Songworks II

polyphonic

ARS NOVA

Owner's Manual

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polyphonic

OWNER'S MANUAL

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About Songworks II

Songworks II is a composer's workshop and also a tool for non-composers to use in exploring music. Whether you want to compose your own music or study your part in a choral composition, Songworks can help you do both. It can generate thousands of new musical ideas to stimulate your creativity, help you in putting your own ideas on paper, transform your ideas with various technical devices used by composers, print your composition in high resolution, and play it for you either on the computer's own speakers or via an external MIDI device. You don't have to have MIDI to use Songworks II; all that it requires is built into your Macintosh.

Songworks II can automatically notate music that you play on a MIDI keyboard (both hands, with notes as quick as a sixteenth), or even simple tunes that you play on the computer keys. It can import and automatically notate hundreds of MIDI files available on the Internet. It can suggest chords to go with your composition, and can suggest more melody ideas to go with your chords. It will help you align lyrics easily. It can export the composition as a MIDI file, or export a sound file or even a picture of the music for use in multimedia documents. The feature called "Take a Picture" provides a very convenient way to quickly create high-resolution music examples or school assignments.

One of the most interesting features of Songworks II is *Active Listening*, in which you can play a part in a multipart composition as the computer plays the other voices. You can do this merely by tapping keys in the desired rhythm with the pitches supplied automatically. You can even use your computer as a chamber instrument, playing duets or quartets with other players at adjacent computers – without necessarily having skill in playing an instrument. You'll find that Active Listening greatly enhances your ability to understand and enjoy a composition.

Setting Up

On a Macintosh computer there is little to do for setup: just run the installer program called "Install Songworks II."

When the installer finishes, you should leave the installer disk in the drive as you start the program for the first time. Then you can put away the installer disk and keep it safe in case you ever need to install again.

Launch Songworks II by double-clicking the Songworks II icon, and you're ready.

Avoiding conflicts

There are a great many add-on programs available for your computer, and in some cases they can interfere with sound or MIDI. The following are a couple you should watch out for.

Virtual Memory: This is an option in the Macintosh memory control panel. On some computers it can interfere with sound, or cause the cursor to jump. If your have such problems, try turning off Virtual Memory.

Programs that "double RAM": This is another class of program that can interfere with system performance, especially regarding sound.

FAX and email software: if it's on and listening for an incoming message then it's taking up valuable processor time and may interfere with sound. These can be left inactive until you need them.

Other background programs: Some software, such as FileMaker Pro, may be constantly active in the background if it has a window open, even though it seems not to be active. This can cause degradation and chattering in the sound. It's best just to close such programs when running music software.

If you have any questions, please email help@ars-nova.com, call 425-889-0927, or visit our support page at www.ars-nova.com.

Maximizing sound quality

Most current computers have adequate sound systems "built-in," but even the best can benefit from an external powered speaker that is specifically designed to be used with a computer. These small speaker systems can be used with Songworks' own sound, with QuickTime music instruments or with an external MIDI instrument.

Music keyboards

Because the letter keys can be used as a piano, Songworks II is useful "as is" with no extra equipment. However, you may prefer to have some sort of music keyboard connected to the computer for input. The simplest input device is the *MiniKeys* keyboard, available through Ars Nova for $15. *MiniKeys* is a hard plastic overlay that sits on your computer's letter keys and converts them to a little melody piano. It lifts off when not in use, and has no electronic parts to worry about. *Minikeys* can also be used with Ars Nova's *Practica Musica* and *Kidmusic,* and is supplied as part of the *Kidmusic* package.

Another option is MIDI (Musical Instrument Digital Interface). The main advantage of using a MIDI keyboard for input is that you can play music "with both hands" instead of being limited to a single melody on the computer's keys. MIDI keyboards typically connect to your computer's modem or printer port via a "MIDI Interface" box, available for well under $100. You need only connect the device and choose the MIDI instrument button on the Songworks screen if you are using the default MIDI Manager software. If you would rather use Opcode's OMS (Open MIDI System) there is an option available in the Sound Settings window.

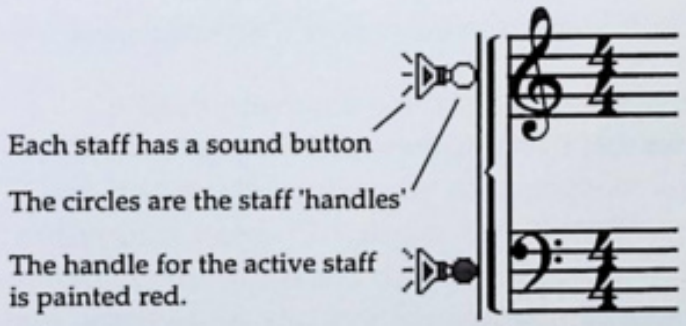
The Edit Window

Staves and their controls

The music editing window in Songworks II displays one or more musical staves, plus a line on which you can enter chord symbols. You can also enter text, either free-floating or attached to one of the staves as lyrics.

A staff is controlled by a small round handle at its left end. You can click in the staff's handle to drag it up or down or just to select the staff. A staff must be selected, or made active, before any changes or additions can be made to it. Clicking on the staff handle is not the only way to activate a staff; it will automatically activate whenever you click on one of its symbols, such as a note or rest. Another quick way to activate different staves is with the up and down arrow keys: the up arrow, for example, will deactivate the current staff and activate the one above it.

If a staff has multiple tracks, that is, if there are places in it where more than one note is sounding simultaneously, it will have a separate handle for each track.

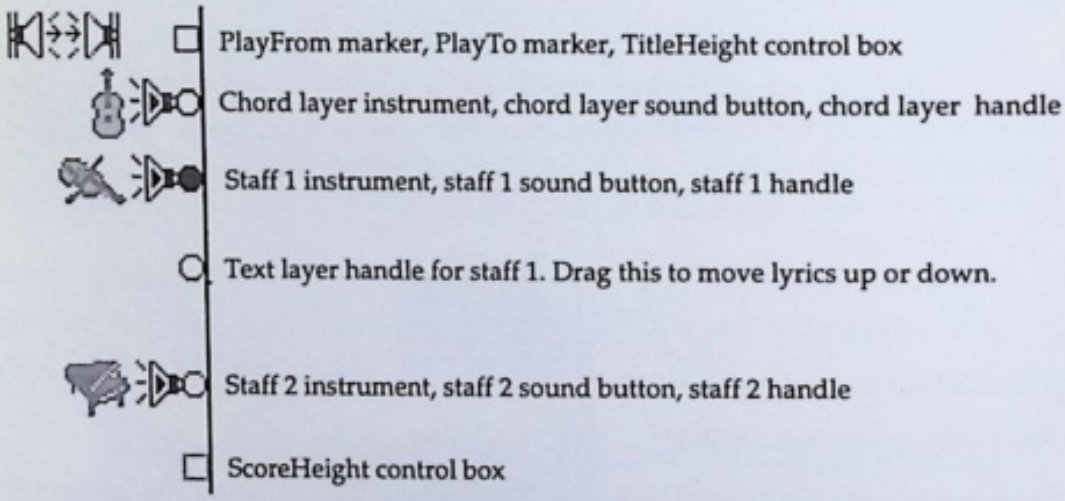


A file named "Template Score" determines what sort of staff arrangement appears when you start the program. You can edit the Template Score so that new files always open as a single staff, as four staves joined by a bracket, as an orchestra score, or whatever you choose. The Template Score file is kept in your Songworks Folder.

The Three layers

There are three independent layers to the edit window: one for entering or editing staff symbols, one for chord symbols, and one for text. Only one layer can be active at a time. When you click on a staff handle or choose a staff symbol such as a note, the staff layer will automatically become the current layer. When you choose the Text tool or click on a staff's text handle, the text layer will be chosen, graying out the music. If you select a chord symbol or click on the score's chord handle, the chord layer will be chosen, graying out everything else. You can enter or select only items appropriate to the current layer, which makes it easier to select items that overlap. The position of the lyric lines, the chord symbol line, and the staves themselves can be changed by dragging these layer handles up or down.

Other staff controls



The TitleHeight control allows you to add some space at the top of the first page so that it will be easier to print a title. Drag the TitleHeight control downward to make more room for a title.

The ScoreHeight control is a similar control box, but is located underneath the staves. It regulates how wide a space will intervene before the next staff system is printed. Drag the ScoreHeight control downward to increase the space between staff systems; drag it upward to make them

print closer together. (Space between individual staves is adjusted by dragging the staff handles up or down.)

The Staff Instrument control shows which instrument is currently selected to play the music of the staff. Click on the Staff Instrument icon to cycle through the list of instrument choices. If you are using MIDI output, the Staff Instrument control will tell which MIDI channel is assigned to the staff. If using QuickTime instruments, there will also be an indication of which QuickTime instrument is selected for that channel. (Click on the instrument name to change it.)

The Staff Sound control allows you to select which staves will be heard. For example, you can listen to the composition without the bass line, if desired. Or you can hear the chords alone, since the chord line has its own Sound control and Instrument control.

The PlayFrom and PlayTo tools allow you to select a portion of the composition for playing. This is especially handy if you are limited in memory: playing a large composition can require a great deal of memory unless you are using MIDI or QuickTime output. Click on either of these tools and then click in the music at the desired place. The PlayFrom and PlayTo points can also be dragged right or left. The quickest way to return either of these to its default position (at the beginning or end of the piece) is to click on the tool and then click in the left margin.

Staff playback volume can be controlled through a command in the Staff menu, which sets the volume for all notes in the active staff. The Note Information window also enables you to adjust the volume of individual notes. To access the Note Information window select the note(s) in question and then press Command-i (Command-i will display an information window for any selected item).

For information about "real-time" volume adjustments please refer to Active Listening on page 57.

Input and Editing

Entering and editing music

There are many ways to enter music. It can be entered by a variety of manual methods, or recorded in "real time," or imported from a MIDI file.

Method One: Select the note value you want from the choices above the keyboard and then click in the staff where you want the note or other item to appear. If you want the note to carry a sharp or a flat, click on the desired symbol before clicking in the staff (see also page 28 regarding accidentals).

Method Two: Select a note value and then play a note on the screen keyboard, the letter keys or *MiniKeys* overlay, or a MIDI keyboard, and the note will appear at the current insertion point in the currently active staff (the staff whose handle is highlighted). Rests and other symbols can also be entered this way; playing a note enters whatever staff symbol is currently chosen.

Method Three (for speed entry): Use the number keys to switch from one value to another while playing pitches with the other hand. Press Command - [any number from 1 to 7] to change the cursor to notes, Command - Option - [same numbers] to select rests. Once the cursor is a note or a rest, the number alone can be used to change its value: "1" is whole, "2" is half, "3" is quarter, "4" eighth, and so on. Holding down the Shift key as you press the number adds a dot (since the Macintosh System uses Command-Shift-3 and 4 for screen pictures you should use the numbers on the keypad for this). The Spacebar will return the cursor to an Arrow for use in selecting items.

Method Four (automatic): Choose "Record" from the menu (or press Command - r) and then play the music in time with the metronome. When you choose "End recording" (Command - e) the passage that you played will be entered in the currently active staff at the current insertion point. If you are recording to two staves at once (see Autonotation

options), the right hand will go to the active staff and the left hand to the staff below the active staff. If recording to two staves you can use the Autonotation option "Set keyboard split" to show where you want the left hand to end and the right hand to begin. All notes below the split point will be directed to the staff below the active staff.

