later in the song somewhere.

A simple form call the "binary" form, has a verse section (labeled "Section A" for convenience), and a chorus or refrain section called B. Section A is played, followed by B, and then section A, then B, and so on until the song is finished. This means only two sections need to be "hand entered", and then copied to the other parts of the song. Suppose the form of the song looks like this:

A B A A B A A B B

We would start this song by entering section A note-for-note on the staff. With section A finished, we proceed to enter section B note-for-note . Now completing the song is only a matter of copying sections A and B to the necessary positions. There are two ways we could do this, a quick way, and a very quick way!

Using Block Copy

The quick way uses the **Block Copy** command from the **EDIT** menu. Using this technique, we would first enter section A, and then section B in the song, and save a copy using the **Save As** command from the **FILE** menu.

Remember that saving part of a song requires only a few seconds of your time, while re-entering the music because of a system crash could require an additional hour or more. As a rule, save before you start any block operation, and at least every ten minutes. I always save after each section, too.

Preventing data loss by saving to 2 files

In addition, you should keep two copies of the unfinished piece in the directory and alternately save between the two. For example, suppose you're working on a song called "Black Magic". After working ten minutes, use the **Save As** command in the **EDIT** menu to save the song as "Black". After working another ten minutes, save the song using the **Save As** command, once again, but this time as a different name, such as, "Magic". When it's time to save again, use the **Save As** command again, and save it as "Black". What's the reasoning for this? Although the author has greatly improved the newer versions, file access and Lyra don't mix--simply put, it's less than reliable in the older versions. In the newer versions of Lyra, 2.52 and above, file access runs much smoother, and is much more reliable, almost 100% safe. By saving intermittently, you can assure at least a current backup to start building with.

Occasionally you'll save a file and see the screen go crazy, or an error box will show its ugly face, and when you try to load the file later you'll see "No longer a valid file" or, even worse, "Damaged Directory". So alternating between two file names when you save your song will assure that you have a backup even if "Damaged Directory" rears its disgusting head. After you've completed the song, you can use the **Delete** option from the **FILE** menu to remove the unneeded copies. Okay, enough for lectures, let's get back to transcribing.

Once both parts, A and B, have been entered, you're ready to finish the song. Simply mark section A using the block options, and copy it to the end of the song. To mark the beginning of the block, use the quick scroll bar

(it's fastest) or the **Go To Bar** option from the **EDIT** menu to get to the first measure of the song which is the beginning of section A. Now place the cursor above the first chord and press the Block key (B). The notes and staff following the first note should become inverse video. A marked block in Lyra appears in inverse video. You haven't marked the end of the block yet, so the rest of the song will remain in inverse video until you mark the end of the block. Move to the end of section A using the **Go to Bar** or the quick scroll bar, align the cursor horizontally with the last note in section A, and press the B key again.

A difference in Block Copy in version 2.60

Any version of Lyra below 2.60 requires you to place the cursor above the note AFTER the last note in the block, and press the B key. In older versions you can easily place an extra note in voice one at the end of the song to allow you to mark the end of the block at the end of the song. After you've finished with the block, you can delete the extra note. In version 2.60, if you try to add an extra note in any voice the block will be reset and you'll have to re-mark the beginning of the block and start over. Just remember in version 2.60 you can place the cursor above the last note in the block, and in any other version, you must place the cursor above the note after the last note in the block. If you accidentally mark the wrong note as the end of the block, simply move to the correct note and hit the B key again. If you mark the wrong note for the beginning of the block, you must choose the **Reset block** option out of the **EDIT** menu before you can re-mark it.

Once you've copied section A once, mark it again, and copy it to the end of the song again. Remember to save after each block operation using the alternate name. So far, the song's form should look like this:

A B A A

Now simply mark section B as the block and copy it to the end of the song as you did with section A. When you're finished, the song's form should look like this:

A B A A B

Looking back at the song's final form, you can see next

comes section A twice followed by section B. The pattern A A B already exists, so mark the entire section of the song including both the A A B pattern, and copy the block to the end of the song. You could mark A at the beginning again, and copy it twice, followed by B, but it's quicker to mark the existing section and do one copy. Now copy section B once to the end of the song, save it again (using the alternate name!), and you're done. If haven't actually entered a song this way before, you can see how easily and quickly it can be done. Now for the quicker way.

Append can be used for even faster transcribing

Don't overlook the **Append** command, it's a very useful tool. Two ways exist to use the **Append** command effectively; one we'll discuss now, the other later. In the above example, using the **Append** command would allow an even quicker transcription of the imaginary song. To create the song in this manner, you would once again start with the A theme.

Enter theme A as normal, saving occasionally under two different names, and remember the name you saved it under last. Now use the **New** command from the **FILE** menu to erase theme A from memory once it's finished and saved. Now enter theme B in the same manner. From here it is simple to finish the song using the **Append** command.

Once again, use the **New** command to clear theme B from memory to start a new song. Now load the file containing the completed A theme. We'll call it "ThemeA". Once "ThemeA" is loaded, choose the **Append** command from the **EDIT** menu, and append the file containing the completed theme B which we'll call "ThemeB". "ThemeB" will be copied onto the end of "ThemeA", creating the first part of the song. Now simply append "ThemeA" twice, "ThemeB" once, "ThemeA" twice, and finish by appending "ThemeB" twice. The **Append** command should only take a few seconds to complete, which is much faster than finding the beginning and end of the block every time.

How to decide which method to use

If you closely examine the song you wish to transcribe before you start entering it in Lyra, you should be able to determine which of the two above methods to use. If the

piece is clearly divided into sections with only a few changes the **Append** method would be easier. If the music has few repeats, and is always introducing new material, copying the sections would be easier because of an added feature innate in the block copy system.

All block commands work on just the displayed voices

The block copy has one more feature I didn't mention. All block commands work only on the voices in the "current" or "on" state, so copying or deleting just one or two voices in a section is possible. Version 2.60 mentions the ability to turn off voices in block commands, but in all other versions of Lyra I've used, it worked perfectly every time. This feature actually allows you to use the block functions selectively on the voices you wish to modify while leaving the others untouched. Remember this feature, it will come in very handy when one or two parts of a section change, but the other six remain the same. In this case, mark the block, turn off the voices you don't want to copy, and perform the copy. Only the voices turned "on" (half-tone) or "current" (solid) will be copied! This same technique will work for **Block Delete, Block Copy,** and **Block Transpose.**

Key changes

Many songs change keys within the music, but only for certain passages. Pieces change keys for a greater impact of a passage and to give a song more depth and variety. Expressive, but controlled use of key changes can add a new dimension to a composer's music. To create a good key change, the composer must use his skills to make a very smooth change that is expected and fits well into the music. A sudden and abrupt key change will certainly leave a bad impression in the listener's ears, but as a transcriber, you shouldn't have to worry about key changes--they're already written for you. Unless you understand music theory very well, you shouldn't change the music immediately before or after a key change. By the same token, if you're not preparing music for other listeners, by all means make changes so you can learn what's right, and what's wrong. All versions of Lyra allow key changes.

Lyra currently has no way to display a key change as in conventional music, but the final result from any form of music is audible, not visible! There are two ways to put

the necessary key changes in a song: Append and immediate.

Handling key changes: the "immediate" mode

I prefer to use the immediate mode of key changes, which means a key change when you come to it in the music. When transcribing a short song written in more than one key, the immediate mode is the best. When using the immediate mode, you simply use the **Key Signature** option from the **EDIT** menu to change to the new key when you encounter it. For instance, suppose the song starts in Bb (2 flats), and changes later to G (1 sharp). Start the song in Bb by choosing **Key Signature** to set the key to 2 flats. Now, start entering the song, and add all the notes in all voices up until the first key change. When you've finished all voices, choose the **Key Signature** option again, and set it for 1 sharp, which puts us in the key of G. No indicator is placed in Lyra, but the key is changed, and you can continue entering the notes as they appear on the score.

You'll be able to notice when a song is written in several keys because it is quite noticeable when you scroll through a song and see dozens and dozens of accidentals. That's your clue that the composer has used more than one key.

A problem with immediate key changes arises when you have to later edit a section of the song. Since no indicator is present in the musical score, it's often hard to determine the key the passage is written in if you're editing someone else's song. The best method to find the current key of the song is to make an educated guess on the sharps or flats present, and then switch the key until most of the flats or sharps disappear. Remember that accidentals could be present, which makes this process more difficult. **Append** will help you keep the key changes straight in your own mind.

Keeping key change sections in separate files enhances readability

By using **Append** to link sections of the song written in different keys, you can easily separate the different keys for easy editing. But when you're composing a song this method leaves something to be desired because it is crucial to listen to changes as you're working on them. To use **Append** for key changes, each section between key changes should be edited in separate files, with the

key changes at the beginning of each file. When all sections are completed, append them all together to create the song.

Watch out for accidentals

When using accidentals in Lyra, you must watch carefully to make sure all the accidentals are properly entered. In printed music, when an accidental appears in a measure, all notes of the same pitch following that note are affected by the accidental marking, too. This covers all octaves, not just the same octave the accidental appears in. So keep a watchful eye open when you encounter any accidental in a musical piece.

Transcribing a song begins with closely examining the song to determine several factors needed to get started. You should know how many voices a song will require, any key changes or time signature changes that occur within the song, and the basic structure of the song.

Determining how many voices a song needs

Two ideas exist about determining how many voices a song will require--a good one, and a bad one. Many people scan through a song looking for the instrumentation, hoping to find out how many voices to use while also establishing which instruments to use. I'll use an example to explain. Suppose they determine the song requires three piano voices, a vocal part, a bass guitar, an electric guitar part, two synthesizer voices, a trumpet part, and a bell part. Counting them up, they find ten voices are needed, and decide to drop one piano part and the bell part to derive the eight voices the song will require. They create the instrument table including all the necessary parts, with one instrument per part and begin entering the song. This method relies one instrument per voice, and allows only eight parts with eight instruments. In actuality, the song contains three piano parts, a bass part, and a two synthesizer parts that plays almost continually through the song; the trumpet and guitar parts are solos only while the vocal part isn't playing, and the bell part is used for only a sixteen measure interlude with the trumpet, piano, and synthesizer parts. This means six main parts are used, and four parts that are introduced above these six main parts. Why not use all the parts and instruments simply by switching to the right instrument at the right time? Choosing the

required amount of voices should rely solely on the largest chord in the song.

Instrument changes can occur anywhere in Lyra, even for one note, so several instruments can share the same voice as long as only one is playing at a time. The song will levy as many voices as there are notes in the largest chord of the song. Suppose, though, that at only one time six notes appeared in a chord, and in the second to last measure. Would you include it? If the chord depended on all six notes to sound correct, sure, it's worth all the trouble to "carry" an empty voice for the second to last measure. But suppose the same note existed in another instrument, it probably wouldn't be worth the trouble unless it was very distinctive. After determining the how many voices to use, you can move on to the next step.

Keeping a log of key changes will save you a lot of bother

After determining the number of voices needed, you should check for key changes, and time signatures changes. Key changes present no problem at all; but make a note of them on a separate piece of paper, keeping a measure by measure log. If the song changes keys in measure 36, then jot down something like "Measures 1 - 35 = Key of Eb" on one line and "Measures 36 - End = Key of F". As I mentioned before, Lyra will not keep track of any key changes you make within the song, so you must organize yourself so you will not get mixed up and edit in the wrong key at the wrong time. By keeping the log, you can easily find out which key the song needs to be in at each measure. For instance, you're at measure 65 and you see a mistake. Sharps cover the screen, so you know you need to change the key signature before you correct the mistake. Without your log you would have to scroll around looking for the last key change, but with the log you can look at the key for measure 65. Time signatures introduce numerous problems, most of which we'll deal with in Chapter 8.

Changing time signatures

Many songs do change time signatures, if only for a measure, and Lyra doesn't deal with time signatures changes too gracefully. First, Lyra's range of time signatures will not cover every song you'll come across.

As a rule, Lyra will not accept a time signature in which the beats per measure (top number) exceeds the note receiving a full beat (bottom number). It also does not allow a two digit number to appear in either the top or bottom number, which often may seem bad when your favorite song displays a hearty 12/4 time signature! Don't worry, Lyra does indeed deal with such time signatures, just not in the normal way. We must delve into the depths of music theory to find the answers we need to accommodate weird and wonderful time signatures such as 7/4 time. The 12/4 time mentioned above, as well as many others, fits nicely into Lyra when approached at the right angle. Divide twelve by four. What do you get? A nice even number of three. That means three 4/4 measures hold the same amount of beats as one 12/4 measure. Did you catch on? Simply by dividing each 12/4 measure in the song into three Lyra 4/4 measures, you could enter the song into memory! This requires only a few extra ties across a bar here and there, and the song doesn't look exactly the same, but no one will ever know if they're only listening. Any time the top number is larger than the bottom, and is divisible by the two or three, you can transcribe the song by entering the correct amount of Lyra measures per normal measure, and that number is the result of your division. For now, keep in mind oddball time signatures such as 7/4, 5/3, and 9/4 exist and will work with Lyra, but learning how comes later. That brings us to our last preparatory work, defining the structure.

Handling "forbidden" time signatures

Defining the structure of a song and writing down that structure in a particular way, called a map, will show you exactly when and where to copy a block. A structure map uses only capital letters and a few words to show the structure of the song. With a structure map, you can also find the form of the song.

A structure map shows how the various themes and bridges are arranged to form the song. Earlier I used a structure map to show you an example of a binary form. A structure consists of capital letters, separated by a single space, placed in a horizontal line with each letter representing a theme or section of the song. Other words such as "Intro.", "Solo", and "Interlude" can appear in

The use of a structure map

the horizontal line, also. If one line extends too far to the right, a single spaced line separates the main line from the continued line. If several movements exist in the song, the movements' horizontal lines are separated by a double space.

The introduction

To start defining a structure map, look at the beginning of the song. If the song contains an introduction, write "Intro." on the first line of your page. An introduction, usually just a variation on the main theme, appears at the beginning of the song and doesn't really get an emphasis in the structure. Following the introduction, if the song has one, a theme will occur. The theme may be the chorus or it may be a verse, or even a supplementary theme. This theme is assigned the capital letter A, because it appears first. Whenever this theme appears again, write down a capital A on the same line of the theme map. The next theme that's different from theme A receives the label B; the next different theme receives the label C, until all themes have been labeled. Each time a new theme is discovered, or an old theme repeats itself, write its label down on the same line as the letter before it. If a repeat occurs with two separate endings, a theme is repeating, and the same letter representing the theme should be written down twice on the theme line.

Assigning themes names

A transitional passage

Sometimes a short four or eight measure passage occurs between themes, a transitional passage, and should be labeled A prime (A') or (B'), or whatever theme it follows, unless it repeats later in the song after a different theme, in which case, it gets its own letter.

An interlude or bridge

Sometimes an interlude, a non-repeating theme that appears only once and introduces new material occurs; you should write "Interlude" next instead of another letter. For a passage to be a theme, it must repeat at least once somewhere else in the song; a passage that repeats right after itself but nowhere else in the song is not a theme, but an interlude or bridge. When a theme repeats only once with a new melody, it usually appears in the theme map as a capital letter with "Solo" or "Cadenza" written before it with no space separating them, as in "SoloB". As an example, most guitar solos of modern songs play over a theme used earlier in the song. A cadenza usually appears in classical music, and the

ocherstra or supporting instruments stop playing and let the soloist play by himself. After completing the structure map, you can easily see how to break the song up into separate files to use the Append method of joining files, or where to copy if you plan to simply copy the sections. Once the structure map is completed, you're ready to do the actual entering.

A complete example of transcribing a song

Together, we will follow the complete process of transcribing a song into Lyra. Please look at the back of this book where you'll see a song called "Two Hearts" I wrote several years ago. It's a rock ballad written in traditional notation so you can practice converting from traditional format to Lyra's format. I chose this song because it doesn't contain any unusual notation; it's a good simple song with an introduction I'm sure you'll like, three themes, and a great solo. We'll start at the beginning, and follow the whole process through.

