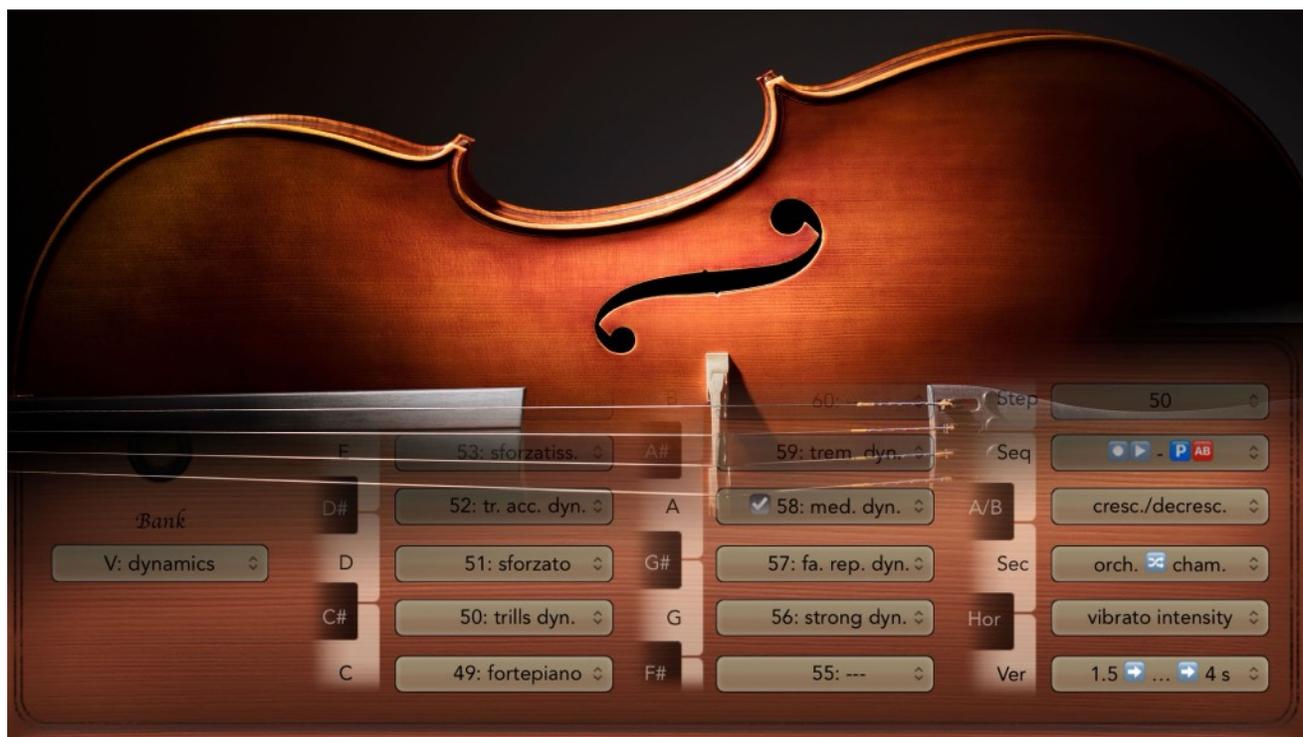


Logic Articulate Tools for Articulate Presets

Complete integration of the VSL into Logic



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User manual

2nd Edition

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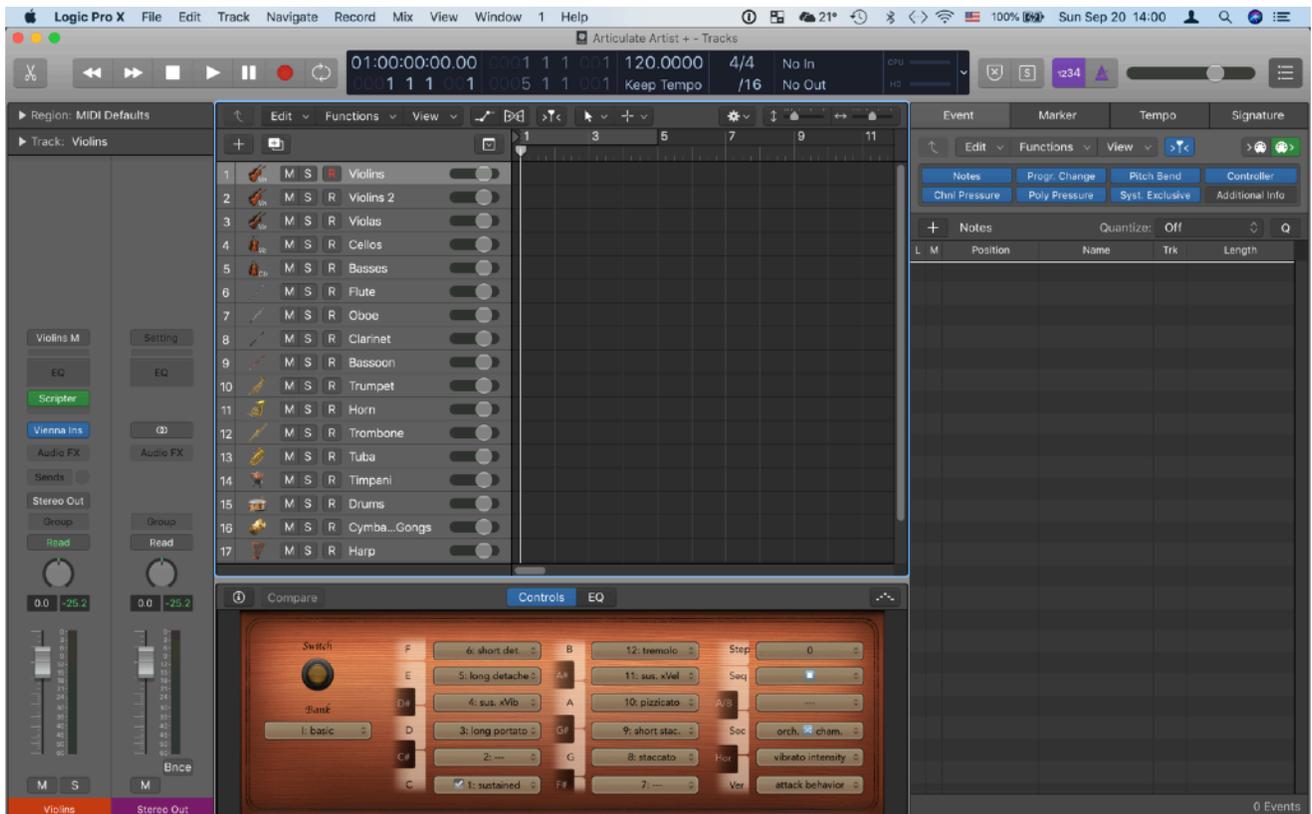
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Introduction

How to fully integrate a sample library into a DAW

There was never a more convenient way to tap the full potential of the Vienna Symphonic Library. The *Articulate Tools* described in this manual integrate the Vienna Symphonic Library (VSL), powered by Articulate Presets, into Logic. They consist of several different parts that seamlessly work together to provide an unprecedented user experience, that literally puts the entire VSL at your fingertips!