Method Five (easier automatic, for a single melody only): Using any note value, such as a quarternote, play the pitches of your melody without using the recording feature. That way you don't have to get the rhythm exactly right. Once you've entered the pitches as quarternotes, choose "Record new rhythm." When the metronome begins, you can use any letter keys to tap the correct rhythm for this tune. When you select "End recording" the tune will be renotated with the rhythm you played. If you don't get it right, just do it again. For more information see "Record new rhythm" on page 23.

Method Six (the reverse of method five): either record the rhythm you want, paying no attention to pitches, or enter manually the desired rhythm pattern with no regard to specific pitches. Then select the passage, hold down the Shift key, and play the desired pitches. As you play, the selected notes will deselect one by one and adopt the pitches you are playing.

Method Seven: Import MIDI file. "Type 1" MIDI files that contain no notes smaller than a sixteenth will import well into Songworks. This covers most files, especially those containing classical music, particularly classical vocal music. Once the music is imported you can use the Autobar, AutoStem, Autobeam, and other editing features to refine its looks.

Short Cuts for note entry and editing

To quickly change the pitch of a note you've entered, select it and then play the desired pitch while holding down the Shift key. Adding the Option key will force the note to appear as a flat or double flat, Command-Shift will force it to a sharp or double-sharp. This is particularly useful if you select a series of notes: they will be altered one-by-one as you play the

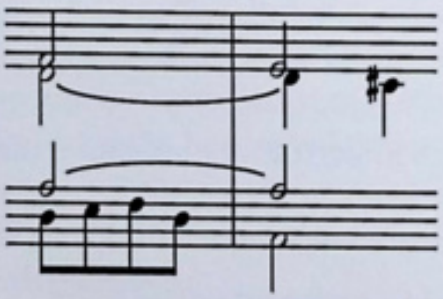
just copy and paste the pattern, using the above technique to quickly alter the pitches after the passage is pasted.

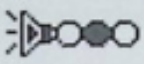
To quickly change the *rhythm* value of a note you've entered, select it and then click on the desired value in the note tools. You don't need to hold down Shift.

Note: Use the same procedure to quickly change any symbol to another of its own kind. A rest can be changed to a different type of rest, a bar line to a different type of bar line, a key signature to a different key signature. For example, to change a clef from treble to bass just select the treble clef and then choose the bass clef from the tools.

Voices (tracks)

Songworks allows you to place up to eight simultaneous notes on a single staff, though you will seldom want to use that many. Simultaneous notes can be of different values, too, as is essential for writing choral music. For example:





Each of the eight possible tracks is controlled by a separate "handle" at the left of the staff. The three handles illustrated show that this staff has three tracks, and that the second track is currently selected. Only the first track (whose handle is the one farthest left) is required to be "complete" in the sense of requiring rests to fill up any empty beats. You can leave out rests in other tracks except where they are necessary to define the starting time of an offbeat (syncopated) note or just to make the music clearer for the reader.

Track 1 is automatically selected for an empty staff with no notes. Similarly, whenever you manually enter notes past the right edge of the existing music, those notes will automatically be assigned to track 1. That's because track 1 notes should be written first and other notes added to them. You can imagine the notes of track 1 as providing a sort of structure for the notes of other voices.

When editing notes in a secondary voice, that voice, or track, is drawn in black, while the others are green. If you click on a green note, the active track will switch to the track of the clicked note. Green notes are ignored by a selection rectangle, however, so that you can drag-select groups of notes in a secondary track in order to delete them all, for example, or change their stem directions.

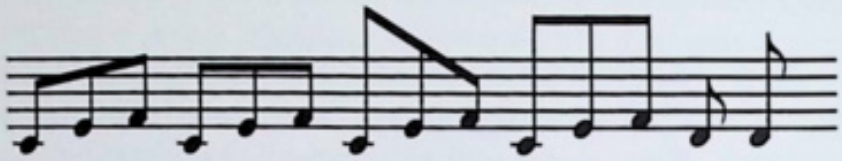
If you want to select and copy a multivoice passage, you can do so when in track 1 (all notes drawn in black).

Defining voices

Sometimes you may need to redefine the secondary voices in a staff that has multiple tracks. The Staff menu command "Define voices" puts Songworks into a special mode in which you can click on the symbols that you want to be part of the current track.

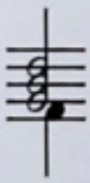
Adjusting the appearance of notes

The stem of any note can be lengthened by dragging it up or down with the mouse. This also allows you to adjust beam angles and beam heights.



Rests can also be dragged up and down, away from their standard positions. This can be useful in polyphonic writing. There are also tools (see the section "Tools of the Screen Keyboard," p.25) that let you put a little more space between notes. Bar lines can be dragged left or right to compress or expand a measure without affecting the others. Ties, slurs, triplets, tuplets, crescendo symbols and first/second ending symbols also display drag handles when selected that allow them to be resized or adjusted.

Special problems of note arrangement

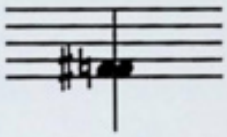


Nothing special is needed to draw chords like the one pictured here; just select the desired note shapes and put them where you want them to be. If a new note is entered approximately above or below an existing one, it will be added to the same stem group. If it's to the right of the group it will be entered to follow the group. The Note Information window (select the note and press Command - i) gives you more detailed control if the default arrangement doesn't meet your needs.

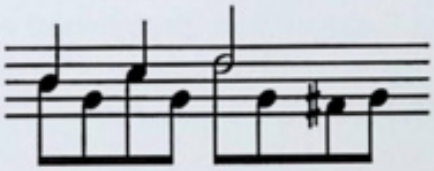
In some cases it may be necessary to use the Note Information window to specify that a note is to have a flag. When several eighthnotes

are stacked up, for example, Songworks will put a flag on only the outside note. But in a case where the notes are far enough apart you might choose to flag each note separately.

Also found in the Note Information window are various tools you will need should you desire to make any really unusual note groups. For example, if you have a unison pair in which the accidentals differ, you might need to specify the print positions of the accidentals:



There are rare occasions when it may be useful to make a notehead invisible. In the following example from Schumann, the eighthnote underneath the halfnote has an invisible notehead, but its stem continues to be drawn. This is not standard practice, however.



from Robert Schumann, *Trällerliedchen*

Special symbols

Songworks has a palette of miscellaneous symbols such as the fermata, dynamic signs, crescendos, grace notes, etc. The palette is beside the Arrow tool on the Keyboard tools palette.

In general these are entered by selecting the one you want and then clicking in the score where you want it to appear.

The main thing to remember is that when you click in the score to enter one of these symbols it will be entered in the active staff, unless your clickpoint is so clearly within a different staff that the program automatically activates the other staff.

Grab handles appear when certain symbols are selected. These allow you to alter signs such as the crescendo or diminuendo by making them narrower or longer. You can select any of these symbols with the Arrow tool and drag them to new locations after they are entered, which makes it easy to adjust their positions. Certain of them, such as the grace notes , miniature slurs, and miniature ledger lines, are meant to be combined. For more information on use of these symbols, please see "Tools of the Screen Keyboard," p. 31-33.

Transposing instruments

A score can easily be transposed to a new key with the Score menu's "Transpose score" command. Individual staves can separately be altered using the Transforms in the Staff menu. But transposing instruments may also require that you use the "Set staff transposition" command in the Staff menu.

Transposing instruments require special treatment because they do not sound at the written pitch. For example, if a clarinet player fingers a "C" on a Bb clarinet, the note actually heard is Bb. So that player's music is written a major second higher in order to make it come out right. If the music as a whole is in G, the part for the Bb Clarinet will be written in A and will sound in G like the others. The French horns will sound F when

playing a written C, and there are several other transposing instruments among the winds.

Here are some instruments whose music is traditionally written in transposition. Songworks numbers octaves from A1 (the first note on a standard piano); middle C is C4.

	Pitch heard when playing written C4
Bb Clarinet	Bb4
A Clarinet	A4
piccolo	C5
Bb Trumpet	Bb4
D Trumpet	D4
Eb Horn	Eb3 (sixth lower than written)
F Horn	F3 (a fifth lower than written)
Alto Eb Saxophone	Eb4
Tenor Bb Saxophone	Bb4
Baritone Eb Saxophone	Eb4

(Eb and Bb Trombone are not transposed, but written at concert pitch).

Some conductor's scores display all the instruments at "Concert pitch" – that is, just as they sound. But the traditional score presents all parts as they are seen by the players, which means certain of your staves may need to be designated as transposing staves if you are writing music for an ensemble.

To create, for example, a part for a Bb clarinet, select its staff and then choose the "Set staff transposition" command in the Staff menu. Enter the pitch that the instrument sounds when playing a written C4, which in this case is Bb4, and click OK. That staff will now sound a second lower than written, so you can set its key signature to that of the key a second higher than the actual key of the piece, and it will sound the same as the others. The screen keyboard will adjust itself to match the transposition of the active staff, so that you can play notes as you enter them and hear them at their correct concert pitch. See also page 55 below, "Extract orchestra part."

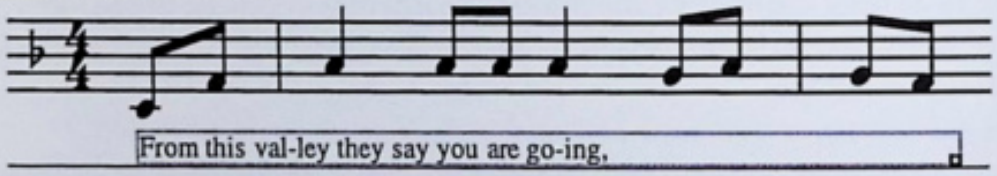
Entering and editing text

Choose the Text tool and then click in the music where you want the text to appear. Start typing. When you're done, get the Arrow tool again, and you can select that block of text and drag it to adjust its position.

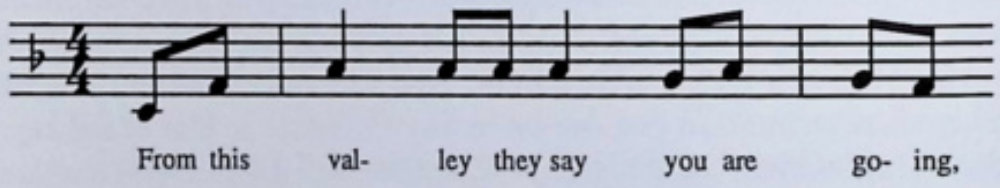
There are two types of text: *lyric text* and *free text*.