Determining the number of voices needed

We start by examining the song for the numbers of voices to use. At first glance, we see that the song only has 6 simultaneous voices as seen in the last measure. In all other places it appears that only four voices are used. A closer look will reveal that the song requires seven voices. Why? I'll give you a hint: look in measure nine. Do you see the small *ped.* marking? That's stands for "pedal", and means that the pianist should hold the sustain pedal down until the end marking (*) appears. You'll see the end marking in measure 16. The sustain pedal causes the notes to ring until they either fade away, or the pedal is released. Also, when the same key is struck again, the note replays. We could use an event to accomplish the pedal markings, but only in the non-multi-timbral mode, and this song requires more than one instrument, so we must simulate it. To simulate the pedal, we simply must stack the notes on top of each other with the first note receiving the full beat of the pedal passage and all the others starting later in their respective counts. Four quarters played with the pedal down would convert to four notes in Lyra, the first being a whole note on the first note in the pedaled series, followed by the second note, a dotted half note preceded by a quarter rest; the next note, a half note preceded by a half rest; and the last, a quarter note preceded by a

dotted half rest. That series of notes would simulate a passage of four quarter notes with the sustain pedal down. Another system to use requires more space, but looks clearer. The second way requires you to stack quarter notes on top of each other, replace the unneeded quarters with quarter rests, and tie all the quarters in the same voice together. I prefer the first method because the display stays clearer, but the second method reflects traditional notation. Using either method requires four voices for this song. Next, we look for key and time signatures changes.

Checking for key and time signature changes

Quickly scanning through the song, we now look for either key or time signature changes. This song contains no key or time signature changes, and is written in the key of C major. One theme contains a few accidentals as seen in measures seven and eight, and the guitar solo, starting in measure 45, also has a few chromatic passages, but other than those few accidentals, the song remains in the key of C major. With any key or time signature changes noted in the song log, we can continue our examining process.

Making the structure map

Below the log, on the same piece of paper, we can create our structure map. The song starts with a windy introduction (I mean that literally), so we start the map with "Intro.", and add to the log the instrument "Wind". Obviously not all synthesizers have the same voices, so, based on the instrument name, pick an instrument your synthesizer has that you think might match the instrument listed in the song. In this case, I've written "Wind" to designate that the first chord is actually a windy sound, like wind blowing during a storm. Next, we see the first theme played by a synthesizer with a Flutter bell, so we label it A, and write "A" down after "Intro." in the map and "Flutter Bell" in the log. Here we also see that the a synthesizer bass plays the bass part, so we note "Synth Bass" in the log. We continue scanning, and notice a new pattern eight measures later. Here the vocal enters and a "Rhodes" voice takes up the accompaniment so quite obviously we've hit another theme; this one receives the B label, and we write down "B" beside the "A", and add vocal and "Rhodes" to the log. Here's what the map looks like so far:

Intro. A B

Next, we see theme A repeats with a vocal part,, so we place another A in the map, followed by yet another A because of the repeat. After the repeat we find theme B with no word changes which tells us that theme B can also be called the chorus, so we write down another B, and continue through the song. After the second chorus we see a new passage. The passage, maybe a bridge or interlude, covers only two measures, but deserves note in the map, so, for now, we add a C to the map. We also add "JX-10May", a soft, medium attack sound, to the log. If later we find out this small passage doesn't repeat, we can change the C to "Interlude". Moving on, we see theme A again, repeated twice, so add two more A's to the map. The map now looks like this:

Intro. A B A A B C A A

After the fourth verse we once again see theme C, this time repeated once, so we add to our map two C's. Next comes the guitar solo played over theme A, so we add A' to the map to designate a variation of the A theme. After the guitar solo, the chorus repeats once and we write down another A, followed by two C's when we see the C theme repeats near the end. The final chord receives no note in the map because it simply ends the song with a sense of finality, but notice the vertical wavy line beside the top four notes and the acoustic bass used for the last note. This line denotes that the four notes are an arpeggio; we'll tackle that problem when we come to it. We do need to add acoustic bass in the log because it appears in the very last measure. That makes the whole map look like this:

Intro. A B A A B C A A C C A' B C C

We can now easily see how to enter the song, and what instruments we'll need.

Entering the first theme into Lyra

Start by choosing **New** from the **EDIT** menu to clear any current information from memory. Check the song's key, which this time is C, so no flats or sharps are needed. Next check the time signature--4/4 in this case, make any necessary changes if the key or time signature is wrong. Once Lyra's editor is set, we enter the first

theme.

Skip the introduction for now, we'll get back to it later. We need to set up the instruments for this theme, and the log says we need a flutter bell for theme A the first time, which means we need to modify the instrument table. Choose **Instrument** from the **MIDI** menu, and enter the three digit number corresponding to your synthesizer's "Flutter bell" (or close match, such as vibes), followed by the instrument name in the instrument labeled 0. Press the enter key when the instrument is correct. To place the instrument in the song, set voice one to the current state and all other voices to an on state with **All notes on** from the **EDIT** menu, then position the cursor near the treble D line, and touch the I key. The instrument table will appear and wait for you to choose an instrument; type the number 0 to choose the "flutter bell". In the same theme, in measure eight, you'll notice a "synth bass" enters, so we'll also need a good bass sound. Choose a bass with a quick attack and a good synthesized sound, and enter it into the instrument table as you did the "flutter bell". Once it's in the table, choose voice six and enter the "synth bass" for voice six. With the first two instruments designated and placed in the song we're almost ready to begin entering the notes.

Achieving a gradual tempo change

Notice the tempo markings directly under the treble staff in measure 6 which read *atempo a poco a poco ...* with a dotted line stretching for eight measures. This means the song starts out at a slower tempo and gradually increases to the correct tempo which means we must enter the correct information into Lyra. Set the master tempo for 40 by using the **Master Tempo** option from the **PLAY** menu, and use the R key to slow the tempo down for the first measure to create the gradual tempo increase by specifying a faster tempo every five or six notes. Start by tapping the R key and choose a tempo of 55 (15 clicks from the regular tempo of 40). Forty is always the normal relative tempo, which remains independent from the master tempo; in this case, they will equal when the song reaches normal tempo, but not always! One last step before we can begin entering the notes; please notice the dynamic markings.

Adding volume changes

Volume changes add a nice, but subtle, depth to music. If your synthesizer has the velocity sensitive capability use it to its fullest. Also, if you plan to give your transcriptions to your friends, and they have velocity sensitive synthesizers, they'd certainly appreciate it if you added the volume changes anyway.

In measure seven, the volume appears as *pp* (pianissimo) which extends to all the voices until noted differently in the music by using more than one dynamic marking on the staff at different vertical positions. For now, both voices one and six will need the *pp* marking at the beginning of the phrase. Choose voice one, place the cursor on the middle C line, type the volume key (V), and type 2 for *pp*. Since all notes in the music must appear on the same staff in Lyra, as well as all dynamic markings, tempo markings, and MIDI specials, such as events, the musical score can get very messy. A technique called "hiding" will help keep the staff clean.

"Hiding" can help clean up Lyra's display

Hiding relies on placing the same Lyra object, such as a note, rest, volume marking, or instrument marker, on top of the same type of marker, but in a different voice. It looks hidden because the other voice hides it, but you can single it out by high-lighting the desired voice, and half-toning the other seven voices. Often rests appear in more than one voice at a time, and by hiding them, you can minimize the objects on the display. "Carrying" a voice occurs when you place rests in several measures until the voice is needed later in the song. If you're carrying two or three voices, you'll want to hide them together to keep the display looking good. In this theme, voices two through four must be carried until they're needed in another theme, so we have two ways to carry these voices. We'll get to that later, but now we need to enter voice one.

Enter 8 rests in voice one first

Before entering in music, place eight whole rests in voice one to fill it so we can edit other voices. The turn voice two to the "current" mode, and all others to the "on" mode. Point to the eighth note at the bottom and click to choose it. Now, look at the structure of measure seven; it has six eighth notes, and one quarter note. In fact, all eight measures of theme A have the same structure of six

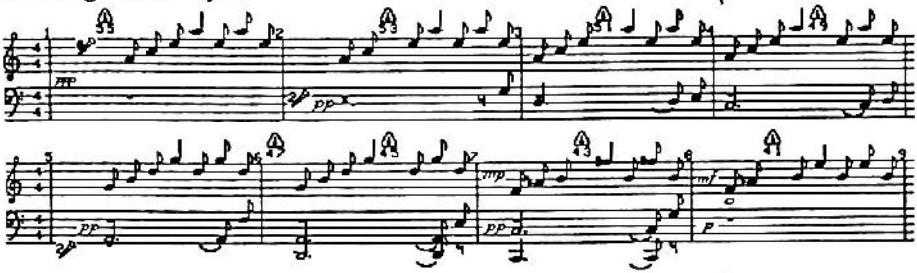
Entering notes of the same length at once saves time

eighth notes and one quarter note. Changing notes requires more time, so, in this case, we need to place all the eighth notes, and later insert the quarter notes to save some time. That may seem trivial, but it will save a lot of time when you have a long phrase. Use the eighth note, and place the first five eighth notes in the first measure, and then place the next tempo marking, speeding up slightly after the fifth note. A low number represents a faster tempo, in Lyra, while a high number represents a slower tempo, so to speed the tempo up, subtract a very small amount, we'll use two, from the current setting of 55. A noticeable difference in the song's speed will occur when a number larger than three is subtracted or added to the tempo, so to make sure the tempo changes only slightly. Keep adding notes and tempo changes until you reach the end of the theme, where the relative tempo should be 40. A few times in the preceding measures we'll need to subtract a three from the tempo to get it down to 40. Once all the eighth notes have been entered, choose the quarter from the bottom of the screen, and insert quarter notes where they belong. Be careful in the last two measures because several accidentals mark the notes to create a smooth transition into the next phrase.

Entering the bass line

Next, choose voice six and enter the bass line. This phrase is almost finished, but the remaining five voices must be carried to the end of the theme. Fill voice will help, but it produces a very sloppy theme. We can use a second approach which takes more time, but keeps the display nice and clean. The second method requires whole note rests to be entered in all the measures of the remaining five voices, which seems long and drawn out, but actually goes quickly. To use the second method, select voice one, **Go To Bar** 1, choose the whole rest, and place it in measure one. You should place it either in the highest vertical position or the lowest vertical position available to keep it from giving the display a messy look. Now, place the cursor just in front of the rest and click seven times. This, in effect, inserts seven rests in front of that one, so no scrolling is necessary. In older versions of Lyra, you must treat voices three, four, five and seven in the same manner, but in 2.60 you can

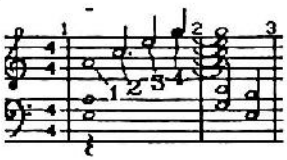
Voice copy voice two to the other five and finish in seconds. That completes the first theme, so save it as "TwoHrtsA". Next we move onto the theme B, or the chorus. Here's what theme A should look like after entering it into Lyra:



Entering theme B

Theme B requires a little thought because of the pedal markings. Use the **New** option to clear the display and memory. Non-multi-timbral synthesizers can use a pedal event for this, but for now you'd better just learn how to simulate it with some clever editing. To create the pedal effect, we must use four voices of all the same instrument. Look in the fifteenth measure, you'll see a *ped.* marking the treble clef of the grand staff. Next, comes four ascending quarters which the pedal would affect, and we must edit them to produce the sustained effect. The notes, four quarters, in unison create a whole note, so the first voice should be held for four beats, or a whole note. Choose voice two, click on the whole note, and place it on the A in the treble clef which corresponds to the lowest note in the pedaled passage. Next, the second quarter note plays, but we must place all notes as if they required four beats, so choose voice three. Now, click on the quarter rest at the bottom, and place it in the measure, followed by a dotted quarter on the C4. That equals four beats. Voice four requires a half-rest and half note on the E4, and voice five requires a dotted half-rest, and a quarter note on the G4. Do you see how they all equal four beats? Look at the example below where all the notes are labeled with their respective voices:

Handling a "ped." marker



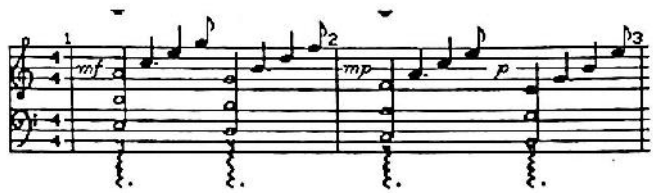
This two measure pattern is repeated four times to form the accompaniment. Accompaniment? Ah, we better enter the melody in voice one first otherwise we'll run into problems later when voice one is empty and we're trying to enter notes in other voices.

Choose the correct instrument for the vocal voice, and enter it as it appears. Choose a good voice for the vocal, one with a good attack speed, and a steady sustain. Pay careful attention to tempo and dynamic markings. Once voice one has been entered, enter voices 2-5 in the manner described above, as well as the two bass voices in six and seven. Once the passage has been entered, save it in a file called "TwoHrtsB". We move onto the verse.

The verse has the same accompaniment the theme we saved in the file called "TwoHrtsA", so it will be easier to edit that theme than to start a new one. Load the file "TwoHrtsA" and delete all the R markings by using the delete key. Now, enter the new melody in voice one in the next eight measures and save that as "THVerse." The next theme, theme B, has been entered, so we can skip to measure 39, where the next different theme appears.

Entering theme C

Theme C is a very short theme which shouldn't require to much time, so go ahead and enter it using the pedal effect discussed above. This time you must use eighth note lengths that last two beats, instead of quarter note lengths lasting four beats. Fill voice one with whole note rests, and save it as "TwoHrtsC" for theme C. Here's how the passage should appear:



The major work is done because now we're ready to merge them into one file! **New** the display and prepare to finish.

Putting it all together

First, we must enter the introduction as seen in measures 1 through 5. Choose voice one as the current voice, enter the instrument markings for "Wind", and place the two whole notes as they appear; do the same for voice two.

Carry the other five voices to the end of the five measure passage by entering whole rests in them, and don't forget to hide them. Now, choose **Append** and add the file "TwoHrtsA". Follow the structure map we made above to merge the correct themes in at the correct places. When you reach the solo, add the verse section, and then using mark block and block delete, remove voice one. Enter the guitar solo in voice 1 with the correct instrument and change the instrument back at the end of the solo. Several things exist you need to watch out for when you're transcribing music into Lyra. Tempo markings are left completely up to you, dynamics are also your responsibility, but style markings are you worst enemy.

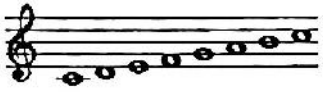
A composer often tries to portray a mood or setting through a piece of music which live performers must articulate through the notes they play, adding volume, hard or soft tonguing, holding the bow looser, and, my favorite, using a stainless steel pick for those rumbling pick-scrapes! Getting a synthesizer to show emotion will create anger in the most calm of personalities, causing a lot of frustration, too.

You should now have a good knowledge of Lyra's abilities, and Lyra editing, but showing style marks, and more editing techniques, is saved for Chapter 8, Compositional Techniques. If you have a song that you can't wait to hear, now's the time to enter it, but remember all the methods you've learn here.

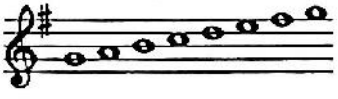
Chapter Six
Scales and Harmonization

A great portion of today's musical philosophy came from the writers of the early churches, and they borrowed many ideas from the Greeks. Long ago, people discovered that songs seemed to be based on a pattern of tones, which we call scales. The majority of a song's notes fall into the scale the song is built around, and--you guessed it--determined by the key. A C major scale looks like this:

A scale is a pattern of notes



As we learned earlier, fifteen different keys exist and a major scale be can built around all fifteen key tones. To make a scale in any key, start by placing the first note on the home tone of the key--C for C major; Bb for Bb, etc. For instance, here's a G major scale:



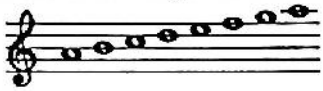
Why have I used the word "major" every time I mentioned a scale? There's a second kind of scale, namely a minor scale. What's the difference? Well, all the scales we've dealt with previously were built with the home tone as the beginning of the scales. Minor scales start on the note five notes up from the key tone. Minor scales date very far back too, but not as long as major scales. Minor scales are a little more diverse, but not as widely used.