This manual describes this integration of the VSL into Logic, which offers the following features:

- load instruments with all necessary settings and tools conveniently via Logic's patch browser
- full overview of the entire content of the VSL with all articulations and the assignments of all controllers offered by Articulate Presets right where you need it: in Logic's Main Window!
- next-generation key switching that allows you to instantly access *all* articulations included in the VSL via the novel concept of *Articulation Banks*
- a *Quick Access* bank for the most important articulations following *Babylon Waves* universal *Art Conductor* layout, compatible with nearly all libraries of other developers on the market
- all articulations are automatically encoded in the note events themselves via Logic's convenient Articulation ID feature, and even main variations are directly accessible without other Midi events
- the *Articulate Sequencer* which allows you to play and record realistic musical lines with complicated articulation switches in real time: you only play the notes while this unique articulation sequencer takes care of all the articulation switching

This functionality is provided by the following components (making up the *Articulate Tools*):

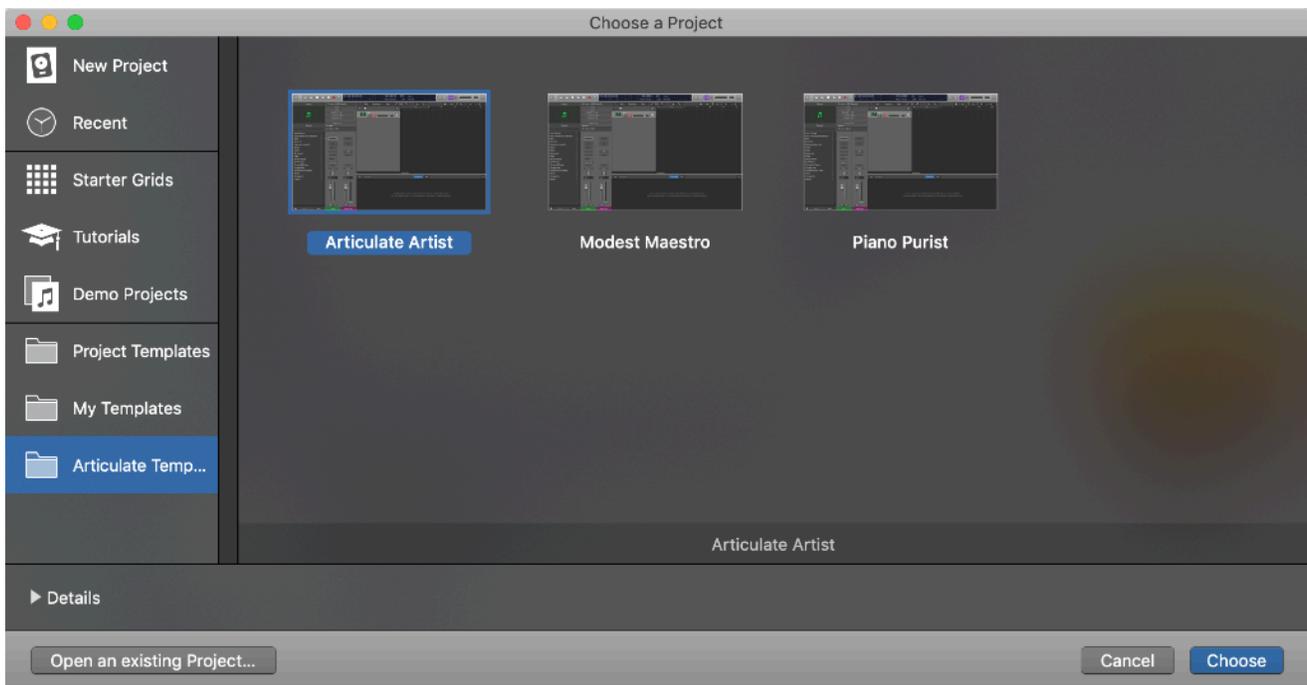
- *Articulate Macro*: global Logic Environment Macro
- *Articulate Monitor*: Smart Controls panel in Logic's Main Window
- *Articulate Scripts*: for Logic's Scriptor Midi Effects Plug-In for the different instruments / libraries
- *Articulate Sets*: Logic Articulation Sets for the different instruments / libraries
- *Articulate Patches*: Logic patch settings for every VSL Instrument / Articulate Preset

All of this might sound complicated, but in practice you don't have to care about the entire implementation at all, since all of these components are automatically set up whenever you load a patch and seamlessly work together. Due to the dedicated patches you can conveniently add instruments to your work via Logic's patch browser (or remove them again) and everything is set up and works automatically!

Setup

What you need to do to get started

There is a dedicated Installer that automatically installs all components required by Articulate Tools. Just double-click it and follow the steps. It installs this manual in your *Music* folder and all components into the standard *Audio Music Apps* folder within it. Once installed, when you start a new Logic project you should find several templates in the *Articulate Templates* folder that specify which external Midi events, i.e. notes and Continuous Controllers (CC) (standardly all on Midi channel 1), are used to control Articulate Tools...



Articulate Artist: requires a second 2-octave keyboard (25 keys) exclusively for key-switching

The small second keyboard should send on the two lowest octaves of the Midi standard, which is even below the key range of a piano keyboard, so just transpose it downwards as far as possible. The lower octave (C-2-B-2) switches banks, the upper octave (C-1-B-1) articulations. The remaining key (C0) controls the Articulate Sequencer: single presses toggle between play and pause; “double-clicking” it (i.e. pressing it twice in a row without pressing a normal keyboard key on your main keyboard in between) toggles record on/off; “triple-clicking” stops the sequencer and resets it to step one.

Piano Purist: requires a full piano keyboard (88 keys)

The lowest or highest full keyboard octave acts as a *control key range* and selects either articulations or banks. The three lowest keyboard keys, which are very rarely used in an orchestral

context (only the Contrabass Tuba & Trombone (A0), Contrabassoon (A#0) and Bases (B0) reach down that low), are permanently assigned as *control keys* and cannot be used for normal playing. The lowest keyboard key (A0) is assigned as a bank-switch, that allows you to select banks instead of articulations while it is pressed (similar to a modifier key on your computer keyboard). The second lowest key (A#0) toggles the control key range between the lowest (C1-B1) and highest (C7-B7) full octave. The third lowest key (B0) in turn controls the Articulate Sequencer (as described in detail in the “Articulate Artist” paragraph). In case you need the lowest keys and instead want to use piano pedals to control the Articulate Tools, see the Articulate Macro section.