Lyric text is text that is sitting on one of the "lyric lines" located underneath each staff. If you place text very near a lyric line it will "snap" to the lyric line. Lyric text is entered in a special way: each word or syllable separated by a space or a hyphen will automatically line up with the next note in the music. Tied notes will of course be treated as one, as will slurred notes. This makes lyric entry a quick matter: after clicking with the Text tool slightly to the right of the note that begins the text, type the words as you would normally, separating syllables with a hyphen or space. Don't try to add spaces to make the words line up with the notes – when you stop typing and click any other tool Songworks will line up the words automatically, and will automatically adjust the words if the spacing of the notes changes. For example:

You type the text this way:

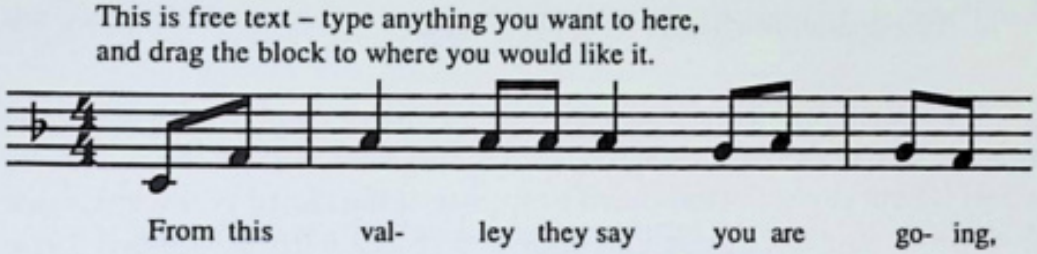


It becomes:



Free Text is any text not sitting on a lyric line. Its vertical position is relative to the staff that was active when you entered it, so that if you type a performance instruction above a staff, that text will move with the staff if the staff is repositioned. Lyric text can be changed to free text, and

vice-versa, by dragging a text block away from or to a lyric line. The horizontal position of free text is automatically fixed to a position that is relative to the underlying beat structure of the piece, so that it will remain in an appropriate position if you change the spacing of the score or otherwise move things around.



Text blocks are limited to 240 characters at a time. We recommend, however, that blocks of lyric text be even smaller – they are easier to handle when no longer than a single line of poetry or a single musical phrase (usually two or four measures).

First-timers are often tempted to make a separate text block for each word or even syllable! This is not a good idea; it makes the program less efficient, and adds to your work.

Entering and editing chord symbols

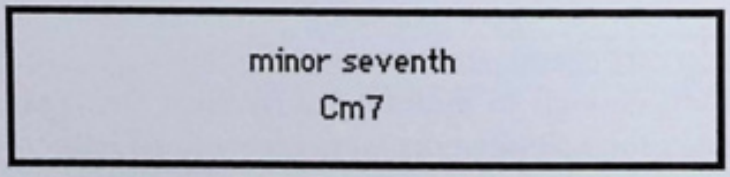
You can, of course, write out a complete harmonic arrangement, but it's often enough to indicate just by name the chords needed to accompany a tune. Songworks knows what notes make up each chord type, and can play them for you in a number of different accompaniment patterns to help you get a better idea of what that tune might sound like when performed by musicians. If you don't know the name of the chord you want but can play its notes on the keyboard, Songworks can even tell you what it's called and enter it for you.

Chords ride on the "chord line," which, like the staff and lyric lines, can be moved up and down with its handle at the left of the music. When you choose a chord symbol the chord layer will become active, and a series of triangles marking the beats will appear. Each of these is a suitable spot to place a chord change, though of course you needn't change chords on every beat.

You can enter chords in several ways:

Method 1: If the chord you want is one of those in the selection displayed above the keyboard, click on it and then click in the music on the beat where you want the chord to appear. If the chord you want is not one of those displayed, you can alter any chord with the Chord Type (major, minor, etc.) and Chord Root buttons. Use the Type and Root buttons to alter any selected chord, whether it is in the music or in the Chord tools palette above the keyboard.

Method 2: When the chord layer is active, any notes you play on the screen keyboard or via *MiniKeys* will "stick" on, and the program will display a window that tells you the name of the chord you have built, if possible. Press the Enter key and that chord will be entered as a chord symbol at the current chord insertion point. The left and right arrow keys can be used to move the insertion point, or just click where you want the next chord. To turn a note off you either hit the same note again, or press the Spacebar. Notes from a MIDI keyboard will by default not "stick," so that you can change chords quickly: hold down a chord with one hand and press Enter with the other.



Method 3: If you select a chord symbol with the Arrow tool and choose "Get info" (Command-i does the same thing), you'll see a window in which you can set both the name and the notes of a chord to anything you like.

Chord symbols in Songworks are not just visual elements; you will hear as well as see them when you play your composition. They will sound according to various "playpatterns" that you can specify to better imitate the effect of an accompanist. All the chords in a song could have the same pattern, or each could be set to a different one. To alter the playpattern for a chord, select the chord symbol(s) and then choose the desired pattern from the playpattern pop-up. For more information, see the playpattern discussion under "Tools of the Screen Keyboard," p. 35.

Recording

In some cases the quickest way to enter music is to play it in "real time" and let Songworks write it down for you. This does not require use of MIDI; you can do it with input from the keyboard alone if it's just a melody. You can also record a new passage while listening to previous ones, so that you can build up layers of improvised music. Of course anything you enter this way can be edited and revised, just as if you had entered the notes one by one.

It is also possible to record chord symbol changes in real time by pressing the number key corresponding to the desired chord (see "Recording chords," p. 19). This is handy if you are not a keyboard player.

The new music will be entered at the current insertion point in the currently chosen staff. If you are recording to two staves, the lower notes will be placed in whatever staff is below the active staff. If recording two staves at once make sure that your existing staves either don't have any music in them, or else have their insertion points at the same place. That will keep the music lined up between the two.

Choose "Record input" to begin (or use the key equivalent, Command - r). You'll hear a metronome, and you can start whenever you are ready. *Keeping in careful time with the metronome,* play your music using either the letter keys of the computer keyboard or a MIDI keyboard, or play the screen keyboard with the mouse. When you are finished, choose "End recording" (Command - e) and your music will appear on the staff.

If you find it difficult to keep in time with the metronome, you can either use a slower tempo (Command-t) or go to Autonotation Options and set the program to record no notes smaller than an eighth. Much music is notated with nothing smaller than that, and it may be easier to record with this option turned on.

What if you want to add some additional notes to a song that is already on the screen? In that case, click in the music (using the Arrow tool) to place the blinking insertion point at the place you want the new notes to appear. Probably this will be at the end, but it could be somewhere in the middle of the song. You might also want to place the PlayFrom tool just a measure or two before the insertion point, so that you won't have to listen to the whole line when doing the recording. Again, if you are recording to two staves, be sure to align the insertion point of the lower staff with that of the active staff. Input for the second staff always goes to whatever staff is next below the active staff.

When you record with existing music, Songworks will count a bar-for-nothing before the listening point marked by the PlayFrom tool. If the listening point is partway through a measure, it will count from the start of that measure and then will begin playing at the listening point. When it reaches the insertion point it will begin recording. You should make your entrance playing in time with the metronome, without missing a beat. When you "End recording" (Command - e) the new music will appear at the insertion point.

To avoid confusion: make sure the insertion point is where you want it to be. Remember that the notes you record will appear *at the insertion point* when you stop recording. If your insertion point was before the opening clef, for example, the new music will push the clef to the right when it is entered.

The Bar-for-nothing

In 4/4 time a full "bar-for-nothing" is four ticks; in 3/4 it's three, but in 6/8 you'll hear two, since 6/8 is normally counted in two beats (1̲23 4̲56). However, if you are adding to existing music, and the music that is already on the staff begins with an incomplete "pickup" measure, then the "bar-for-nothing" will consist of that bar. For example, if the existing music begins on beat four, Songworks will tick one, two, three, and begin playing on beat four. But if the existing music starts on beat one you'll hear a full bar of ticks before the tune starts.

Recording chords

You can include chords in your recording by playing them on the number keys of the computer keyboard. The keys 1 through 7 correspond to the seven chords of the selected key as pictured in the chord boxes above the screen keyboard, and the "0" key stops the current chord. If you have modified one or more of the chord boxes using the Type or Root buttons then the modified chord will be the one entered into your song. Before starting the recording play each chord you want to use, so that it will be loaded into memory for instant response. Otherwise there will be a momentary delay as the computer calculates sounds needed for the chord.

Chord changes can be recorded before, afterward, or at the same time as a melody. You can try recording the chords first (or enter them one-by-one with the chord tools) and then record the melody while listening to the chords. This is a particularly good method because the chord accompaniment helps keep you playing in strict tempo.

When using this method to add chords to a melody remember to place the staff insertion point at the end of the tune before starting the recording, so that you'll hear the whole thing. (The position of the staff insertion point doesn't affect where the chords will appear, however, since they are not on the staff.)

How autonotation works

Notation is not meant to be a transcript of an individual performance! Written music should be clear and easy to read, but a performance of the same music will introduce subtle complexities, especially in articulation and dynamics, but also in rhythm. Expressive nuances are not meant to be notated unless they are essential to the structure of the piece. So how does the computer tell what is meant to be notated and what is merely expressive liberty?

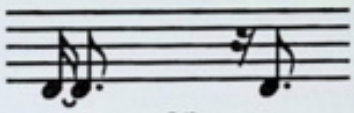
In the first place, you should avoid expressive liberty, as much as possible, when using autonotation. Nonetheless, your playing cannot be mathematically exact, and so Songworks will make certain assumptions:

(1) It will assume that you don't mean to play any notes shorter than a sixteenthnote (or an eighthnote, if you've set that option). Notes shorter than a sixteenth are relatively unusual and would multiply the difficulty in getting the right results when recording. If you play notes that are too close together to be considered successive, Songworks will assume you meant them to be part of a chord.

(2) Due to the difficulty of determining which notes in a chord are being deliberately held over, it will give them all the same value (it does the same when importing MIDI files). When editing your music you may decide in some cases to make some of the secondary notes longer or shorter. You may even want to redefine the voice-leading using the "Define voices" command.

(3) Unless the "Record triplets" option is on, Songworks will assume that you don't mean to play any triplets or other irregular rhythmic groupings. A triplet is a rhythmic pattern that divides an undotted note in units of three, such as three eighthnotes played in the time of a quarternote (normally a quarternote would divide into two equal eighthnotes).

4) It is important to play carefully in time with the metronome. If you play a note a little too early or too late, for example, a quarternote might be interpreted as



or

If you have trouble playing in time with the metronome and have tried slowing the tempo, you might try entering some chord symbols and then record your music to the accompaniment of the chords. If you choose your playpattern well, the rhythm of the accompaniment will help you keep a steady beat.

Also, remember to "think in small values" as you play. In Songworks, that means thinking in sixteenths, if the tempo is not too fast, or in eighths for a quick tempo. For example, if your tune moved mostly in quarternotes, you would think the underlying sixteenths, "1 ee-and-a, 2 ee-and-a, etc." Thinking in small values helps you play in tempo.

Recording with triplets

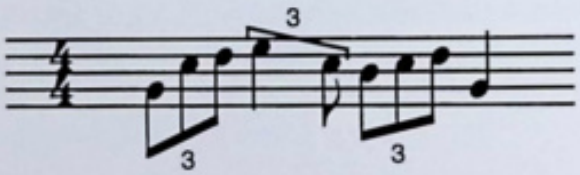
If you select the "Record triplets" option from the Autonotation Options menu, Songworks will be a little more discerning: it will examine your playing more closely and notate a triplet if three eighthnotes or three quarternotes seem to be closer to a triplet than to any duple division.

Remember that the price of this extra flexibility is a greater sensitivity to accuracy in the performance: if triplets are allowed then Songworks will sometimes interpret as a triplet something that you really meant to be, say, just a dotted pair.

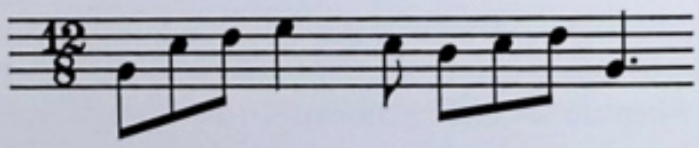
Triplets and meter signatures

One benefit of allowing triplets in an autonotation session is that you may discover you have chosen the wrong meter for your composition. For instance, suppose you record a tune with the meter signature 4/4, and you discover that almost every measure ends up being notated with eighthnote triplets. This would be pretty clear evidence that you are not really in 4/4 at all: your tune is constantly dividing quarternotes in three and so would be better notated in a compound meter such as 12/8. (Compound meters are those in which the beat is marked by dotted notes instead of undotted ones.)

