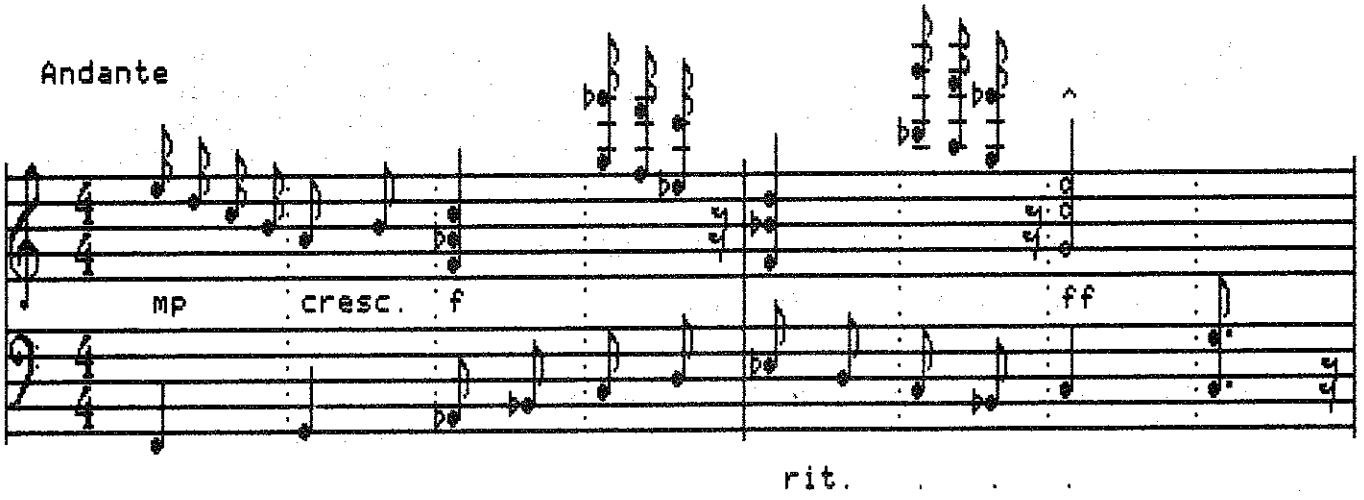
Composer's Assistant™

A polyphonic music score transcriber for the alphaSyntauri® digital synthesizer

Syntauri

Composer's Assistant™ User's Manual



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I. COMPOSER'S ASSISTANT™ OVERVIEW

A. General Description

Composer's Assistant is an innovative software product for scoring music from keyboard performance to paper. Combined with Syntauri's flexible recording software, your alphaSyntauri™ digital synthesizer becomes a "composer's work station".

The process is simple. First, by using Metatrak™ or alphaPlus™ software, a recording of your keyboard performance can be made and saved to disk. With Composer's Assistant, the recording can then be analyzed and reconstructed into music notation. The music notation can be graphically displayed on a video screen or printed on paper using a dot matrix style printer.

Composer's Assistant was developed by a professional composer to "assist" in the process of scoring music. Its notation is similar to that used in piano scoring with some minor modifications to standard notation techniques. The modifications are such that the notation can still be easily sight read or used for reference. The end result is a cost effective, efficient and time saving method of scoring music for:

* Band or orchestral arranging
* Lead sheets
* Copyrighting
* Preparation towards publishable manuscripts
* Reference and documentation of compositions

Composer's Assistant is a versatile compositional tool providing many special features for scoring from performance:

* Fully polyphonic transcribing
* Usable with multitrack recordings (up to 16 tracks)
* Variable tempos, time signatures, key signatures, and timing resolutions
* Transposition to other key signatures
* Accomodates individual playing styles
* Score displays on video screen or paper (via printer)
* Expressions, lyrics and chords can be added to final printout
* Supports the majority of dot matrix style printers available

B. How To Use This Manual

This manual describes the proper operation of the Composer's Assistant software for the alphaSyntauri digital synthesizer. It is divided into ten sections covering all aspects of operation. All sections can be referenced in the Table of Contents.

The manual also includes an Appendix section with a great deal of useful reference information. **Appendix A is a step by step guide to a Composer's Assistant demonstration recording and score. Appendix B is a command and operation summary that can be used as a quick reference guide.**

We recommend that, before using Composer's Assistant, you become familiar with alphaPlus or Metatrak. Doing so will make the learning process easier and more enjoyable.

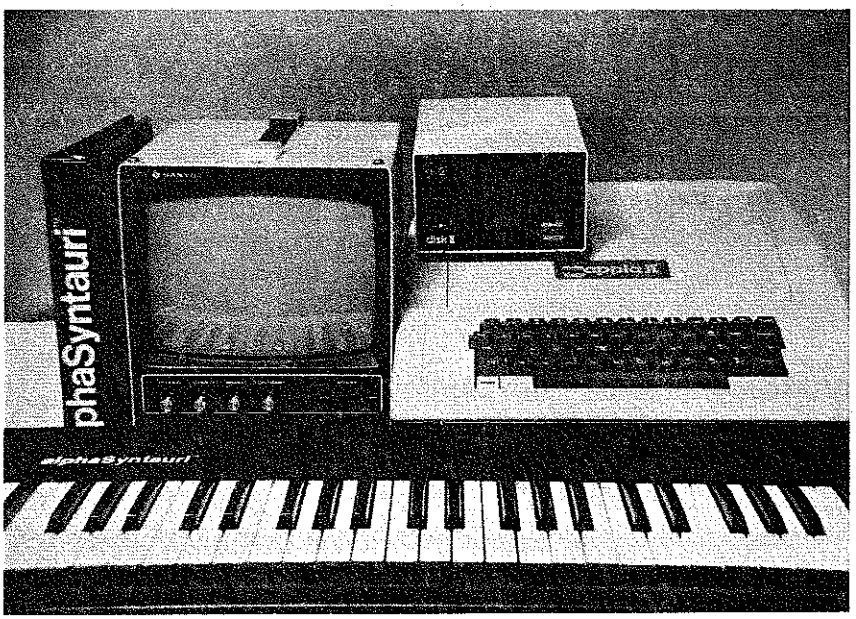


Figure 1: The alphaSyntauri Digital Synthesizer System

II. SYSTEM REQUIREMENTS AND SET-UP

The Composer's Assistant is used with the alphaSyntauri digital synthesizer (see figure 1). The system requirements include the following components:

* Composer's Assistant software
* Composer's Assistant Printer Initializer (Syn-Dump) software
* Dot Matrix Style Printer for paper print-out of score
* Apple II^{tm} Plus 48K with 16k RAM card or Apple IIe Computer
* Video Monitor (or TV with RF Mod)
* Disk II Controller card and one or two disk drives
* Metatrak II or alphaPlus (V2.Ø) operating system software
* alphaSyntauri interface card, cable and keyboard
* Mountain Hardware Music System^{tm} cards
* Audio system (stereo, P.A., amplifier or headphones)

In addition to the above list, you should have a few additional diskettes handy for storing recordings and Composer's Assistant graphics files.

Because the Composer's Assistant diskette is not copyable, a back-up disk is provided in case something happens to the original.

The diskette labled Composer's Assistant Printer Initializer (Syn-Dump), can be copied for back-up purposes, (see Appendix C of the alphaPlus Tutorial for initializing or copying disks). This diskette is used to configure your Composer's Assistant diskette to use any of the supported printers and cards listed in Appendix C. The use of this diskette will be covered in more detail later.

To begin using Composer's Assistant, set-up your alphaSyntauri system as explained in Appendix A of the alphaPlus tutorial then follow the instructions in the subsequent sections of this manual.

III. RECORDING FOR COMPOSER'S ASSISTANT^{tm}

A. Metatrak or alphaPlus

As explained in the overview, Composer's Assistant analyzes recordings performed with the alphaSyntauri keyboard. Either alphaPlus or Metatrak software may be used, although Metatrak offers more flexiblity and control capability due to its advanced multitrak recording features.

Metatrak allows you to create complete multipart compositions which can then be analyzed selectively for score printout. For example, consider a multitrack recording consisting of bass guitar, piano and strings, with each instrument on an individual track. The recording can be worked on until you are satisfied with how all the parts sound together. Then, with Composer's Assistant, each individual part can be analyzed and with a push of a button, printed out.

Besides the multitrack recording capability, Metatrak has many special recording features that make creating recordings for Composer's Assistant much easier. Thus, we recommend using Metatrak with Composer's Assistant to provide the greatest degree of flexibility and control.

To start recording for Composer's Assistant, **first turn off then on the power switch of the computer. Then insert either alphaPlus or Metatrak into the disk drive.** Follow the boot-up procedure in the respective manual until in live mode, (the keyboard plays with video display responding).

B. Using the Metronome

One essential procedure in recording for Composer's Assistant is usage of the built-in metronome. Both alphaPlus and Metatrak can access the metronome by holding down the "CTRL" key and typing "Z" while in live mode. Doing so will show the following prompt:

"METRO TEMPO (Ø-28Ø)":

Type in the desired tempo in beats/minute (Ø=off), followed by "RETURN". If Metatrak II is used the following prompt will also appear:

"METRO PRE-COUNT (Ø-16)":

Pre-count provides a count down of Ø-16 beats before recording starts. It is meant to be used just prior to adding additional tracks in the Metatrak record mode. Thus, it allows you to prepare your hands at the keyboard for playback of earlier recorded tracks. When recording the first track pre-count is not necessary, just hit "RETURN". The recording will not start until a key or pedal is depressed anyway. In Metatrak II the metronome prompt also occurs in line with record and playback modes.

Once back in live mode the metronome provides both audible and visual assistance for keeping tempo. The Apple speaker will click and a white rectangular block will alternate from one side of the screen to the other. If a louder click is desired the cassette output of the Apple can be connected to an amplifier. The drum machine interface of Metatrak II can also serve as a useful means of keeping tempo.

When recording for Composer's Assistant, the metronome should be played with as accurately as possible. The more precise the playing, the clearer the final score will be. Remember, Composer's Assistant will print what you actually play not necessarily what you think you are playing. In order to get used to this technique practice with the metronome before you start recording. Playing at slower tempos will allow you to be more precise with your timing resulting in a clearer final score.

Usually, the metronome is used to indicate quarter beats however it may also be used to subdivide the beat into smaller metrical divisions. Doing this may help in keeping accurate timing during complex rhythmical passages. For example, if a recording has a metronome setting of 5Ø, one beat equal to a quarter note, then a setting of 1ØØ would allow correct metering for eight notes of the same recording. Both the metronome setting and the implied metronome tempo must be remembered for later use with the Composer's Assistant. In most cases, except as explained above, these tempo settings will be the same. For reference purposes, the tempos can be added to the name of the file, such as "TEST 1ØØ 5Ø".

C. Selecting Instruments

There are many factors involved in transcribing a performance recorded on the keyboard into music notation. These factors include individual playing techniques such as playing ahead or behind the beat. Instrument selection is also a factor that can have a great effect on your response to the keyboard.

If an instrument sound has a long release time, that is, it continues to sustain after the key is released, the tendency is to pre-release the key letting the sound die out in the proper time. Since Composer's Assistant specifically monitors timing of the actual key depression and release, not the evolving sound, the timing may be misinterpreted.

As a general rule it is best to use instrument sounds with fast attacks and release times. Doing this will make your response to the keyboard much closer to what you intend to have in music notation.