Modest Maestro: requires only a basic 5-octave keyboard (61 keys), sustain + additional pedal

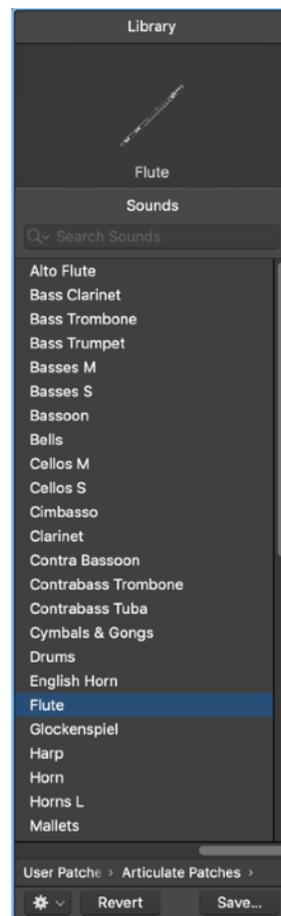
The lowest or highest keyboard octave acts as a *control key range* and selects either articulations or banks. The sustain pedal (CC64) acts as bank-switch and selects banks while pressing and holding (like a modifier key on your computer keyboard); “double-clicking” it (i.e. pressing it twice in a row without pressing a normal keyboard key in between) flips the control key-range between the lowest (C2-B2) and the highest octave (C6-B6) on the keyboard. The second switch pedal or button (sending CC65) controls the Articulate sequencer (see the “Articulate Artist” paragraph).

All three templates are available in an empty version and in the *Symphonic Cube* or *Basic Orchestra* also in a version (distinguished by a “+” or “-“ sign) that already includes all instruments of a basic orchestra. If one of these templates matches your control hardware, everything should work out of the box and there is nothing to set up. Yet, these are just a few standard examples and you can fully adapt Articulate Tools to your hardware as described below in the Articulate Macro Section.

In case your keyboard has more or even less than 5 octaves, please adjust the two key ranges via the corresponding text faders (“Lo-Art-Hi”) on the Articulate Macro. Similarly, if your Midi keyboard has a whole range of buttons, drum pads or similar, you can assign up to five of them instead of the pedals to control Articulate Tools even more conveniently, see the corresponding section on the Articulate Macro for details. If you only have a small keyboard and no switch controllers you need to get some if you want to use the key-switching and/or the sequencer—already a simple Smartphone App can do the trick!

Depending on the chosen template you might also have to configure your control hardware to send the appropriate switch controllers discussed above, as well as the four dedicated controllers Articulate Presets use (Vertical controller CC2, Horizontal controller CC3, Section controller CC20 and the A/B switch CC4).

You can now add orchestral instruments conveniently via Logic’s patch browser (shown on the right), which can be accessed selecting *View > Show Library* (Y). Everything can be controlled via the corresponding control keys and/or switch controllers discussed above. And you always have complete overview of the available articulations and banks, the selected articulation and the effect of the four dedicated controllers used by Articulate Presets via the Articulate Monitor, which you can access selecting *View > Show Smart Controls* (B).



Features of Articulate Tools

Integrating the VSL into Logic

Articulate Tools provide a complete integration of the VSL into Logic. As mentioned before, even though the implementation relies on different components you generally do not have to worry about the individual tools, but you will experience a seamless and coherent integration. In this section we describe the general features and the handling, whereas further details are deferred to the individual sections covering the particular tools.

Articulate Patches and Articulate Monitor

Instead of loading an Articulate Preset in Vienna Instruments pro (VI pro), you just add the *Articulate Patch* for the corresponding instrument via Logic's convenient Patch Browser. In addition to instantiating the Vienna Instruments player and loading the corresponding Articulate Preset this also adds other components (Articulate Script, Articulate Set, ...) to enable the comprehensive functionality of Articulate Tools. Therefore, as soon as you have loaded a patch everything is automatically set up and you can use all the features described in detail below, ranging from key-switching and Articulation IDs to the sequencer.

You do not even have to open the Vienna Instruments player at all, unless you want to perform special editing, since you get full overview of the current Articulate Preset and its features directly in Logic's main window via the *Articulate Monitor*. The left part shows the active Articulation Bank, described below, the middle part the available articulations within this bank, the active articulation (marked by a check mark) and the keys to access them. The right part shows in detail which effect the different main continuous controllers (Vertical Controller CC2, Horizontal Controller CC3, Section Controller CC20 and A/B switch CC4) used by Articulate Presets have for the selected articulation. Finally the two top right panels show the status of the *Articulate Sequencer*, described below.



Articulation Banks & next-generation key-switching

Standardly Articulate Presets allow you to conveniently access all articulations included in the VSL via 128 program change messages and all the different versions of an articulation by additional

continuous controller events. However, it takes time to enter a 3-digit program change number and therefore this is harder to do during live playing. Changing articulations by keyboard keys (“key-switching”) is generally much faster and more convenient. However, even on the largest keyboard there would not be enough keys to have a dedicated key for each articulations. As discussed in the Articulate Presets manual, the articulations are therefore arranged into *Articulation Banks* of 12 articulations each. The different articulation banks for all chromatic instruments are shown in Table III in the Appendix and their detailed content as well as the corresponding banks for the percussion instruments are given in the Articulate Presets Manual.

Based on the concept of Articulation Banks Articulate Tools implement (in addition to program change messages) a *next-generation key-switching* solution that allows you to conveniently access *all* the articulations in the VSL via a small number of keys (1 or 2 octaves) that switch both banks and articulations. As already discussed in the Setup section and as will be discussed in more detail in the section on the Articulate Macro below, Articulate Tools offer several modes depending on how much resources you can allocate for key-switching. As a minimal requirement to use the key-switching you merely have to allocate a single key or switch controller (like a sustain pedal or button), which toggles articulation and bank selection (single press) as well as a lower and upper 1-octave *control key range* (double press), so that these octaves can also be used for ordinary playing.

