

Articulation Tool

Version 2, November 2005

The Articulation Tool provides an integrated framework for an intuitive use of large sample libraries within Logic. It allows to access all the sampled articulations and variations, required to reproduce the versatile sound character of a natural instrument while playing by assignable physical controllers and to record them on a single track for direct score and convenient post-production.



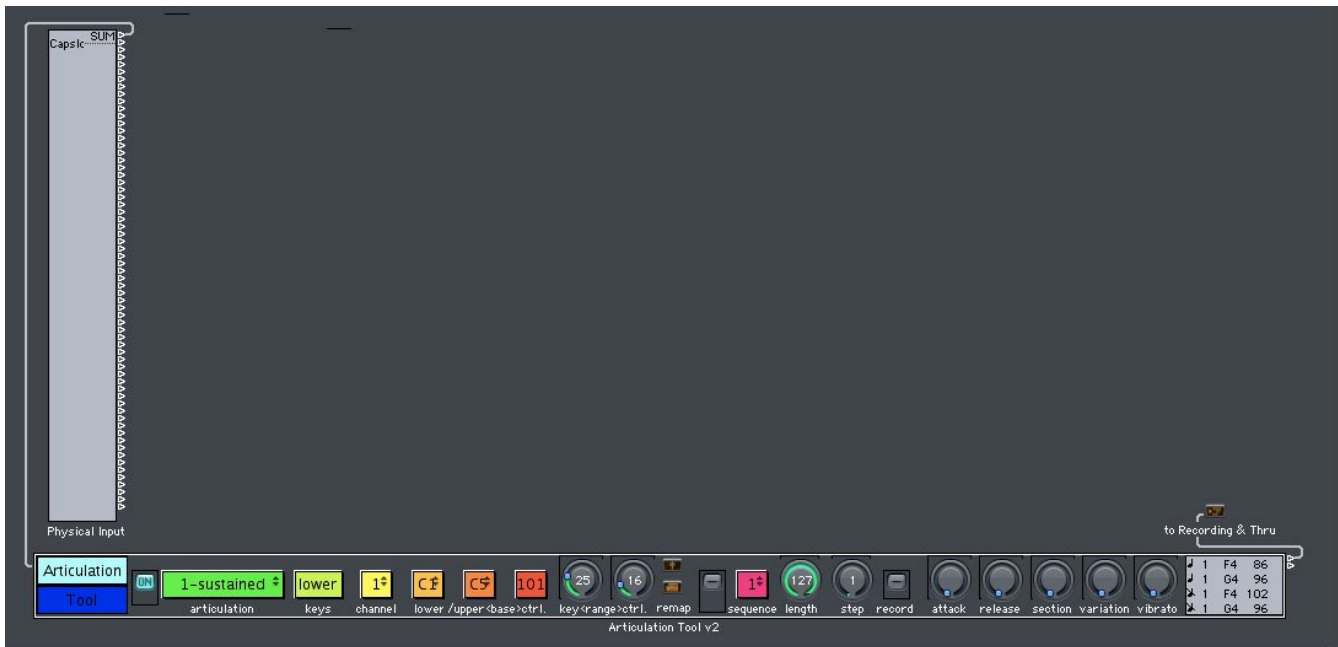


Figure 1: Input routing scheme with inserted Articulation Tool

range - i.e. a range of consecutive controller numbers which can include switch pedals like the standard “piano-trio” or assignable buttons found on many current keyboard controllers. The control elements of these ranges can be assigned to an extensive list of possible destinations that include

- selection of the different articulations per instrument
- control of the all functions of the included *Alternation Section*
- control of the *VSL Performance Tool* in an improved and integrated way

III. SETUP

1. Include the Articulation Tool into your setup

Copy the Articulation Tool from screenset 9 of the corresponding song and paste it in the *Click & Ports* layer within the environment of your Autoload song or VSL-template. Cable it in the midi path between the *Physical Input* and the *Sequencer Input* as shown in Fig. 1 (to record midi data, every Logic song has a connection from the Physical Input to the Sequencer Input). Include an environment window showing the Articulation Tool in one of your screensets for easy access. You need only one Articulation Tool per song which due to the above routing affects midi events before they enter Logics sequencer and thereby works for every instrument you select in the arrange.