D. Playing the Keyboard (Two Hands, Right Hand, Left Hand)

Before starting a recording it is important to understand how Composer's Assistant interprets playing the keyboard and placing notes and rests on the staff (see Figure 2). Since the Composer's Assistant score print-out is based on a grand staff with one position (middle C) between the treble and bass clefs , it is possible that notes may overlap between the two clefs. To accomodate for this there are three different modes to be aware of:

* Two Hand Playing (divided keyboard at middle C)
* Right Hand Playing (no keyboard division, all rests in bass clef)
* Left Hand Playing (no keyboard division, all rests in treble clef)

Which mode is to be used depends on what is played on the keyboard and the intended results in music notation. **How these modes affect the actual score is covered in the sections VII of this manual.**

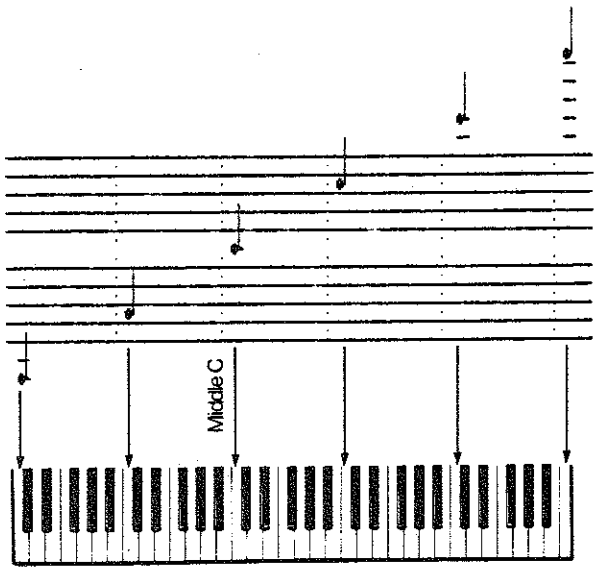


Figure 2: Keyboard to Staff Relation

If you record a single piece playing with two hands where the right hand serves the treble clef and left hand the bass clef, plan on using the two hand playing divided keyboard mode. In this mode, **all notes played below middle C (left hand) will be placed with timing relative to the bass clef. All notes played from middle C (right hand) and above will be placed with timing relative to the treble clef.** Crossing middle C with either hand may cause the analyzed music notation not to appear as you intended. Middle C on the keyboard is the third C key from the left.

If you need to extend past middle C in either direction plan on using one of the other modes for proper keyboard interpretation. For instance, if a recording is meant to be read relative to the treble clef and it extends below middle C, then the right hand playing mode should be used. In this case all notes and timing will be placed relative to the treble clef regardless of where it is played on the keyboard. The bass clef will have all rests. The opposite is true for left hand playing mode. With either of these modes it is best to use only one hand at a time.

When you are creating a multitrack recording you may end up using a different mode per track. This depends on what clef a given track notation is intended to reside on. It may be useful to make note of what clef each individual track is to be associated with.

E. The Recording Process

To start recording, enter the record mode as explained in the Metatrak or alphaPlus manual. The display will show the instrument name in reverse video (dark letters on a light background). Recording will not start until a key or pedal is depressed. If the metronome isn't set at this time type "CTRL Z" and set it to the desired tempo.

Start the recording as close to the metronome beat as possible. If it is started or played to far off beat the notes will be improperly placed. If a foot pedal is used, the recording will start with a rest.

When using Metatrak II and you wish to start a recording over typing "R" will cause an immediate restart. Doing this will display the metronome prompt. Unless you wish to change it, just type "RETURN" until back in live mode. To start over in alphaPlus (V2.Ø), hit the spacebar and type "B" for begin. Again, in both cases, it will not start recording until a key or pedal is depressed.

Once you feel satisfied with a recording, you can terminate it by hitting the spacebar. Before doing so, however, make sure you have released all the keys depressed on the keyboard. Also, if the last bar is to have rests that extend to the bar line, then the recording should not be immediately shut down after the last

note played. Allow the metronome to beat enough times to at least reach the first beat of the next bar.

F. Saving A Recording

After you are satisfied with the recording you can save it on a diskette. This is accomplished through the record/playback menu as explained in the alphaPlus and Metatrak manuals. Use a separate diskette for saving your recordings, (explanations on how to initialize a new diskette are covered in Appendix C of the alphaPlus tutorial).

Including pertinent information within the name of your recorded files can be very helpful for later reference. For example, "TEST 1ØØ D#" which indicates metronome tempo and key signature. Such information will need to be entered when using the Composer's Assistant diskette.

G. File Size

Even though alphaPlus can record up to 2,ØØØ notes and Metatrak II up to 3,ØØØ, files specifically to be used for Composer's Assistant **must not exceed 1,25Ø notes.** This can be monitored in the record/playback menu after finishing a recording.

The 1,25Ø note limit also includes rests and notes that are divided across the bar line. An average rate of expansion to the notes recorded is about 3Ø%. Thus, as a general rule it is best to keep recorded files below 1,ØØØ notes.

Composer's Assistant will accept recorded files which expand beyond its 1,25Ø note limit, but the final score will contain apparent timing errors. When analyzing a recorded file the screen display will alert you if the file has expanded beyond the 1,25Ø note limit. If your recording requires a greater number of notes, record it in two or more sections as needed. Each section can then be analyzed individually in Composer's Assistant.

IV. BOOTING-UP AND INITIALIZING COMPOSER'S ASSISTANT[tm]

To boot-up Composer's Assistant, **first make sure the power switch for the computer is off, then turn the power switch on and insert the Composer's Assistant disk into the disk drive. This is critical for proper operation.** Do not use an IN# or PR# command. This same power-down/up procedure should also be taken when returning to do additional recording with Metatrak or alphPlus.

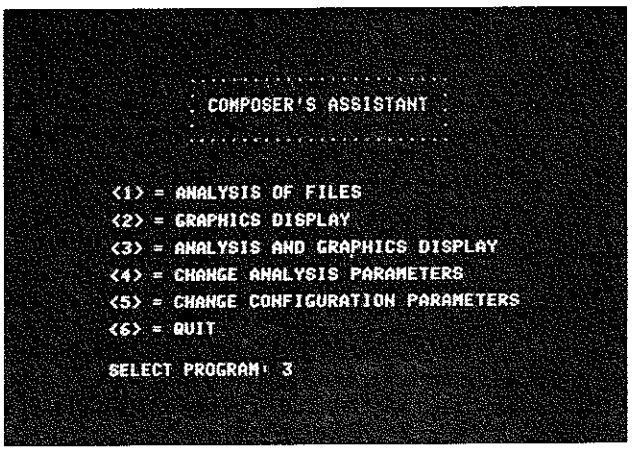


Figure 3: Main Menu Display of Program Options

Shortly after the Composer's Assistant disk has started booting the screen will display a main menu of program options (see figure 3). There are six possible selections.

1) **ANALYSIS OF FILE:** This option takes previously recorded files of notes and restructures them into music notation files which are used by the graphics program for display.

2) **GRAPHICS DISPLAY:** This option allows displaying or printing of previously analyzed recordings.

3) **ANALYSIS AND GRAPHICS DISPLAY:** This option combines the first two options together allowing immediate display of graphics after analysis rather than returning to the main menu.

4) **CHANGE ANALYIS PARAMETERS:** This option allows you to tailor the analysis procedures to fit your own playing style or achieve overall editing results. It also is used to set keyboard division and transposition.

5) **CHANGE CONFIGURATION PARAMETERS:** This option is used to specify your particular system configuration including number of disk drives, print-out and text input defaults, recording file type (meta or note) and printer type and location.

6) **QUIT:** This option exits Composer's Assistant into "Applesoft Basic". To get back, follow the boot-up procedure.

Chapter 4: Booting-Up Composer's Assistant

If the Composer's Assistant diskette hasn't been used before, you may want to first access the configuration parameters (option 5) to initialize Composer's Assistant for your particular set-up. Specifically the printer and interface card type and slot location. To do this, have the Composer's Assistant Printer Initializer (Syndump) diskette handy for use in the procedure, (see the sections VII, IX or Appendix B) to reference the default conditions that come with Composer's Assistant.

V. ANALYSIS

A recorded file can be analyzed by selecting the first option in the main option menu. This program will step you through a number of entry questions giving Composer's Assistant the information needed for analysis. After all information is entered, the actual analysis will occur. The analysis will reconstruct the recorded file into a new file with graphics information for music notation. This new file will then be saved to disk to be used later for display or print-out.

Before selecting the analysis option, have the diskette with your recorded file handy. If the system configuration is set to work with two disk drives insert the diskette with recorded file into the second drive. The following instructions will assume one disk drive is being used.

At any point in the analysis program where a file name is requested, a catalog of the disk can be viewed by typing "?" followed by "RETURN". If during the analysis entry procedure you wish to go back to the main option menu, type "CTRL-G" followed by "RETURN".

A. File for Analysis

The first prompt to appear after selecting analysis makes a request to insert into the disk drive, the diskette which contains the recorded file, (this will not happen if set for two drives). Once this has been done and "RETURN" has been pressed, the following prompt will appear:

"FILE NAME FOR ANALYSIS:"

Enter the name of the recorded file to be analyzed followed by "RETURN". If you can't remember the name type "?" followed by "RETURN". This will catalog the disk, allowing you to see the file names on the disk. The recorded files on the disk will have either a "META:" or "NOTES:" prefix in the name. When entering the name in Composer's Assistant do not use the prefix.

After the file is loaded from the disk, a prompt will ask you to put the Composer's Assistant disk back into the disk drive.

B. Metatrak Track Selection

If a Metatrak file (meta file) is to be analyzed rather than an alphaPlus file (notes file), and the "File Type" selection in the configuration parameters menu is set to indicate so, then a screen display for track selection will appear (see figure 4).

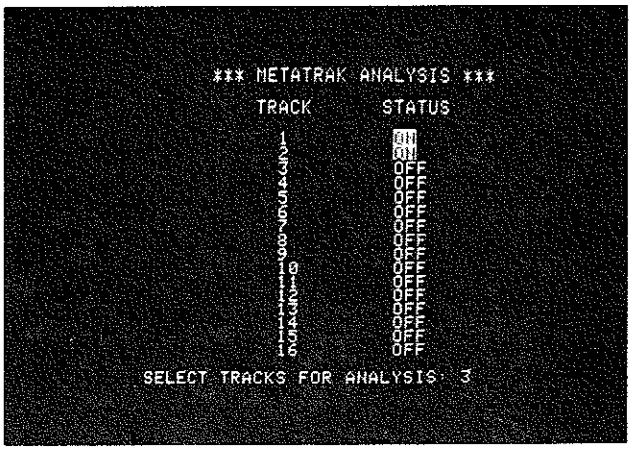


Figure 4: Metatrak Track Selection

The track selection display allows the specification of which track(s) of a Metatrack recording are to be analyzed. You can set as many tracks "ON" as desired. In most cases though, only one or two tracks at a time should be set "ON". This is because analyzing many tracks at once, with notes that overlap mutual staff boundries, can make the final printout difficult to read.

To set a track to "ON" or "OFF" for analysis, type the number of the track desired followed by "RETURN" in response to "SELECT TRACK FOR ANALYSIS:". The cursor will jump to the correct track. Type the status you wish to assign to the track "ON" or "OFF" followed by "RETURN". Just typing "RETURN" defaults a track to "OFF". When track selection is complete, continue by pressing <RETURN>.

C. Metronome Marking

The following prompt for entering the metronome tempo will appear:

"RECORDED METRONOME MARKING:"

Enter the **exact** metronome setting used (Ø-28Ø) during the recording, followed by "RETURN". After the recorded metronome setting is entered the following prompt will appear:

"ANALYSIS METRONOME MARKING:"

Enter the **implied (or actual)** metro tempo (Ø-28Ø) at which you want your recording to be analyzed. This second metronome entry takes into consideration that the metronome setting during a recording may have been a subdivision of the actual tempo. This is discussed in section III, "Using the Metronome". Composer's Assistant needs to know if this technique was used. In most cases these metronome markings will be the same.

D. Key Signature

The next analysis screen entry is for specifying key signature. Fifteen different key signatures are available for selection. To select a key signature type the number (1 to 15) as labeled in the display followed by "RETURN". If transposition has been set in the analysis parameters option then it will be necessary to calculate and enter the new key signature for the transposed piece.