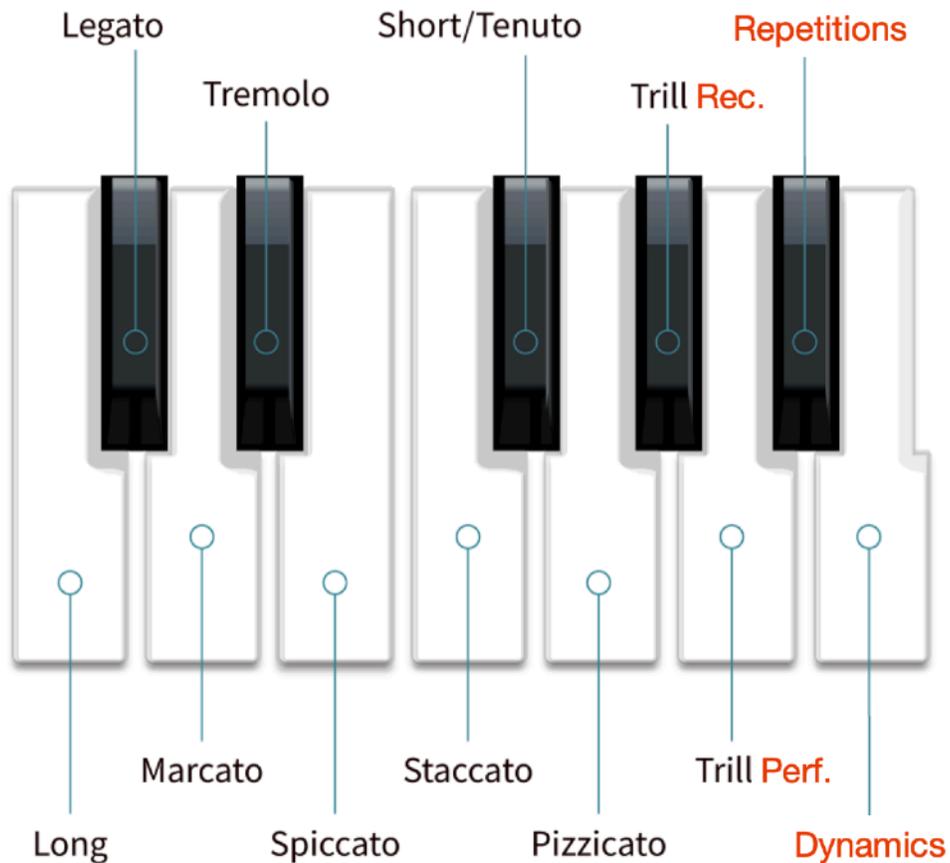
Quick access bank

The quick access bank contains a selection of the most used articulations from all the other banks. It follows the universal layout introduced by *Babylon Wave’s Art Director* and is thereby compatible with nearly every orchestral instrument library on the market. Whereas Art Director implements only a partial octave of 10 key-switches (C to A), the quick access bank completes the octave by adding further crucial articulations specific to the VSL. The keyboard layout is shown in the figure, where the extended articulations compared to the Art Director layout are shown in red. Like for all the other banks the Articulate Monitor always gives you a complete overview of the layout. As shown in table II in the Appendix, due to the additional continuous controllers used by Articulate Presets (Vertical CC2 and Horizontal CC3) the 1-octave *Art Conductor* layout gives you access to *all* key articulations –and due to 3D-control it even gives you control over the nuances of the performance.

Articulation IDs

Articulate Tools fully implement Logic’s convenient and powerful articulation ID feature! I.e. when you record a sequence the active articulation (out of the 128 that Articulate Presets offer) is automatically encoded directly in the note events themselves. Correspondingly no additional Midi events beside the notes are needed in the sequence for articulation selection. The articulation a note plays is displayed as clear text in Logic’s editors and the required program change messages to select the corresponding articulation in VI pro are sent automatically.

Since the *Articulate Sets* Logic Articulation Sets offer the maximum number of 255 Articulation IDs you can in Logic’s editors in addition even select all of the most commonly used particular articulation versions (dynamics, repetitions, trills, ...) via additional Articulation IDs: e.g. directly select a 4s medium decrescendo. Therefore, even in this case no other control events are required in the sequence and all necessary control events to select the particular articulation version (i.e. in addition to the program change message also the Vertical & Horizontal controllers or the A/B-switch) are automatically sent to VI pro.



Articulation Sequencer

In order to allow you to intuitively play a realistic sequence with numerous articulation changes and all the detailed nuances realized via Articulate Preset's 3D control in real time, Articulate Tools introduce the novel concept of an articulation sequencer. Once an articulation sequence has been recorded, the *Articulate Sequencer* switches all the particular articulation versions automatically so that you can concentrate on the crucial timing, phrasing and dynamics of your music! I.e. the goal of this sequencer is not to replace Logic's sequencer, but instead to allow you to conveniently and directly record very realistic musical lines into Logic's main sequencer, which would otherwise only be possible by tedious subsequent editing, if at all. All the comprehensive features of the Articulate Sequencer are described in detail below.

Articulate Patches

Just select your patch and you are ready to start

Articulate Patches store all the information and settings that guarantee an intuitive use of the corresponding VSL instrument. Whereas in VI pro a “patch” is the smallest unit, i.e. a single articulation (version), a Logic patch is by far the most comprehensive data structure and can store anything related to a given sound (Instrument, Audio & Midi processing, routing, ...). Dedicated Articulate Patches are available for every Articulate Preset and have identical names as the corresponding preset. They are conveniently loaded via the patch browser in Logic’s main window.

As soon as you load an Articulate Patch, all instrument specific Articulate Tools are selected and completely set up to control the corresponding instrument, so no further manual set-up is required at all. In particular, selecting the Articulate Patch automatically ...

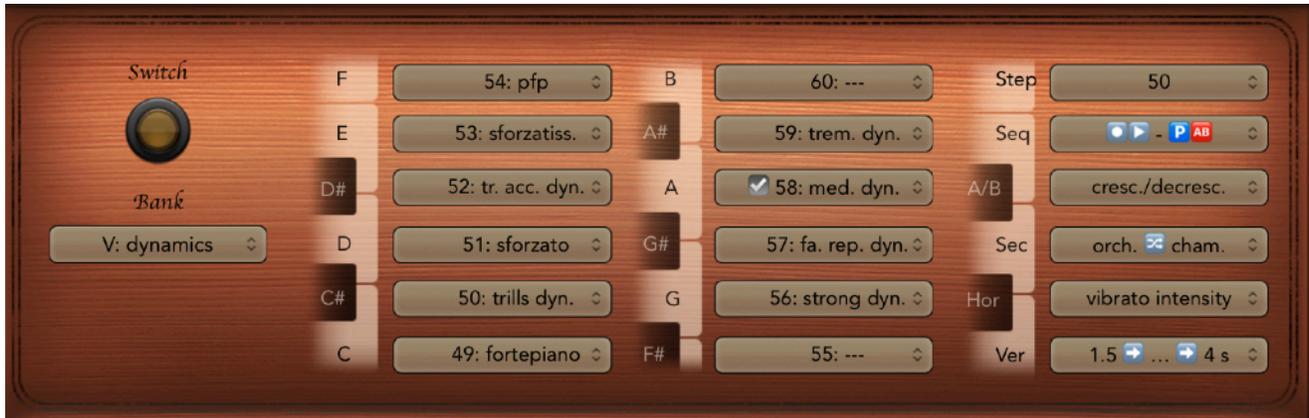
- loads the corresponding Articulate Preset in VI pro (including countless “VSL patches”)
- selects the respective Articulate Monitor for the instrument and the corresponding Articulate Script that drives it
- enables the respective Articulate Set
- selects the appropriate Logic instrument icon
- selects the appropriate Logic Score Style for the corresponding instrument (In the basic orchestra templates there is also an Instrument Set so that every instrument is automatically correctly displayed in Logic’s Score Editor. You can surely use your own Instrument Set instead or adapt it to your needs, in order to obtain the desired score representation and printout.)
- As part of the above basic orchestra templates it also includes a send to a corresponding group bus (Strings, Woodwinds, Brass, Percussion) so that you can conveniently control (e.g. solo, mute or process) whole instrument groups

To not distort the pristine VSL samples, Articulate Patches do not include any additional audio processing (equalizer, effects, ...). In case you use MIRx the room placement and reverberation is already done within VI pro itself. In case you want to use other audio processing, simply include the corresponding plug-ins in the channel strip. In general even though everything is already fully set up and ready to start you can surely adjust all audio and Midi aspects of Articulate Patches to your needs (e.g. change the score style, ...). Simply load the patch for the corresponding instrument make the required changes in the instrument track and save the patch under a different name and/or at a different location.