2. Adjust the Articulation Tool to your midi hardware

Set the channel parameter of the Articulation Tool to the midi channel of the physical controller (e.g. a keyboard) you want to use for articulation changes.

If you have ...

- a separate 2 octave keyboard ...
 - adjust the *lower base* to the base note of your keyboard if necessary and have a look at the key-assignments in the appendix

- a range of 8 or 16 midi buttons ...
make them send on channels 101 to 108 or 116 and you can change the corresponding articulations (you can also make the Articulation Tool accept the controllers your buttons standardly transmit - see the remap function)
- a single keyboard and a sustain pedal ...
set *key range* to 12, *ctrl. range* to 1 and *base ctrl.* to 64 - now you can use the first octave (left part in the appendix) and the sustain pedal to switch between two different ranges in order to be able to access the full key-range of all instruments (see below)
- only a single keyboard ...
set *key range* to 12, and have a look at the *remap* function in order to set one key of the *control key range* to the destination *toggle key range* (destination 17)

3. Connect the EXS sampler instances you want to use

If you ...

- already use channel splitters as track objects ...
you only have to change the articulation-names in the *articulation* text fader to meet your present conventions (see the description of the *articulation* fader in the next section).
- haven't used channel splitters yet ...
you have to create a corresponding template. To do this create a channel splitter for each instrument you want to use and cable its outputs to EXS instances with the corresponding articulations of the instrument loaded as shown in Fig. 2. Have a look at the third screenset of the *Articulation Tool v2* song where this is already done for some instruments - simply copy the lowest row of objects as often as you need and move the objects below.



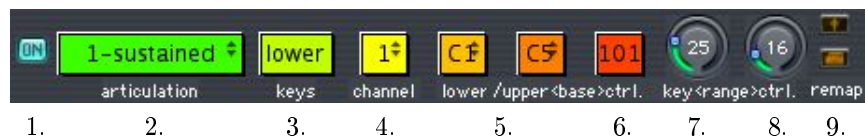
Figure 2: Channel splitter routing scheme with inserted Performance Keys Tool

Finally insert the track instruments in the arrange window and play!

IV. ARTICULATION TOOL

A. Articulation Section

There are three ways to change articulations, namely via keys, switch controllers or program change messages. Although program change messages work as expected and may seem most natural, they are somewhat disadvantageous since it usually takes too long to enter a 2 digit number and an enter command to do this during playing. If your controller has a row of 8 or 16 assignable buttons, this would be a good way to perform articulation switches. Keyboards with a good action, however, usually don't have many additional controllers. Therefore, the standard method would be to use keys for this task. Probably the ideal case is to have a small second keyboard (2 octaves) for switching articulations and for other control purposes. With a single keyboard it is a bit less convenient, since generally the instruments of an orchestra cover the whole 88 key range of a masterkeyboard and so there are no unused keys that can be dedicated entirely to the task of switching articulations. In order to enable the articulation selection by keys in this case, too, the Articulation Tool provides two separate control key ranges appropriate for high and low instruments respectively. These two ranges can be toggled by an assignable key or switch controller (this has to be done manually since there is no way for the Articulation Tool to "know" which instrument is selected in the arrange). The control elements of the *Articulation Section* are:



1. on/off switch for the articulation selection
2. *articulation* shows the currently active articulation. Articulations are much more conveniently selected by midi events in which case this fader is only intended as a display - however they can also be selected with the mouse. Double clicking the display the text fader opens (you may need to double-click several times until it actually does) and you can adjust the articulation names in order to adapt them according to your preferences. Note that this affects only the display, whereas the actually played articulation depends on which articulation is loaded in the EXS-instance cabled to the corresponding output of the cable splitter and has to be changed accordingly. See also the *remap* function to assign keys or buttons to select articulations in this context.
WARNING: In Logic 7.0 and probably also in the previous versions there is a bug which causes Logic to crash hard when you double click a text fader! A workaround to change the articulation names in this case is to unpack the Articulation Tool macro make the changes and pack it again. In logic 7.1 and higher, however, the bug is fixed and double clicking is safe.
3. *keys* is mainly shown to keep track of which of the two key ranges is currently active, since they are usually controlled by midi events - however they can also be selected with the mouse.
4. *channel* sets the midi channel on which midi events are interpreted as control events. This parameter is particularly useful in combination with a second keyboard.
5. *lower/upper base* selects the lowest key of the *control key range* (which always starts with C) for the lower and upper region respectively. If you want a fixed *control key range*, set the same base key for both ranges or simply do not switch them.
6. *base ctrl.* selects the lowest controller number of the *switch controller range* which allows to control the same range of possible destinations as can be controlled by keys. Switch controllers can be used in addition to any assigned keys which allows to take advantage of all available physical controllers. Switch controllers could be switch pedals (as e.g. a sustain pedal) or midi buttons as found on many current controllers and according to the midi standard are associated with controller numbers above 64.
7. *key range* specifies the number of successive keys that form the *control key range* used to perform control actions.
8. *ctrl. range* specifies the number of successive midi controllers that form the *switch controller range* and perform control actions. To be specific, possible actions can be selected by switch controllers sending controller numbers between *base ctrl.* and *base ctrl. + ctrl. range - 1*.

- The *remap* function allows to customize your physical controllers for the use with the Articulation Tool. It has two parts given by the transformers with a “fader” and a “notes” icon. Double clicking the icons opens the corresponding transformer window where you can adjust the map in the lower part of the window. The upper “fader”-transformer allows you to remap any controller number on the selected channel - represented by the corresponding element of the map - to any other - represented by the height of the column. This allows to change the controller numbers of incoming controllers and in particular to map different controllers to a range of consecutive controller numbers in order to constitute the *switch controller range* of the tool. The second part represented by the notes-icon works similar to Logic’s key commands window and allows you to assign both the keys of the *control key range* and the midi controllers of the *switch controller range* to various actions like switching articulations, controlling functions of the tool or sending specific midi events. The difference to the key command window is that in the *remap* window you assign the actions to the keys respectively switch controllers and not vice versa. Moreover the sources and destinations appear only as numbers instead of plain text. The keys of the *control key range* starting from the respective base key encoded as C=1, C#=2, ..., and the controllers of the *switch controller range* starting from the selected *base ctrl.* number are mapped to the possible actions encoded as numbers. Destinations 1 to 16 correspond to the selection of the respective articulation whereas higher numbers perform other actions including the control of the *Performance Tool* of the *Vienna Symphonic Library*. The complete list of the available destinations and their corresponding numbers as well as the default settings are given in the appendix.

B. Alternation Section

Since the *VSL Alternation Tool* selects articulations via additional note events and is not compatible with the method of encoding the articulation directly in the midi channel, the Articulation Tool also includes an *Alternation Section*. It has four articulation sequences and looks more restricted than the VSL tool due to its limited number of control elements, but actually it works the same way and is much more intuitive and easier accessible. Compared to the unfavorable access of the VSL-tool through the edit menu of the EXS instrument editor and the inconvenient handling via mouse, the alternation section is always visible and all functions can be controlled by assignable physical controllers. The alternation mode in the Articulation Tool works like a tape machine. You can simply press record and play your line once with the corresponding control keys that change the articulations. Thereby the tool stores the articulation changes and performs them automatically in the following to concentrate on the music. In particular all functions can be controlled by keys - these are in detail:



- on/off* switch for the alternation function - double clicking returns to the start of the sequence.
- sequence* selects one of four available articulation sequences. Each sequence features up to 127 steps and is independent of the others, i.e. any changes do not affect other sequences which thereby can be used to store often used alternation patterns (e.g. the alternation of two different staccato versions). Moreover, there are key-commands for each sequence so that you can change sequences while playing - the same way as with the *VSL Alternation Tool*.
- length* sets the length of the repeated alternation sequence which can contain up to 127 steps.
- step* displays or selects the current (i.e. next played) step number.
- record* enables a mode to record an articulation sequence by playing.