E. Time Signature

The time signature selection includes 3/4, 4/4 and "FREE TIME". The first two are self explanatory. Free time takes into consideration other time signatures by not plotting measure bar lines. Since the Composer's Assistant score does show the actual beat occurrances, it is relatively easy to count the beats and mark-in the intended bar lines on the final score. To select the time signature, type the number (1 to 3) as labeled in the display, followed by "RETURN".

F. Timing Resolution

Timing resolution specifies the smallest note value that will be recognized. There are three resolution settings; 1/16 note, 1/8 note and 1/8 note triplets. The normal default resolution is 1/16 notes. To select the timing resolution, type the number (1 to 3) as labeled in the display.

If you know the recording to be analyzed doesn't have a lot of 1/16 notes or rests and you wish to avoid unintended 1/16 notes or rests, the 1/8 resolution may be useful. Using this will disallow any timings below a 1/8 note making the piece much easier to read and possibly closer to what you intended to play.

The 1/8 note triplet setting allows for recognition of 1/8 note triplets. Triplets are notated by the shifting of the notes out of their normal locked positions into the positions normally occupied by the accidentals. To qualify as a triplet, a few conditions must be met: three notes each with durations less than a 1/8 note must occur within the duration of one quarter note, and the first note must fall on the beat. The triplet setting should only be selected when the recording has specifically used triplets.

G. Name for Analyzed File

After the previously described analysis entries have been made, the following prompt will appear:

"NAME FOR ANALYZED FILE: (current file name)"

By simply hitting "RETURN" the name the recorded file has been given will also be given to the analyzed graphics file. Giving it the same name won't destroy the originally recorded file on disk for the new analyzed graphic file name will have a differentiating "CA:" prefix . If you wish to change the name, type a new name followed by "RETURN". After the new name has been entered, the Composer's Assistant will go into the actual analysis process.

H. The Analysis Process

There are two stages involved in the analysis process, preliminary and primary. Both stages will visually show the "total number of notes" and "current note count". This is used as a means of depicting operating status and how long the analysis will take. The length of time is dependent on the number of notes in the recording.

Once completed with the analysis, a prompt will appear asking that a storage diskette, (most likely the same one with the recorded file on it), be inserted into the drive. This won't happen if your system configuration is set up for two disk drives. The newly analyzed file will then be saved on a diskette for later access by the graphics program to display or print out the score. At this, point the system will return to the main menu.

Occasionally a formatting error is encountered in a file which is being analyzed. Composer's Assistant can normally handle these errors; if not, a flashing sign at the bottom of the screen will display an error message before the program returns to the main option menu. If this occurs, it is best to review this manual and the recording procedures of Metatrak and alphaPlus, then re-record the composition. If this fails to fix the problem, remember the error message number and refer to the Apple II Reference Manual.

VI. GRAPHICS DISPLAY

The second option in the main menu is "Graphics Display". This option allows an already analyzed recording to be displayed or printed out as a score. The process involves: loading the analyzed "CA:" graphics file from disk, entering a few specifications for bar labeling and range to display, and viewing the score measure by measure on the screen or printing it to paper.

There are a number of ways to use the graphics display program. Which method depends on the intended result for viewing or printing. The method of using the graphics display can be set to a default condition in the configuration parameter option from the main menu. Setting these will be covered in more detail in section IX, "Configuration Parameters".

The default conditions that come with Composer's Assistant allow you to view the score on the screen measure by measure, but print-out will not occur unless a special command is given.

At any time during the graphics program (except when printing) a "CTRL-G" followed by "RETURN" will send you back to the main option menu. Depending on where you are in the graphics display process, you may need to type "CTRL-G" followed by "RETURN" a second time.

A. File for Display

After selecting the second option "Graphics Display", from the main menu, the first prompt that will appear on the screen is:

"FILE FOR DISPLAY:"

The name of the last file analyzed will be displayed. If it is the file you wish to look at, simply hit "RETURN". If it isn't, type the desired name followed by "RETURN".

If you wish to view the contents of the diskette a "?" followed by "RETURN" can be entered. Type consecutive "RETURN"s until you step through the entire catalog. The analyzed file will have a "CA:" prefix.

After entering the file name for display, Composer's Assistant will ask you to make sure the storage diskette with the analyzed file is in the disk drive. If your system is set-up for two disk drives this won't occur, for it automatically assumes it is in the second drive. The analyzed file will be read from the disk. Again, if you're using one drive, a prompt will appear asking you to insert the Composer's Assistant diskette back into the disk drive.

B. Bar Labeling and Range

After the analyzed graphics file has been read the first information entry prompt will appear:

"NUMBER TO START BAR LABELING WITH: 1"

This prompt allows you to change the numbering of the first bar in the score. This is very useful if you have recorded a number of small sections to make up one large score and wish to have them consecutively numbered.

If you wish to leave it as 1, press "RETURN". To change, enter the desired number followed by "RETURN". Once you have set the bar labeling number, another screen will appear for setting bar range for display.

"BAR RANGE TO DISPLAY"
"FIRST BAR:"
"LAST BAR:"

Bar range is the beginning and ending bar numbers you wish to display or print. Initially the total number of bars of the file will be shown. The range can be changed so that any portion of the composition may be selected. If you wish to display the entire bar range, both inputs can be defaulted by pressing "RETURN". To change the bar range, type in the desired values followed by "RETURN".

C. The Screen Display

After the previously discussed entries have been made, the first measure of the score should appear on the video screen. An example of the screen display is shown in figure 5.

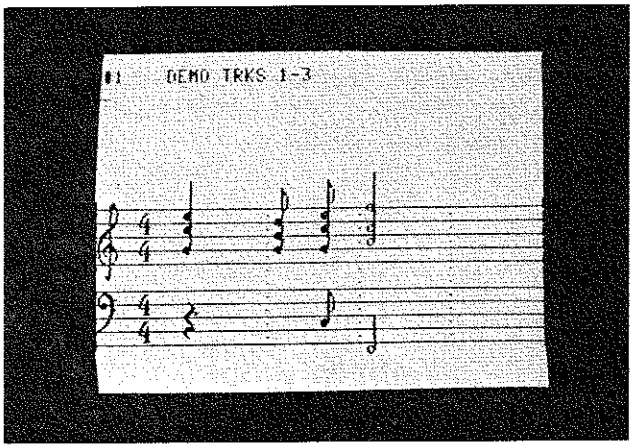


Figure 5: Graphic Screen Display (one bar)

Chapter 6: Graphics Display

A detailed discussion of the Composer's Assistant scoring techniques and its differences from standard notation are explained in the last section of this manual. However, we will go over a few of the basic points about the display and its usage.

One grand staff measure at a time can be displayed on the video screen. The grand staff is structured with one ledger line (middle C) between the two clefs. The dotted lines that go vertically across the staff are the actual beat markings. The occurrences of the notes and rests are placed relative to the beat markings.

At the top of the screen the bar number and the name of the file are displayed. The time signature is shown at the beginning of the score. The clef signs and key signature will appear every three measures if in 4/4 or free time, and every four measures if in 3/4 time.

As mentioned in the beginning of this section, control over the process of the graphics display is somewhat dependent on the default configuration parameters. Since the original default conditions specify text-input and no print-out, (both these issues are covered in more detail shortly), the screen can be viewed one measure at a time. **To move to the next measure type the "/" key.** Continually typing the "/" key will allow you to scan through the piece measure by measure until the end is reached where the following prompt appears:

"REPEAT GRAPHICS PROGRAM (Y/N)"

To go back to the beginning of the graphics display program enter "Y" followed by "RETURN". Doing this will display the "FILE FOR DISPLAY" prompt again. Unless you wish to view a different file, simply press "RETURN" and follow through the graphics display sequence as explained earlier. If you are finished with the graphics program, type "N" at the end of the display to return to the main options menu.

If at anytime during the display of the score you wish to immediately return to the beginning of the graphic display program, type "CTRL-R". This will also send you back to the "FILE FOR DISPLAY" prompt allowing you to enter a different file or change bar labeling or range settings.

D. Text Input

If text input is selected as a default condition in the configuration parameters option, then text can be added to the screen for print-out on paper. When text input is selected the prompt "INPUT TEXT ADDITIONS" will appear briefly at the top of the screen. The text input can be used for adding lyrics,

expressions, or chords to the print-out. Note that the individual bar must be printed-out immediately after text is added, (selecting print-out is explained shortly). This is because **text is only temporarily on the screen for immediate print-out and cannot be saved for later use.**

To add text to the display you have a cursor that can be moved anywhere on the screen by first typing the "ESC" key once and then typing one of four direction keys: I (up), J (left), K (right) and M (down). Move the cursor to the position you wish to start your text and type "ESC" once more. Now you can add text by typing in either upper and lower case. Typing "CTRL-L" selects lower case, typing "CTRL-K" selects upper case.

If you wish to change the text input condition you can do so by typing "CTRL-T". Doing this will cause the following prompt to appear:

"TEXT INPUT? (Y/N)"

The current status will be shown with a flashing "Y" or "N". If set to a "N" followed by "RETURN" then the display will automatically scan from bar to bar until reaching the end.

E. Printing Out a Score

Even if the print-out default condition is off in the configuration parameters option, the printer can be turned on from the graphics display. Before doing this, make sure you have initialized your Composer's Assistant disk for your particular printer. This can be done via the configuration parameters option.

While in the graphics display program, Composer's Assistant can be set for printing out the score by typing "CTRL-T". By typing "CTRL-T" the first prompt encountered will be for text input (Y/N). If you wish to print out one bar at a time and have the ability to add text then make sure text input is set to "Y". If you wish to have continuous print out, set text input to off by typing "N". After entering a value for text input the following prompt will appear:

PRINTER? (Y/N)

Type "Y" followed by "RETURN" to allow output to your printer. Follow through the rest of the graphics display prompts until the graphics display appears. Print out will occur immediately unless text input is on; then the "/" key will initiate printing for each individual bar.

VII. ANALYSIS AND GRAPHICS DISPLAY

The third option in the main menu is "Analysis and Graphics Display". This option combines both the analysis procedure (option 1) and graphics display (option 2) to allow immediate display of the graphics after analysis without returning to the main menu.

This combined option may be best used when analyzing a recorded file for the first time. Since you'll most likely want to see the graphics immediately using the combined option provides a quicker path to do so.

The combined option comes in handy when two disk drives are being used, print-out is set on and text input is set off (as defined in the configuration parameters option). When using two disk drives it isn't necessary to swap diskettes in and out of the drive during the procedure. Because of this, a recorded file can be set up for analysis, and without further assistance, continue until the score is fully printed out on paper. Since a print-out on most dot matrix style printers can take some time this methods allows you to walk away for awhile, then return to a completed score on paper.

VIII. ANALYSIS PARAMETERS

Selecting option four of the main menu will route you to the analysis parameters menu (see figure 6). Using the menu allows you to tailor the analysis procedure to fit your own playing style or achieve overall editing results. It is also used to set keyboard division and transposition.

Composer's Assistant is designed to operate properly with the analysis default values. Alterations of default values can sometimes effect unintended aspects of the score. However, there are occasions when a small adjustment in these values can make the final score appear as intended. Sometimes the final score will contain small errors that have been caused by a musicians individual technique. It is often easy to change analysis parameters just slightly to accommodate a particular playing style. It is best to start the analysis of a new composition with the default values and change analysis parameters only when the score necessitates it.

To select an analysis parameter, simply type the associated number on the screen followed by "RETURN". All of the selected parameters will display a secondary menu, with the exception of "Restore Default Values".