Two main types of scales: major and minor

There are three kinds of minor scales--the normal minor, harmonic minor, and melodic minor. We won't learn all three forms because that would require some advanced work we're not ready for yet. However, we certainly can try a few minor scales to broaden our horizons! In all cases, we will go down one full step (one line or space) from the key tone and start writing the scale as we would a major scale. That's it! Minor scales are named by the tone they start on, not the key tone of the key. For

Minor scales

example, look at the following A minor scale:

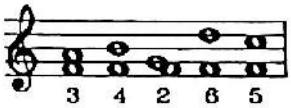


The scale is written in the key of C--no sharps or flats--but the scale is a minor with its beginning note on A.

Intervals

After learning scales, the next step is to learn how to write chords in music. Intervals are the first step towards writing chords. If you take the first, third, and fifth notes from any scale, you'll find they will sound pleasant together. To try this on your synthesizer. Choose any white key, place your thumb on the chosen key, skip one key and place your middle finger on the next key, followed by skipping another key and placing your little finger on the last key. Press all three down simultaneously. Your fingers should look like this:

You've just used an interval. The first interval is a 3rd above the first note because it encompasses three keys (counting the starting and ending keys). The third note is a third from the second note but a fifth from the first note. Can you see why? It stretches across five keys. An interval is the amount of tonal distance between the root note and the note we place above it. The root note of a chord is the lowest note that appears in the chord. Here're some intervals written above the key tone of F:



Play some intervals, trying to determine which sound good and which sound bad.

Chords

Intervals, actually the building blocks of chords, once learned, slip from memory because we begin to learn to recognize chords instead of the intervals that compose them. Some composers use only pre-defined chords and never step off the beaten path to devise some intervals of

their own. As you can imagine, this lack of creativity limits their work, and materializes in every piece they write. Writing the same chord in a different key is still that same chord because the intervals haven't changed. It will sound the same, just a little higher or lower because of the new key.

A vast majority of songs, new and old, issue from a major or minor scale. Additional scales do exist, and are found in modern writing. Playing a C major scale relies on moving up at a set interval in an ascending or descending fashion using only the white keys. If we were to play a scale using all the keys including the white and black keys, we would be playing a scale based on half-steps, called a chromatic scale. Theoretically there is only one chromatic scale because it uses all fifteen notes.

A chromatic scale includes all black and white keys

A sharp (#) requires us to play the given tone plus a half step, so a C# would require us to play the black key between the C and D on the synthesizer. A flat (b) represents a half step lower, so playing a Bb requires pressing the black key just to the left of the B.

Concerning sharps and flats, one very old (and odd) notation still exists. When there's a sharp in the key signature affecting a tone we wish to represent a half a step higher, a double sharp (similar to an "x") sometimes is used. On the other side, when there's a flat in the key signature affecting a tone we wish to represent a half a step lower, we use a double flat (bb). I prefer to simply move the note to the next line or space above with a natural sign for the double sharp, or the line or space below the note with a natural sign rather than dealing with outdated notation.

Double sharps and flats

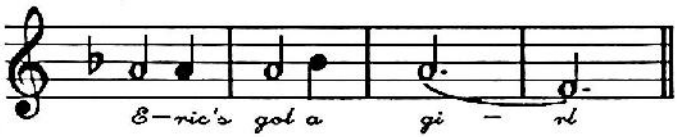
As you've probably noticed, the word "chromatic" often describes colors as they relate to the spectrum. In music, the "chromatic notes" add color to music adding a greater variety of sounds to both melodies and harmonies.

Even though only basics have been covered so far, we are about to embark on the first advanced topic of harmonization. Surely, everyone's had the desire to write a song, even if it didn't bring in any money. It just seems

Starting a song writing project

like an exciting thing to do, and it is. But first, we must start small.

Think of small children chanting a phrase in the school yard. They repeat the phrase over and over again in a pattern that matches the words. For example, "Eric's got a girl." To set these words to music, we must first analyze the rhythm. The children start at a medium note, pronounce the first three syllables, move up one step, pronounce the fourth syllable, and move back to the previous tone, pronouncing the last syllable with a slide down two steps. In musical notation, that appears as:



Picking out a melody

Now just exactly how did I do that? I have the ability of perfect pitch, which helps tremendously. Perfect pitch allows me to hear a note, and know exactly which note I'm hearing. What if I didn't have perfect pitch? Well, I head to the piano (or guitar) and pick out the melody out by ear. Then I play it over and over to make sure it's right. Then I begin to analyze it carefully. By carefully counting as I play I can figure out how long each note is held, so I can write down the rhythm. As I play, I notice that several notes sound louder; that, coupled with the knowledge that the first note of each measure is accented, tells me where to place the bars. After the bars are in place, I can then count up how many notes per measure and write the time signature. Lastly, it sounds like the phrase is centered on the last note. We also notice several Bb's throughout the phrase. The key of F has only one flat, Bb. So most likely the song has been written in the key of F.

I covered the above process quickly, because it is not actually writing a song, but "earscribing"--the process of transcribing the song without the score by just listening to the music. I'm sure you're much more interested in composing your own song.

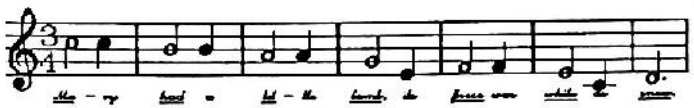
Two approaches exist to creating a song with words. Some people claim they can hear the words and music at

the same time. That may be the truth, but most agree it is easier to start with the words and write a melody to them. A good poem will "imply" its own melody simply from the meter and phrasing. The music must follow the words for a good song to evolve. We'll start with a simple example.

Consider the poem "Mary Had a Little Lamb." I can see the excitement already, but we all know it, so it's a good example. We read it over and over in our minds, in a process called singsonging. The words have a rhythm to them that we can't avoid hearing. The first thing we notice is that certain syllables sound accented as we stress them. The most natural way to sing this phrase is MA-ry HAD a LIT-tle LAMB, its FLEECE was WHITE as SNOW. Any other way just doesn't sound natural. This is called "scanning" the words. Now we write them below a staff, underlining the accented syllables, making sure there's enough room to write notes below the staff.

Fitting the rhythm of the words to music

Our next step is to decide on the number of beats per measure. Usually, there's a choice when it comes to deciding on the time signature. In this case, we can write it in 3/4 time as in the following example:



By carefully counting the beats as we sing it in our head, we can determine how many counts each syllable will receive. That's what I've done above. To achieve this quickly requires a great deal of practice, and you should get better as you practice.

After writing a melody, we must write some harmonization for it, requiring the use of intervals to create chords. We'll study simple chords, called triads.

The simplest form of harmonization is a triad, which consists of three notes in the 1-3-5 interval position. Simplistic, but beautiful, triads are often used for harmony using several instruments. Playing harmony on a guitar using triads can be accomplished after listening to a melody only once, if the guitarist is experienced.

Triads

Pianos, harps, accordions, autoharps, and mandolins also lend themselves to triads nicely.

Trying out a triad on Lyra

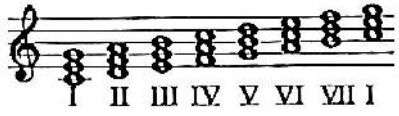
Let's use the key of C major because it has no flats or sharps to worry about. Now, let's put the root note on middle C to make this the tonic chord of C. The C becomes the root, or the first note in the chord, and is the starting point of our interval. For listening purposes, we need a slow tempo and long notes, so use Master Tempo to set the tempo to 60, and choose the whole note from the bottom of the screen. Make voice one the current voice, placing a whole note on middle C. Now we must add the next interval of 3 (remember the 1-3-5 combination). To do this, start counting with the C as one, and move up the staff until we reach three. On three, you should find yourself on the E which is the next line up. Make voice two the current voice, and place another whole note on the E. For the third interval of 5, we start counting from the C again until we reach 5 and find ourselves on G, the next line above the E. Place another whole note in voice three on the G. That completes the chord. Notice all three notes are on a line, and they simply ascend from the root falling on the next line up.

Building a triad is easy! Just place two notes above the root on the next two lines or spaces depending on if the root rests on a line or space. This rule is independent of the key; building a triad in any key simply requires three notes placed in an ascending order from the root in intervals of 3 and 5. Try a few of your own. Place a note any where on the staff in voice one. Place the next note in voice two at an interval of 3, followed by voice 3, an interval of five, appearing on the staff as either line-line-line, or space-space-space. Very simple! The chords you've built probably don't move in a logical progression across the staff, so let's learn how to create a good smooth chord progression.

Building a chord progression

A good chord progression produces a good song because the very basis of a song is its chord progression. Thousands of different chords exist. So far you've only learned triads, but you should realize many others exist. Let's use triads to learn how to create a good progression

of chords. Look at the following example:



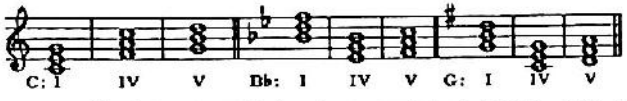
A series of triads have been placed ascending up the scale. If you play it, you'll notice that the chords built on the first, fourth, and fifth notes of the scale (written as I, IV, and V to indicate that we're talking about chords) seem the most prominent. These are the major triads of the scale and are the most important chords we will use for harmony.

The notes of a triad can be moved around

We use the I, IV, and V chords of the key more than any others. In fact, a whole song can be harmonized using only these three chords. First, you must understand that each note can be placed in ANY octave, and still be the same chord, only in a different pitch. So what characterizes them is their root (or the note of the scale on which they are built) which is C for the I, F for the IV, and G for the V in the key of C major. You might be wondering why I've used Roman numerals to designate the chords instead of using C, F, and G. The Roman numerals depict the chords in any key.

The names of triads are independent of key

Remember the discussion earlier on scales? The above example uses C for the root of the I chord. In the key of Bb, the first note of the Bb scale is the Bb. So a I chord in the key of Bb starts on a Bb. The I, IV, and V chords can be found by writing the triads in ascending order as shown above, and picking out the first, fourth, and fifth chords. We can see that using Roman numerals can show the chords in any key, not just one. Here're some examples in different keys:



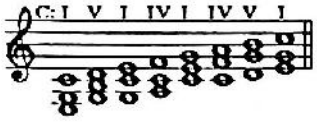
Harmonizing a scale

Assume that we want to harmonize a scale. We find certain notes of the scale appear in the chords which we know. Here's a list of the chord spellings when C major is used:

I Chord: C E G
IV Chord: F A C

V Chord: G B D

To harmonize a note of a melody, we pick a chord that has a note in it that is the same as the melody note. Therefore, we shouldn't use a IV chord if we plan to harmonize to a G. But in the same situation, we could use either a I or V because they both contain a G. Here's an example of a harmonized C major scale:

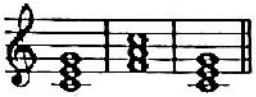


Most songs are harmonized so that the beginning and ending chords are the I chord, and a V chord should occur before the last I chord at the end.

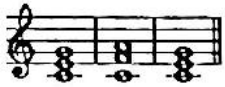
That's starting to sound like music! We could harmonize with whole notes only, but that isn't very interesting. We could use half notes or quarters, but a combination of lengths allow a greater variety of sound. The harmonization can have a rhythm, but it should be simple because it is written to complement the melody, not draw attention from it.

Making chord transitions smoother

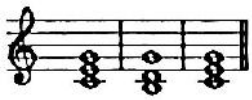
We can work for a smoother transition between chords by applying another rule. Look at the three chords below, a I-IV-I combination which occurs quite often:



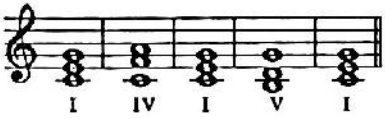
To execute this transition, you see we move all the notes up four notes from C-E-G to F-A-C. Notice that the note C occurs in both chords, so it would be simpler never to move it, making a much smoother transition. Instead, it would look like this:



Always move to the nearest tone when moving between chords. Here's what a I-V-I move would look like using this rule:



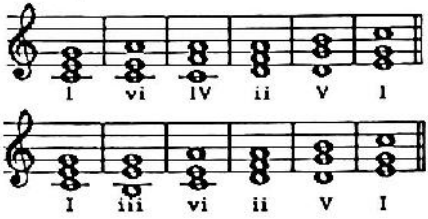
A longer progression might help you understand better, so look closely at this five chord progression:



Plus, let's cover another key--F. Look at this five chord progression, carefully studying the note movements to see how they've been moved as little as possible.

In professional music, many different chords are used to harmonize the melody. For any given tone, well over 25 different chords could be written to complement it. I've taught you very simple harmonization so you can expand your knowledge. But as an example of other good progressions, I'll write a few examples for you to study and use. Here they are:

Some examples of chord progressions



That concludes our theory lesson on harmonization. For now, practice what you've learned, and even try a simple song using a melody and the harmonization techniques you've learned here. You should be able to produce some nice sounding songs.

NOTES

Chapter Seven
The Magic of MIDI

In the late sixties Robert A. Moog produced the first commercially sold synthesizer called a MemoryMoog, capable of playing only one note at a time, and completely composed of analog circuitry. Mr. Moog's first synthesizer could play a single note, and had only one resident instrument. The instrument was "programmed" with electronic slides similar to the ones used to control the volume on most modern day machines. Then came digital synthesizers which were computers with only one output: sound. Digital synthesizers could store many instrument sounds, often called patches, and weren't affected by environmental changes like their analog counterparts. Soon after digital synthesizers came MIDI, and now we have Lyra.

Definition of MIDI

MIDI, an acronym for Musical Instrument Digital Interface, is a complex set of messages composed of instructions that can control an electronic musical instrument. The most common electronic instrument is a synthesizer, but MIDI can also control such instruments as drum machines and bass machines. Although synthesizers have many different options which don't exist on all other machines, MIDI has remained standard. If a company designs a synthesizer capable of some new function, the International MIDI Association defines a new MIDI message to implement the new function, and all following instruments must use the new message. If a synthesizer doesn't have a particular function, no MIDI messages are implemented for that function. In fact, MIDI is so standardized that the chart displaying exactly what MIDI messages are used is the same in each manual. Synthesizer manufacturers must follow very strict standards if they want the IMA (International MIDI Association) to give their synthesizer the MIDI seal, and an ID.

MIDI synthesizer ID

ID? Yes, each synthesizer has its own MIDI identification. This identification has many uses; synthesizers are classified first by company, and then by model. For instance, let's consider my Korg DS-8. Korg's company

ID is 42H (H for hexadecimal. I prefer the $ notation which precedes a hex number, and will commence using that notation), so all Korg synthesizers' are first identified by $42, the Korg ID. Next, the IMA has assigned the DS-8 synthesizer an ID of $13. So together, the DS-8 is identified by the two hex numbers $42 $13 which no other synthesizer shares. Older synthesizers are phased out after they become less popular, and their ID is assigned to a newer model. Almost all synthesizers have a unique ID because no company has produced 256 different synthesizers ... yet. "Why would the IMA go through all the trouble to identify each synthesizer", you might ask.

The reason for having synthesizer IDs

Synthesizers are identified for various reasons that the IMA correctly predicted when they designed MIDI. All system exclusive messages (more later) contain the synthesizers ID. Why? Let's create a hypothetical system with three synthesizers and a drum machine. Suppose our system is composed of a Korg M-1, Yamaha DX-11, and a Casio CZ-101, plus a Korg DDD-1 (Dynamic Digital Drums) drum machine. They are all connected in a single line through a series of MIDI cables in a manner that all MIDI data reaches all synthesizers with the M-1, first; DX-11, second; CZ-101, third; and the DDD-1, last. To do this, a cable leaves the CoCo serial port and enters the MIDI IN on the M-1. Another leaves the M-1 from the MIDI THRU port, and enters the DX-11's MIDI IN port. This continues until the last machine, the DDD-1, is connected to the CZ-101's MIDI THRU (the MIDI OUT might be used instead of the MIDI THRU). Assume that within a song, we wanted the CZ-101 to stop playing, and load a new instrument patch. We would first send out a system exclusive request with the CZ-101's ID requesting the patch load. The first synthesizer that receives the request is the M-1 because it's first in the line, but it ignores the request because it contains an ID different from the M-1's. Next, the DX-11 receives the request and also ignores it because it contains a different ID, but now the CZ-101 receives the request. As it examines the message, it finds it's own ID within the message, and responds to the message by executing the function. Lastly, the DDD-1 receives the

message, ignoring it also because of the different ID. As you can see, IDs are very useful in a multi-instrument system.