There are no further controls to set the alternation sequence since this can be done simply by playing! If you press ordinary (monophonic) notes the tool jumps as usual from one articulation to the next and cycles through the sequence. You see the articulation that will be played next and the corresponding step number in the *articulation* and *step* displays. You can always change the current articulation simply by pressing the corresponding key or button to select the articulation. Thereby the articulation display changes to the new articulation without progressing to the next step. As soon as you play an ordinary note the new articulation is played and finally stored in the articulation sequence and the step counter progresses. When the record mode is enabled, however, articulations are not changed by those stored in the sequence in each step, but those are erased by what you play. In particular every time you press

an ordinary note without a preceding control key, the currently active articulation is stored. This means that you can “program” a sequence just by playing - as you would do without the tool - in a first run and skip the control keys afterwards to concentrate on the music! The Articulation Tool can also be used for polyphonic playing. However, compared to the VSL-tool it uses the respective number of steps for each note of a polyphonic chord.

C. Continuous controller section

The five faders on the right are for future extension and have no effect so far. Furthermore this section includes a monitor that shows the output of the tool. You might notice that the tool usually generates several note-off events associated with a given note. This is to ensure that you can change to a new articulation while notes playing the previous articulation are still active. However, these duplicate note-off events are not recorded and do not appear in Logic’s sequences.

V. PERFORMANCE KEYS TOOL

The *Performance Tool* of the Vienna Symphonic Library responds to control notes. These are very low notes that do not overlap with the range of the corresponding instrument but nevertheless these notes usually appear in the score and strongly affect the visual image - making it rather useless. The Articulation Tool deals with these control events in a way that they do *not* appear as notes in the score. Instead they appear as midi controllers in sequences and thereby do not affect the score at all. These midi controllers can be transformed into the correct control notes afterwards by the simple *Performance Keys Tool* before they reach the sampler instances. Therefore, it is necessary to use a midi instrument instead of the channel splitter itself as track instrument and insert the *Performance Keys Tool* in between as shown in Fig. 2. Finally, with this method the *Performance Tool* destinations are included into the freely assignable *control ranges* of the Articulation Tool - see the list in the Appendix.

VI. WORKING WITH A TEMPLATE

When using the channel-splitter method for a large library like the Pro Edition or Opus 1/2 with many dozens of different instruments, you will end up with the corresponding number of channel splitters connected to literally hundreds of audio objects in total. An audio objects is generally like a slot where you can insert an audio instrument by selecting it with the *Channel* parameter in the audio objects parameter box in the environment. Since Logic currently offers only 128 audio instruments (in which the actual EXS instances are inserted) it is not possible to fill all audio objects and have a dedicated active EXS instance for each articulation of each instrument that is ready to load the corresponding sound. However, this is neither necessary nor useful, since due to memory restrictions it is not possible anyhow to load everything at the same time and beyond that unused EXS instances use processing power and memory. Therefore EXS instances of unused articulations should be removed from the corresponding audio objects by setting them to *off* (it becomes a structureless gray rectangle - see Fig. 2), or stated the other way around you should only select one of the 128 different audio instruments in the audio object associated to an articulation when you actually want to use it. However, this allows a very convenient working method: Logic stores all information of an audio instrument - including the loaded sampler instrument - even if the audio instrument is not assigned to any audio object. Furthermore, it automatically loads the corresponding sound if you assign an audio instrument to an audio object and frees the memory when you remove it. Therefore you can already set up your most frequently used articulations (usually much more than would fit into memory at the same time) in fixed audio instruments and simply insert the audio instrument to the matching audio object when you need to use the articulation. For this purpose it is useful to include the corresponding instrument number in the articulation’s audio object name so that you know which one to assign (if you are a user of Opus 1, try to select the instrument numbers which are exemplarily given for the first few articulations in the *Articulation Tool v2* song to see how the whole scheme works). For all less often used articulations you have to reserve a few “shared” audio instruments. For these articulations the inclusion into a song is a two step process: first assigning the audio instrument and then loading the EXS instrument.