The below example demonstrates how triplets can disappear when a tune is re-recorded in a compound meter:



becomes



Similarly, a "3/4" tune with lots of triplets is probably better marked as 9/8, and a "2/4" melody with many triplets as 6/8.

If you end up with too many triplets the best thing to do is to change the meter signature, delete the notes you just entered (Undo, or Select All and Delete), and then re-record the melody. Since the new beat will be slower by one-third you may want to increase the tempo when you change to compound meter.

Recording a new rhythm

Sometimes it's hard to record both pitch and rhythm at the same time, especially when using the letter keys as a "piano." If you are entering a plain melody, as opposed to a two-hand piano passage, this option gives you the chance to enter the pitches of the melody first and then tap the rhythm all by itself. For example, you can pick a quarternote from the note boxes and then carefully play the pitches of your tune with one finger, ignoring the rhythm. Then use "Record new rhythm" to assign a rhythm to those notes by tapping any key or keys.

If the results are not what you wanted just Undo the "Record new rhythm" and try again. The "Active Listening" command (see File menu) provides a way to practice tapping out a tune.

If you have a device that can translate your singing voice into MIDI notes you could use it to enter the pitches and then record the rhythm separately as described above. This method provides a solution to the problem such devices have with rhythmic accuracy.

Importing MIDI files

Standard MIDI files are a compact way to store music, and many music programs are able to save them and read them. A MIDI file contains no sound information and no visual information – it is basically just a list of note numbers and times when they are to be turned on and off. For that reason saving a MIDI file of your music is no substitute for saving the complete Songworks file that contains all the information about the appearance of the music on the page. And that's why MIDI files require some interpretation before they can be displayed as music notation.

Songworks II can interpret type 1 MIDI files (the most popular format) that contain mostly notes of sixteenthnote value or larger. This covers most of the files you'll want in order to learn a vocal part in a chorus, for example, or to notate classical chamber music or piano music. It does no harm to attempt importing any MIDI file – if it comes out well and sounds good then it met the requirements. If it looks funny and sounds that way it must have contained something Songworks couldn't make much sense of – either notes that were too quick to distinguish or perhaps a group of percussion tracks that don't make much sense as pitched music.

To import a MIDI file just choose the "Import MIDI... " command from the File menu and select a file. If it is very large it will open at first without beams and bar lines, so that you can decide if you want to use the "Autobeam" and "Autobar" commands (which can take some time) to put it all in order. Afterward you can do further editing if needed, add text if desired, save, and print the file as sheet music.

"Import MIDI" is especially useful if you are in a chorus and want to learn your vocal part. In many cases the director will be able to give you a MIDI file of the chorus, and once you turn it into a Songworks file you can use Active Listening to tap out your own part while hearing the others. It's great fun, and an effective way to learn. There are also sites on the Internet that offer collections of music that can be downloaded for free. The Ars Nova web site (www.ars-nova.com) contains links to some of these.

Tools of the Screen Keyboard

The Spreader and the Shrinker

You may want to move a note a little to the right or left for aesthetic reasons, or to make more room for an accidental, or to make two notes a little farther apart to keep lyrics from running together. The Spreader tool will add to the space between two notes or other symbols; the Shrinker tool will take away space. Place the tool just before the note you want to move and click the mouse. Each click moves the note one pixel, or you can just hold the mouse down. As a shortcut, pressing Command-";" will change the Spreader tool to the Shrinker, and vice-versa. Remember that you can also change the note spacing of the entire score with the "Set note spacing" command in Score Options, and you can compress or expand the whole contents of a bar by dragging the bar line left or right. The Spreader/Shrinker also works in the chord layer, where it provides a way to "close up" extra space left in the chord progression after deleting melody notes, or to add some bea in the chord progression after inserting melody.

The Text tool

Use the Text tool to enter lyrics, titles, or other text in your song. Just place the text cursor where you want the text to appear and begin typing. The font used will be the one currently selected in the Font menu; you can also change the font or size/style of existing text by selecting it and then changing the current settings in the Font menu.

Another way to enter text is to press Command-i after clicking with the Text tool. That brings up the Information window for the text block. Some people find it easier to enter text in the Information window rather than directly in the music.

Text placed near one of the lyric guidelines will "snap" to the line and the words will automatically spread out to follow the notes of the song . You can move the block so that it will start on another note; just drag it to the desired position. Note: Be sure to read pp. 14-15 for more information on entering lyrics.

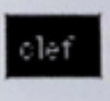
Text blocks can also be cut and pasted: select a block with the Arrow tool, Cut or Copy it, click the mouse where you want it to appear, and then use the Paste command.

A single text block can have only one font, size, and style. If a word must be italicized, for example, you should make that word a separate text block.

We suggest that you keep your lyric text blocks *short enough to fit on one screen;* they're easier to handle that way. Each text block is a single item in Songworks, regardless of how many words it contains. It can be copied and pasted just like any other symbol.

Sometimes two notes will be so close together that there isn't enough room for the words. To change the spacing of all the notes select "Note spacing" from the Options menu, or you can spread two notes farther apart with the Spreader tool, as described above.

The Clef button



When a staff first appears it will carry the default clef, which is the clef most recently chosen, but you can delete that clef and substitute another if you desire. When you click on the Clef button a window will appear with every clef that you could ever want, as well as some you will probably never use. You can place clefs anywhere in your music and you'll see that, when you do, all the notes following the new clef will instantly transpose to the correct positions for that clef.

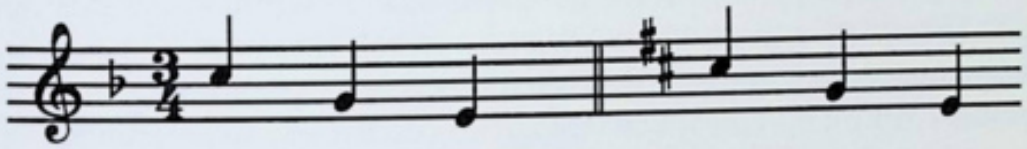
To quickly change an existing clef just select it and then choose a new clef. The new one will replace the old.

The Key button

key

When you choose a key signature from the pop-up window be sure to choose between the major and minor keys that share the same key signature: this will ensure that the appropriate chords are displayed in the chord choice boxes.

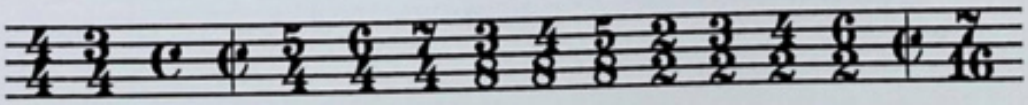
As with clefs, you can enter a different key signature as many times as you like within a composition. If you put a change of key in a score it is customary to enter a thin double bar to mark the division:



The Meter button

meter

Select a meter signature from the pop-up menu and enter it in the same way as described for clefs and key signatures. Changes in meter should take place at the end of a full bar of the previous meter, though Songworks will allow you to make the change wherever you like. If you don't see the meter you want in the meter pop-up, you can make your own by selecting "other" from the choice boxes.



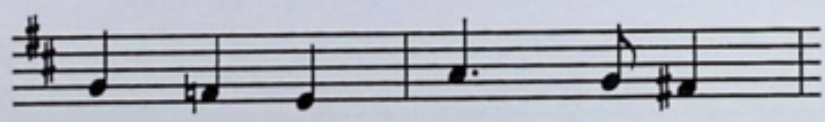
The Accidentals buttons

Normally accidentals (notated flats or sharps) are entered as the note is entered, by clicking on one of the accidental boxes in addition to the note symbol itself. And if you play on the keyboard a note that is not in the key signature, it will automatically appear on the staff with an accidental. But you can also add an accidental to a note that has already been entered by selecting the note and then clicking on the box of the desired accidental.

The empty box is the default choice. It signifies: As this note would be in the current key with no accidental. *That is not the same thing as a natural*, which always means that the note is a "white key" note on the piano. Click on the empty box when you need to clear an accidental from the cursor, or to change a note in the music from its current state to whatever is appropriate for the key.

A *precautionary accidental* is one that is not technically necessary but may be desirable for reasons of clarity. Unless you tell it otherwise, Songworks will not display a sharp or flat that is already in the key signature. For example, if you enter a flatted E in the key of E flat, Songworks will display the note without the flat sign, since that flat is already in the key signature. If you want to override this feature in order to enter a precautionary accidental, hold down the Option key as you enter the note with the accidental, or as you change its accidental. That will tell Songworks to display the accidental regardless of whether it is required by the key signature.

The sharp in measure two, below, is a precautionary accidental:



The screen keyboard (or your MIDI keyboard) will normally play according to the key signature. But you can override these default

enharmonic choices. If you hold down the Option key as a note is played it will come up as some kind of flat (even if it's a white key), regardless of the key signature. If you hold down the Command key the note will appear as a sharp (again, even if it's a white key). This feature may be handy in transposition if, for example, you are in a sharp key and want to transpose a passage so that the starting note is E flat.

The Staff menu's "AutoInterpret accidentals" command provides a way to help you decide which notes should be called sharps and which should be flats. It analyzes the context of each note carrying one of these signs and changes it if it thinks another might be more appropriate. This command is useful if you have manually written some music but are not sure where to use flats and where to use sharps. If you disagree with the changes, just use the Undo command to return to the previous interpretation.

Note and Rest buttons

Most of the note and rest symbols have pop-up extensions that offer choices beyond the one on top. In most cases these are the dotted versions of the same symbols. To choose a dotted quarternote, for example, click on the Quarternote button and slide down the pop-up to the dotted quarternote. Then release the mouse. To enter the selected note or rest, either click in the staff, or play a note on the screen keyboard or a MIDI keyboard. Notes and rests can also be selected with number keys (see page 6 and the Command key list in the appendix).

The Arrow

The Arrow tool is the "normal" cursor, used to select items in the score. If you play a note on the screen keyboard using the Arrow tool you can hear the note without entering it into your music. (If you play a note with the cursor set to any symbol other than the Arrow tool, that symbol will be entered into the staff).

The Slash

The slash is a shorthand device used in lead sheets to fill up measures; it has the same value as one beat in the current meter, and is effectively a type of rest. It is common in jazz when an arranger wants to indicate the time taken by chord changes without being specific about the melody. It is also used traditionally as a type of repeat sign, meaning that the material of the previous beat is repeated.

The slash with repeat dots indicates that the previous measure's notes should be repeated.

Slashes always appear in the staff, like rests, and are treated by Songworks as a variety of rest. A single slash always occupies the space of one beat; the slash with dots occupies the space of one measure in the current meter.

These devices are useful only in printing out leadsheets or parts for musicians, where they make a part shorter and easier to read. With the advent of desktop editing and publishing of music they've lost their value as shorthand for composers.