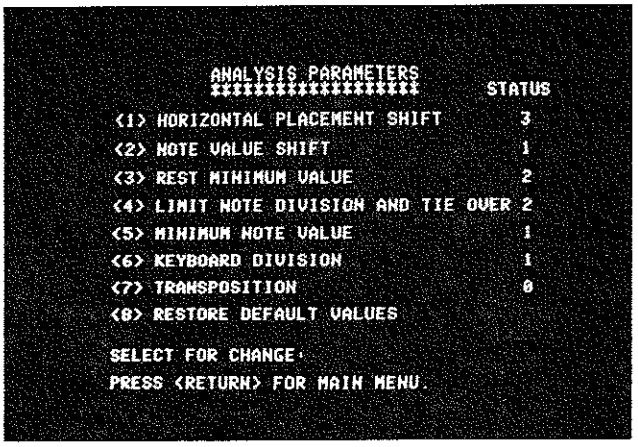


Figure 6: Analysis Parameter Menu

A. Horizontal Placement Shift

Often musicians anticipate the beat and place notes early, "rushing", or play behind the beat, "laid back" or "dragging". No matter which side of the beat the note was played on, the final score should place the note on the beat. This is accomplished by a shifting routine which may shift all notes forward or backward.

Selecting horizontal placement shift will show a secondary menu of note values. The note value selected from this menu will shift the placement of all notes forward or backward in relationship to the beat. For example; if the placement of notes is consistently behind the beat and you want the score to place notes on the beat, then specify a forward shift. If placement of notes is consistently ahead of the beat and you want the score to place the notes on the beat, specify a backwards shift (see figures 7A, 7B).

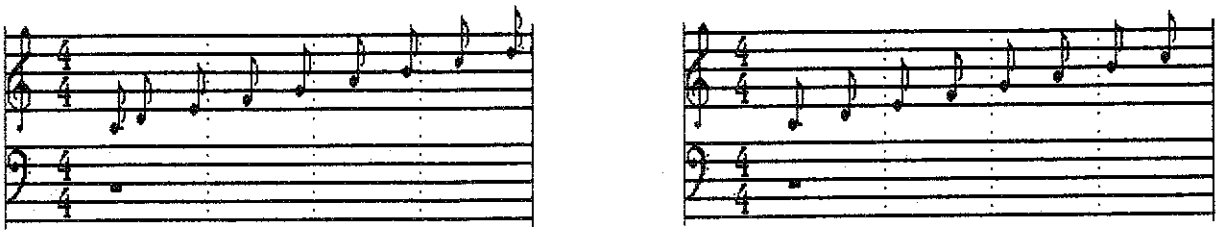


Figure 7A: Beat Rushing; Figure 7B: Compensation for Beat Rushing

B. Note Value Shift

Instrument sounds with long release times can also cause rest problems as the musician will release a note early and allow the long release to sustain the note. A special routine compensates for long envelope release times by extending the value of all notes and decreasing rest values proportionately.

The note value selected from the note value shift menu will increase or decrease the duration value of all notes. For example; a forward shift of an sixteenth note will cause a sixteenth note to change to an eighth note (see figure: 8A,8B). A backward shift will cause a quarter note to change to a dotted eighth note.

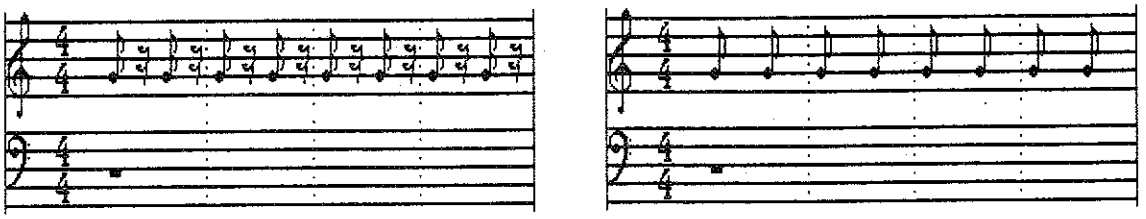


Figure 8A: Normal Note Value; Figure 8B: Sixteenth Note Shift

C. Rest Minimum Value

In keyboard playing, the hands are removed from the keyboard for a fraction of a beat in order to get to a new hand position. This break from playing is technically a rest, even though it is not intended as such. Selecting rest minimum value can prohibit these small breaks from being analyzed as a rest. The larger this value the longer the break in playing can be before it is interpreted as a rest (see figure: 9A,9B). If a rest minimum value is set for a sixteenth note, then the note value shift needs to be extended by a sixteenth note. Figure (9B) clearly shows this principle, as the dotted eighth notes need to be extended by a sixteenth note value since the sixteenth note rests are now missing.

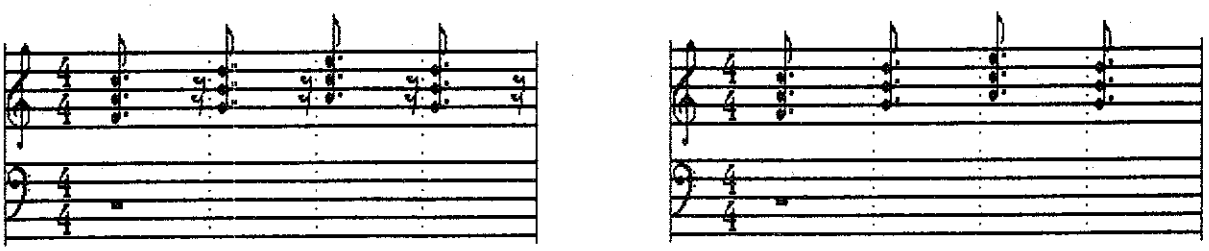


Figure 9A: Normal Rest Value; Figure 9B: Rest Value Increased by Sixteenth

D. Limit Note Division and Tie-Over

Notes are sometimes divided and tied to the next bar when their duration value exceeds the bar only by a sixteenth note (see figure 1Ø). Selecting "limit note division and tie-over" can eliminate this division for small tie-over amounts. Each note to be tied over is checked against the value the division and tie-over is cancelled (see figure 1Ø).

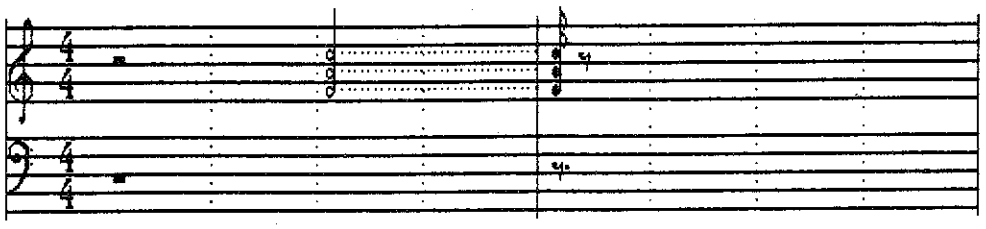


Figure 1Ø: Note Divided and Tied to Next Bar

E. Minimum Note Value

Errors in keyboard playing, such as the slip of a finger, can cause unwanted notes to appear on the final score. Selecting "minimum note value" allows specification of the smallest note value that will be recognized. Notes which fall below this setting are not analyzed (see figures 11A, 11B).

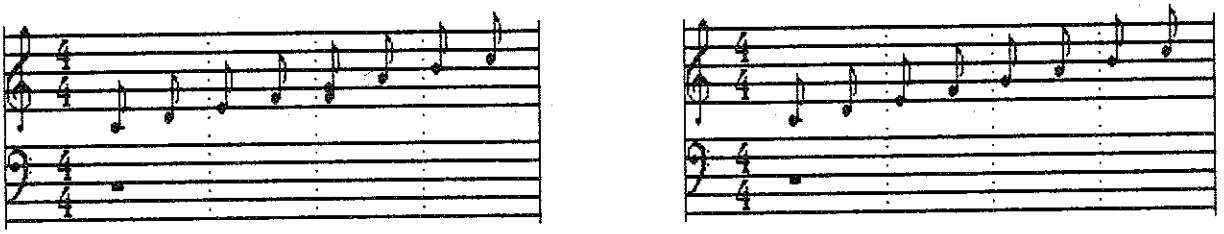


Figure 11A: Error caused by slip of finger; Figure 11B: Corrected by increasing mimimum note value

F. Keyboard Division

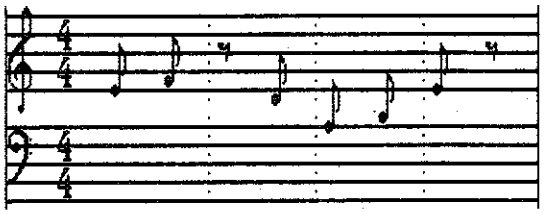
Since the Composer's Assistant score print-out is based on a grand staff with one position (middle C) between the treble and bass clefs, it is possible that notes may overlap between the two clefs. To accommodate for this there are three different modes that can be used. These include:

* Two Hand Playing (divided keyboard at middle C, middle C and above, treble clef, below middle = bass clef)

* Right Hand Playing (no keyboard division, all rest in bass clef)

* Left Hand Playing (no keyboard division, all rests in treble clef)

After selecting one of the keyboard division modes, all subsequent analysis of recorded files will be analyzed accordingly. Examples of how the keyboard division modes effect the score print out are shown in figures 12A, 12B and 13A, 13B. A more thorough explanation on this is covered in Chapter III.



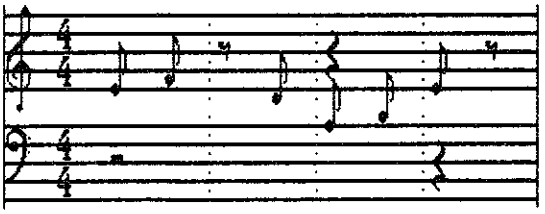
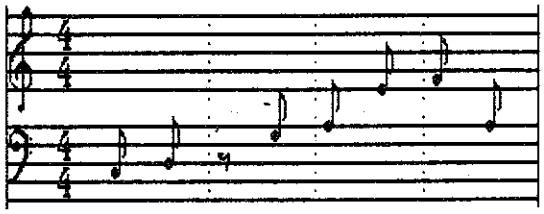


Figure 12A: Right Hand Playing Mode; Figure 12B: Two Hand Playing Mode (divided at middle C)



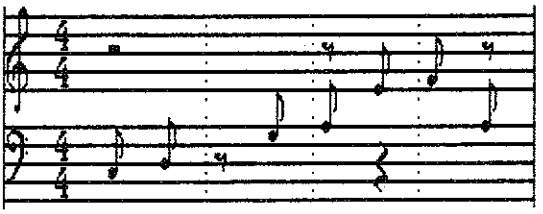


Figure 13A: Left Hand Playing Mode; Figure 13B: Two Hand Playing Mode (divided at middle C)

G. Transposition

Composer's Assistant can transpose up or down one full octave from the key in which the piece was originally performed. If a note is transposed out of the range of the keyboard, it is printed one octave lower or higher depending on which end of the keyboard it exceeds. If you transpose to a new key make sure to match the key signature to the transposition during ANALYSIS inputs. For example: A piece played in the key of "C" is transposed up a perfect 5th, so the signature should be changed to "G".

IX. CONFIGURATION PARAMETERS

Selecting option five of the main menu will route you to the configuration parameters menu (see figure 5). This menu allows you to specify your own particular system configuration including the number of disk drives, print-out and text input defaults, recording file type (meta or note) and printer type and location. To select a parameter simply type its associated number.

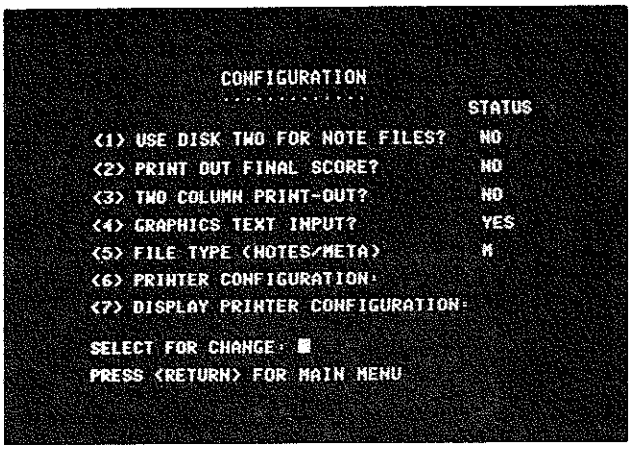


Figure 14: Configuration Parameters Menu

A. Use Disk Two for Files

The Composer's Assistant diskette should always be in disk drive number one. If a second disk drive is used then a storage diskette with meta or notes files should be in disk drive number two. Composer's Assistant is considerably more efficient with two disk drives. The initial default condition is "NO" for one disk drive. In this condition the Composer's Assistant and storage diskettes will have to be swapped in and out of drive one.