Throughout this chapter we'll slowly cover all the common problems that can arise when you use Lyra with you synthesizer, plus a great number of nice techniques that will allow greater flexibility in your songs. Let's start with some basic terminology, and synthesizer functions.

As you can see, the IMA has taken great pains to identify all synthesizers claiming to perform MIDI functions. As stated previously, the first synthesizer could play only one note at a time; today's synthesizers can play up to 16 separate notes simultaneously. Recording music from the old machines was a tedious job because the musician would play the music using only one note at a time. It required many studio hours for a musician to play a song with the right voices, and now Lyra can do it for you!

What velocity sensitivity is

Velocity sensitivity is used in MIDI jargon in place of "can respond to volume changes". If a synthesizer is velocity sensitive, it can play different volumes through the MIDI and the keyboard. From the keyboard, the strength of the key press determines the volume of the note, but in MIDI, each note contains a volume setting. Lyra allows you to choose different volumes as discussed earlier.

What multiphonic ability is

The term used to describe how many notes a synthesizer can play simultaneously is called multiphonic ability. Some electronic keyboards are monophonic with the ability to play only one note, hence the "mono" prefix. The opposite of monophonic is polyphonic which is a musical term meaning a song with more than one voice. A 4-note polyphonic synthesizer can play four separate voices, a 6-note synthesizer can play six separate voices, and a 16-note polyphonic synthesizer a total of sixteen voices (I personally cannot reach sixteen separate keys, proving this ability was patterned for MIDI only). Most synthesizers selling on today's market are 8-note polyphonic instruments. Several 16-note polyphonic instruments exist, but synthesizers are still used primarily as hand-played instruments, not for programmed music, and 16-notes is an overkill for a keyboardist. The market has

settled for an 8-note medium. Timbral ability goes right along with polyphony.

What multi-timbral means

The word timbral stands for timbre which means "sound quality." Multi-timbral synthesizers can play more than one instrument patch at a time along with being polyphonic. Usually, the number of instrument patches the synthesizer can play matches the number of voices it can. Companies often describe an instrument by saying something like "8-note polyphony, multi-timbral synthesizer"; they're assuming you'll realize it can also play 8 different instruments at once. Multi-timbral synthesizers can offer a large number of different modes for a performing musician, like split and layered.

What non-multi-timbral synthesizers are like

Non-multi-timbral synthesizers can play only one instrument on all of its voices. They can store many different patches, but can play only one at a time. Vocabulary describes how many patches a synthesizer can store and utilize at a time. Older synthesizers like the Yamaha DX-9 (which isn't very old at all) could store only 20 instruments at a time, and used a regular cassette tape to store others. My Korg DS-8 stores 100 instrument patches at a time, so it has a larger vocabulary than the DX-9. Some store more than 250 patches at a time! Because multi-timbral instruments can play several different instruments at a time, they allow the musician more flexibility in keyboard modes.

Multi-timbral have several unique capabilities

Multi-timbral synthesizers can combine voices in various ways to create effects that the musician can control. Since the instrument can mix patches together, several different options are available to use. Non-multi-timbral synthesizers do not have these modes, so in this discussion of keyboard modes, I'll be addressing only synthesizers with the multi-timbral ability. Four common keyboard modes exist: single, layer, split, and multi. The first is single.

The "single" mode

In the single mode only one patch is played at a time, meaning any key pressed will produce the same sound with that sound depending on the current patch choice. In this mode all available synthesizer voices (not necessarily Lyra voices) can be played at the same time. In this discussion, I'll use my Korg DS-8 with 8

multi-timbral, polyphonic voices. With this particular machine, I have eight voices available to me in the single mode, and I can hear them all by pressing eight keys, but only in one patch. Because it is a multi-timbral synthesizer, it can act just like a non-multi-timbral machine in this mode.

A multi-timbral synthesizer must receive voice information for its voices on separate channels. In a non-multi-timbral instrument, several voices of information can be sent through any of MIDI's sixteen channels. To set up the multi-timbral synthesizer to receive its voices in this mode, each voice must be sent on a separate channel. In the case of the DS-8, I can choose the single mode, and tell Lyra to send the eight voices through channels 0,1,2,3,4,5,6, and 7. The next mode is called a split.

The "split" mode

In the split mode, the keyboard can be split into two sections with each section playing its own patch. Both patches are chosen by me. I can change where the split occurs. For instance, suppose I split it at the E above middle C, assign the lower section as funk bass, and the upper section as jazz guitar. Now the bass keys play a bass instrument, and the treble keys a lead instrument. In addition, you can usually transpose both sections up or down to the complete range of the synthesizer. On some synthesizers the split mode is called the double mode. Multi-timbral synthesizers are very versatile, and the layer mode is no exception.

The "layer" mode

In the layer mode, the synthesizer "stacks" two patches on top of each other and plays them simultaneously any time a key is touched. A bell can be stacked with a piano to produce a bellpiano, or a cello and a violin to produce a string duet. Stretch your imagination; put a laser sound with Granny's Hammond organ! But layering does have a disadvantage: voice stealing. Each time you stack another instrument, the number of simultaneous voices is cut in half. That brings us to the last mode.

The "multi" mode

The last mode, multi, allows a different patch to be played on each of the synthesizer's different channels. In this mode, a patch is assigned for each channel, and usually the synthesizer is controlled by a sequencer. Lyra,

an eight voice sequencer, fits very nicely with a multi-timbral 8-voice synthesizer. And a sequencer is exactly what Lyra is.

What a sequencer is

A sequencer is an electronic device that stores note information for several voices, and then later plays the notes through a MIDI instrument to create a song. In all sequencers, notes must be entered one at a time in a particular voice to create single note melodies. Then, by stacking several of these single note melodies on top of each other, chords are created. Each single note melody is played through one or more MIDI channels, into a synthesizer, and the song is played. Sequencers have two basic mediums: software and hardware.

Hardware sequencers

The first sequencers were hardware only. They still sell today because many musicians use them instead of a computer to enter notes into a song. Hardware sequencers usually are simple computers that perform only one program. Entering notes using a hardware sequencer is tedious, because often it is a process of assigning numbers for lengths and pitches, instead of graphic notes on a graphic staff. Most drum machines have a built-in sequencer to allow the user to enter drum beats for the various drums available. Imagine entering a song using only numbers. Lyra, on the other hand, is a software sequencer.

Software sequencers

A software sequencer runs on a general purpose personal computer, and accomplishes the same task as the hardware sequencer described in the above paragraph. Software sequencers usually provided a graphical interface instead of just numbers, and they also have the added advantage of printing the music in score form on a printer. I think you'll agree that Lyra's interface is much better than numbers! In addition, software sequencers can change as the author improves the program whereas a hardware sequencer can't be upgraded without the purchase of a new machine. Either way, a sequencer transforms the notes into MIDI messages so a synthesizer can use them.

We'll discuss how MIDI works as an introduction to events, but we'll examine only the very basics, leaving the more technical topics for your own study. I also assume

you have a knowledge of computer basics. If not, don't worry, you'll be able to learn everything you need to know to use events properly. But first, what are events?

What an event is

Events consist of a series of MIDI messages that perform a function on the synthesizer other than actually playing notes. Events can perform things like changing the keyboard mode, loading a patch, turning portmento on or off, and bending notes. Many more events exist, I've only named a few. To use events, the sequencer must send the series of bytes that performs the desired action on the synthesizer. Understanding how the MIDI protocol works will give you insight as to how events work.

All MIDI data is sent as "status" or "data" bytes

All MIDI data is sent in single bytes. Two types of bytes compose MIDI messages--status and data. Status bytes are eight bits long with the last bit always set to 1. Data bytes, also eight bits long, never have the seventh bit set on. All messages are made of combinations of these two bytes. A status bit always precedes data bytes, so most messages contain at least two bytes consisting of a status bit followed by at least one data bit. Real-time messages, messages that coordinate MIDI devices, consist of only a status byte, and may be sent at any time, even within other messages.

System exclusive messages

MIDI messages are further divided into two types for the synthesizer's use. The first is system exclusive messages, which contain the synthesizer's ID, and perform system functions. These are often preceded first by a request to perform the function, and then the message to perform it.

Channel messages

The second type, channel messages, also contains a subset called channel voice messages which can alter the status of the synthesizer's voices. Channel messages change the state of a channel. As an example, a note-on channel voice message consists of three bytes, one status byte and a two data bytes. The status byte identifies the note-on message and which channel is affected, telling the synthesizer that the next two data bytes contain the information needed to play a note. The first data byte tells the machine the pitch of the note, and the next tells the volume of the note (for velocity sensitive instruments). You don't to have worry about the note-on message, Lyra handles all that for you, but some

messages, Lyra doesn't.

Lyra events are the same as user-defined MIDI messages

Lyra allows the user to define four MIDI events which consist of one or more MIDI messages. With events, you must enter the message in by hand because Lyra doesn't have a preset message to send. A program change is actually a message, but Lyra sends it for you when it finds an instrument change marker. With Lyra's definable events, you're allowed a much greater degree of flexibility. But defining an event requires a little knowledge of MIDI messages, and how to read a MIDI implementation chart.

MIDI implementation charts

MIDI implementation charts all look alike. A MIDI implementation chart shows what data a synthesizer can recognize, and what data it can transmit. Here's an example of a chart:

FUNCTION	TRANSMITTED	RECOGNIZED	REMARKS
BASIC CHANNEL Power ON Setting Range	 1--16 1--16	 1--16 1--16	 Memorized
VELOCITY Note On Note Off	 O X	 O	 9n,v=1--127
AFTERTOUCH Keys Channels	 X O	 X O	

In the chart, an O means the synthesizer supports the function, and an X means it doesn't. If a value appears, it supports the function in the range of the values. The chart shows both the transmitted and recognized data plus remarks. The chart I've shown is very small, and shows only a few functions. A real chart must show all the MIDI functions defined by the IMA. In the above chart notice the aftertouch section; it is capable of channel aftertouch, but not key aftertouch. This means each key is sensitive to aftertouch but only through channels.

A MIDI event can apply the channel pressure. First, we

must make sure the synthesizer supports channel pressure, so we look on the chart for aftertouch and a O. We find it, so the synthesizer is capable of aftertouch. Check your own synthesizer manual to see if yours supports channel pressure. Next, we define the actual event.

An example of using a MIDI implementation table

Assuming that you have Lyra ready, click on the Event option in the MIDI menu. A window appears, waiting for you to enter an event. If any exist now, restart Lyra so they'll be cleared. Now, look in your synthesizer documentation under "Channel Messages" for the exact bytes to perform the channel pressure function. Here they are if you don't have them (plus a few other messages of interest):

Setting up Lyra

Status	Second	Third	Description	ENA
1101nnnn	0vvvvvvv		After Touch	C
1011nnnn	01000000	01111111	Damper On	C
1011nnnn	01000000	00000000	Damper Off	C
1110nnnn	0xxxxxxx	0bbbbbbb	Bender Change	C

nnnn : MIDI channel Number (0 - 15)
xxxx : Don't Care
bbbb : Bender (0 - 64 - 127)
vvv : Volume (1 - 127)

I've listed the bytes that create four different channel messages. The first is the aftertouch we've talked about above, the next two control the damper pedal, and the last will allow us to bend notes as if we were using the pitch bend wheel. To use any of them we must enter an event in Lyra's event table.

We'll set up an event to preform the aftertouch. The cursor should be resting on the blank description line. Type "AftrTch". When you tap the down arrow key, the cursor moves over to the next spot, a number directly before a dash. This is the number of bytes in the event. Looking back up at the table, we see the aftertouch requires two bytes--the status byte followed by a single data byte. Type 02 there. Remember, these numbers are in hex. The cursor automatically moves over to the right of the dash, awaiting the first byte. The table above shows 1101nnnn for the first byte with nnnn being the

Setting up an aftertouch event

channel number. This number is represented in binary, so we must provided the channel number and convert to hex. We'll use channel number one, so the whole binary number is 11010000. Look in the back of this book where you'll find a chart showing the numbers 0-255 in binary, decimal and hexadecimal. Find 11010001, you'll see it's $D1, so type "D1" in the next spot. Take care here, the D must be a capital letter! The next byte appears in the table as 0vvvvvvv with vvvvvvv as the volume. We'll use a medium volume setting of 64 (decimal), which is $40, making the next byte 40. Enter it in the table by pressing 4 and then 0. Now the first event is entered in the table, and we could use it in the song. Let's try another event first.

Setting up a damper pedal event

This time, we will use the damper pedal. When the damper pedal is on, the notes are sustained until they fade. This is like the sustain pedal on a piano. Press the down arrow key until the cursor rests on the space after the "1:", this is the description area for event 1. Look at the table. We see damper on is a three byte message with the bytes being 1011 nnnn, 0100 0000, and 0111 1111. Enter "Dmpr On" as the description, and 03 as the number of bytes. Once again, we must supply a channel number; let's use channel 0. Now, use the number conversion table at the back of the book to find the hex code for the first byte.

What did you get? You should have substituted the channel number for the nnnn, making the byte 10110000, and then found the hex representation for the byte ($B0). If that's the hex number you figured, enter it in the event table; if not, go back over it until you understand it. Now, find the second byte.

Did you get $40? Good. That's the correct byte. The third byte is 01111111. Find it's hexadecimal representation ($7F) and enter it. When we place the event 1 marker in the music, the notes will be sustained, but they will stay that way until a damper off message is received. Try entering the damper off event by yourself. Enter it as event 2.

When you're finished, event two should look like this:

2:Dmpr Off 3-B0 40 00

which will turn off the damper pedal. You should now have entered three events. An aftertouch event, a damper on event, and a damper off event. But we haven't entered an event to turn the aftertouch off. There isn't a specific MIDI message to turn aftertouch off; we must use an aftertouch message with a volume of 0. Try it yourself. Here's what event 3 should look like:

An event to turn aftertouch off

3:ATOff 2-D1 00

That will turn the aftertouch off. It's pretty simple, isn't it?

Now the four events can be entered anywhere in the song by typing the event key (E). After tapping the E key, the event table will appear. Just type the number of the event you want performed, such as 0,1,2 or 3. How about the note bender? Let's look at it.

Entering an event into music

The note bender affects a channel, and is given three bytes. In some synthesizers, it receives two data bytes, giving it a 14-bit resolution, but the Korg DS-8 allows only one data byte, so the first is ignored. If your machine's documentation lists the three bytes as 1110 nnnn, 0bbbbbbb, and 0bbbbbbb, then it uses the full two bytes for the pitch bend. The pitch bend will work just like the pitch wheel on your synthesizer by raising or lowering the pitch of the note. The notes will stay bent until you send another pitch bend event returning it to the original value. Notice the range of the pitch bend for the DS-8 is listed as 0-64-127. The value of the wheel when it's centered is 64, so to bend up supply a number larger than 64, and to bend down supply a number lower than 64. Remember though, you must return the pitch bender to 64 or the notes will stay at the bent pitch. I'll give you the information, and you create the events. Suppose we want to bend channel 1 up to 120 somewhere in the song, and bend it down to 55 later in the song. You create the three events called "Bendup", "Benddwn", and "Bendoff." When you're finished look at the answers below:

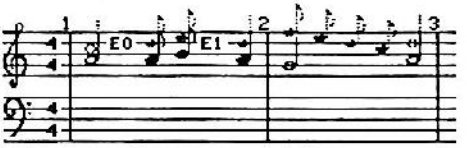
The note bender MIDI message

0:Bendup 3-E1 00 78

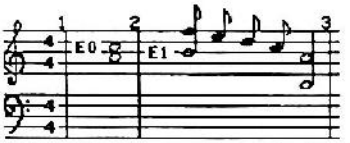
1:Benddwn 3-E1 00 37

2:Bendoff 3-E1 00 40

That's what the event table should look like. Now let's create a small passage that uses them. Here's what it looks like:



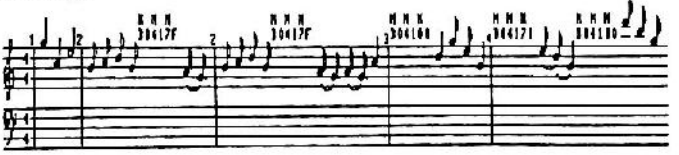
Play it through MIDI. Did it work? Usually, a synthesizer will bend evenly along the duration of the note following the event marker; your synthesizer may not. Change the passage to this:



Did the bend take longer on the whole note? A little experimentation will give you some answers as to how your synthesizer will bend notes through MIDI. All the events we've covered so far have only been three bytes long. We could just put three MIDI byte option markers instead, leaving an event slot for a larger event.