Articulate Patches are included for all main Articulate Presets. In case you want a patch for one of the alternative versions of an Articulate Preset, simply load the corresponding Articulate Patch, then load the alternative version of the corresponding Articulate Preset in Vienna Instruments Pro and save the Articulate Patch under a different name and/or at a different location.

Articulate Monitor

Complete overview of the entire VSL



The *Articulate Monitor* Smart Controls Panel gives you complete overview of all the sounds in the VSL just when and where you need it: namely right when selecting articulations directly in Logic's Main Window! As the name suggests, the panel is a pure monitor that is controlled by external Midi events and does not send Midi events to control VI pro itself. Each VSL instrument track has its own Articulate Monitor. After loading an instrument patch everything is already fully set up and, if not shown yet, you can simply view the Articulate Monitor for the corresponding instrument by selecting *View > Show Smart Controls (B)* from Logic's main menu.

There are two alternative styles for the Articulate Monitor: *wood* or *metal*. Depending on the material, the corresponding orchestral instrument is mainly made of, either of the two styles is used. Both have the identical layout and work exactly the same way.

The Articulate Monitor contains the following display elements:

Switch: This button on the upper left lights up when the bank switch controller or a bank key is pressed. You can also press it with the mouse to see the list of available banks.

Bank: This panel on the lower left shows the currently active bank. You can also change it with the mouse to see the list of articulations in another bank.

C to B: This octave of keyboard keys in the middle is divided up into two columns with associated panels that show either the articulations of the currently active bank or the list of available banks when the bank controller or a bank key is pressed.

Ver & Hor: These two panels on the right show for the selected articulation the effect of the Vertical and Horizontal controllers.

Sec: This panel shows for the selected articulation, which two section sizes are blended by the section controller or otherwise for which sampled section the corresponding articulation is exclusively available. In case of the Dimension Libraries, where the Section Controller generally has

the same effect for all articulations and at the same time offers a more advanced functionality, this panel even shows the currently selected section size (with auto-divisi), the particular group or the individual desk or player. I.e. the display changes as you change the Section Controller and gives you a full overview of the various options the Section Controller offers for these libraries.

A/B: This panel shows for the selected articulation the assignment of the A/B switch.

Seq: This panel shows the status of the articulation sequencer, i.e. in which of the different transport modes (, , , , , , ) it is, and in the record modes it also shows which control events (, , , , ) are recorded—see the Articulate Sequencer section for details.

Step: This panel shows the current discrete sequencer step. Each step in the articulation sequence, which stores only the program change message and controllers to select a particular articulation version, corresponds to a musical note.

Owing to the used Smart Controls theme, all the panels on the right are graphically likewise arranged next to half an octave, but this has no meaning and these elements are not controlled by the corresponding keys, but change automatically when an articulation is selected, the Articulate Sequencer is activated, or in case of the Dimension Libraries when the Section Controller is dialed.

Via the panels next to the keyboard octave in the middle, the Articulate Monitor gives you full overview of the articulations in the current bank (or the available banks) that can be selected directly by the corresponding key of the control key range on your corresponding keyboard controller. A checkmark  shows the currently active articulation and you will see it move when you switch from one articulation to another one. At the same time the panels of the articulation-dependent Articulate Presets controllers (Vertical (CC2): “Ver”, Horizontal (CC3): “Hor”, Section (CC20): “Sec” and A/B-switch (CC4): “A/B”) change automatically as well.

Similarly, as soon as you are about to change the bank by either pressing the bank-switch or a key of the dedicated bank octave on your corresponding keyboard controller you will see the full list of available banks. As soon as you release the key or bank controller you will see the available articulations in the current bank again. Switching banks does not switch articulations, yet, or send anything to VI pro. I.e. when you switch to another bank without switching articulations you will see that none of the articulations is checked, since the currently active articulation is still in a previous bank. When you have set up Articulate Tools to work with a switchable single octave and a bank controller/key (modes CC(s)+ and Key(s)+, for more details see the Articulate Macro section), the bank panel also shows the currently active (lower or upper) control key range via the symbols  and .

The articulation panels also show the program change numbers of the corresponding articulations and you can in addition to key switches also select articulations by program change messages. The Articulate Monitor switches in this case automatically to the corresponding bank containing the selected articulation. The controller assignments on the right are always shown for the currently active articulation and automatically switch when you select another one.

The “Switch” button and the “Bank” panel can also be controlled with the mouse/trackpad, in order to display the list of available banks as well as the articulations within another bank. However, this does not actually select articulations or banks. All other panels are changed remotely by the Articulate Macro in response to external Midi events and are not meant to be altered via mouse/trackpad. Under the hood, the *Articulate Monitor* is driven by *Articulate Scripts* in Logic’s Midi-Scripter Plug-In, which includes among other code the directories of the various libraries. Therefore, the corresponding Scripter Plug-In, which is already fully set up when you select an instrument patch, should not be removed!

Articulate Scripts

Articulation directories for Articulate Presets

The *Articulate Scripts* Logic Midi Scripter codes power the Articulate Monitor just described. They include the entire articulation directory of a given instrument. In general you will not have to access them directly since they are part of the various instrument patches that you can conveniently select from Logic’s patch browser. Not every instruments has its own dedicated Articulate Script, but only those that have a distinct layout. E.g. most instrument groups follow the same articulation layout, even for the Special bank, so that a universal Articulate Script is sufficient. All Articulate Scripts are named “Articulate-Script-#” where # is the name of the instrument or class of instruments it applies to. The list of currently used Articulate Scripts (as well as Articulate Sets described below) is:

- Strings S, Strings M, Strings L, Basses L, Violins D, Violas&Cellos D, Basses D
- Flutes, Oboes, Clarinets, Bassoons
- Trumpets, Second Trumpet, Horns, Trombones, Tubas, Brass D, Low Brass D
- Harp, Timpani, Cymbals, Drums, Percussion, Bells, Mallets, Glockenspiel, Xylophone, Vibraphone, Marimba

Owing to the universal Articulate Presets layout the *Articulate Scripts* for chromatic instruments are largely similar. Aside from the special bank, containing instrument specific articulations, the different Articulate scripts include identical or at a least comparable articulations at the same position. This guarantees, as far as possible, that a sequence plays as expected when moved from one instrument to another one, which is possible due to the consistency of the VSL across the entire orchestra. In addition there are dedicated Articulate Scripts for the different percussion Combi patches (see the Articulate Presets manual for details). These have a different layout and the corresponding dedicated Articulate Scripts guarantee that even in these cases you get a full overview in the Articulate Monitor and instant access to everything included in these extensive libraries without memorizing or searching VSL manuals.