B. Print Out Final Score

If the "print out final score" parameter is set to "YES" then as soon as the graphics display appears on the screen, printing will occur. This may only be useful when using two disk drives and main menu option three "Analysis and Graphics" as explained in Chapter VII. If set to "NO" then the printer must be turned on in the Graphics Display program using "CTRL-T", if print-out is desired. The initial default condition is "NO".

C. Two Column Print Out

In two column print-out the score prints three bars of 4/4 time or four bars of 3/4 time in one vertical column down the page. Following the last bar of the first column, the program stops and requests, "run printer back to top of form". After the printer is adjusted back to the top of the form "press <RETURN> to continue:". The second vertical run down the page prints another column of bars achieving six bars of 4/4, or eight bars of 3/4, all on one piece of 11 inch paper. If "two column print-out" is set to "NO" then the printer prints one vertical column of bars down each 11 inch piece of paper. If you are printing out a rather long piece it may become a bit tedious to use two column print out. The initial default condition is "NO" for single column print out.

D. Graphics Text Input

When text input is set to "YES", the graphics display will stop after displaying the current bar and wait for text to be input. This stop is also necessary for extended viewing of each bar. Call the next bar by pressing the division key, "/". If text input is canceled the program will continuously display the whole score until the "repeat graphics display?" input is reached. The initial default condition is "YES".

E. File Type

Recordings made and saved to diskette using alphaPlus are referred to as "NOTE" files. Metatrak creates files of notes called "META" files. The correct file type must be specified or an error will occur in the analysis procedure. To select simply type "M" for meta file or "N" for note file. If set to use Meta files Metatrak track selection display will appear in the analysis procedure. The default condition is "M" for meta file.

F. Printer Configuration

To configure your Composer's Assistant diskette to a specific printer, Printer Configuration should be selected. Doing this will cause a prompt to appear requesting the printer configuation diskette, "Printer Initializer (SYNDUMP)", to be inserted into the drive.

As you enter the SYNDUMP configuration program your monitor screen should first give you a copyright notice. After a short pause, you will hear a beep and then you will be given a list of printers manufacturers. A complete list of printers and interface cards can be referenced in Appendix C.

Pick your printer's manufacturer and then press RETURN. Remember that you will always have to press RETURN after indicating your choice to your Apple. Now pick your printer's model number from the ones shown. You will next be asked to give a choice of parallel interface cards. If you don't know whether you have an Apple Standard or an Apple Centronics, try specifying the Apple Centronics. If you are wrong you will see an extra line feed between each printed line of graphics. You can then rerun the configure program and specify the correct card.

After you enter your interface card choice, you will be asked what slot your card is in. If you don't know, turn your Apple off, lift the lid and look for the printer controller card. (it is connected to your printer by a cable and it sticks up vertically out of a plug-in slot in your Apple's main circuit board). Look at the slot the card is plugged into. It is one of eight slots near the back of the Apple. As you face the Apple's keyboard the slots are numbered from left to right starting with Ø on the left and moving to 7 on the right. Your printer controller card is most likely in slot #1. Enter the slot number and press RETURN. At this point the SYNDUMP disk should come alive and whir and fizz for 15 to 2Ø seconds. What it is doing is writing your particular system configuration into the SYNDUMP programs. You will next return to the Composer's Assistant configuration menu.

G. Display Printer Configuaration

Selecting this parameter will cause the current configuration, printer, interface card, and slot number to be displayed for status.

X. SCORING TECHNIQUES AND INTERPRETATIONS

Composer's Assistant provides a cost effective, efficient and time saving method of scoring, by transcribing your keyboard performances to music notation. It is designed to be an "assistant" in this process, and will take you a large percentage of the way to standard musical notation.

Composer's Assistant creates notation similar to that used in piano scoring with some minor compromises made to enable such a complex application to reside on an affordable personal computer. These compromises concern various aspects of music notation including: staff and ledger lines, bar format and size, note grouping, dotted notes, tie markings, stem directions, triplets and time signatures. The modifications are such that the notation can still be easily sight read or used as a reference for creating a final publishable manuscript.

Reading the following sections should fully explain the scoring techniques used by Composer's Assistant and how to interpret and correctly read the printed score.

A. Staff and Ledger Lines

Traditionally the treble and bass clefs are separated by the vertical distance of one complete staff, and a subset of the ledger line reles control note placements in this internal space (see figure 15A). Above and below the staff the symbol "8va-------" is commonly used to specify a one octave increase or decrease in pitch (see figure 15B).

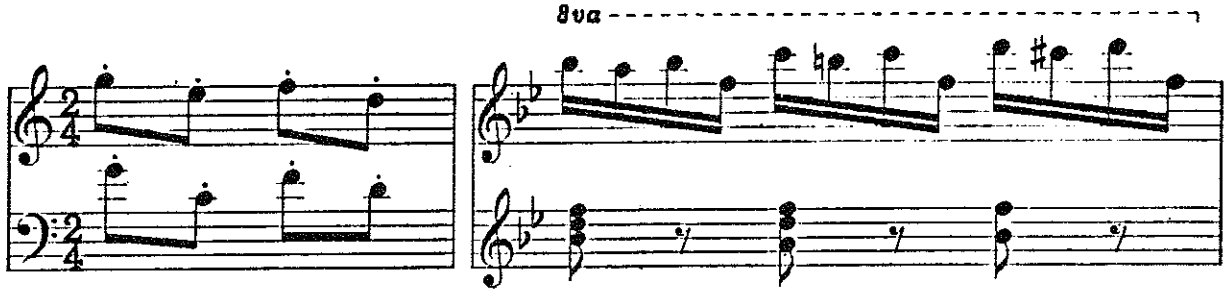


Figure 15A: Standard Ledger Lines; Figure 15B: Octave Symbol

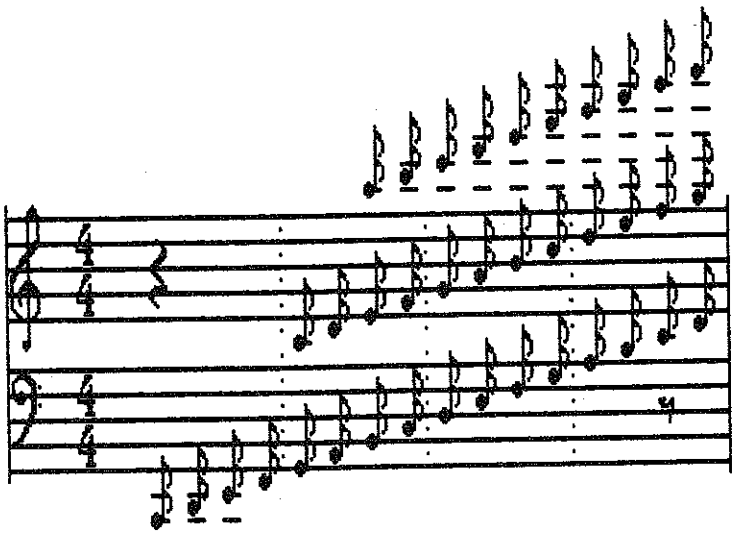


Figure 16: Composer's Assistant Staff and Pitch Range

Composer's Assistant maintains an absolute placement of pitches in its five octave range, separating the staffs by three note positions and using one and one-third octaves of ledger lines above the treble clef (see figure 16). Theoretically there are only three note positions between the two staffs; by not deviating from the fixed format principle, the complex rules for ledger line use of this internal space are avoided.

Because the treble and bass clefs are divided by only one ledger line (middle C), Composer's Assistant provides three keyboard playing modes for interpreting notes relative to the intended clef. These modes include a two hand playing mode (with the keyboard divided at middle C) and a right hand and left hand playing mode with no keyboard division. In the first mode all notes played from middle C and above will be placed with timing relative to the treble clef. Notes played below middle C will be played with timing relative to the bass clef. The second and third modes allow for notation of single hand parts which extend across middle C. The right hand mode references all notes played anywhere on the keyboard with timing relative to the treble clef, the bass clef receives all rests. The left hand mode is the opposite condition for the clefs. Examples of these modes are shown in figures 12 and 13.

B. Bar Format and Size

Due to the careful graphic design of the musical characters, Composer's Assistant can exactly display one bar of sixteen sixteenth notes, key signature of up to 7 flats or sharps, time signature, up to sixteen accidentals and five octaves of pitch. All screen formatting and size and shape of musical characters are designed around a resolution factor of a sixteenth note (see figure 16).

Because of the graphic design, many complex rules for note and accidental placement are avoided. An example of this is the shifting of notes when seconds occur at the same time. The traditional rules for this situation dictate a shift to the side of the stem so as to prevent overlap (see figure 17A). The Composer's Assistant graphic design makes it possible to have absolute location and does not have to compensate for this figure (see figure 17B).

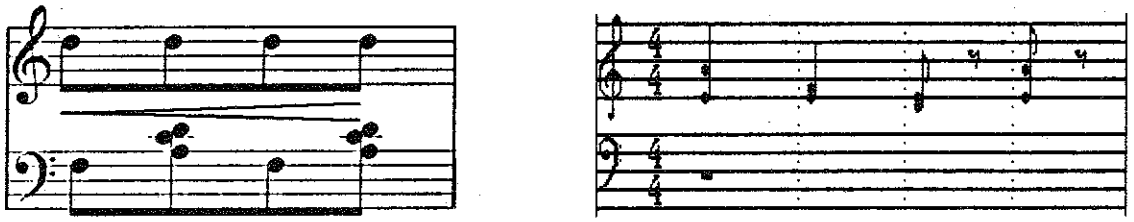


Figure 17A: Standard Shift of Second; Figure 17B: Composer's Assistant Absolute Location

In standard notation the horizontal length of a bar often varies. For example, if a quarter note is the smallest rhythmical division inside of one bar, then the bar may compress, as the space for sixteenth notes is not needed (see figure 18). Composer's Assistant always maintains it sixteenth note format as it provides a consistent visual image.

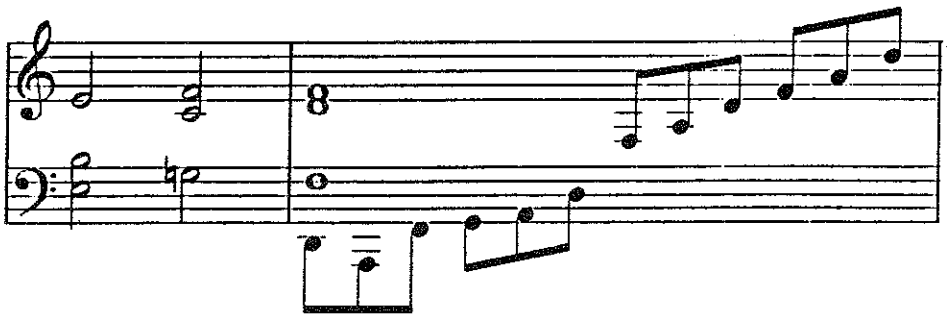


Figure 18: Standard Bar Size Compression

C. Note Grouping

There are many techniques for notating different groupings of notes, such as time signature, stem barring, and phrase markings. Stem barring is used to group individual notes into larger units of time (see figure 19). For example, the stems of four sixteenth notes are barred together to form a quarter note duration value. Composer's Assistant treats every note as an individual event and uses a unique character, **the beat placement line**, to notate subdivisions of the whole bar. The beat placement line notates the beginning of each metronome beat, and provides the visual cues for recognition of groupings. The beat placement lines can be seen in figure 17B or any other Composer's Assistant staff print-out.