The Bar line/Miscellaneous symbol button

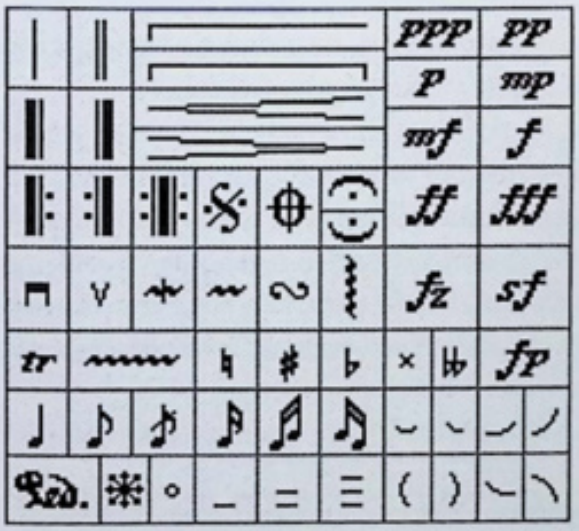
Bar lines

Bar lines are entered like any other staff symbol and may be placed wherever you like, even "incorrectly." Bar lines can also be entered automatically with the "Autobar" command.

Bar lines can be dragged left or right, compressing or expanding their contents proportionally. Their numbering can also be changed in the bar's Information window (as with any staff item, select the bar line and press Command-i to see its Information window).

Repeat bars are observed by Songworks II when playing your composition with Active Listening. Use the Information window for the repeat bar that ends a section to set the number of repeats.

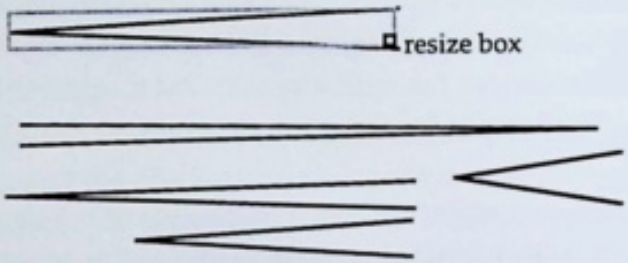
Miscellaneous symbols



Aside from bar lines, the symbols grouped together in this pop-up are all positioned in relation to the beat structure of the music, or to staff items such as notes and rests. For this reason it's best, and most logical, to first enter the staff symbols and then add these extra signs as needed. Some, like the fermata, automatically snap to a position above the current staff; others will appear right where you click the mouse. All can be selected with the Arrow tool and dragged to new locations. Certain of them, such as the crescendo, can be resized as well (see below about resizing items).

Crescendo, Diminuendo

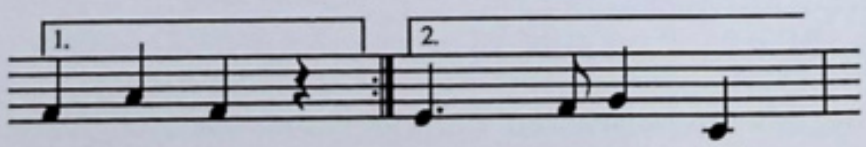
After you have entered one of these signs in your score, you can use the Arrow tool either to resize it or to drag it to a new position. When you select the item a small resize box will appear in the lower corner. Click in the resize box and drag it to change the symbol's size and shape; drag any other part of the sign to move it without altering its size.



First ending, Second ending
(*prima volta, secondo volta*)

Select the "open" or "closed" ending symbols to mark a first or second ending. Use the Text tool to number the endings as desired. These symbols also display a resize box when selected, and can be dragged to any width or depth.

The ending symbols are not merely visual: when playing music using Active Listening, Songworks understands that the first of any pair of these is the first ending and that the second one is the second ending. It will perform the repeat and skip the first ending material on the second pass. Or, if playing a song with more than two verses, it will repeat as necessary.



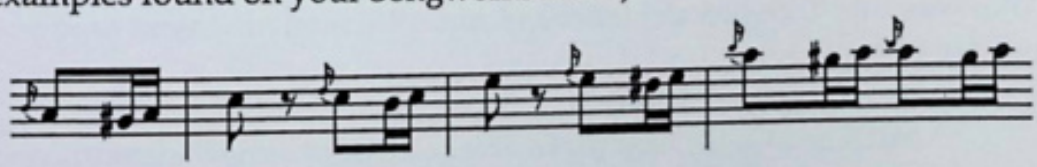
Grace notes

Songworks provides the most common of the grace notes as *visual* symbols, for those who may need them in preparing sheet music for printing. These will not sound, nor do they transpose, but they will snap to the nearest staff position to make placing them easier. As with the other special symbols, you can select and drag them to adjust their positions.

When a grace note appears far enough above or below the staff to require ledger lines, you can superimpose one or more of the small ledger line symbols that are found in the same pop-up as the grace notes. You can also add one of the provided miniature slurs, which will look better with a grace note than the normal flexible slur. There is also a set of miniature accidentals for use with grace notes.

Flexible slurs (made by selecting both the grace note and the following note and clicking on the Slur button) are necessarily very small and hard to adjust. If one of the slur controls overlaps the grace note itself (or the real note) you will find it helpful to hold down the Option key when attempting to drag the slur control: if the Option key is down Songworks will know that you really want to select the slur, not the note.

There is a way to hear grace notes. You can do so by creating a duplicate of the staff containing the grace notes and replacing the graces in that staff with notes written-out just as you want the graces to be interpreted. Then turn off the sound of the original staff and hide the one with the written-out grace notes using the "Set staff appearance" command. Or, for educational purposes, you could leave the written-out version visible to show how the graces should be interpreted. See the Mozart *Alla Turca* excerpt for an example (included in the musical examples found on your Songworks II CD).



The Chord buttons

The seven Chord buttons in the keyboard window will normally display the seven chords that are natural to the last-chosen key. These are the chords built on each of the scale notes, without any alteration. You can alter any of them or change their roots: select the chord and then use the Type or Root buttons.

If you change keys, the seven chords in the boxes will all be transposed to the new key, together with any changes you have made to them. However, if you change mode (from a major to a minor key or vice-versa) the boxes will be filled with fresh default chords appropriate for the new mode.

The first time you attempt to play a chord, either with the number keys (see page 19) or with the "Hear" command, Songworks will pause a moment while it calculates the data for the chord's sound. But the next time you use it the chord will be heard instantly, unless a memory shortage has forced it to be deleted from memory. Remember that chord sound data takes up quite a bit of space in memory; if you have many different types of chords in the same piece and all of them have lengthy playpatterns you may not be able to fit them all in memory. In that case you'll have to either use shorter playpatterns (the best choice), a quicker tempo, fewer types of chords, or listen to just part of the song at a time.

If you are about to record a tune or improvise using chords, it would be best to first press the numbers of all the chords you want to use. That way they'll be precalculated and instantly ready the next time you call for them.

MIDI and QuickTime chords are calculated almost instantly and take up no appreciable amount of memory, so if your computer has

limited memory, you will have much more flexibility if you use MIDI output instead of Macintosh sound.

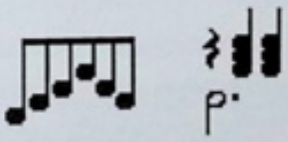
The Type and Root buttons

You can alter almost anything about chords as long as they have no more than six notes. If you select a chord from among the chord boxes or within your music, you can use the Type and Root buttons to change the chord to whatever you like. If, for example, the chord you want is not among the types listed, or if you want the chord to be in a particular inversion, select the box labeled "other" in the pop-up menu. That will bring up a window that allows you to specify the individual notes of the chord (you can also reach this window by selecting the chord and pressing Command-i). You can even give the chord a different name.

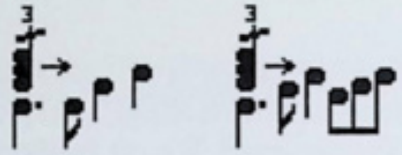
The Playpattern button

Select a chord box, or a chord in your song, or a group of chords in your song, and then use the Playpattern button to change the performance pattern for that chord. The variety in playpatterns gives you a more realistic idea of what your song sounds like with real accompaniment.

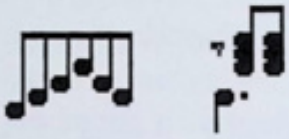
Some playpatterns are not equally good in all meters. The shortest ones, such as the plain eighth or sixteenthnote block chords, will work in any meter. But the longer and more elaborate the playpattern, the more it will imply a meter. These, for example, work best in 3/4 time:



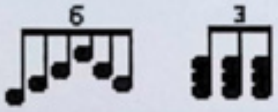
These work well only in 4/4:



These patterns are particularly good for 6/8:



Patterns with triplets would not be good for any compound meter such as 6/8. These should be used only in simple meters (meters in which the beat is marked by an undotted note, such as 4/4 or 2/4 or 2/2 or 3/4):



The Stem direction buttons

Notes written above the middle of the staff usually are written with the stems downward, notes on or below the middle with the stems upward. If a group of notes is beamed together, stem direction would typically be chosen according to whether most of the notes were above or below the middle. This is largely an aesthetic decision, and you can set the stem directions as you wish. Select a note or notes and click a stem direction button to alter the passage. That also sets the default stem direction for new notes. The current choice is highlighted.

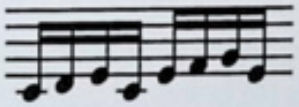
When you use the "AutoStem" command, notes in the same chord will all be given the same stem direction. However, you can manually change any of them as you please by selecting the note and clicking the desired direction button.

The Beam/Unbeam buttons

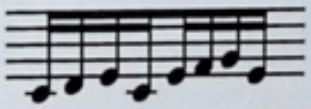
The Staff menu's "AutoBeam" command beams all beamable notes in the active staff, grouping notes beat-by-beat. A similar command in the Score menu does the same for all staves at once. But the Beam button allows you to specifically beam certain notes, and it gives you enough control to permit making various special beam patterns.

Songworks provides a tool for manual beaming because there may be more than one way to correctly beam a passage, and the choice is often dictated by personal taste or a desire to imply a certain musical effect. For instance, eight sixteenth notes in 4/4 time could be beamed in three ways, as two separate groups of four, as two groups of four with a bridging single beam, and as one group of eight. Songworks can do whichever you like if you use the Beam button. Just beam first the smallest groups within the larger one, and work upwards.