Each Articulate Script contains the information which articulations are available for a particular instrument or class of instruments, and which not: if an articulation is not available the entry in the



Articulate Monitor shows “---” so that you immediately see what’s included in the corresponding library and do not accidentally select articulations that are not present. Nevertheless, the corresponding Articulate Presets generally contain *replacement matrices* for missing articulations, so that a sequence moved from another instrument nevertheless plays as far as possible even if the corresponding original articulation is missing (see the Articulate Preset manual for details).

Moreover, Articulate Scripts include the particular assignments of the different continuous controllers for every articulation, which are always shown for the currently selected articulation on the right of the Articulate Monitor. In cases where different versions of an articulation are available (e.g. different crescendo times), Articulate Scripts list the particular versions (e.g. 2 to 4s) available to the corresponding instrument. In case of larger classes (e.g. instrument groups) the maximum set of versions available to the instruments in the class is listed and for a particular instrument the number of available versions can be smaller. In all cases the individual controller ranges to access the individual version follow the universal layout described in the Articulate Presets Manual and in order for a sequence to be fully transferable to another instrument you should select the appropriate controller range (e.g. even though for some strings there are no very short crescendo times and you will get a 2s version already for a controller value of 0, in order that this sequence plays back as expected for many wind instruments, where short crescendos are available, requires that you select a controller value between 27-54, see the Articulate Presets Manual for details).

Articulate Sets

All articulations right at your fingertips

Articulation IDs and Articulation Sets

An *Articulation ID* in Logic is a property of a note (like its velocity or its length). It stores the information, which articulation is to be played, directly in the note event itself and automatically

sends the MIDI messages required to access the articulation to a Virtual Instrument. An *Articulation Set* specifies the Articulations IDs as well as by which external Midi events they are selected and which Midi events are sent immediately before the corresponding note to access the articulation. Currently Logic Articulation Sets support up to 255 Articulation IDs and for each up to 3 different MIDI messages can be specified, that are sent to the Virtual Instrument. In Logic an Articulation Set is assigned to a given track at the bottom of the Track parameter panel above the corresponding channel strip.

Features of Articulate Sets

The *Articulate Sets* integrate Articulate Presets into Logic and allow you to record and select all articulations included in the Vienna Symphonic Library (VSL) via Logic's Articulation ID feature. Using the maximum number of 255 Articulation IDs, Articulate Sets are some of the most comprehensive Logic Articulation Sets ever created and even allow you to individually access different sampled versions of an articulation, sending the corresponding program change message and up to two continuous controllers (CC) to Vienna Instruments pro. Whereas there is a single Articulate Preset/Patch per orchestral instrument, just like for Articulate Scripts there are only distinct Logic Articulate Sets for instruments and libraries with different articulation layouts.

The first 128 Articulation IDs give you direct access to all matrices included in Articulate Presets (as listed in Table III of the Articulate Presets Manual). These Articulation IDs are automatically encoded in recorded notes during the recording process and automatically send the corresponding program change messages to access the corresponding articulation in VI pro during playback. The corresponding Articulations ID numbers are identical to the Program Change messages used to access articulations (matrices) in Articulate instruments. I.e. the Articulate Sets have the same articulation layout as Articulate Presets and Articulate Scripts discussed before and guarantee that you also get a clear full-text description of the entire content of the VSL in all of Logic's editors, allowing you to conveniently view and change articulations. If an articulation is not available for a particular instrument, the name of the corresponding articulation is given in parentheses, instead of showing an empty Articulation ID. This is done because if you move a sequence from one instrument to another one that does not offer a given articulation, you still see which articulation was used with the original instrument, and can replace it in case the automatic replacement matrix does not lead to the desired result.

Many matrices include different sampled versions of the corresponding articulation. In this case you standardly need additional continuous controllers to access them, e.g. for runs CC2 to select the type (major, minor, whole tone or chromatic), CC3 to select the scale and CC4 to select if the run goes up- or downwards. However, the residual Articulation IDs 129 - 255 even give you in Logic's editors direct access to the individual versions of the most often used articulations (see Table III in the Appendix for details). The VSL is still unmatched when it comes to recorded dynamic transitions, phrases, They can strongly increase the realism, but for most users they likely sit unused on their disk since up to now they required a significant effort. With Articulate Presets and the Articulate Sets, using them couldn't be simpler: for the most important ones (dynamics, trills, grace notes, fast repetitions, ...) you can simply select a note in Logic's Editors (Score, Piano Roll, Event) and directly assign the specific articulation version via its full name, e.g. *muted medium decrescendo 2s*, from the corresponding menu—everything else is done automatically and no additional control events are required at all! Logic sends both the program change and up to two

continuous controllers to access the corresponding sampled sound. And due to the consistency of the VSL and of Articulate Presets all this still works even when you move the sequence from one instruments to another one.

Many of the matrices in Articulate Presets offer continuous 3D-control of certain parameters allowing you to gradually shape the sound via continuous controller messages. To do this you can still add the respective continuous controllers, e.g. to control the vibrato intensity of a particular dynamic transition. Similarly, due to the limitation to 255 Articulation IDs, for some articulations only the most often used versions are directly accessible (e.g. only half and whole tone grace notes). In the rare cases that you want to access the other versions (e.g. larger grace note intervals) or more rarely used articulations you have to use the generic Articulation ID (below 128) and add the corresponding continuous controllers.

In order to realize the full implementation of Articulation IDs the Articulate Tools use internally CC79. This controller does not appear in any sequence so you won't even realize this, but you should not use this controller for other purposes.