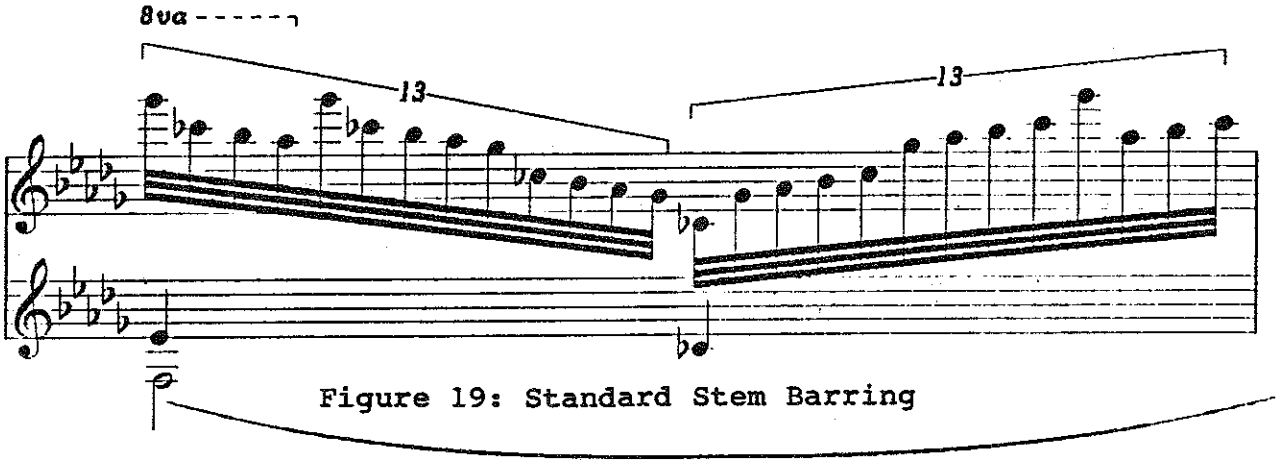


Figure 19: Standard Stem Barring

D. Dotted Notes and Tie Markings

Dotted notes and tie markings are used in Composer's Assistant for proper rhythmic interpretation. Dotted note values can be single, double or even triple depending on the total rhythmic divisions involved. Tie markings are used within a single bar to group notes of nondescending rhythmic divisions such as a quarter note and a sixteenth. They are also used if a note exceeds the bar line. If this occurs it is divided and a tie marking connects the note across the bar (see figure 19). This is normally a line which curves up or down depending on the pitch range in which it falls, and on whether it will cause visual interference with other notes. By using a straight dotted line which extends out from the note and across the bar, all potential for interference is eliminated as no other note will be occuring in the tied note's pitch position (see figure 2Ø). Often notes will exceed the bar by a very small duration. This small tie-over is occasionally caused by player timing errors and is not wanted in the final score. A special analysis parameter can be adjusted to cancel this division for small duration values.

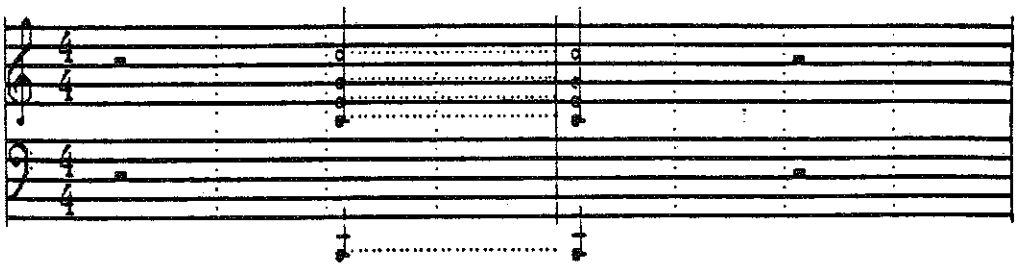


Figure 2Ø: Notes Tied Across Bar Line

E. Stem Directions

The set of rules for stem directioning is interrelated to every aspect of notation. Stem direction must notate groupings, hand assignment, pitch range, voice leading, and keyboard technique. There is no other set of rules with so many exceptions. Piano notation divides its pitch range into four sections with each range notated by a stem direction reversal. However, this rule is often altered to lend clarity to other aspects of the score (see figure 21A).

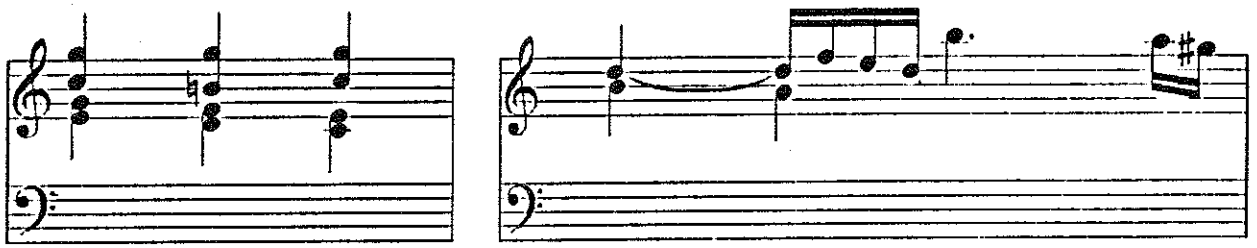


Figure 21A & 21B: Standard Stem Direction

All stems go up in Composer's Assistant. Even with this compromise there are still extensive subsets of rules which are necessary for calculating visual interference. The most obvious case of interference is caused by two simultaneous sixteenth notes very close together in pitch.

The flags of the two notes print over the top of each other unless an alteration of the lower note is made (see figure 17B). The program which checks and corrects this condition determines whether the lower note is flagged. If it is, the flag is removed and just the note and stem printed. The note now assumes the duration value of the upper note, unless the lower note was larger. In this case, the larger of the two flagged values shifts to the top.

If no flag is detected on the lower note then it is not altered (see figure 22). This causes a slight modification of standard notation, which normally would reverse stem direction (see figure 21B), but remains an entirely legible figure.

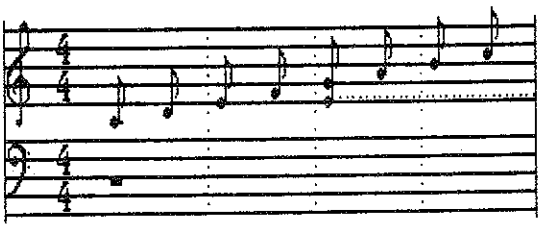


Figure 22: No Flag Detected on Lower Note

F. Triplets

Triplets are traditionally notated by a curved line above or below the three note grouping with a "3" figure in the center of the line (see figure 23A). In Composer's Assistant, this figure is notated by a shift of the triplet notes out of their normal locked horizontal positions, thus achieving a perfect three not symmetry inside of one beats duration. Additional markings are not needed because the shift is so obvious (see figure 23B).

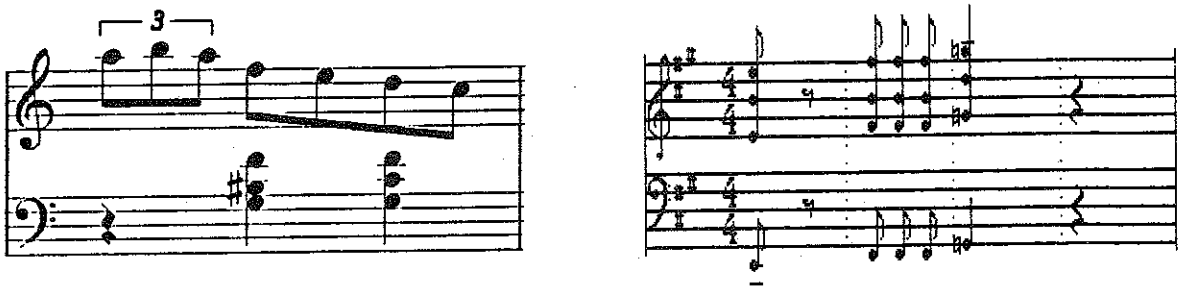


Figure 23A: Standard Triplets; Figure 23B: Composer's Assistant Triplets

G. Accidentals

Each key signature implies that a note out of its key be marked with an accidental. In standard notation when a flat, sharp or natural occurs inside of one bar the accidental remains for the duration of the bar (see figure 24). The bar line cancels the accidental unless the note is suspended into the next bar. In Composer's Assistant any note out of the key signature is always marked by an accidental. Any unmarked note is in the key signature.

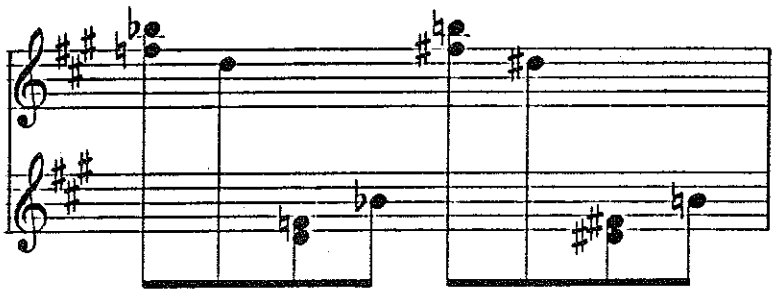


Figure 24: Standard Accidental Conventions

H. Time Signatures

In contemporary music there are a large number of time signatures and often a variation of signatures between bars (see figure 25). In Composer's Assistant screen displays are formatted for 4/4 time, 3/4 time and a special "Free Time" mode available for all other signatures. In "Free Time" bar lines are eliminated and only beat placement lines occur (see figure 26). The bar lines can be hand drawn in by counting the beat placement lines. With this technique varying time signatures can occur within a score.

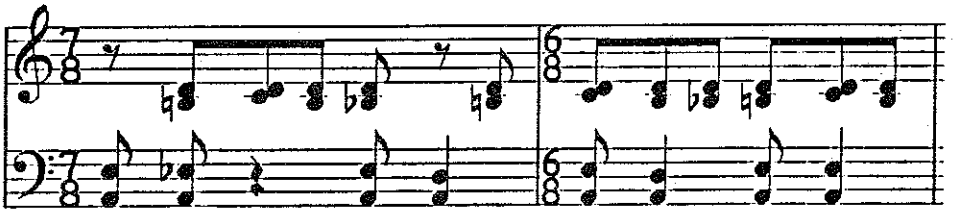


Figure 25: Standard Time Signature Variation

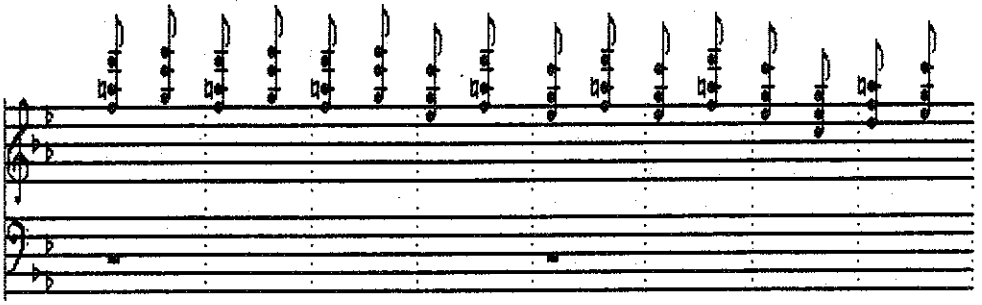


Figure 26: Free Time

CONCLUSION

For many of us who dread the hours it often takes to transfer our musical creations to paper or don't have the refined skills to approach the task in the first place, Composer's Assistant and the alphaSyntauri synthesizer are an invaluable tool.