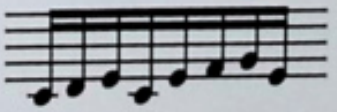
For example, the first way of notating eight sixteenths is to select each group of four and use the Beam button on each group:



These two groups can themselves be beamed together by selecting them both and using the Beam button again:

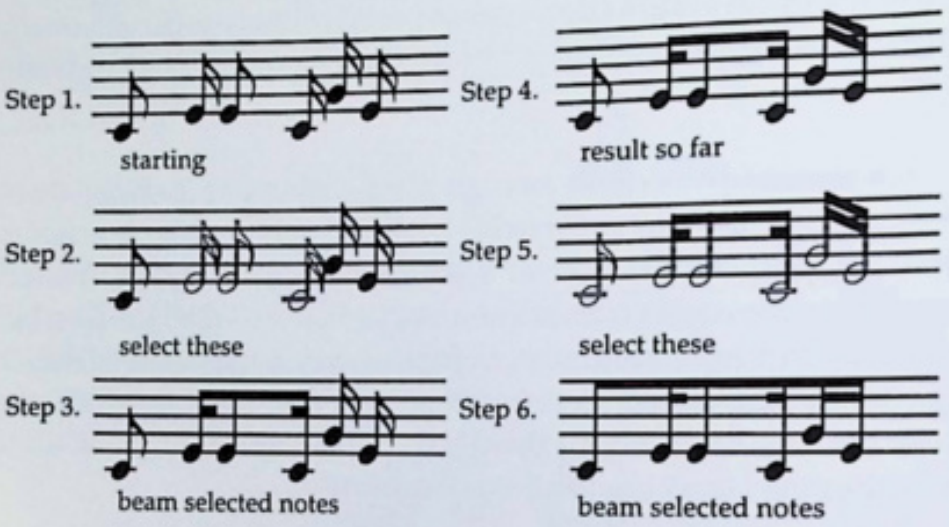


Finally, to beam eight sixteenths without any subgroups simply select all eight in the first place and use the Beam button once:

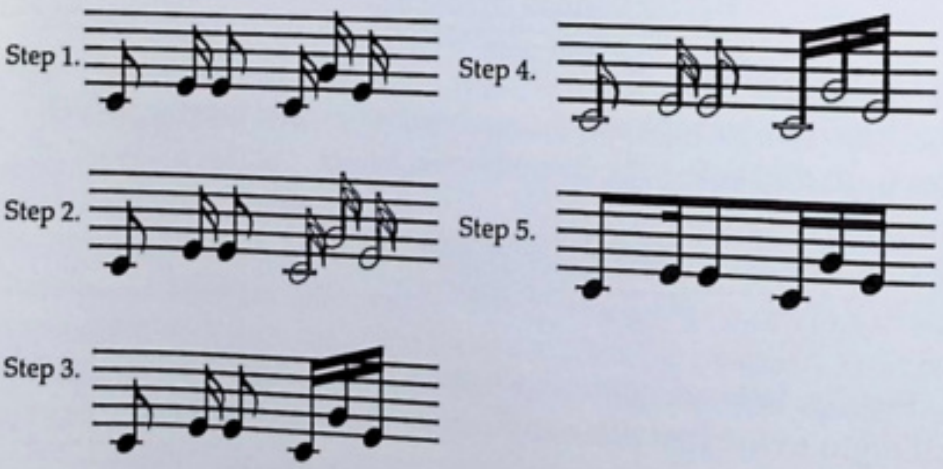


This technique also gives you control over the direction of short beams within larger groups. For example, the same rhythm could be beamed into two different patterns, as follows:

Sixteenth values grouped in pattern 2, 4, 2:



The same notes grouped in pattern 3, 2, 3:



Vocal beaming

Beams that are designed to emphasize the beat structure of the music are typically used in instrumental music, though many people prefer this style for vocal music as well. Traditionally, however, vocal music has been written with beams having an entirely different meaning: in the vocal style notes sung on the different syllables never are beamed together and only notes sung to the same syllable are beamed. If you want to use this style you should of course not use the "Autobeam" command at all.

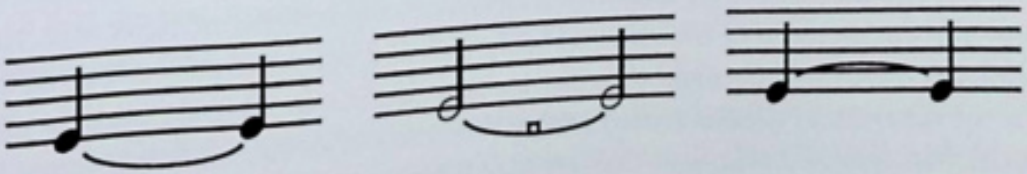
Adjusting beam angles and heights

See page 10 for an illustration of adjusting beam angles and beam heights by dragging note stems up and down.

The Tie/Untie button

A tie indicates that two notes of the same pitch are to sound as one. A tie can be used to extend a note over a bar line, to clarify the appearance of a rhythmic pattern, or to notate a rhythmic value that wouldn't be possible with a single note.

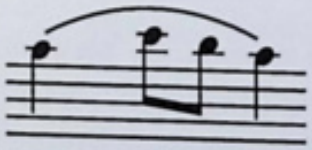
To tie two or more notes together just select them and then click on the Tie button. The Untie button works the same way to untie them. When the first note of a tied pair is selected you'll see a little grab box halfway along the tie; this can be used to adjust the height of the tie up or down, and can also be used to flip its direction.

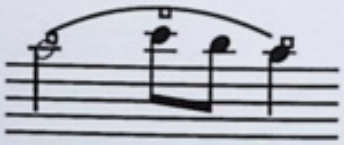


The Slur/Unslur button

A slur is used to show that two or more notes are smoothly joined together. In a song, slurred notes would be sung to the same syllable of text and without taking a breath; in a violin piece, slurred notes would be played on a single stroke of the bow (if possible). A piano player would try to imitate the slurred effect by holding each melody note until the next one has begun, so that there would be no break between them.

To slur notes, select them and then click on the Slur button. The Unslur button can be used to remove a slur from selected notes. When the first note of a slurred group is selected you'll see grab boxes appear at both ends of the slur and halfway between. The boxes at each end can be dragged to adjust the endpoints of the slur; the box at its midpoint can be dragged to adjust its height. When you click elsewhere the slur will be deselected and the adjustment boxes will disappear, but you can make them visible again by selecting the notes of the slur, or even just the first note.

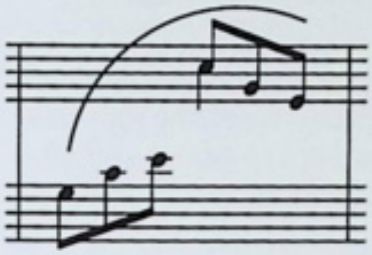




When you insert or delete a note within a slurred group, the slur will remain. But if you delete the first note of the slur, the slur will be deleted as well; it is attached to the first note. You can reslur the remaining notes, if desired, with the Slur button.

Remember that the notes you originally selected are the ones that are slurred: though you can drag one of the slur's end points so that it appears to include other notes, they are not really slurred. This could create problems for lyric alignment because, regardless of how the slur looks, Songworks will consider as truly slurred only the notes that were selected when you pressed the Slur button. If you want to expand a slur group it's best to unslur it and reslur. On the other hand, there may be occasions where a slur that doesn't affect lyrics could come in handy.

One use for a "fake" slur is in making music appear to cross from one staff to another, as in this example:

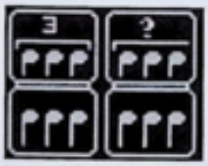


from Robert Schumann, *Kleine Studie*

An invisible rest at the start of the upper measure and at the end of the lower one is combined with a slur dragged so that it appears to include the notes of the upper measure. Only the first three notes were included in the actual slur group.

To enter a very long slur it may be desireable to break it into smaller sections. A note can both end a previous slur and begin a new one

The Triplet and Tuplet buttons



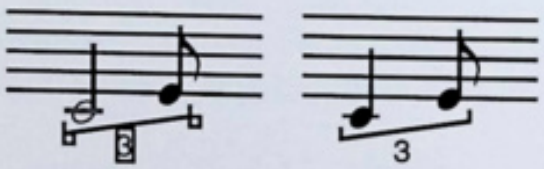
Undotted notes normally divide into two equal parts. For example, a quarternote is worth two eighths, a halfnote, two quarters. If you want to play three notes that divide evenly the time of a quarternote, that would be called a *triplet*. Three triplet eighthnotes equal one normal quarternote, a halfnote is worth three triplet quarternotes (or one triplet halfnote plus one triplet quarter, etc.) If you select notes whose total value equals that of three eighthnotes and modify them with the Triplet button you'll find that they now are played in the time of a single quarternote.

If the notes you selected add up to a value that cannot be converted to a triplet the Triplet button will do nothing.

Tuplet is the general term for any division that goes beyond the triplet; for example, the quintuplet, sextuplet, etc. This button is far more

general than the Triplet button because it also allows you to choose the equivalent time value of the group; for example, 7 to be heard in the time of 4 (triplets are 3 heard in the time of 2).

Once you've made a triplet or a tuplet you can adjust its appearance. Just as with slurs and ties, when the first note of the triplet is selected the triplet graphics become moveable: grab handles will appear on both ends of the triplet beam and a selection rectangle will appear around the number. You can move the bracket and the number as needed, but of course be careful to keep them on the notes they are intended for! Also, the Note Information window for the starting note will include a button to access further options for the triplet or tuplet. You can use this Options window to specify, for example, that the triplet is to be shown with a number but not a bracket, or with both bracket and number hidden.

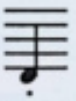


The Double and Halve buttons

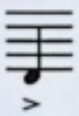
These double or halve the rhythmic value of selected items. They provide a convenient way to double or halve the value of a whole passage. To change the value of a single note or rest, it works just as well to select the item and choose the new value in the Note/Rest buttons.

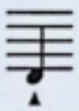
Staccato, Tenuto, Accent, Wedge buttons

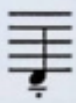
Each corner button adds the indicated mark to a selected note or group of notes; the inner button changes the note back to its "plain" form. These can be combined where reasonable; for example, it's possible to combine staccato and tenuto marks to indicate "stressed and moderately short." These expressive marks sometimes have an imprecise meaning. Below is a list of typical interpretations:

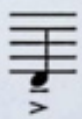
staccato:  Played somewhat shorter than the notated value.

tenuto: Held to its full value. Also can mean a pressure accent.

accent:  A moderately sharp attack, in context of the prevailing dynamic level.

wedge:  Played very short. In modern practice also indicates *martellato* in string playing (heavy accent with the heel of the bow).

tenuto/ staccato:  Stressed and moderately short.

tenuto/ accent:  Percussive, but with full value.

Composition

A Composer's workshop

One of the central functions of Songworks II is to serve as an aid in composition. It is equipped both with tools for compositional techniques (tonal inversions, retrogrades, etc.) and with an ability to invent interesting melody and harmony ideas that can provide the basis of, or the inspiration for, new compositions.

These tools can be combined in endless ways. Let Songworks invent a starting melody and then develop it yourself, perhaps using tonal inversions and other devices to extend the material. Or invent a melody yourself and see what harmonies Songworks creates for it. Or do both a tune and chords and let Songworks add an additional voice that agrees with the same harmony (these will almost always be improved by wise editing). Sometimes it's fun to create some chords of your own and let Songworks start coming up with melodic ideas that agree with them, then develop those, add more... the essence of creation is choosing from and judiciously editing and reshaping a bountiful stream of ideas. Songworks is of great use in coming up with ideas that will throw you onto a new and unexpected creative path.

The Ideas menu includes options for melody and harmony that allow you to alter in various ways the type of melodies being created. The clef, key and meter will be whatever is current in the chosen staff; the scale, rhythmic complexity, and harmony type can all be changed.

Just for fun, listen to the musical examples provided with Songworks II that show some of our favorites among the ideas it came up with all on its own. Most of these are completely unedited, to show you what can happen. And remember that any ideas it invents on your own computer are ones it has never presented to anyone else. Each is unique and has never been heard before. They belong to you, and you can do what you want with them.

The Ideas menu

Invent chord accompaniment

This command creates a chord progression to go with the existing music, whether it's music of your own or an idea created by the program. In a multi-staff composition this command pays attention to all the staves at once; it attempts to harmonize with all of them simultaneously.

You can dictate, to some degree, the types of chords Songworks will choose through the "Chord Idea" options in the same menu.