Another very handy thing is to have a dedicated screenset to assign and load instruments. By linking an arrange window with an environment window that shows all the audio instruments for the articulations of a given instrument and has the proper size you can achieve that the content of the two windows is actually linked. Thereby you can simply select an instrument in the arrange and immediately access all its audio instruments in the environment window. An example of a corresponding screenset is given in screenset 2 of the *Articulation Tool v2* song.

Finally for mixdown and effects it can be very useful to combine all articulations of an instrument on a dedicated bus.

APPENDIX

Default settings

These are the default settings for the control key range and the switch controller range. These assignments should be viewed rather as a suggestion since everything can be set up according to your preferences and available physical controllers - see the remap function for details

Control key range (standardly 2 octaves)

perf. leg. repetition	articulation 7 (tremolo/ fluttertongue)
perf. leg. ghost	articulation 6 (per. legato)
perf. leg. release	articulation 5 (sforzato)
	articulation 4 (long detache/ portato)
alternation record	articulation 3 (short detache/ portato)
	articulation 2 (staccato)
alternation on/off	articulation 1 (sustained)

first octave

	articulation 16 (variable 2)
articulation 15 (var. 1)	articulation 14 (pizzicato)
alternation seq. 4	articulation 13 (con sordino)
	articulation 12 (fortepiano)
alternation seq. 3	articulation 11 (long detache/ portato 2)
	articulation 10 (short detache/ portato 2)
alternation seq. 2	articulation 9 (staccato 2)
alternation seq. 1	articulation 8 (sustained 2)

second octave

Switch controller range

controller 64 - toggle control range
 controllers 101-116 - articulations 1-16

Program change messages (fixed)

p.c. 1-16 - articulations 1-16

Control destination list

This list includes the possible actions that can be performed by keys or switch controllers and the corresponding numbers that have to be selected to assign them in the remap window.

1-16	articulation tool - articulation 1-16
17	articulation tool - toggle control key range
18	articulation tool - alternation on/off (double clicking resets the step-counter)
19	articulation tool - alternation record
20-23	articulation tool - alternation sequence 1-4
24	VSL performance tool - legato mode - release (encoded in controller 31)
25	VSL performance tool - legato mode - ghost (encoded in controller 32)
26	VSL performance tool - legato mode - repetition (encoded in controller 33)
27	VSL performance tool - repetition mode - skip first on (encoded in controller 34)
28	VSL performance tool - repetition mode - skip first off (encoded in controller 35)
29	VSL performance tool - repetition mode - jump to last (encoded in controller 36)

Substituted controllers for the Performance Tool functions

The following list consists of controllers (c) that are created by the articulation tool and appear in recorded midi sequences in order to be converted to the proper notes needed to control the functions of the VSL Performance Tool.

c31	performance legato release (finally converted to A0)
c32	performance legato ghost (finally converted to C1)
c33	performance legato repetition (finally converted to D1)
c34	performance repetition skip first on (finally converted to A1)
c35	performance repetition skip first off (finally converted to A#1)
c36	performance repetition jump to last (finally converted to B1)

Finally

This software is freeware ...

... however, should you find that it improves the work with your sample library and your output, then remember how much you paid for the samples and have a look at www.unicef.org - anything helps

Thanks!