If you have already made use of Composer's Assistant or have read this manual in preparation to do so, **Congratulations!** We're sure you'll find Composer's Assistant to be of "great assistance", saving you both time and effort in the process of scoring music.

If you have any comments or suggestions for future enhancements to the Syntauri product line, write them down and send them to Syntauri with your warranty card or in a separate letter. We want to develop the products you want, so let us know what you think.

APPENDIX A: COMPOSER'S ASSISTANT^{tm} DEMONSTRATION

We have included a Metatrak recording that has been anaylzed by Composer's Assistant for your use as a quick demonstration. The Metatrak recording consists of six tracks (piano, brass, bells, strings, flute and gong type sounds). The first three tracks were analyzed together and printed out using Composer's Assistant.*1 The final print-out is included on the last page of this Appendix*1.

For the demonstration, follow the instructions below*2:

TO SEE THE MUSIC NOTATION ON THE VIDEO SCREEN:

Step 1. Boot-up*3 the Composer's Assistant diskette and wait until the main "menu" (a selection list) of options appear.

Step 2. Type "2" for "Graphics Display" followed by "RETURN".

Step 3. A prompt will appear to insert storage disk, just type "RETURN".

Step 4. Another prompt will appear to load a file for display. If the name "DEMO TRKS 1-3" appears, simply type "RETURN". If not type "DEMO TRKS 1-3" followed by "RETURN".

Step 5. Continue to type "RETURN" after each new prompt until the first bar of notation is displayed on the screen.

Step 6. To step to the next bar type the "/" key. To start over, type "CTRL-R". To quit, step through the score until a prompt asks to "Repeat Graphics Program (Y/N)" then type "N" followed by "RETURN".

TO HEAR THE METATRAK RECORDING:

Step 1. Boot-up the Metatrak II diskette and wait until live mode (the keyboard responds audiably and visually).

Step 2. Press the "spacebar" to get the record/playback menu.

Step 3. Insert the Composer's Assistant diskette into drive.

Step 4. Type "L" for load, followed by "RETURN", a prompt will appear to load a meta file, type the name "DEMO 140 35" followed by "RETURN".

Step 5. After the meta file is loaded a prompt will appear to load the track master. Using the right arrow key step through the name that appears ("DEMO 140 35") then press "RETURN".

Step 6. The record/playback menu will reappear, type "P" for playback followed by consecutive "RETURN"s until playback is heard.

TO RE-ANALYZE THE METATRAK RECORDING:

Step 1. Boot-up the Composer's Assistant diskette and wait until the main menu of program options appear.

Step 2. Type "3" for "Analysis and Graphics Display" followed by RETURN".

Step 3. Using the section in Appendix B, "To Analyze" as a reference, enter the following information when asked to by the screen.

INSERT STORAGE DISK:	(Hit "RETURN", the recording is on the Composer's Assistant disk)
FILE NAME FOR ANALYSIS:	DEMO 140 35
SELECT TRACKS FOR ANALYSIS:	(Tracks 1-6)
RECORDED METRONOME MARKING:	140
ANALYSIS METRONOME MARKING:	35
KEY SIGNATURE:	C
TIME SIGNATURE:	4/4
TIMING RESOLUTION:	1/16
NAME FOR ANALYSED FILE:	(use a name other than DEMO TRKS 1-3)

Step 4. Wait for preliminary and primary analysis to complete

Step 5. When asked to insert storage diskette us a diskette other than Composer's Assistant. The Composer's Assistant diskette is totally full with no more room for new files.

Step 6. Follow the instructions on the screen until you see the music notation displayed. Use the section in Appendix B, "To Display Graphics" as a reference.

For more information on using Composer's Assistant please refer to the Table of Contents.

NOTE *1: The "two column print out" option was set on for this print out, its original default condition is off. Also, text was added to the final print out).

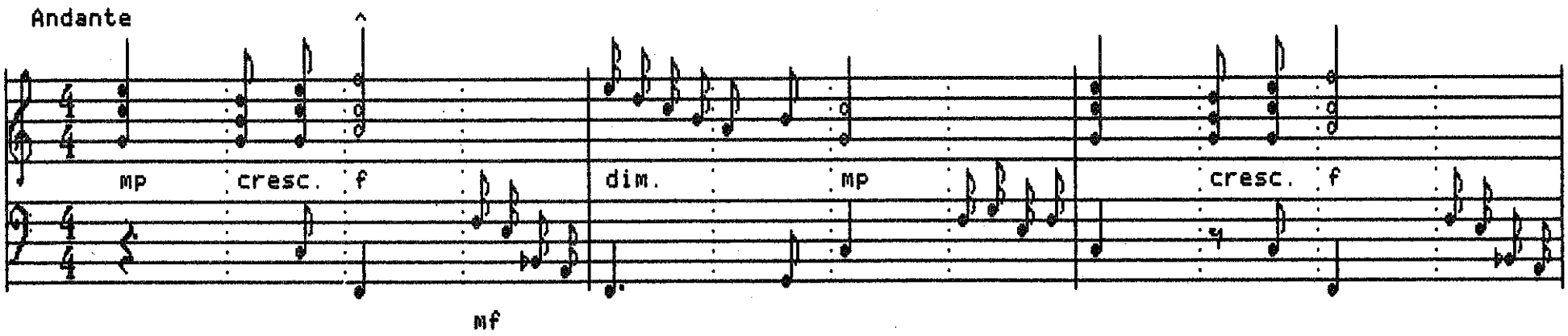
NOTE *2: This demonstration of Composer's Assistant assumes that you are using the Composer's Assistant as it was originally set up when you received the product (the original default conditions).

NOTE *3: Boot-up of Metatrak or Composer's Assistant should be done by turning the power switch off, then on, then inserting the respective diskette.

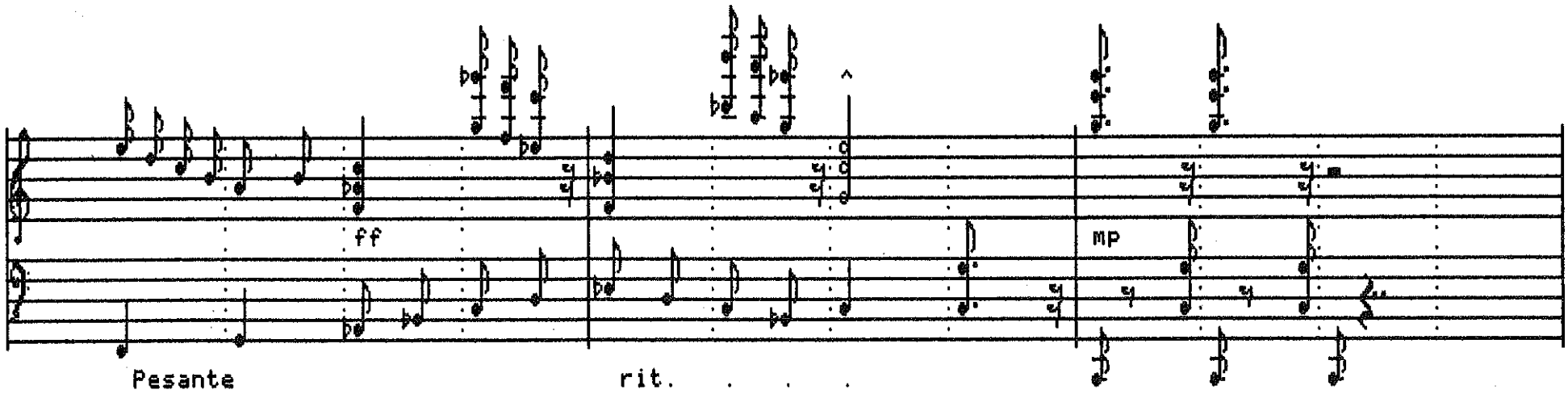
#1 DEMO TRKS 1-3

Composer's Assistant tm

Demonstration



#4



APPENDIX B: COMMAND AND OPERATION SUMMARY

TO RECORD

-Record your performance with Metatrak II or alphaPlus (rev.2) using the metronome for timing reference. Try to keep your recording under 1000 notes.

-Be aware of the three keyboard division modes used in Composer's Assistant, Two Hand (middle C division), Right Hand (all rests in bass clef), Left Hand (all rests in treble clef).

-Remember your metronome tempo, key signature, keyboard division technique and time signature, (this information can be included in your file name to help you remember), then save your recorded file to a spare storage diskette.

TO BOOT UP COMPOSER'S ASSISTANT

-Turn power switch off, then on, then insert the Composer's Assistant diskette. The main menu for selecting program options will appear.

-"CTRL-G" followed by "RETURN" at any time (except during print out) will send you back to main menu.

TO ANALYZE (option 1)

-This option is used to enter information needed for analysis of a "Meta" (Metatrak) or "Notes" (alphaPlus) file recording.

-Have your recorded files on a separate storage disk, if two drives are used place the recording in drive two, otherwise follow the screen instructions for swapping diskettes.

-FILE NAME FOR ANALYSIS: (Meta or Notes File name, a "?" will give a catalog of the disk)

-SELECT TRACK FOR ANALYSIS: (Metatrak only, 1-16, ON or OFF

-RECORDED METRONOME MARKING: (set tempo, 0-280)
ANALYSIS METRONOME MARKING: (actual tempo, 0-280)

-KEY SIGNATURE: (as shown in display, 1-15)

-TIME SIGNATURE: (4/4, 3/4 or Free Time, 1-3)

-TIMING RESOLUTION: (1/16, 1/8, 1/8 Triplets, 1-3)

-NAME FOR ANALYZED FILE: (name for CA graphics file)

-After the above, preliminary and primary analysis will occur and a "CA:" graphics file will be created and saved to disk.

TO DISPLAY GRAPHICS (option 2)

-This option allows a "CA:" graphics file (an already analyzed Meta or Notes file) to be displayed on screen or printed out.

-Have your storage disk with the "CA:" graphics file handy. If set for two disk drives put the storage disk in drive two, other wise follow the screen instructions for swapping disks.

-FILE FOR DISPLAY: (CA: graphics file, a "?" will give a catalog of the disk)

-NUMBER TO START BAR LABELING WITH: (1-32,76Ø)

-BAR RANGE TO DISPLAY
FIRST BAR: (number of first bar to be displayed or printed)
LAST BAR : (number of last bar to be displayed or printed)

-"/" displays next bar if text input is set on.

-"CTRL-R", goes back to "File for Display".

-"CTRL-T", allows text input and print-out to be set

-"ESC" allows J, K, L, M, to be used as cursor controls. Press once for cursor, press again to enter text for print-out.

-"CTRL-K" sets upper case

-"CTRL-L" sets lower case.

TO ANALYZE AND DISPLAY GRAPHICS (option 3)

-This option combines both analysis and graphics display for immediate graphics display after analysis (rather than returning to the main menu).

TO CHANGE ANALYSIS PARAMETERS (option 4)

-Select this option if you wish to change any of the default analysis parameters. (When a parameter is selected, the choices are given on the screen.)

PARAMETERS	DEFAULT
HORIZONTAL PLACEMENT SHIFT	= 3 (1/128 note forward)
NOTE VALUE SHIFT	= 1 (none)
REST MINIMUM VALUE	= 2 (1/64 note)
LIMIT NOTE DIVISION AND TIE OVER	= 2 (1/64 note)
MINIMUM NOTE VALUE	= 1 (1/128 note)
KEYBOARD DIVISION	= 1 (two hand, middle C)
TRANSPOSITION	= Ø (none)

A command to restore the default parameters is also included.