Using the MIDI byte option

The MIDI byte option allows you to send any single byte to the synthesizer. If the three bytes are sent with no interruptions between them, they will, in effect, send a message. Byte options are easy to use. After placing the cursor in the correct position of the staff, press the M key. A window will open asking for the byte to send. Type in two digits, creating the hex number to send. An M with the number you entered will appear on the staff. During MIDI play, Lyra will send the byte out when it reaches it. The following passage will turn the portmento on using MIDI bytes options, and play a single note melody:



Many other channel messages can be used as events. Here are a few:

portmento on - 1011nnnn 01000001 01111111
portmento off - 1011nnnn 01000001 00000000
pitch modulation - 1011nnnn 00000001 0vvvvvvv
timbre modulation - 1011nnnn 00000010 0vvvvvvv

Using the panpot to create stereo sound

If you have a synthesizer with dual outputs for stereo sound, you can use an event to set the panpot on all eight voices. Panpot is defined as which stereo side the output of the voice will be sent to, either from A,B, or A+B. A should be from the left speaker; B, from the right speaker; and A+B, from both. Look in the channel messages chart, you'll see four messages from panpot called A,B,A+B, and A+B. There is no difference between the two A+B messages unless noted in your synthesizer's manual. Notice that each panpot message requires three bytes, and you may ask how we can get one event to set the panpot for all 8 voices. Mr. Hands has given us the provisions for events longer than fourteen bytes.

Using a event disk file

If the byte count, the number just before the dash, is an SF (15 decimal), then Lyra will look for a disk file with the name given in the event description with an extension of EVN. For example, if the name of the event is "PANPOT" then Lyra will try to load an event file called "PANPOT/EVN." All the bytes in the file will be sent to the synthesizer through MIDI. Because disk access is so slow, you should only use an event longer than fourteen bytes at the beginning of a song. This is a good way to initialize the system, set up the synthesizers, or load in some patches. You must create the file using a short BASIC program or file editor. Here's a short BASIC program that will write an event file for you:

An example of how to create an event disk file

```
100 ' CREATES A LYRA EVENT FILE
110 INPUT"EVENT NAME ";EN$
120 EN$=LEFT$(EN$,8)+"/ENV"
130 OPEN"O",#1,EN$
140 READ F$
150 IF F$="*" THEN 180 ELSE F=VAL("&H"+F$)
160 PRINT#1,CHR$(F);
170 GOTO 140
```

```
180 CLOSE #1
190 ' MESSAGE DATA HERE IN DATA STATEMENTS
200
990
999 DATA *
```

Lines 200-990 should contain the bytes of the MIDI message to send to the synthesizer. Let's create an event file that will setup the panpots of a stereo synthesizer.

Setting up an event file to change panpots

We'll set up voices 1,2 and 3 to output from the left, voices 4,5, and 6 to come from the right, and voices 7 and 8 from both. Here's a table of the panpot messages:

1011nnnn 00001010 000xxxxx Panpot (A) C
1011nnnn 00001010 001xxxxx Panpot (A+B) C
1011nnnn 00001010 011xxxxx Panpot (B) C

In all cases the status byte contains the channel number, and the next byte in hex is $0A. The only difference appears in the last byte where only the last three bits matter; they have the value of $00 for A, $3F for B, and $60 for A+B. The first byte will start with the same value as voice one in the channels command. You may set the channels up however you like, but I'll use the setting of 01234567. Now let's construct the DATA statements for the above program. Here they are:

```
200 DATA B0,A,0,B1,A,0,B2,A
210 DATA 0,B3,A,3F,B4,A,3F
220  DATA B5,A,3F,B6,A
230 DATA 60,B7,A,60
```

Run the program to create the file we need. Now we just have to place the event marker at the beginning of the song.

Before we can examine the system exclusive messages, we need to talk about synthesizers in general. The higher quality synthesizers have many options and functions that must be set to receive the correct MIDI information on the correct channels. The options you've chosen with Lyra must agree with your synthesizer.

MIDI has four ways to pass data across channels. The trend lately has been to include only two of these options, but some machines can be set for all four. In the

first, *omni-on poly,* voice messages are received from all channels and assigned to the synthesizer's voices polyphonically. (When a synthesizer assigns voices polyphonically, it follows a very strict procedure. If a voice is not playing, it assigns the new note to the first empty voice. If all of its voices are already playing, it shuts off the oldest note, and assigns the new note to that voice.) The second method, *omni-on mono,* receives messages from all channels, but controls only one voice. In the third method, *omni-off poly,* messages are received from one channel and are assigned to voices polyphonically. In the last method, *omni-off mono,* messages are received in channels N through N+M-1, and assigned to voices 1 through M, where M is the number of voices, and N is the start channel (normally 0). Most modern synthesizers simply use omni-on or omni-off, and assign voices polyphonically. I suggest you turn the omni on, so you can assign which channels to send data across with Lyra's channel option. With omni-off, you must tell Lyra and the synthesizer which channel to send the information across; they must match.

The omni-on poly mode

The omni-on mono mode

The omni-off mono mode

Another option found in most synthesizers deals with keyboard, joystick, and pitch wheel control. If a synthesizer is set with the *local* on, it responds to the keyboard and joystick control. If local is off, it controls other synthesizers connected through the MIDI OUT port, and has no output itself. Most likely, you'll want the local on. Both omni and local can be controlled through MIDI using an event.

The next option we'll cover often causes problems to people just beginning to use MIDI. Synthesizers, like MIDI, can filter certain types of data to ignore, and you must make sure the synthesizer is set to receive the correct data. Lyra allows you to filter byte options, channels, events, instrument changes, and volumes. When Lyra is filtering byte options, events, instrument changes, or volumes, it doesn't send the MIDI messages to the synthesizer. When it is filtering channels, all information will be sent on one channel. A MIDI machine filters information also, but in much larger groups.

Some synthesizers are capable of filtering MIDI data

All MIDI messages have been divided into four groups, called receive enable modes. In MIDI, receive enable modes are abbreviated with ENA. Look at the following lines from a recognized received data table:

Status	Second	Third	Description	ENA
1011nnnn	01111111	00000000	All Notes Off	A
1101nnnn	Opppppppp		Patch Change	P
1011nnnn	01000001	01111111	Portmento On	C
1011nnnn	01100000	00000000	Data Increment	E

What the different "ENA" letters mean

Notice at the far right the ENA column contains only one letter. Each letter stands for one of the MIDI filtering modes. The A stands for always enabled.

Messages with the A class cannot be filtered. They are always enabled unless the sequencer filters them because MIDI will not. No provisions for changing this are provided in the synthesizer.

The P stands for program change enabled and any messages with the P class will be filtered if the program change enable is off. If the enable is on, program changes are allowed. This option is parallel with Lyra's I filter.

The C stands for control enabled, because these options are the synthesizers controllers, such as the joystick, pitch bend wheel, pedals, and aftertouch. When one of these various controllers is used, the synthesizer sends one of the control class messages to change the music. If the control enable is on, controller messages will affect the voices; if it is off, they will not change the sound of the music. Make sure the control enable is on when you are using an event with the C class message.

The last class, E, protects your synthesizer's memory and programming. The E stands for exclusive enable, meaning system exclusive mode. System exclusive messages deal with the functions exclusive to a particular synthesizer. The IMA has assigned a system exclusive status message that informs the synthesizer that an exclusive message will soon occur. The IMA has also assigned messages to identify the system functions, but MIDI cannot set a standard on exactly how system exclusive messages should be executed because synthesizers are so diverse, all with different hardware and software. For

instance, the DS-8 stores 100 voices, while the Yamaha DX-9 only stores 20; therefore, a MIDI message that was standard could not load the voices for both synthesizers because they store a different number of patches. The manufacturers are responsible for implementing the system exclusive MIDI messages for the particular synthesizer, because if MIDI set standards for system functions, all synthesizers would have the same basic features! MIDI does handle it well.

System exclusive events

To accommodate system exclusive messages, MIDI takes two steps to perform the function. Some synthesizers do not require a request, but the majority of machines do use them. First, MIDI sends a request to the synthesizer that requests to perform a system function. If the synthesizer is capable of executing the function, it acknowledges the request by setting itself into the correct modes to accommodate the function. If it receives a request to dump its voices, it moves into the function mode, sets up its parameters, and awaits the next MIDI message.

After sending the request, MIDI now sends the message to perform the task. When the synthesizer receives the message to perform the function, it executes the task. Both the request message, and the function message contain the synthesizer's ID. A sequencer can ask for a synthesizer's ID by sending an ID request message, and the machine will respond by returning its ID. Although Lyra doesn't do it, a sequencer can actually find out which synthesizers it is using by simply asking! Then, using a database, the sequencer can look up each synthesizer's particular functions and create a menu for the user that contains each synthesizer's functions! But believe me, sequencers that do that cost more than a whole CoCo system. Let's try a system exclusive event.

Trying a panel mode change

We'll try panel mode change. It is hard to choose a good system exclusive message because synthesizers are so different. If you have an electronic keyboard instead of a synthesizer, you probably can't do any system exclusive events because they just aren't flexible enough. I think it's safe to assume all synthesizers have a function mode, so we'll use two events to change the panel mode into

the function mode. The first event will be the request, and the second will be the function message.

I will again use the DS-8 as an example, but you must supply the correct bytes and format for your synthesizer. A system exclusive message starts with the exclusive status byte of $F0. Now, any number of bytes can be sent to MIDI, and the message ends with an $F7. First, we send the request for a panel mode change.

Open the event table in Lyra by choosing **Events** from the **MIDI** menu. Check your table for the correct number of bytes. Here's what the DS-8's exclusive messages look like; you'll find yours are much different:

```
Request:  11110000  Exclusive status
          01000010  Korg ID 42H
          0011nnnn  Format ID (n=channel)
          00010011  DS-8 ID 13H
          00010010  Panel Mode Request
          11110000  EOX

Function: 11110000  Exclusive status
          01000010  Korg ID 42H
          0011nnnn  Format ID (n=channel)
          00010011  DS-8 ID 13H
          01001110  Panel Mode Change
          00000ddd  Panel Mode Data
                    ddd=000 : Program
                    ddd=001 : Voice Parm.
                    ddd=010 : Combi. Parm.
                    ddd=011 : Function
                    ddd=100 : Combi
          11110111  EOX
```

As you can see, the DS-8 requires 6 bytes in the request and 7 bytes in the function, so we can use two events. I always use channel 0 to send exclusive messages across, but you may use any channel your synthesizer normally receives. In the first event, I would just add the bytes to form the request. In the second event, I would supply the bytes from the function, but would supply $03 for byte six to specify the panel mode.

Changing to the function mode in the song would be

worthless without a parameter change exclusive message, which would change some parameter in the function mode, followed by a panel mode change back to the program mode.

Checklist of things that can prevent full MIDI communication

If you have been having problems getting a full eight-voice output from your synthesizer, make sure to check the things above. If your synthesizer is a multi-timbral machine, follow this checklist.

1. Only one voice? Make sure Lyra is sending each voice on a different channel and the synthesizer is set for omni-on. The Channels should look like this: 01234567.

2. Only one instrument plays even though different patches are assigned to different voices? Make sure the synthesizer is in the multi keyboard mode, and no. 1 above is satisfied.

3. No sound at all? Make sure your cable is correct, as in Chapter 2. If you haven't used the resister, try it. Check amplifier cord for shorts, and make sure No. 1 above is satisfied. If it still persists, have the synthesizer and amplifier checked.

If you have a non-multi-timbral synthesizer, follow this check list:

1. Only one voice? Make sure Lyra is sending each voice on a different channel and the synthesizer is set for omni-on. The Channels should look like this: 01234567. Or try turning omni-off and sending the voices all through the same channel. Make sure the synthesizer's chosen channel and Lyra's chosen channel match.

2. No sound at all? Make sure your cable is correct, as in Chapter 2. If you haven't used the resister, try it. Check amplifier cord for shorts, and make sure No. 1 above is satisfied. If it still persists, have the synthesizer and amplifier checked.

Here are some common problems for both:

1. No instrument changes occur? Check Lyra's filter to make sure the I is not present, and make sure the

synthesizer's program change enable is on.

2. Aftertouch, joystick, damper, or pitch bend wheel events don't respond? Make sure local is turned on, and control enable is on. Also check to make sure Lyra is not filtering events.

3. The synthesizer no longer works after working for a while? The synthesizer must be reinitialized because certain codes sent by Lyra have shut down sections in the synthesizer. Turning it off and then on will usually fix the problem.

If the above checklists don't help, try talking to your dealer, or getting some help from a local Lyra user. If all else fails, you may write me at the address found in "About the Author".

Chapter Eight
Compositional Techniques

I remember taking composition class using the piano as the medium of music while scribbling on manuscript paper until I got smart--I used a synthesizer. That certainly helped out because it had a five-hundred note memory in which I could store a short song, but I would have sold my Stratocaster to get my hands on Lyra. Lyra makes composing so easy; I can write a song in a fifth of the time it use to taking me either using a guitar or a piano. And I don't have to scribble even one note on a piece of paper! The techniques discussed in this chapter will help you when writing your own songs, but they only add to Lyra's ease. All of the transcription techniques discussed in Chapter 5 apply here as well, and some from here will apply there, but the ideas presented here concentrate on getting an idea from your mind onto the computer screen.

Different ways composers get ideas into reality

Composers write music in many different ways. Mozart could compose a whole symphony in his head, later writing it down on paper. Beethoven, on the other hand, could barely get the ideas from his mind onto paper. Edward Van Halen simply plays from the top of his head and captures it on tape, then later refines it into a final form (just think what Mozart could do today!). Some musicians start with a melody and later add the instruments, others think of the song in a semi-final form. Whatever the way, Lyra has a lot to offer. I think of musical ideas with instruments, notes, effects, and all, but it would be just as easy to later experiment with different patches to find the correct instruments.

Composition on Lyra starts with setting up an instrument table

If you are like me, you probably fill the instrument table first, and then begin the composition. If you don't, I have a suggestion to make. Pick some instruments closest to the ones you're thinking of in your mind. In fact, train yourself to pick your instruments first. Writing for a violin and a trumpet requires different techniques. The violin can play two notes simultaneously, and the trumpet only one. The trumpet has a fast attack, or even a stabbing attack, but the violin has a slower attack,

Music tends to reflect the instrument it was intended for

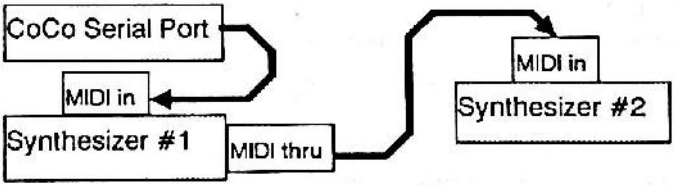
requiring more time to reach its sustain level. Writing for these two instruments is very different; however, substitute voices with similar attacks could work to get you started with only one drawback. We tend to prefer music written the way we hear it first, because that sounds most natural to us. That is why song re-makes often don't do very well with an older audience who have heard the song before. We can write a melody and then experiment with instruments before we write the harmonization.

Listening to individual voices

Lyra gives us a method to listen to individual voices even after we have added seven notes of harmony. By turning off the voices we don't want to hear and then choosing the MIDI play option, only the displayed voices will sound. In a setup with more than one synthesizer, in which over sixteen voices are playing, this is a very nice option. It will also allow you to concentrate on a section of the band you're using, such as the brass, or guitarist. Wait a second! Lyra only has eight voices, how can we get more than that?

Extending Lyra's capabilities

Lyra cannot send out more than eight voices at a time, but with a few MIDI gadgets, we can extend its abilities. One way is to record eight voices and play them back with your song. That's very hard because getting the tape and Lyra to start at the same time is difficult, if not impossible. All we need is a storage device that can store MIDI messages, and send them to a synthesizer at Lyra's command. Then, by setting up the synthesizers to receive information on different channels they can each start at the same place in the song at the same time. For instance, suppose we have eight voice synthesizers connected to the CoCo in this manner:



We can set up synthesizer 1 to receive information on channels 0 through 7, and synthesizer 2 to receive information on channels 8 though 15. In between the two synthesizers we would have a device that would store MIDI data sent to it, and later send the data on channels

8 through 15. We could then load one file that sends information out on voices 8 through 15 and program synthesizer 2 to play. Next we would load the second file which would send information directly to synthesizer 1. Because they are connected through the MIDI THRU port, both would receive the message to play at the same time. I admit, there is a little more involved than that, but that's the general principle. It could also be done with a MIDI splitter that would take the same information from eight channels and send it to several MIDI devices. Ask your dealer, I'm sure he can sell you something (be careful though, because he'll do his best). Now, to the editing part.