Generate melody idea in active staff

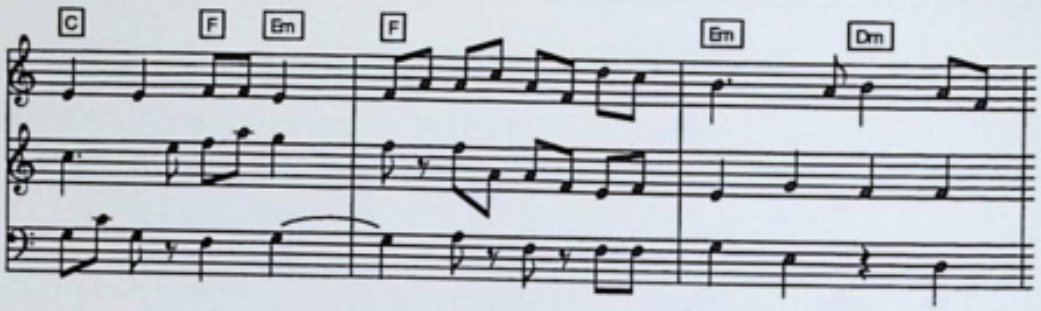
This invents a melody in the current staff. If chords are already entered in the chord layer, Songworks attempts to create something that will agree with the existing chords. You will find that it sometimes produces an odd idea, but at the same time, these ideas are often the source of some unexpected melody/harmony combination that you may find interesting.

If there are other lines of melody already written, Songworks will not attempt to write actual counterpoint for them, but will merely create a free melody to the same chords. Frequently, the accidental counterpoint produced by this method will be attractive, and certainly should stimulate your own ideas.

Note also that if there are any chords in the chord layer, the invented tune will regard the last one as continuing onward – if you enter only one chord the whole melody idea will linger in that one harmony. But if you enter no chords at all, Songworks will imagine some of its own.

One approach is to start by either creating some chords of your own or asking Songworks to come up with some, and then repeatedly ask for melody ideas until you see one you like. Then you might add another staff and do the same thing again until you see an idea that harmonizes

particularly well. Here's an unedited idea in several parts invented by this process (the example file is "Droid Cowboys").



Invent a chord progression

This command invents a progression, but without regard to any existing music.

Adapt melody of active staff to chords

This will reshape an existing melody to make it agree better with the harmony. It changes only the pitches, leaving rhythms untouched. It can produce some interesting variations on a tune idea if you also alter the chords originally intended for it.

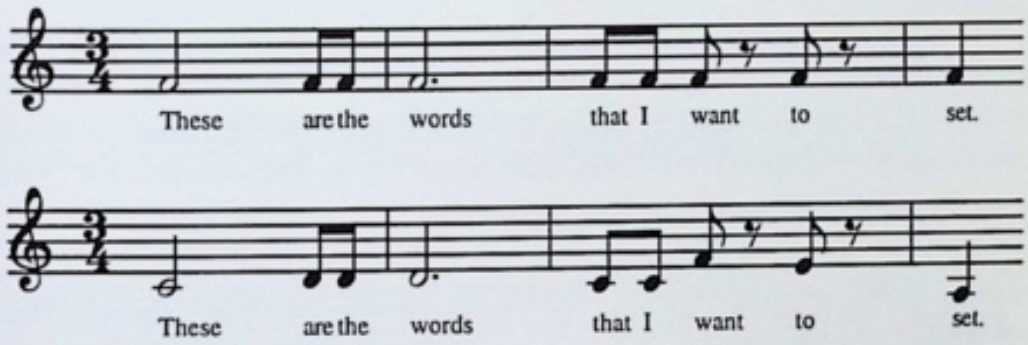
Generate new chords and melody idea

This creates both a melody in the active staff and a series of chords to go with it.

Try using this command to create an interesting bass line (make the bass clef the active staff and then do the generation). After you have an acceptable bass line, try imagining a treble melody or recording an improvised one "live" while listening to the bass and chords. Or ask Songworks to come up with some ideas for the treble clef, too...

Remelodize existing rhythm

This alters the pitches of an existing tune or any series of notes, while leaving the rhythms untouched. You can use this command, for example, to help get ideas for a text setting. Just enter notes at any pitch using the rhythm of the words as you would like them sung, and then use the "Remelodize" command repeatedly until you see some ideas that appeal to you. Then do more editing on the generated ideas to shape them further to your own taste. For instance, the second example below was Songwork's first idea for a melody line following the given rhythm (it would give a different idea were you to ask it again).



The Transforms menu

The Transforms menu, within the Staff menu, contains a group of commands intended for use as transformation tools in composition. Each of these transformations will act upon all or selected notes in the active staff. First select the notes you want to alter, then select the command. If nothing is selected these commands will apply to the entire staff. (Note that if you want to transpose the entire score it will be more convenient to use the Score menu's "Transpose" command.)

Transposition

Songworks does transpositions without requiring you to know the name of the transposition interval. After choosing the "Transpose" command you can simply either play the note that you want to be the new

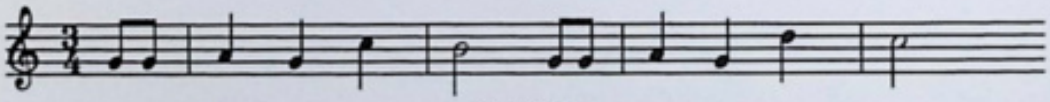
starting note for the passage, or choose a new key from the Key menu. The entire passage will immediately be rewritten to start on the new note or to sound in the new key.

Real vs. Tonal transposition

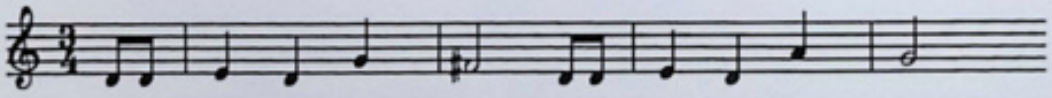
A "real" transposition will move all the pitches by exactly the same interval, so that in some cases the passage will gain sharps or flats and may sound in a different key. A melody transposed in this way will sound the same as it did before except for the change in pitch level. If you have chosen the command that includes a key signature, Songworks will enter an appropriate key signature just before the passage.

A "tonal" transposition, however, will change the pitches without changing key. If you transpose tonally, some intervals that had been minor will become major, some that had been perfect may become diminished or augmented. This will usually alter the character of your melody, while still keeping its general shape.

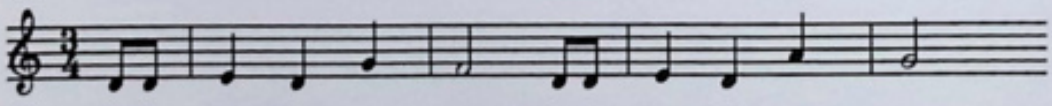
Compare, for example, the following transpositions of this familiar tune:



Original



Real transposition



Tonal transposition

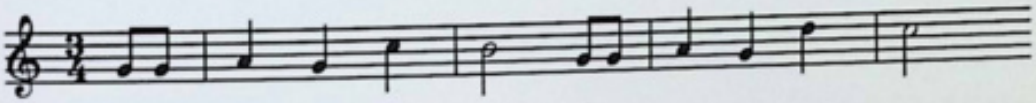
(Note: you may want to use the "Autostem" command after a transposition, so that the note stems are again in the right directions.)

Inversion

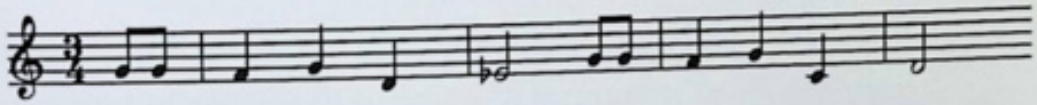
"Inversion" reverses the direction of each interval in a melody. Where the original melody went *down* a minor second, for example, a real inversion would go *up* a minor second.

A tonal inversion differs from a real one in the same way that real and tonal transpositions differ. A tonal inversion will keep the same intervals, but the interval qualities may change in order to keep within the key: minor seconds may become major, and so on. The real inversion would inevitably require some accidentals, and could seem to be modulating to a new key.

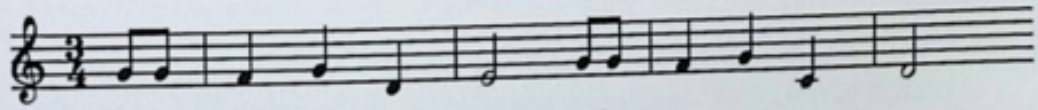
Compare these real and tonal inversions of the sample tune:



original



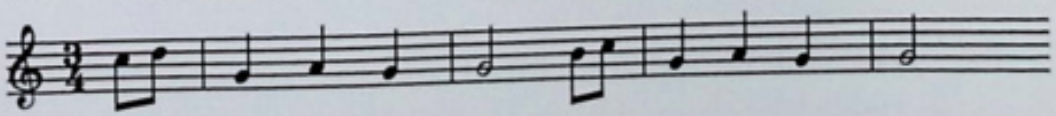
real inversion



tonal inversion

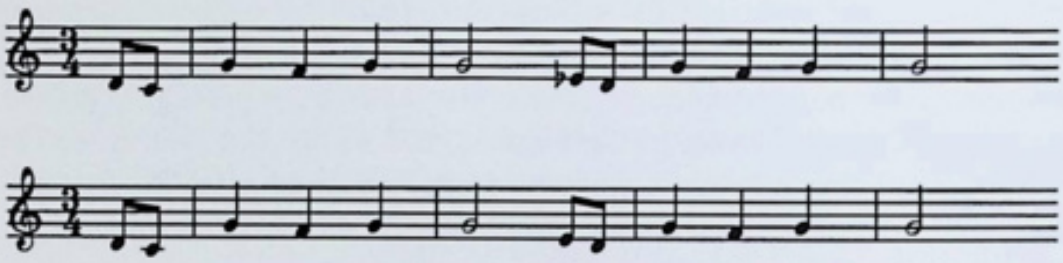
Reverse all or selected

The reverse of a melody or phrase is sometimes called its *retrograde:* it's just the same thing played backwards. Normally only the pitches are made retrograde, however. Retrograde rhythms don't always work well. The combination of the original rhythm and reversed pitches takes the melody far from its origins – and yet a connection remains.



Reverse all or selected with real or tonal inversion

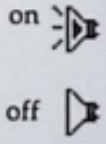
Retrograde inversion produces a variant that is both backward and inverted. The inversion again can be either real or tonal.



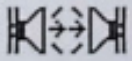
Output

How to hear your composition

Use the "Hear" command (Command-h) to listen to an entire composition or to any combination of staves.



The little speaker symbol at the left of each staff turns the sound of that staff on or off. This allows you to listen to just the bass line, for example, or to the bass and soprano but no others.



The PlayFrom and PlayTo tools are found at the upper left of every music window. If you want to hear only part of a piece, select one of these and place it in the music: the PlayFrom tool defines where listening begins and the PlayTo tool marks where it stops. The tools can also be dragged left or right after being placed. To return either tool to its default position (beginning and end of the piece) just click on the tool and then click in the left margin.

These tools are especially useful if memory is limited and you don't have enough memory to listen to a whole composition at once.

Printing and Page Preview

Songworks II includes a new *TrueType* font called Sebastian. Sebastian is an outline font, capable of printing in the highest resolution of your printer.

For printing and for the export of music "pictures" to other programs, the Sebastian font needs to be in your System's font collection (it is placed there automatically by the Songworks installer). If you export a music example, either with the "Export picture" command or via "Take a Picture," you should remember to send a copy of the Sebastian font along with any documents you send to others. (Please see p. 53 for more about using "Take a Picture.")

Adjusting line breaks

In the edit window, line breaks appear as a dotted triangle above and below the staff. Page breaks are a double dotted triangle.

You can force a "hard" line break or a page break via the Information window for a barline (select the bar line and press Command-i). These appear in the edit window as solid single or double triangles (they do not print, of course).