Directly recording with Articulation IDs

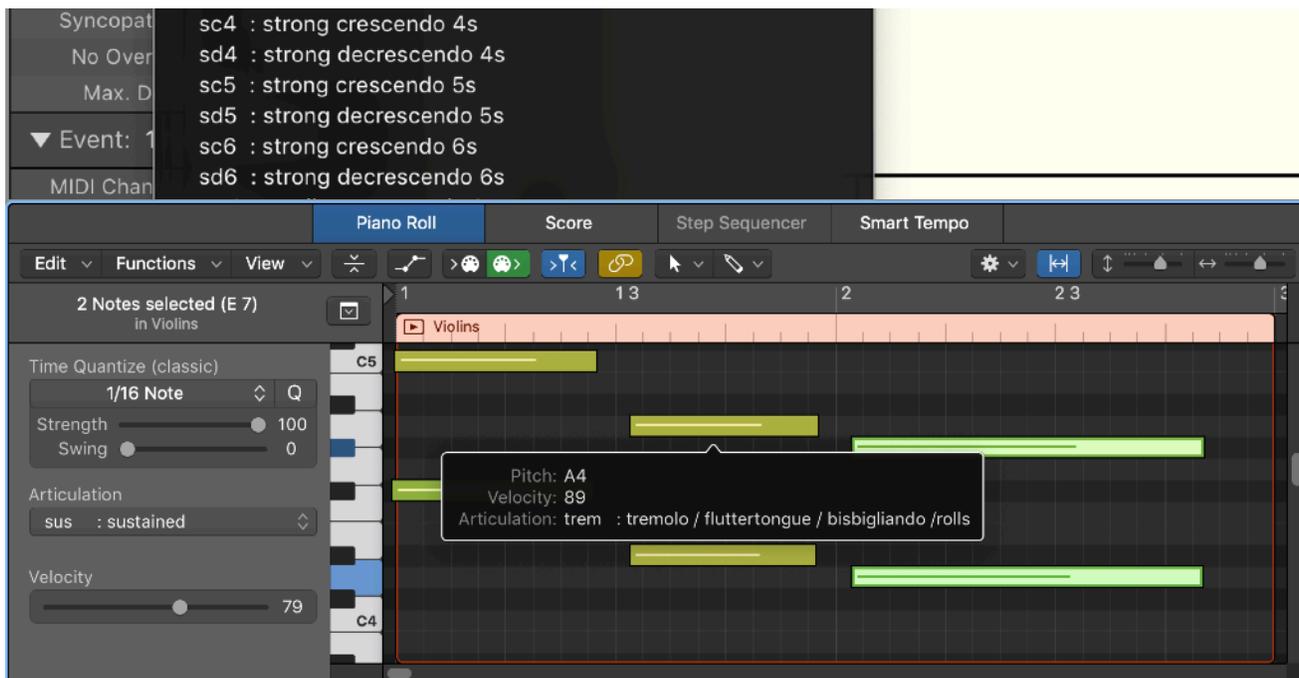
When you record a sequence with Articulate Tools the currently active articulation is automatically encoded in the Articulation ID of a recorded note and as soon as you stop the recording process they are displayed as clear text in Logic's editors. This makes editing very easy since you get an immediate feedback which note will be played by which articulation via its full name, whereas the corresponding program change message involves merely a number and could be far away from a given note. Moreover the Articulation IDs keep sequences uncluttered since fewer Midi events appear in them: in most cases, only the notes are necessary. Last but not least, you can start the sequence at any point and the individual notes will always play with the correct articulation.

Even though all articulations are generally directly encoded in the Articulation IDs of the individual notes, due to limitations in Logic, the program change messages are nevertheless recorded in the sequencer. However, they have no impact in this case, because a dedicated program change message is automatically sent immediately prior to each note owing to its Articulation ID. Therefore the explicit program change messages can simply be hidden in Logic's editors, so that you do not see them at all, or even removed if you prefer to do so.

That the underlying program change messages are recorded also has the advantage that you have the choice whether you want to use Articulation IDs or not. In case you prefer to not use Articulation IDs and work exclusively with program change messages instead, you can completely turn off the encoding of articulations into the Articulation ID in the Articulate Macro, described in the corresponding section below and simply remove the corresponding *Articulate Set* in the track parameters.

Editing Articulation IDs

You can view and change the Articulation ID directly in Logic's Editors (*Score, Piano Roll, Event*). The *Articulate Sets* use 4-character abbreviations plus a full description of the articulation. They give you therefore a clear overview in Logic's editors and at the same time enable a convenient articulation selection in all pull-down menus. The Articulation ID number itself is not shown but only the abbreviation and the full name (e.g. "mmd2 : muted medium decrescendo 2s").



In Logic's different editors the Articulation ID is accessed as follows:

Piano Roll Editor

In the Piano Roll Editor the Articulation ID selector is shown in the *Local Inspector* to the left. Make sure that the Local Inspector is visible by selecting "Show Local Inspector" in the local "View" Menu. Moreover, the height of the Piano Roll has to be sufficiently large for the Articulation ID selector to be displayed. Simply select one or several notes and assign the desired Articulation ID in the Articulation selector to the note(s) by selecting it from the pull-down menu. You can also check which articulation is assigned to a given note by hovering with the mouse pointer over the note.

Score Editor

In the Score Editor the Articulation ID is shown both in the Local Inspector (as in the Piano Roll Editor, see above), and in the *Event Inspector*, as soon as you select one or several notes. Simply change the Articulation selector to assign the corresponding articulation to the note(s).

For a few articulations (staccato, pizzicato, ...) the appropriate score symbol is automatically added when you select the articulation. Similarly, when you add the corresponding score symbol from the Part Box, the Articulation ID is automatically changed to the corresponding articulation. When there are several articulations that share the same score symbol—like the standard staccato, staccato repetitions, muted staccato and muted staccato repetitions—the standard version is used, when you add the symbol from the part box, and you will subsequently have to change the Articulation selector to get one of the other articulations. The support of score symbols in Logic Articulation Sets is unfortunately still rather rudimentary at this point. It only includes symbols that are attached to an individual note, but not such that can affect several notes, like legato slurs or dynamic marks.

Event List

When activated in the "View" menu, the Articulation ID is one of the columns of the Event List. Generally the Event List has rather narrow columns. For an ideal overview, enable in addition to the Articulation ID only those entries you need in the local "View" menu (e.g. you might not need the

Midi channel) and then adjust the width of the Event List so that the 4-character articulation abbreviations are fully visible. (If you use locked screensets remember to unlock the screenset before you make the change, and lock it again afterwards.) The Event List then gives you an instant overview which articulation each note plays. You can also get the full name by hovering with the mouse pointer over the Articulation entry. Selecting one or several notes, you can choose the desired articulation from the pull-down menu via its full name.

Position	Status	Num	Val	Articulation	Length/Info	
2 1 1	1	♪	D#3	48	mc2... ◇	0 2 0 25
2 3 1	1	♪	C#3	48	sde mc2 : medium crescendo 2s	
2 4 1	1	♪	D#3	48	sdet... ◇	0 1 0 0
3 1 1	1	♪	B2	48	sdet... ◇	0 1 0 0
3 2 1	1	♪	E3	48	ldet... ◇	0 1 0 7
3 3 1	1	♪	C#3	48	sus... ◇	0 1 3 215
4 1 1	1	♪	F#3	49	lsta... ◇	0 0 3 215
4 2 1	1	♪	F#3	51	sdet... ◇	0 1 0 0
4 3 1	1	♪	G#3	54	pizz... ◇	0 1 0 15
4 4 1	1	♪	A#3	56	pizz... ◇	0 1 0 0
5 1 1	1	♪	B3	56	pizz... ◇	0 1 0 7
5 2 1	1	♪	D#3	50	pizz... ◇	0 1 0 7
5 3 1	1	♪	C#3	44	trwt... ◇	0 1 1 125

Exporting standard Midi files to other DAWs

When you export sequences or an entire project as a standard Midi file, the Articulation IDs, being an exclusive Logic feature that is not part of the Midi standard, are *not* directly exported. Yet, Logic automatically creates the required Midi events (i.e. program change messages and continuous controllers) for all notes with Articulation IDs when you export a standard Midi file. This works for all Articulation IDs (both the 128 that can be recorded as well as the additional ones you can assign in Logic's editors) and ensures that a sequence is always fully transferable from Logic to other DAWs (e.g. Cubase)! I.e. it will play exactly the same in the corresponding sequencer when Articulate Presets are used.