Best not to use the Append command when composing

In composing a song, we first must apply the techniques discussed in Chapter 4. You should always use two file names for intermittent saves, save before performing an Append or block operation, and keep a song log. But you can't use the Append command in the same way. In composing, it is crucial to listen to changes between song sections. In Chapter 4, we broke the song up into separate files at the transitional sections because they were already written. In composing we must listen to the end of the old section and the beginning of the new section with no breaks in between, making sure the transition works. Instead, we use the Append to store rhythm lines.

Append can be used to store repetitious rhythm or accompaniment sections

When writing a section of the song, the accompaniment to the melody often repeats while the melody plays different material. We can first enter the notes of the accompaniment and save them in a file. Then we can begin writing the melody until we reach the end of first repetition of the rhythm. We simply Append the rhythm file and continue the melody. Using Append in this manner is much easier than Block copies or writing the whole rhythm section first. But Block copies must be used during transitional sections.

Use Block Copy for transitions

When writing a transition it is best to use a block copy, and turn off the voices we don't wish to copy. This allows us to hear the transition with the melody, rather than having it split into two files. Just exercise two precautions before performing any block options. Number one,

Precautions to follow when doing block copies

save the file before you even mark the block. I guarantee you'll accidentally place the block in the wrong spot occasionally, and this insures you can just load the file before you performed the option, and then try the operation again. Number two, always check to make sure all voices are completed up to the point you wish to enter the block, or the voices will move to fill in the empty gaps and you must then find out what went wrong and where! Of course, if you've saved the file before the operation, you can just load it, correct it, and carry out the operation again.

Using the voice copy command

Use the voice copy command to your advantage. Very often you'll want several instruments playing the same line. Enter the melody in one voice, and just copy it to all the others. This can be used also when one voice is playing a variation of another. It is much easier to edit a closely related existing voice, making the changes as needed, than to re-enter the whole thing from scratch. For those using a multi-timbral synthesizer, don't forget it already has a layer mode built in that works just fine for duets or quartets playing the same notes. Just set up an event to switch the synthesizer into the layered keyboard mode, and enter the event marker at the correct time, returning to the multi mode after the section.

Enter volume and tempo changes as you go along

As a general rule, I also suggest you enter volume changes as they occur in the piece while you're editing the section, not after you've finished the song. It will help your writing as you hear the song played in the correct tempo and volume. Often a section is finished, the volume changes are then added in, and the next time it's played, it doesn't sound correct at all. Tempo changes affect the music in the same way.

Implementing sustain pedal

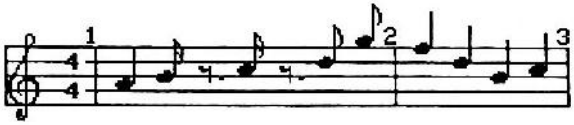
The pedal can be implemented as an event if the synthesizer is correctly set up for it. A non-multi-timbral synthesizer will respond to the pedal event correctly with the omni on, but a multi-timbral synthesizer requires the keyboard single mode to use a pedal effect. And while in the single mode, only one instrument can be used at a time.

Staccato notes present a small problem for Lyra, but it

can be dealt with effectively. Look at this passage:

Implementing staccato on Lyra

It only contains two staccato notes, so it would be easiest to use a short note, and fill the rest of the time with rests. Consider the staccato quarter note. We can place a sixteenth on the correct pitch, followed by a dotted eighth rest, which together equals a quarter. We might want to make it a shorter staccato by using a 32nd note; then we add a dotted sixteenth rest and an eighth rest after it to get it to equal a quarter note. A sixteenth note plus a dotted eighth note equals a quarter note, and the short sixteenth would simulate the staccato note. Here's the passage as it would appear in Lyra to achieve the staccato effect:



A staccato section of a song presents more problems, but can be entered correctly in one of three ways--the hard way, the not-so-good way, and the good way. Depending upon the circumstances of the song, you should be familiar with all three. We'll start with the hard way.

Handling a whole section of staccato

If we have used all the voices, and have no empty ones, we must use the hard way or the not-so-good way. The hard way is entering all the notes in the above fashion, making each one a shorter note, such as a 32nd, and adding in rests to pause the correct length. For a passage of sixty notes, this gets very tedious.

The hard way: entering notes and rests

The not-so-good method is your best option if no other voices are empty. This relies on your synthesizer's abilities of voice programming. Here, you just switch to a different instrument that plays all notes as staccato. Assume we're writing a violin part that suddenly shifts into a long staccato passage. The player would begin to pluck the strings pizzicato fashion through the passage, so we could just switch to a pizzicato violin voice entering the melody as it appeared. Making a voice's attack, decay, sustain, and release all very fast should

The not-so-good way: changing the synth instrument

achieve the staccato effect, but it may also distort the voice, so the good method should be used when possible.

Using the Note Lengths option

Lyra's **Note Lengths** option produces a beautiful staccato for any instrument, and the editing is simple. This method creates the most satisfying staccato, but it requires an empty voice. The **Note Lengths** option allows you to change the length that each note is held. When you click on this option a window will appear that contains eight fractions (this time they are fractions and not time signatures) that represent the amount of time the note length of each voice is held. Beginners find this subject the hardest to comprehend, so I will cover it slowly. Each fraction in the window corresponds to one of the voices. They are numbered like this:

8/8 8/8 8/8 8/8 Voice No. (1) (2) (3) (4)
8/8 8/8 8/8 8/8 Voice No. (5) (6) (7) (8)

At Lyra's startup, they all contain an 8/8, equal to one, which is the full value for each voice. When the fractions equal one, all note lengths, such as whole notes, half notes, etc., are played to their fullest value. If the top note is decreased in a fraction, the note is held for a shorter amount of time than the note's original value. The value stays the same but the time the note plays is shortened. In others words, a quarter note still receives the same number of beats, but only a portion of that time plays. Let's consider an example.

An example of using the note lengths option

Suppose we're writing in 4/4 time where a quarter note receives a beat with four beats per measure. Placing four quarter notes in voice one on the staff completes a measure, and when the passage is played each quarter note plays for the full beat. Now, suppose we change the note length of voice one from 8/8 to 4/8, exactly half the value. Do this on Lyra, first placing the four quarter notes in voice one, and then changing the note lengths to 4/8. To change the note lengths, click on the **Note lengths** option from the **EDIT** menu, and press the 4 key. The 8/8 will change to 4/8 and all notes in voice one will still retain their full value, but the note will play for only half of it. Now, place a whole note in voice two, at an interval of two below the quarter notes. Now **MIDI Play** it using a good clear voice such as a trumpet. Listen

very carefully to try to determine what's going on.

The whole note in voice two plays for all four beats, but the quarter notes each play for only half their actual value while replaced by silence for the second half of their value. The **Note lengths** option doesn't change the note lengths, but simply changes how much time each note plays within its length. So to write a staccato section using this option requires you to define a voice with a 4/8 or 3/8 note length, and then switch to the voice playing the instrument in the staccato section.

Another example

Suppose we're writing a saxophone solo in a song. In our song we have used six voices, 1-6, with voice 1 as the sax voice. In the solo we decide a sixteen measure staccato section would create a nice climax to the solo, but sixteen measures is a lot of notes to hand-edit staccato notes. Instead, we decide to use voice seven to create the staccato effect.

It's a very simple matter now. In the instrument table we have assigned instrument F as the saxophone so now we begin to create our effect. First, we must fill voice seven with rests up to the point the staccato section starts either by entering whole rests or by using the **Fill voice** option from the **EDIT** menu. Once voice seven has the same amount of beats as the others, we assign it the instrument F for the sax. Now we enter the **EDIT** menu and select **Note lengths,** setting voice seven's to 3/8. This means the sax in voice seven will play for 3/8's of the notes value, and rest the other 5/8's. Now, we use voices one and seven to enter the notes in the staccato section. When we encounter a staccato note, we use voice seven to place the note in the solo, and when we encounter a normal note, we use voice one. Remember that both voices should have rests in them when the opposite voice is playing. They shouldn't play together unless you want two saxes, one staccato and one normal. You'll find this technique very useful, and it has one other very useful application.

Two ways of achieving legato

A song containing a legato section can also use this option. Legato is hard to achieve on Lyra, but two basic methods exist. One relies on the synthesizer's functions, and the other on Lyra's. As always, I prefer Lyra's

option, but I'm fair, I'll give the synthesizer a chance. The first method requires a little voice programming involving the portmento option. You must set the portmento of the legato instruments to a gradual slide that sounds natural, not synthesized. Then, use byte options or events to turn the portmento on at the beginning of the section, and off at the end. The only problem is that all voices will respond to the portmento, not just a selected few. I prefer Lyra's way.

I write songs with the idea of getting them on tape or record. On my album, some of the songs required five Lyra files using several different options. One even took seven with almost eight voices in each. Because my goal is to create songs on tape, I have developed a few techniques you'll probably find worthless; you probably want songs that Lyra can play by itself. This technique might be one of those, but it will work for some songs. This time our goal is to create a legato section, not a staccato, so we approach it differently.

Using the Note Length option to write legato

Once again, we must have an empty voice for every voice we want to be legato. In this case, we assign the normal voices a note length of 5/8ths or 6/8ths, and the legato voices the full 8/8ths. Then use the lower note lengths for all non-legato notes, and the higher note lengths for the legato notes. But, we must assign each legato voice a normal voice of the same instrument as we did with the staccato above. This will produce a very nice legato, but requires a lot of voices. When you're worried only about the final song on tape, that's no problem when you record several files on top of each other in a process called over-dubbing. This effect is costly on voices, but works well if your song has only five or six main parts, or you're writing to record.

Handling unusual time signatures

Sometimes I get in an unusually creative mode as a song enters my mind in a very odd time signature. I write sometimes in 7/8 time, 3/8 time, or maybe something like 12/8 time, 12/16 time, 7/4 time--hold it a second! 7/4 time? 12/8 time? "Lyra can't do those," you may be thinking. And you're right if you stick to the time signatures that Lyra provides. I can see the 7/8 time or 3/8 time, no problem there, but what about 12/8, 12/16

and 7/4? These are all possible if you apply the rules of music and the information presented in the theory chapters. These weird and wonderful time signatures occur often in nature, and very often in primitive music, such as African. Why should you limit your creativeness because it is a technique not immediately obvious? Instead, use those time signatures with a little extra work and some clever applications of musical theory. Let's examine a time signature in depth.

Time signatures explained

The bottom number determines which note length gets a full count. This number must always be equal to some note value, such as 2,4,8, or 16; no others are acceptable. In common time, a quarter note receives one count. Ignoring the top number for now, we can see that the bottom number determines speed. If we placed a 2 on the bottom, then a half note would receive a full count. If a song written in 4/4 time was rewritten in 4/2 time and played at the same tempo, it would sound twice as fast because all the notes have been divided in half. Why? If we were counting four quarter notes in a measure as four beats with a quarter receiving a full beat, we would be playing four quarter notes to create four beats. Now suppose we change the time signature to 4/2. Instead of a quarter note receiving a count, now it receives an eighth of a count because the half note receives a count. Eight quarter notes appear in a measure instead of four, so we have doubled the tempo. What happens if we tried it in 4/8 time? Can you answer that? We would double the tempo, making it twice as slow. So actually, as far as sound is concerned, playing the song at a tempo twice as fast would achieve the same effect as rewriting it in 4/2 time. Sure, now we count a half note as a beat, but that doesn't change the sound of the song!

The top number of a time signature

Now, let's examine the top number. The top number tells us how many beats per measure, establishing a unit for the cadence to follow. The top number, unlike the bottom, doesn't need to be a note length value; it can be any number used to establish the cadence (see Chapter 1). Problems arise with Lyra when this number is larger than the bottom. In music, the top number can be larger than the bottom, but not in Lyra. Don't worry though, it's only a minor inconvenience; there's always a way to

perform any time signature through the use of division and tempo.

The top number can be 2, 3, 5, 6, 7, 9, and 12, and the bottom 2, 4, 8, and 16. We have no problem until the top number gets bigger than the bottom, so we'll examine those first.

What to do when the top number is larger than the bottom

When the top number is bigger than the bottom, we must find a way to break the measure up into usable parts that Lyra will accept. Start by dividing the top number by two or three. If the number is evenly divisible by either of these, we'll have an easy job. When the number is divisible by either two or three, two or more Lyra measures will make a single measure in the given time signature. For a few examples, consider 9/4, 12/4, and 6/4. Look at the first one; 9/3. Nine isn't divisible by two, but is by 3 with the result of 3, so three measures of 3/4 time compose one measure of 9/4 time. Like this:

$$3/4 + 3/4 + 3/4 = 9/4$$

Moving along, we'll try the 12/4. Twelve is divisible by 2, but the result is 6 which is still bigger than 4, so we move on to the 3. The result of 12 divided by 3 is 4, a good number to use. In this case, three measures of 4/4 time equals one measure on 12/4 time. Catching on yet? Try the 6/4 time yourself, checking your result here:

$$3/4 + 3/4 = 6/4$$

One more thing to look at before we can continue. What about 12/2 time? Dividing by two gives us six which is no good, and dividing by three gives us 4, which is still no good! But it was divisible two, so try six. Dividing by six cuqals 2, giving us a good measure to use. Here's how:

$$2/2 + 2/2 + 2/2 + 2/2 + 2/2 + 2/2 = 12/2$$

Six measures to create one does take time, luckily 12/2 is a very rare time signature. The next question: what happens when it's not divisible by two or three?

Dealing with odd numerators

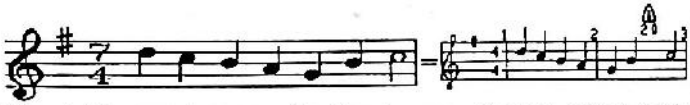
Times like 7/4 and 5/2 create real problems, but are not impossible. Through the use of tempo markers you can create even these! The plan of attack here is to find a time signature that gives us one more beat per measure, and then using tempo, speed the last two beats up to sound like one. Take the 7/4 time signature. What time

signature gives us one more beat than 7. The answer, 8/4, gives us the insight to the problem. Well, using the first rule presented above, we find we'll need two 4/4 measures to make the one 8/4 measure. But we want 7/4, not 8/4. Now think about this.

If we are in 4/4 time, and divide the tempo by 2 for the last two beats, tying all notes in the two together, don't we achieve 3/4 time? Sure enough! Making the tempo twice as fast for the last notes does indeed make them sound like one, giving us 3/4 time in a 4/4 measure. Can't we then add this onto the back of a 4/4 measure and get 7/4 time? Like this:

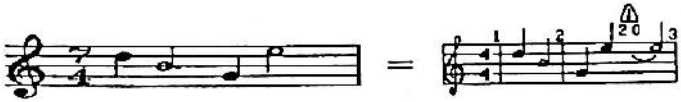
Double the tempo for the last 2 notes and you shave off 1 beat

4/4 + 3/4 (converted 4/4) = 7/4



The tricky part comes in the tempo change. First let's examine a simple example:

As you can see, both measures do have four beats, but the second measure will sound like it only has three due to speeding up the tempo. But the key is to also double the one beat of the 7/4 measure (for all voices). At the beginning of the next measure the tempo must be slowed down to normal again. Sometimes we must break one of

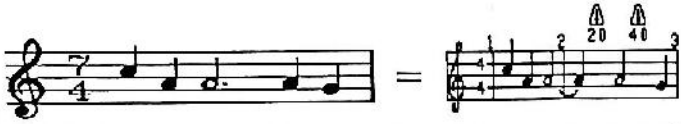


the 7/4 notes into two and tie them together in order to get the tempo marker in the right place. Consider this example:

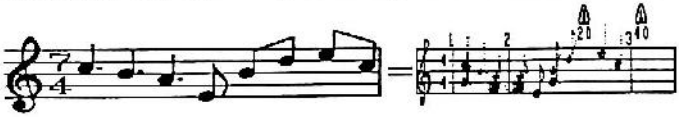
Here I had to break the 7/4 measure's half note up into a quarter note tied to a half note with the tempo marker in front of the half note, but Lyra doesn't create the correct tie, so avoid this by using the following techniques. We must speed up exactly 2 beats for this to work.