Page layout

Fine control of line breaks can be achieved by dragging a bar line left or right; this is handy if you want to compress measures in one line just enough to squeeze in one more measure.

A Page Preview window can be left up while editing, so that you can move bar lines or make other adjustments before actually printing. As you drag a bar in the edit window you will see the corresponding results appear in the Page Preview.

Changing the size of printed notes

If your score has many staves, you will want to print at less than 100% size. The Page Setup window (see File menu) allows you to choose any reasonable number for the print magnification, and Songworks will respond to changes in this number by allowing more measures on each line and more lines on each page. For example, if you choose to print at 50%, a glance at the Page Preview will reveal that twice as many measures are now able to fit on each line, and more lines fit on each page. The music in the Page Preview appears to be the same size, but the "paper" has enlarged; the effect is like zooming in for a closer look. Similarly, you can choose to print at larger than normal size, perhaps 150%, which would be preferable for making a child's songbook.

Exports

Making files for use with *Kidmusic* and *Practica Musica 3*

Kidmusic 1 and *Practica Musica 3* both read song files in the *Songworks I* format. At the moment, files created by Songworks II are not readable by Kidmusic or Practica Musica; and for this reason your Songworks II CD includes a copy of Songworks I for use in creating such files. Songworks II can read Songworks I files, so work you have done in the old format can be imported to the new program.

Using *Take a Picture* to create music examples

An easy way to create a music example for a word processing document is to use the Score menu's "Take a Picture" command (Command- Option-p). After choosing "Take a Picture" you can drag a selection rectangle around whatever music you want to copy, and when you release the mouse a high-resolution image of the selected area will be transferred to the Clipboard. You can then switch momentarily to a page-layout or word-processing document and paste the image. When printed, it will appear at the highest resolution of your printer (all the music examples in this manual were created in Songworks with "Take a Picture").

If you send such a document to a printer or to anyone else, be sure to include a copy of the Sebastian music font. We consider this to be "fair use" of the font; you are free to send the Sebastian Font file to others as needed for reading documents that use it.

The Sebastian font was placed in your computer's Font folder by the Songworks installer; another copy of it is available on your Songworks CD. The easiest way to send a copy is to drag Sebastian from your CD to your hard disk or to a floppy.

Export Picture

The "Export Picture" command will create a series of PICT files containing the entire contents of the current score. Each file will be one staff system as it would appear on the printed page. Exported PICTs will also need the Sebastian font, as described above.

Exporting Sound

Select the "Export sound" command to create an "AIFF" file (Audio Information File Format) of the current music. AIFF is a standard audio format that can be edited with various sound editing tools and imported to multimedia projects. The AIFF files are based on the sampled sounds provided with Songworks and should sound just the same as they do when played by Songworks itself. If you want to export for QuickTime music instruments you should export a MIDI file (see below).

AIFF files can be either 8-bit or 16-bit. 16-bit is by far the best, though of course it takes up twice as much disk space. The sound will be exported at the resolution currently chosen in Sound Options.

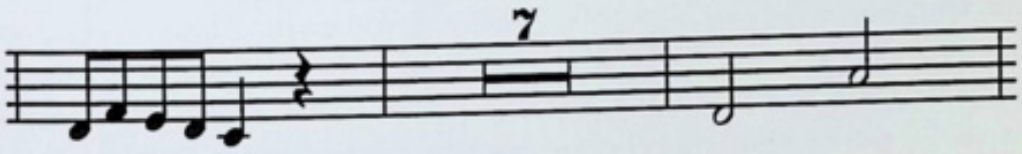
Exporting MIDI

Your composition can also be exported as a highly compact MIDI file, which can be read by many music programs, including this one (see Import MIDI, p. 24). A MIDI file takes up little space because it contains no actual sound data; it is merely a list of note events. Your exported MIDI file will contain all the notes of your score, at the currently chosen tempo.

A MIDI file is not a substitute for a Songworks File – it contains no visual information about note placement, for example. It doesn't know if a particular note is D# or Eb, or whether it is beamed or slurred. If you export a score to MIDI and then import it, you will find that the imported score doesn't look the same on the page; it has been interpreted. The best thing about MIDI files is that many music programs on different types of computers can read them. They provide, at the least, a quick way to enter the basic notes of a composition for further editing. They can also be used in multimedia projects and as soundtracks in QuickTime movies.

Extracting orchestra parts

The Staff menu's "Extract orchestra part" command will copy the contents of the active staff to a separate file that can be saved and printed as an orchestra part. It will also condense any repeated measures of rests into the multiple rests normally used in orchestra parts to save space. For example, if your part has a passage containing seven measures of rest, it will end up like this:



You can also enter multiple rests manually; they are found in the whole-rest pop-up. The number above the rest can be changed by selecting the rest and pressing Command-i to bring up its Information window. Multiple rests can be freely edited, like other symbols in Songworks.

Exploration

Active Listening

This is one of Songworks' most interesting features. In a multivoice composition or even a song with chords, you can play one voice yourself while the computer accompanies with the others. It's a very good way to learn your part in a polyphonic vocal composition, or to study a piece for pleasure. You can also choose to either play the actual pitches yourself, or just to tap the rhythm of your part while the computer handles the pitches. That latter is the preferred method for most people, and is not only a lot of fun in itself, but a way to gain a deeper understanding of the music. Nothing gets you into the music better than the sensation that you are actually playing one of the parts, and yet this method of playing is easy enough to learn that almost anyone can handle a complex part. It's surprisingly engrossing, and does enhance one's ability to hear and appreciate the details of the composition. We believe the pedagogical and entertainment value of this type of play is significant enough to deserve a special term: *Active Listening*.

When you choose "Active Listening" Songworks will take a few moments to prepare the other parts, and then it will tell you to "tap any keys." (If you've turned off the automatic pitches it will just say, "begin playing.") If the part you are playing makes its first appearance after the other voices have begun, you'll need to signal the computer to begin by striking any note. Otherwise, the other parts will begin when you do.

The computer will assume that you intend to play the currently active staff yourself. The accompanying voices will wait for you if necessary, or, at other times, jump ahead if you play some notes too quickly. You won't be able to get very far off for long, and if you get mixed up, the computer will stop at the first convenient place and wait for you. (A convenient place is one where all the voices can start together on a downbeat; the number of such places varies according to the nature of the

composition.) The PlayFrom and PlayTo tools are still available, so you can use this technique to play just part of a score.

Your Songworks CD includes a folder of musical examples for you to explore this way. Just select an example, choose a part, and have fun!

Controlling volume in real time

When playing with Active Listening a special tool will pop up: the Mouse volume control (available at other times by pressing Command-y).This is a real-time volume adjustment that lets you change the volume of the notes you are playing by moving the mouse left and right. It works even within a single note, to create the effect of a "swell." It's not the same degree of expressiveness, of course, as is possible on other instruments, but it does give you some control over nuance, which adds to the fun. It's entirely optional; if you don't want to use it, leave the volume control turned off.

If you want to save the volume settings of a particular performance, you have the option of saving that information in the score file (see the Staff menu command: "Store recorded volumes to staff"). Subsequently, the previously recorded volumes will be used for every performance, provided that the volume control is not turned on. Remember that you can also set the volume of the staff as a whole with "Reset staff volume" and of individual notes with the Note Information window.

Technique

Active Listening can be accomplished via a MIDI instrument, but it works well with just the letter keys of the computer. If playing on the letter keys using automatic pitches, you'll probably need to acquire the technique for this instrument:

- It is best to play by alternating two fingers of the same hand.

- Keep your fingers low to the keys.

- Like a piano, the notes stop when you release the key, so don't peck at them like a bird (unless you want to hear very short notes).

- Don't hit the keys very hard.

Musicians with some experience of old acoustic instruments may be amused to notice that the clicking of the computer keys is reminiscent of the extraneous mechanical sounds of old keyboards, especially old tracker organ keyboards. Perhaps these little clicks can be appreciated in the same way.

The Computer as a chamber music instrument

Active Listening brings us to an interesting social use of computers. If you have two or more computers in the same room, each equipped with Songworks II, you and friends can read through polyphonic compositions as if you were a string quartet, or a duo or trio. Each person should choose one of the parts in a polyphonic composition and use the Staff Sound control to turn off all the other staves. If you have a player on every part (with no part being played automatically) the resulting experience will resemble that of playing in a chamber music ensemble, except that little skill is required.

Each of you can use the Mouse control to adjust volume, so that

certain parts can be brought forward as needed, or dropped to the background as another comes forward. You will need to pay attention to each other and keep in time. This is a beginning exercise in ensemble playing, an exercise in rhythm-reading, a terrific way to gain familiarity with and learn about some favorite compositions. And, of course, it's a lot of fun. It is one of the few social uses for computers.

We think you'll enjoy this activity most if you actually hold the computer's keyboard between your neck and left hand (right hand for lefties), as if it were a violin. Choose any pair of letter keys and tap the rhythm using two fingers. Or leave the keyboard on the table so that you have a hand free for the Mouse Volume control.

It is even possible to have a whole room of computers used this way to perform a symphony! In such a case it might be a good idea to have one person serve as "conductor" (for a brief summary of the gestures used in conducting, see Ars Nova's textbook, *Windows on Music*).

Command Key table

Hold down the Command key and press the indicated letter key for these shortcuts.

⌘ a	Select all items in active layer of active staff
⌘ b	Beam selected notes
⌘ c	Copy selected items
⌘ d	Stems down
⌘ e	End recording
⌘ f	Play with Active Listening
⌘ h	Play (hear all or whatever is between the play points)
⌘ i	Get info/set options for selected item
⌘ j	Toggle Justify on/off
⌘ k	Bring keyboard window forward (if it's hidden)
⌘ l	Force linebreak at selected item
⌘ m	Toggle Metronome on/off
⌘ n	New score window
⌘ o	Open score
⌘ p	Print active score
⌘-Option-p	Take A Picture
⌘ q	Quit
⌘ r	Start recording
⌘ s	Save score
⌘ -Option-s	Set keyboard split point
⌘ t	Set tempo
⌘ u	Stems up
⌘ v	Paste clipboard contents
⌘ w	Close frontmost window
⌘ x	Cut selected items
⌘ y	Toggle volume control
⌘ z	Undo
⌘ .	Stop current process (e.g., stop defining voices)
⌘ ;	Toggle between Spreader and Shrinker tool
⌘ =	Autobeam active staff
⌘ \	Autobar active staff
⌘ /	Autostem active staff

Shortcuts for selecting note values

⌘ 1	wholenote	⌘option-1	wholerest	[shift] add dot
⌘ 2	halfnote	⌘ option-2	halfrest	[shift] add dot
⌘ 3	quarternote	⌘option-3	quarterrest	[shift] add dot
⌘ 4	eighthnote	⌘option-4	eighthrest	[shift] add dot
⌘ 5	16thnote	⌘option-5	16threst	[shift] add dot
⌘ 6	32ndnote	⌘option-6	32ndrest	[shift] add dot
⌘ 7	64thnote	⌘option-7	64threst	[shift] add dot

Note: the Macintosh System uses ⌘-Shift-3 and 4 for screen pictures – you should use the numbers on the keypads to get the intended result.

Other shortcuts

Spacebar:
- Stops play of any music if music is playing
- Changes cursor to the arrow if nothing is playing

Shift key: If notes are selected, you can change their pitches by holding down the Shift key and playing the desired pitches in order.

Changing rhythm value of a note: select it and choose the desired value.

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