TO CHANGE CONFIGURATION PARAMETERS (option 5)

-Select this option if you wish to change any of the following default configuration parameters:

CONFIGURATION	DEFAULT CONDITION
USE DISK TWO FOR FILES	= NO (single disk drive)
PRINT OUT FINAL SCORE	= NO (select print out when displayed)
TWO COLUMN PRINT OUT	= NO (single column print out)
GRAPHICS TEXT INPUT	= YES (add text to print out, allow for bar by bar display
FILE TYPE	= M (METATRAK Meta files not alphaPlus Note files)
DISPLAY PRINTER CONFIGURATION	= (EPSON MX8Ø, EPSON APL CARD, Slot #1)

APPENDIX C: SUPPORTED PRINTERS AND INTERFACE CARDS

The following is a list of all the printers and interface cards supported by Composer's Assistant via the Printer Initializer (SYNDUMP).

PRINTERS

Apple DMP/Silentype
Anadex 9500/9501/9000/9001
Centronics 739/122
Epson MX-70/MX-80/MX-100 Graftrax80/Graphtrax+
IDS 440G/445G/460G/560G/Prism
ITOH 851;
MPI 88G
NEC 8023
Okidata 82A/83A/92/93/84/84 STEP 2

PARALLEL INTERFACE CARDS

ALS Printermate
Apple Standard
Apple Centronics
CCS 7728
Epson APL/Type2
Grapler
Microbuffer II
Microtek Apple Dumpling
Mountain CPS
Prometheus PRT-1/Versacard
SSM-APIO
TYMAC

APPENDIX D: INDIVIDUAL PRINTER SPECIFICATIONS

INTRODUCTION

This Appendix is sectioned with regard to each individual printer. Each printer has its own strong points, quirks and limitations as well as individual horizontal centering numbers. We recommend that you read the section on your printer.

APPLE DMP

See ITOH 851Ø. They are basically the same machine with different covers.

ANADEX 9ØØØ/9ØØ1/95ØØ/95Ø1

The Anadex printers differ only in their dot size, type size, and carriage size. The 9ØØØ is exactly the same as the 95ØØ with the exception of its shorter carriage. The same is true of the 9ØØ1 and the 95Ø1. The only difference between the 9ØØ1/95Ø1 and the 9ØØØ/95ØØ is their type size and dot spacing. The difference in dot spacings means that the two types of Anadex printers have different centering functions. Due to the unequal horizontal and vertical dot spacing the the 95ØØ your graphics will appear to be somewhat elongated in comparison to your screen graphic. The Anadex 95Ø1 will not print Magnification 3 graphics without the optional expansion buffer.

There are two versions of the way that the Anadex Printer handles control codes. The early version does not perform an automatic line feed on receipt of a Printer Control Code whereas the later versions do. The very first thing that your SYNDUMP Software does is to issue a control code to tyrn off the Auto Line Feed. On the later versions this control code will cause a line feed and throw your top of form off by one line when you exit the program. In order to defeat this problem we recommend you purchase an interface that has auto line feed as its default mode.

You will also notice that the Anadex printers have a routine that allows the SYNDUMP Software to give them graphic shortest logical path. Quite nifty.

ANADEX GRAPHIC CENTERING

If you want to change the horizontal placement of your graphics, first BLOAD the DRIVER.OBJ2 into memory. The graphic is spaced a three digit number of dots from the left edge of the paper to the left edge of the graphic. Each of the three digits is stored in a different Byte. Example: If you wanted to specify a margin of Ø35 dots, x would equal Ø, y would equal 3, and z would equal 5.

```
LEFT SIDE    POKE 35ØØ6,z
             POKE 35ØØ8,y
             POKE 35Ø1Ø,x

RIGHT SIDE   POKE 35ØØ7,z
             POKE 35ØØ9,y
             POKE 35Ø11,x
```

The graphic margins specified in the SYNDUMP CONFIGURE program are as follows:

	9ØØØ/95ØØ	9ØØ1/95Ø1
LEFT SIDE	17	3Ø
RIGHT SIDE	194	34Ø

CENTRONICS 739/122

The Centronics 739 and 122 are very much the same in performance with the exception of the 122 being unable to access compressed print size. The Auto Line Feed switch must of OFF. A parallel interface that defaults to Auto Line Feed is recommended for the Centronics printers in that the Auto Line Feed in the printer may remain off and you may still list your programs or print from an immediate mode without turning the Auto Line Feed on. Strangely enough the Apple Centronics interface does NOT default to Auto Line Feed and thus is not recommended. The Centronics printers use a Data Compression technique that forces the print head to return if the graphic is more than a certain degree of complexity. Therefore on some lines you amy see the Centronics print head return to the left margin after printing part of a line then go back to print the rest of the line. This is internal in the Centronics machine and is NOT generated by your SYNDUMP Software. The final product will look just fine.

CENTRONICS GRAPHIC CENTERING

If you wish to change the horizontal placement of your graphics, first BLOAD DRIVER.OBJ2 into memory. The graphic is spaced a number of dots from the left.

To Specify a Graphic Margin of x dots:

```
LEFT SIDE    POKE 35ØØ6,x
RIGHT SIDE   POKE 35ØØ7,x
```

The Grapic Margins specified in the CONFIGURE Program are as follows:

	739	122
LEFT SIDE	255	35
RIGHT SIDE	255	4Ø

EPSON MX-70/MX-80/MX-100

The EPSON MX-70 needs no special switch settings or other special care. We recommend that you use the EPSON APL Parallel Interface Card. There is only one magnification available on the MX-yo and it is slightly eleongated due to the differing horizonatal and vertical dot spacings.

The EPSON MX-80 must be equipped with the Graphtrax-80 or Graphtrax Plus Graphics ROMS available from EPSON America in order to print dox matrix graphics. The MX-80 can achieve truly amazing resolution with a 120 x 140 dot matrix. The MX-80 with Graphtrax-80 loses its top of form when it goes into graphics mode, though the SYNDUMP Printer keeps track for it. When using the GRTX Dump be sure to remember that where the paper stops is where the MX-80 thinks the top of the form is. Be careful when printing large spaces of solid black. We have heard reports that is it possible to overheat and burn the printhead, although we have not had that experience in our testing of the MX-80. We recommend the EPSON APL Parallel Interface card for use with the EPSON MX-80 and with the MX-100.

Before you start printing with your EPSON MX-80 or Mx-100 you must have the internal dip switches properly set. We have included a table of the proper settings for each printer. The dip swithches represent different functions on the two printers.

	MX-80	MX-100
S1-1	OFF	*OFF
S1-2	*ON	*OFF
S1-3	*ON	OFF
S1-4	OFF	OFF
S1-5	OFF	*OFF
S1-6	OFF	ON
S1-7	OFF	ON
S1-8	*ON	*ON

	MX-80	MX-100
S2-1	OFF	ON
S2-2	OFF	ON
S2-3	*OFF	*0FF
S2-4	*OFF	*ON

The switch settings marked it an "*" are required to be at that setting for proper operation. The other switch settings are optional, but preferred.

EPSON GRAPHIC CENTERING

If you want to change the horizontal placement of your graphics first BLOAD DRIVE.OBJ2 into memory. The Graphic is spaced from the left. The MX-80 and MX-100 use condensed spacing for more exacting placement.

To Specify a Graphic Left Margin of x:

LEFT SIDE POKE 35006,x
RIGHT SIDE POKE 35007,x

The Graphic Margin specified in the CONFIGURE program is as follows:

	MX-70	MX-80	MX-100
LEFT SIDE	5	7	7
RIGHT SIDE	27	54	54

IDS 440/445/460/560

The IDS 440 and 445 are virtually indistinguishable. The only substantive difference if that the 445 print head is manufactured by IDS themselves. Only one magnification is available on the 440/445 and the graphic image is slightly elongated due to the differing horizontal and vertical dot spacing.

The IDS 460 and 560 differ only in their carriage width. The graphic dots are evenly spaced horizontally and vertically at 84/inch. The Auto Line Feed switch must be disabled in order to have proper vertical register when running the SYNDUMP. We recommend an interface that defaults to Auto Line Feed with the IDS Printers so that you needn't switch the Auto Line Feed off and on in the printer when using the SYNDUMP Software.

IDS GRAPHIC CENTERING

If you wish to change the horizontal placement of your graphics first BLOAD DRIVER.OBJ2 into memory. The graphic is spaced from the left edge of the paper to the left edge of the graphic with a margin that is counted in normal print spaces.

To specify a left graphic margin of x spaces:

LEFT SIDE	POKE 35006,x
RIGHT SIDE	POKE 35007,x

The graphic margin specified in the CONFIGURE program is as follows:

	460	560	PRISM	440/445
LEFT SIDE	9	9	9	36
RIGHT SIDE	53	53	53	200

ITOH 8510 and NEC 8023

The ITOH 8510 and NEC 8023 are the same printed in different cases. They print quite precise graphics and have a nice character set. The two printers have a small problem with placement of their graphic lines due to their bidirectional graphic printing. We have inserted a compensating half pixel on every other graphic line to try to compensate for that problem. You can adjust the print head alignment further with an adjustment pot located under the print head track next to the dip switches. The dip switches must be set as follows:

SW 1-8	OPEN	SW 2-8	OPEN
SW 1-7	CLOSED	SW 2-7	CLOSED
SW 1-6	OPEN	SW 2-6	OPEN
SW 1-5	OPEN	SW 2-5	OPEN
SW 1-4	OPEN	SW 2-4	OPEN
SW 1-3	OPEN	SW 2-3	OPEN
SW 1-2	CLOSED	SW 2-2	OPEN
SW 1-1	OPEN	SW 2-1	CLOSED

ITOH AND NEC GRAPHIC CENTERING

If you wish to change the horizontal placement of your graphics first BLOAD DRIVER.OBJ2 into memory. The graphic is spaced a number of dots from the left.

To Specify a Graphic Margin of x dots:

LEFT SIDE POKE 35ØØ6,x
RIGHT SIDE POKE 35Ø07,x

The Graphic Margins specified in the CONFIGURE Program are as follows:

LEFT SIDE 13
RIGHT SIDE 87

MPI 88G

The Auto Line Feed switch on the MPI 88G must be OFF. We recommend using interfaces that default to Auto Line Feed. With these cards you will not have to turn the Auto Line Feed on and off in the printer every time you use the SYNDUMP Software.

If you wish to change the horizontal placement of your graphics first BLOAD DRIVER.OBJ2 into memory. The graphic is spaced a number of dots from the left.

To specify a Graphic Margin of x Dots:

LEFT SIDE POKE 35ØØ6,x
RIGHT SIDE POKE 35Ø07,x

The Graphic Margins specified in the CONFIGURE Program are as follows:

LEFT SIDE 4Ø
RIGHT SIDE 255

NEC 8Ø23

See ITOH 851Ø. They are the same machine with different covers.

OKIDATA 82A/83A/92/93/84/84 STEP 2

The OKIDATA 82A and 83A are virtually the same printer with the exception of the longer carriage on the 83A. The dot pattern is quite tight on the 92, 93 and 84's and they have proved to be some of the most precise of the printers we have tested. The Auto Line Feed switch must be disable in order to have proper vertical register when running the SYNDUMP. For this reason we recommend using an interface that defaults to Auto Line Feed mode.

If you wish to change the horizontal placement of your graphics, first BLOAD DRIVER.OBJ2 into memeory. The graphic is spaced from the left edge of the paper to the left edge of the graphic with a margin that is counted in graphic dots of 1/60th of an inch.

To specify a left graphic margin of x dots:

```
LEFT SIDE    POKE 35006,x
RIGHT SIDE   POKE 35007,x
```

The graphic margin specified in the CONFIGURE program is as follows:

	82A	83A	84	84S2	92	93
LEFT SIDE	11	11	24	20	20	20
RIGHT SIDE	183	183	135	125	125	125

SILENTYPE

The Silentype printer can print only on magnification. It is automatically set for the unidirectional mode before a graphic is printed. If you wish to change the graphic margin, refer to the MPI section.

The Graphic Margin specified in the CONFIGURE Program is as follows:

```
LEFT SIDE    5
RIGHT SIDE  32
```

TRENDCOM

The Trendcom printer is the same printer as the Silentype without the Apple specific roms. Treat it just as you would a Silentype from the SYNDUMP program.