Sometimes, it's easier to speed up the measure somewhere else besides the last two beats. This would work on the problem above, avoiding the tie completely. Look at this example:

Here, the two eighth notes at the end of the measure make it too hard to speed it up there, so instead, I



doubled a quarter at the beginning of the measure, and performed the speed-up correctly there. Sometimes we



may have to break a note up in the 4/4 measure and tie it into the three beat measure to get the correct rhythm. Consider this measure:

This is much harder when using multiple voices, so you may have to speed up two eighth notes like this:

In this case, I have sped up two eighth notes from the original measure after converting them to quarters. It is easier to do a 4/4 then convert another 4/4 into 3/4, but if it's easier for you, you could place the tempo marker in the first measure of the pair. But as a basic rule, look at the last beat in the 7/4 measure and use the following method. Place the marker at the note before the last beat, and double all the notes that compose the last beat. Then, in the beginning of the first measure, make sure the tempo is slowed back down to the correct speed. That should do it every time, but it does take practice.

The 5/2 will work the same way, but using three 2/2 measures, and use the tempo-doubling technique for two beats.

Using "slurs"

Even though Lyra does not slur notes, it doesn't do any harm to put them in for clarity. As I mentioned before, depending on the synthesizer and its mode, it may accept ties of different pitches as slurs. But even if it doesn't, you may wish to place them into the music to show other

musicians that the notes should be slurred when played with an instrument. When writing a guitar solo, I always use slurs to show the guitarist what methodology of picking to use because often it is essential for speed sometimes to know where notes are slurred. The same rules apply to band or orchestra instruments; it doesn't hurt to place those ties in.

Writing optional parts in Lyra is easy

Another nice trick involves optional material a composer writes,but doesn't feel is necessary in the song. In this case, the extra voice or two may sound nice, but often a composer will leave it out to fit the song for a smaller group of instruments. With Lyra, you can write all the parts, including the optional ones, and then selectively turn off the optional material. A good habit to develop is to turn all voices used in a song to the current state (completely black) after the song is finished. This makes the display look nice, plus provides a security measure that someone won't accidentally place a note in the staff. When more than one voice is current, no editing can be done, so this assures an accidental slip-of-the-finger on the mouse won't insert an extra note in the song. But by turning on only the voices you want played, excluding the optional material, only the voices turned on or current will play. Then place a note in the **Annotation** that reads something like, "Optional material in voice 3," so other users will know to turn voice three on to hear the optional part. Unfortunately, this won't work for **TV Play** users.

TV Play Lyra user's are becoming rarer and rarer because they are all buying synthesizers! If you do use Lyra with only a monitor or TV, you're missing a lot. Keep your eyes open for a good sale on a handy little synthesizer. I guarantee a whole new world will open up to you. MIDI is alive and well, and happily co-existing with Lyra in the Color Computer. Many people have paid hundreds of dollars more to buy a computer, MIDI interface, synthesizer, and MIDI software, but thanks to Lester Hands, we get it all. A good synthesizer and a CoCo is all it takes. No reason to fuss with a MIDI interface, the CoCo's got what it takes. With a little time, patience, and work, we can compose to our hearts desire with no restraints.

NOTES

Chapter Nine
Musical Forms

Writing a book and writing a song have much in common. Using words enables an author to write sentences, chapters, and books. A composer uses notes to create melodies, harmonies, and compositions. Books have a clear form that the author has followed when presenting the information to his reader. And a song has a form that the composer has created to establish his musical ideas. A book makes little sense when read out-of-order, as a song makes little sense when played backwards, or from somewhere in the middle. Songs have a definite form that must be followed to portray the idea as it was meant to be heard. In this chapter, we will examine the architecture of music.

Most songs have a definite form

When listening to a song, we often hear rhythms that keep repeating themselves throughout the song. This is known as a cadence, and it feels natural to hear this cadence over and over again. Melodies also repeat, and we often desire to hear them again. Composers use repetition of melodies and rhythm when writing a song, and use them in a defined structure.

Much of musical form is repetition

In classical music, the name of a song immediately reveals the form of the song. Music in the days of Beethoven, Haydn, and Mozart had a definite structure that composers couldn't deviate from, or people would not listen to their music. When listening to a classical piece, predicting what will happen is very easy. But when we listen to modern forms of music, we find the music has become more complicated in form. We cannot predict trends in form, or see where it is going.

Classical forms are easy to predict

In music, the smallest unit is a single note. A group of notes with a rhythmic pattern is called a motif (sometimes spelled motive). Motives make musical phrases which are usually 2,4,8 or 16 measures long. Two phrases make a musical period, and these in turn make song forms. Arranging periods in various ways create major compositions.

Motif=group of notes

Phrase=group of motifs
Period=2 phrases

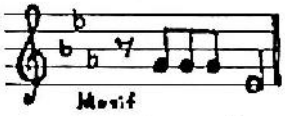
In most folk songs, the form is very simple. One or two

Folk and gospel music form

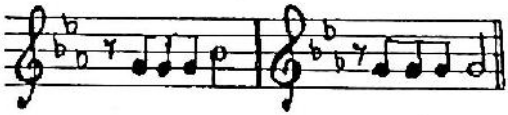
stanzas followed by a chorus or a refrain creates the whole song. This applies to most gospel music and church hymns. (Today, we often call a stanza a verse, but a verse is a single line of poetry. Several verses make up a stanza, but we have simplified the matter by dropping stanza, and replacing it with verse.) A composer may move a melody to a new key, change the mode from major to minor, or introduce counterpoint to complement rhythm; these are all methods used to create form, including repeating previous material.

Example of a motif

As an example of a motif we'll use Beethoven's fifth symphony. This work contains possibly the most well-known motif in history. Here it is:



This motif appears throughout this work well over a hundred times, sometimes without a change, and sometimes with no change but new instruments. At other times, the last note moves upward instead of down, or the rhythm is played on the same pitch, as in the following two examples:

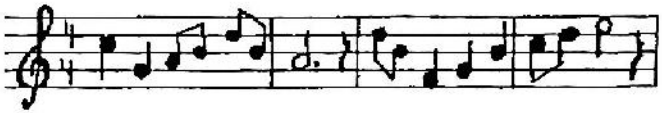


A motif, a small group of notes based on a rhythmic pattern, is the unit just larger than a single note. Next we have a phrase, as mentioned before, usually 2,4,8, or 16 measures long. A phrase gives us one musical thought or idea. In modern terminology, a phrase is called a riff, especially by those of us who prefer a fretboard to a keyboard. Two kinds of phrases exist: those that ask a question, called antecedent; and those which give the answer, called consequent. An antecedent phrase leaves the listeners up in the air because it does not sound finished. For this reason, we do not like to end a period with an antecedent phrase, so we write a consequent phrase finishing the complete period, creating the single thought. An antecedent phrase plus a consequent phrase

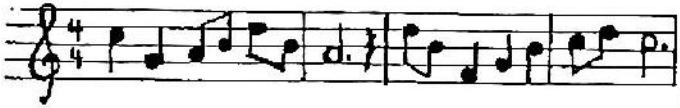
Antecedent and consequent phrases

equals a period. Here're examples of question and answer phrases:

Examples of phrases



Antecedent (question)



Consequent (answer)

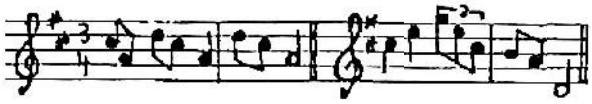
We must consider the most common ways of arranging periods into themes.

Consider the following eight measure song. It has two main themes consisting each of a four-measure phrase. The first theme is repeated, followed by the second theme, repeated. This is called binary form because it is based on two themes. These two themes can be arranged in any order. Here's the song:

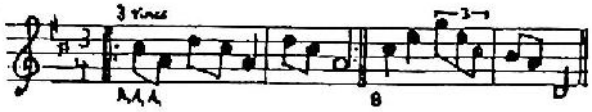
If we add a third theme, like this:

we achieve the ternary form, based on three themes. Once again, the themes can be arranged in any order. Often the composer may change the key or rhythm of the third theme to contrast it from the first two.

The manner in which the themes are arranged gives us the song's form. By using two contrasting melodies (A and B), we can create many interesting songs. Here are two melodies, each composed of two measures, that we will arrange in different order. We will be using the binary form because it uses only two themes.



Now let's arrange them in an A,A,A,B form:



An A,B,B,A form:

An A,A,B,A form:

Those are just a few examples. Try some on your own, or even write two of your own melodies. In studying music, we find thousands of different forms. We can not hope to cover them all, so we'll just do a quick study, spending more time on the major ones.

The canon form

The first is a *canon,* which is called "a musical game of tag." A melody is played while others play it again, but starting late. They are often called rounds. This is a popular form, but a simple one. Many songs use this form, but change the melodies a little. The new melodies start on the same pitch.

The fugue form

A *fugue* is a canon in which the voices do not exactly imitate the first, and start on a different tone of the scale. A four part fugue may start a melody on E, four measures later start it again on C, wait for four more measures, starting it again on G, and ending it by playing it once again four measures later on high E. Fugues are very complicated and hard to write, and the fugue master was J. S. Bach. It takes practice to write a fugue following Bach's rules.

The chorale form

The third is a *chorale* which is a simple melody with a chordal background, meaning simple chords as accom-

paniment. Most modern music uses a modified chorale form; we certainly can't call Eddie Van Halen's or Huey Lewis's chordal accompaniment simple. In classical music, orchestras often use a chorale to warm up.

A glossary of musical forms

Here're some forms you'll find today, mostly in classical music because modern music, like rock and country, almost completely uses the modified chorale form.

CONCERT DANCES - Serious music often based on folk tunes. To be listened to, not danced to. (You figure it out.)

ETUDE - A musical study which is very interesting to hear. Often they become concert pieces.

EXTRAVAGANZA - A musical playground. "Having fun musically."

FANTASIA - "Fantastic" -- from reality. Here the composer allows his mind to run wild (a personal favorite).

HUMORESQUE - A good-humored piece, often played seriously today.

INTERLUDE - A piece played between other pieces as a "fill in" while the stage is set for a new scene.

INTERMEZZO - Short, independent pieces not related to the other pieces played in the performance.

MINUET - These started as Folk Dances, but became a separate form. They have 3 beats per measure, and shouldn't be played too fast.

OVERTURE - A introduction to an opera. This is a collection of themes woven into one piece. "Vanguard" is such a piece.

PRELUDE - Opening selection that to set the mood for selections to come.

RHAPSODY - Like a fantasia, imaginative.

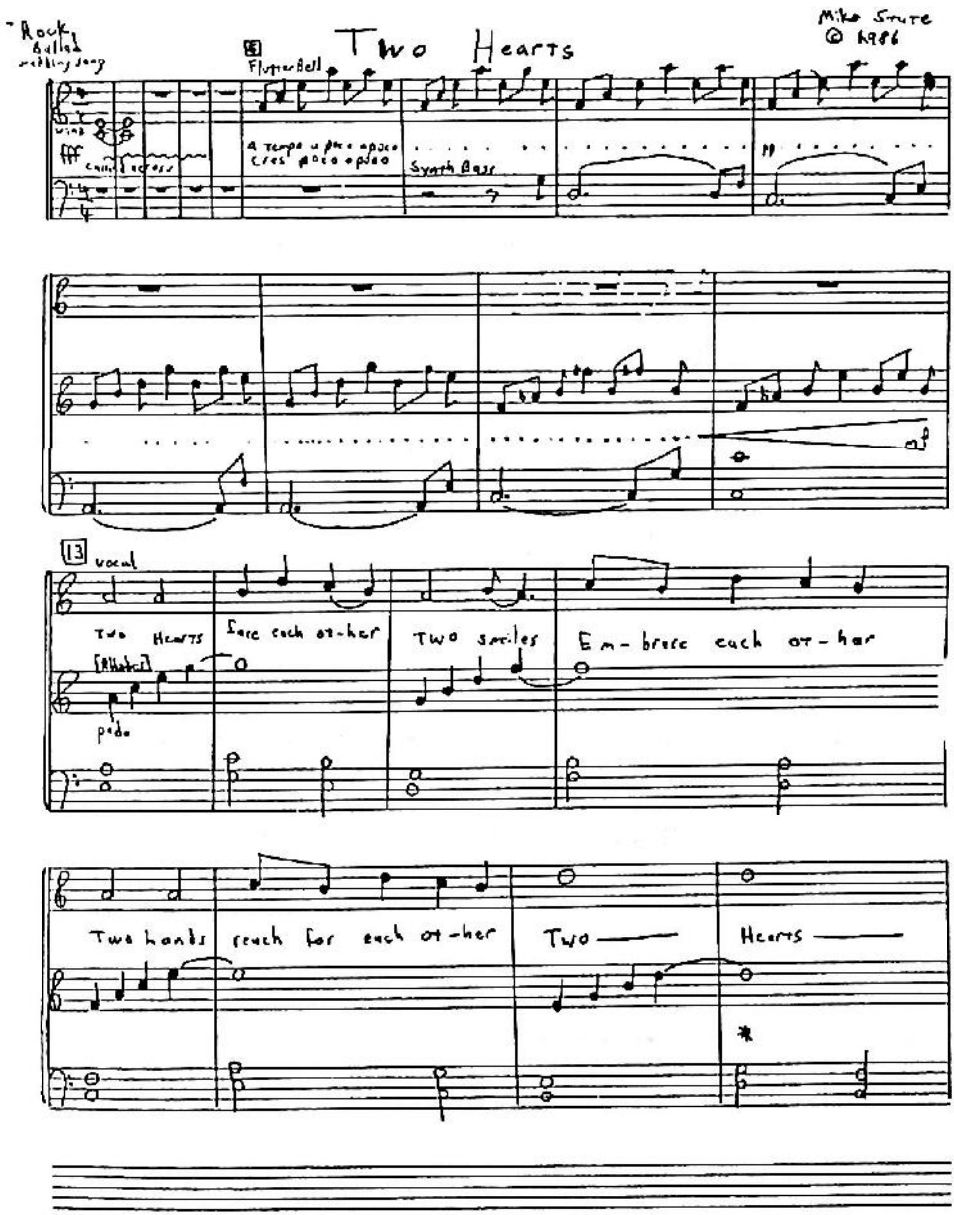
SCHERZO - Humorous composition--a joke.

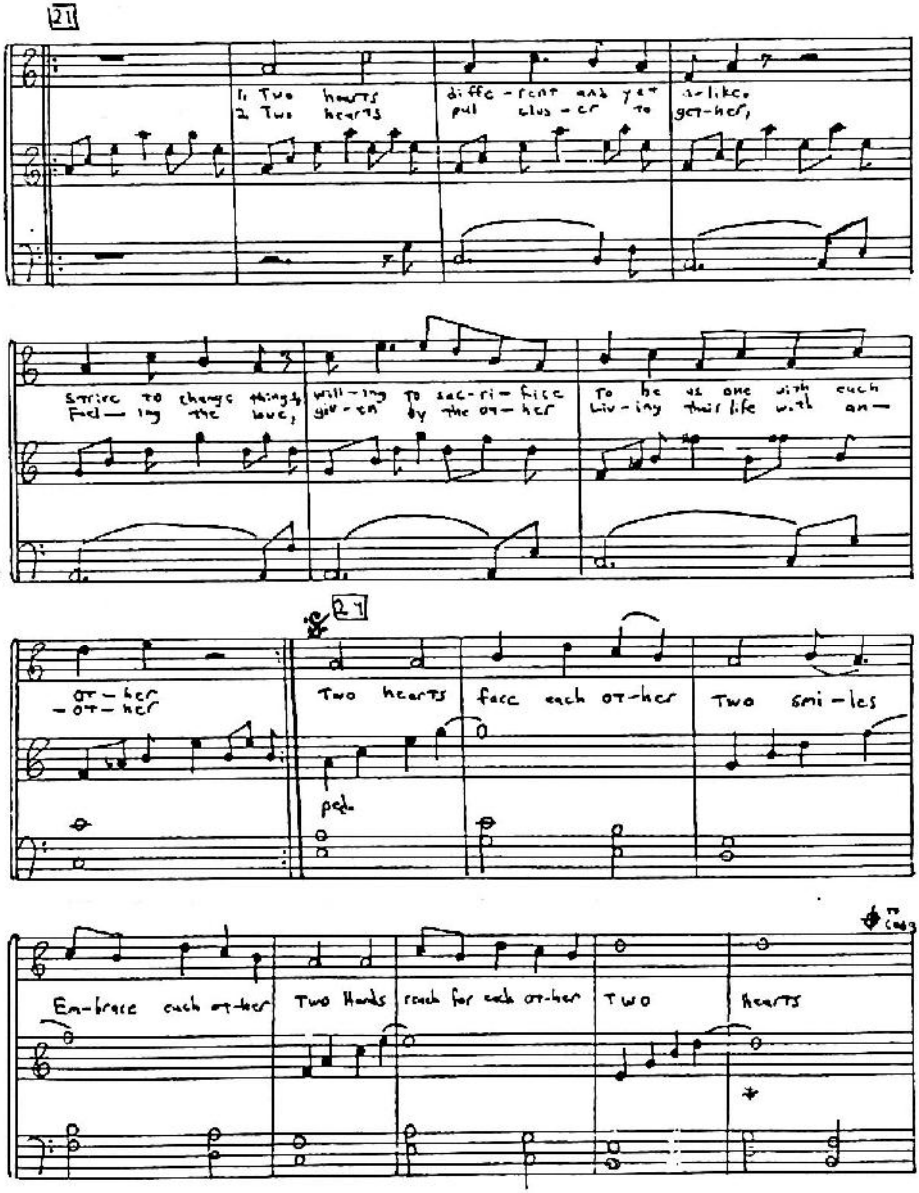
SONATA - A solo work for one or two instruments with 3 or 4 contrasting movements.

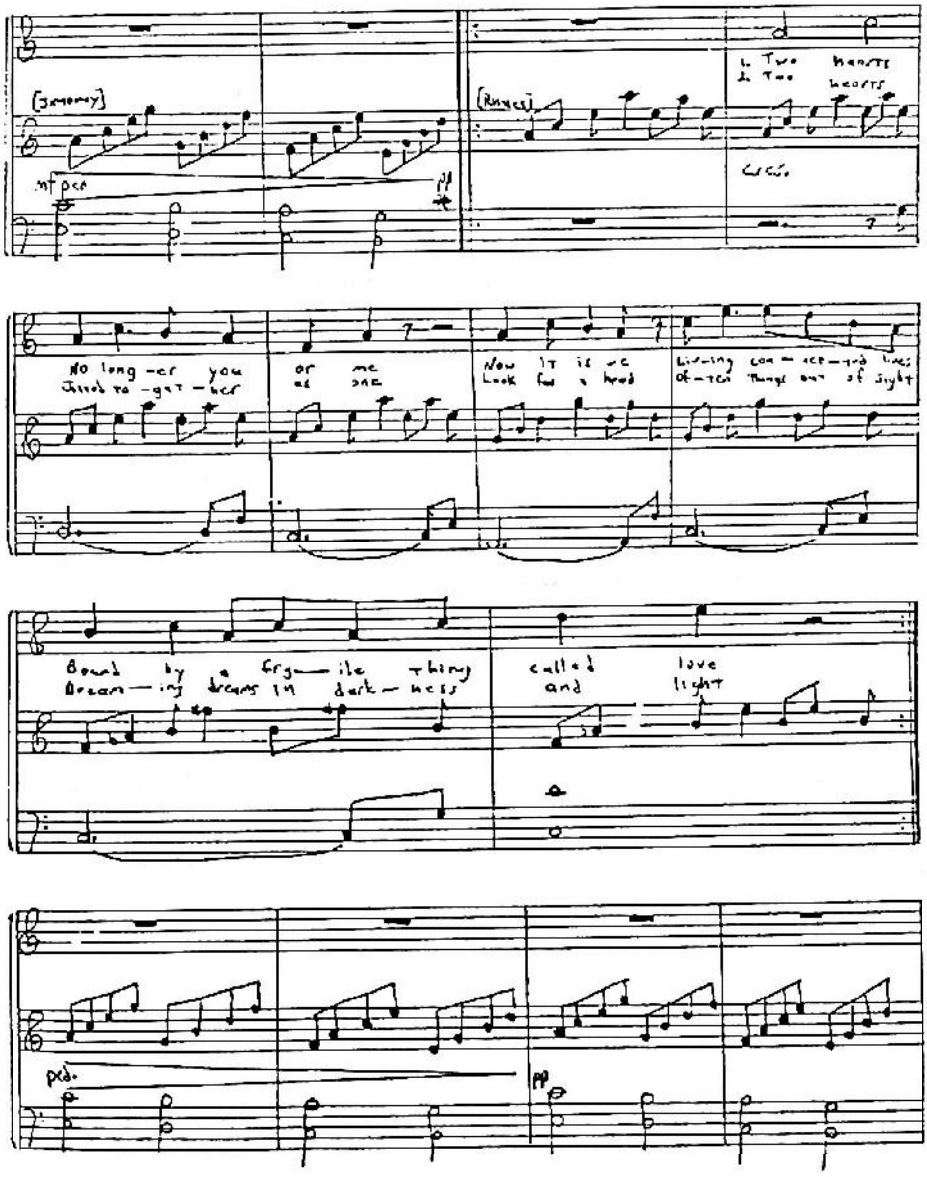
SUITE - A group of contrasting dances with different styles.

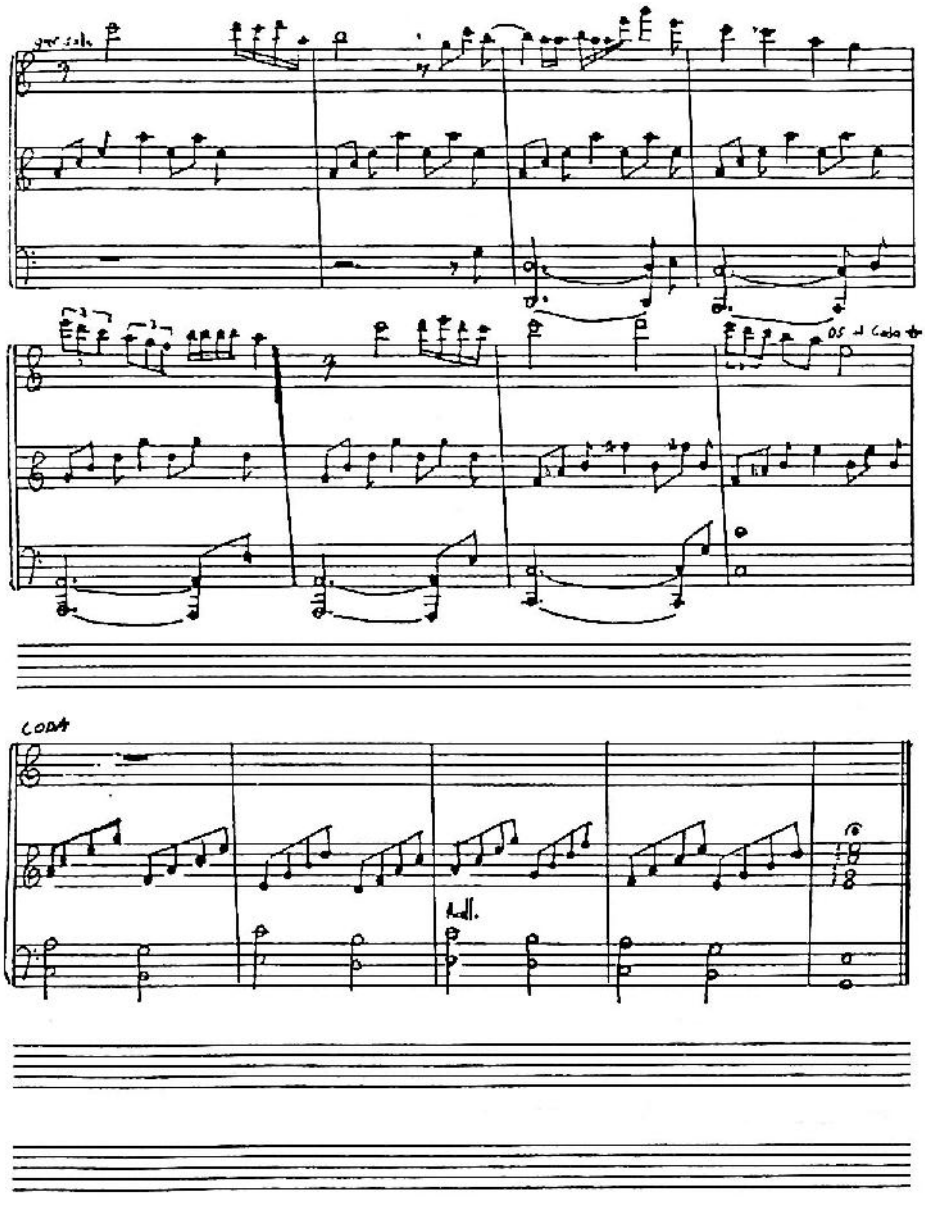
SYMPHONY - A major instrumental work, recognized as the highest form of instrumental writing.

THEME AND VARIATIONS - A principle theme reworked through different harmonization and compositional techniques.


Rock, Ballad
wedding song
Two Hearts
Mike Smith
© 1986
5
Flutter Bell
A tempo a poco a poco
Cres poco a poco
Synth Bass
13
vocal
Two Hearts
face each other
Two smiles
Em-brace each other
[Whistle]
Two hands
reach for each other
Two
Hearts


21
1. Two hearts
2. Two hearts
dif-fer-ent and yet
pul sus-er to
a-like
get-her,
strive to change things
Feel-ing the love,
will-ing to sac-ri-fice
giv-en by the o-ther
To be as one with each
Liv-ing their life with an-
o-ther
-o-ther
27
Two hearts face each o-ther Two smi-les
ped.
Em-brace each o-ther
Two Hands
reach for each o-ther
Two
hearts


[Jeremy]
mf poco
[Rose]
1. Two hearts
2. Two hearts
Cres.
No long-er you
Tried to get her
or me
at one
Now it is as
Look for a head
Living con-cep-tions
of-ten things out of sight
Bound by a frag-ile thing
Dream-ing dreams in dark-ness
called love
and light
ped.
pp


gtr solo
DS al Coda
CODA
full.

Hex/binary/decimal table

hex	binary	decimal	hex	binary	decimal	hex	binary	decimal
00	00000000	0	2E	00101110	46	5C	01011100	92
01	00000001	1	2F	00101111	47	5D	01011101	93
02	00000010	2	30	00110000	48	5E	01011110	94
03	00000011	3	31	00110001	49	5F	01011111	95
04	00000100	4	32	00110010	50	60	01100000	96
05	00000101	5	33	00110011	51	61	01100001	97
06	00000110	6	34	00110100	52	62	01100010	98
07	00000111	7	35	00110101	53	63	01100011	99
08	00001000	8	36	00110110	54	64	01100100	100
09	00001001	9	37	00110111	55	65	01100101	101
0A	00001010	10	38	00111000	56	66	01100110	102
0B	00001011	11	39	00111001	57	67	01100111	103
0C	00001100	12	3A	00111010	58	68	01101000	104
0D	00001101	13	3B	00111011	59	69	01101001	105
0E	00001110	14	3C	00111100	60	6A	01101010	106
0F	00001111	15	3D	00111101	61	6B	01101011	107
10	00010000	16	3E	00111110	62	6C	01101100	108
11	00010001	17	3F	00111111	63	6D	01101101	109
12	00010010	18	40	01000000	64	6E	01101110	110
13	00010011	19	41	01000001	65	6F	01101111	111
14	00010100	20	42	01000010	66	70	01110000	112
15	00010101	21	43	01000011	67	71	01110001	113
16	00010110	22	44	01000100	68	72	01110010	114
17	00010111	23	45	01000101	69	73	01110011	115
18	00011000	24	46	01000110	70	74	01110100	116
19	00011001	25	47	01000111	71	75	01110101	117
1A	00011010	26	48	01001000	72	76	01110110	118
1B	00011011	27	49	01001001	73	77	01110111	119
1C	00011100	28	4A	01001010	74	78	01111000	120
1D	00011101	29	4B	01001011	75	79	01111001	121
1E	00011110	30	4C	01001100	76	7A	01111010	122
1F	00011111	31	4D	01001101	77	7B	01111011	123
20	00100000	32	4E	01001110	78	7C	01111100	124
21	00100001	33	4F	01001111	79	7D	01111101	125
22	00100010	34	50	01010000	80	7E	01111110	126
23	00100011	35	51	01010001	81	7F	01111111	127
24	00100100	36	52	01010010	82	80	10000000	128
25	00100101	37	53	01010011	83	81	10000001	129
26	00100110	38	54	01010100	84	82	10000010	130
27	00100111	39	55	01010101	85	83	10000011	131
28	00101000	40	56	01010110	86	84	10000100	132
29	00101001	41	57	01010111	87	85	10000101	133
2A	00101010	42	58	01011000	88	86	10000110	134
2B	00101011	43	59	01011001	89	87	10000111	135
2C	00101100	44	5A	01011010	90	88	10001000	136
2D	00101101	45	5B	01011011	91	89	10001001	137

hex	binary	decimal	hex	binary	decimal	hex	binary	decimal
8A	10001010	138	BC	10111100	188	EE	11101110	238
8B	10001011	139	BD	10111101	189	EF	11101111	239
8C	10001100	140	BE	10111110	190	F0	11110000	240
8D	10001101	141	BF	10111111	191	F1	11110001	241
8E	10001110	142	C0	11000000	192	F2	11110010	242
8F	10001111	143	C1	11000001	193	F3	11110011	243
90	10010000	144	C2	11000010	194	F4	11110100	244
91	10010001	145	C3	11000011	195	F5	11110101	245
92	10010010	146	C4	11000100	196	F6	11110110	246
93	10010011	147	C5	11000101	197	F7	11110111	247
94	10010100	148	C6	11000110	198	F8	11111000	248
95	10010101	149	C7	11000111	199	F9	11111001	249
96	10010110	150	C8	11001000	200	FA	11111010	250
97	10010111	151	C9	11001001	201	FB	11111011	251
98	10011000	152	CA	11001010	202	FC	11111100	252
99	10011001	153	CB	11001011	203	FD	11111101	253
9A	10011010	154	CC	11001100	204	FE	11111110	254
9B	10011011	155	CD	11001101	205	FF	11111111	255
9C	10011100	156	CE	11001110	206			
9D	10011101	157	CF	11001111	207			
9E	10011110	158	D0	11010000	208			
9F	10011111	159	D1	11010001	209			
A0	10100000	160	D2	11010010	210			
A1	10100001	161	D3	11010011	211			
A2	10100010	162	D4	11010100	212			
A3	10100011	163	D5	11010101	213			
A4	10100100	164	D6	11010110	214			
A5	10100101	165	D7	11010111	215			
A6	10100110	166	D8	11011000	216			
A7	10100111	167	D9	11011001	217			
A8	10101000	168	DA	11011010	218			
A9	10101001	169	DB	11011011	219			
AA	10101010	170	DC	11011100	220			
AB	10101011	171	DD	11011101	221			
AC	10101100	172	DE	11011110	222			
AD	10101101	173	DF	11011111	223			
AE	10101110	174	E0	11100000	224			
AF	10101111	175	E1	11100001	225			
B0	10110000	176	E2	11100010	226			
B1	10110001	177	E3	11100011	227			
B2	10110010	178	E4	11100100	228			
B3	10110011	179	E5	11100101	229			
B4	10110100	180	E6	11100110	230			
B5	10110101	181	E7	11100111	231			
B6	10110110	182	E8	11101000	232			
B7	10110111	183	E9	11101001	233			
B8	10111000	184	EA	11101010	234			
B9	10111001	185	EB	11101011	235			
BA	10111010	186	EC	11101100	236			
BB	10111011	187	ED	11101101	237			

Index

Rulaford Research
P.O. Box 530328
San Diego, CA 92153
(619) 690-3648