This is particularly useful since Logic's notation capabilities are behind most of its other features. It allows you to create a project in Logic, taking advantage of all the powerful possibilities that Logic and Articulate Tools offer to create the most realistic Midi playback of your music, and then export it to another music software to improve and finalize the score. The fact that Articulate Presets use program change messages—instead of key switches that would distort the score—guarantees that this procedure should work as expected.

Articulate Sequencer

Bringing your music to life

What is an Articulation Sequencer?

The *Articulate Sequencer* is a unique concept that is distinct from both Logic's sequencer and the Auto Playback and Pattern (APP) sequencer in VI pro. Its purpose is not to replace them, but rather to perfectly complement them. The only goal of the Articulate Sequencer is to help you record realistic musical lines with fancy articulation switches in real time into Logic's sequencer. This is particularly useful and necessary for Articulate Presets which allow you in addition to switching different discrete articulations via program change messages also to access different versions of an articulation or intermediate nuances (using Articulate Presets signature 3D control) with the help of additional continuous controllers. For instance the user can select a strong dynamics articulation (PC56) and then specify that it has a length of 2s (via CC2), that it is a decrescendo (via CC4), that it is played with just a bit of vibrato (via CC3), and finally that it is played by an intermediate size instrument section (via CC20). It would obviously be impossible to send a program change message and four additional controllers before each note in real time during fast passages with many articulation changes.

In addition to the appropriate articulation version, when playing/recording a musical line there are all these subtle but crucial timing, phrasing, and dynamics variations that distinguish the performance of a virtuous instrumentalist from the same set of notes played by a computer. These variations, that are intuitively added during real time playing, bring a performance to life. Yet, they are extremely hard to restore subsequently by editing of plain, quantized Midi data. At the same time, it is likewise nearly impossible to play a musical line realistically when using the wrong articulation version: just think of trying to play a romantic legato strings melody with a staccato articulation or the other way around a fast, rhythmic staccato pattern with a legato articulation 😊. So when recording a sophisticated musical line using various different articulations you would ideally want some magic tool that always automatically provides you with the appropriate articulation version for each note and thereby allows you to concentrate on the additional nuances of the performance (timing, phrasing, ...)—that's exactly what the Articulate Sequencer does!

The idea is that you record in a first take the control events into the Articulate Sequencer, by simply playing the musical line with all the program and controller changes. This can be done as slowly as necessary, or even step by step, and the detailed timing, phrasing, ... does not matter at all since the Articulate Sequencer only records the control events required to select the particular articulation versions for notes of the musical line, but not the actual notes themselves. I.e. in contrast to an ordinary sequencer the Articulate Sequencer does not record any timing information (i.e. when these events are played), instead the Midi events necessary for articulation selection are sent whenever you send the corresponding note and then determine how this note is played (e.g. the 5th set of events, stored in the 5th step of the sequencer, is sent whenever you send the 5th note of your musical line from your keyboard). After the articulation sequence is recorded you can then in a second take simply play the line in real time while the Articulate Sequencer takes care of all the

articulation switching, so that you can concentrate on the detailed timing, phrasing, and if necessary also the dynamics via VSLs Velocity Xfade controller and/or real-time vibrato changes using Articulate Preset's Expressive Vibrato (xVib) matrices (see below).

Like the next-generation key-switching, the Articulation Sequencer is powered by the Articulate Macro and its display elements, showing the currently active sequencer mode and the current sequencer step, are integrated in the Articulate Monitor driven by Articulate Scripts. It is exclusively controlled by external Midi events like keys or controllers.

Features of the Articulate Sequencer

The Articulate Sequencer is kept as elementary and easy to use as possible: it only offers a single sequence of up to 127 steps, which is even global and shared by all tracks. As mentioned before, this sequence does not record actual Midi notes, but merely the control events to select the particular articulation version an associated note will use. With Articulate Presets you cannot only select a few discrete articulations via program change messages (PC) or the corresponding key-switches, but for most articulations you have the chance to dial the nuances of the performance by other (quasi-)continuous controllers (Vertical CC2, Horizontal CC3, Section CC20 and A/B switch CC4). In the following we refer to this set of five midi events events (PC, CC2, 3, 4 & 20) as *control events* and the Articulate Sequencer can record all of them. I.e. each step—corresponding to a note of your musical line—can record a program change message, specifying the articulation, as well as all the other dedicated controllers (Vertical, Horizontal, Section and A/B switch) used by Articulate Presets to select the particular articulation version.

As discussed before, the program change messages are standardly subsequently encoded into Articulation IDs and are not required in Logic's sequences anymore. Nevertheless the program change messages are the primary Midi events that are stored in the Articulate Sequencer, (which, as part of the Articulate Macro, is located in the Midi flow before Logic's sequencer) and therefore we refer here to the program change messages, even though you generally only have to deal with the corresponding Articulation IDs in Logic's sequences.

The single sequence of the Articulate Sequencer is not meant to be set in stone, but is merely a temporary tool that is stored only until you recorded the corresponding musical line safely into Logic's sequencer ... and it is overwritten the next time you use it again for another line. All its features can either be controlled by a single Midi switch controller (foot switch, button, ...) respectively a single keyboard key, or a range of three controllers or keys.

Since the set of control events stored in the n-th step of the sequencer is associated to the n-th note in your musical line, you cannot omit notes when you record or play the sequence, because this will lead to unwanted results. The musical line can be polyphonic and in particular can without difficulty contain chords, if the different notes of the chord are to be played with the same articulation. Yet, take into account that each note counts as a step. In the special case that your sequence contains chords and you want the individual notes played by different articulations you have to make sure that you play the individual notes in the same order during both takes (i.e. when recording the control events into the Articulate Sequencer and when eventually recording you musical line into Logic's sequencer). This can be achieved by very slightly displacing the different notes of the chord in the same way (i.e. very quickly, and thereby unnoticeably, arpeggiating them).

Most Articulate Presets offer Expressive Vibrato (xVib), Expressive Mute (xMute) or Expressive Tuning (xTune) matrices. These are on PC4, 16, 76 & 88 and allow to control the corresponding property—in particular vibrato—with the Section Controller in real time while a note is playing, instead of merely setting the version that is to be played when the note is triggered. Therefore for these particular Expressive matrices (PC4, 16, 76 & 88) the Section Controller is automatically not sent at the time a note is triggered, so that you can instead record the continuous controller data in real time while you record your musical line into Logic.

Articulate Presets contain many matrices with phrases, which are either pre-recorded or are realized via the Auto Playback & Pattern (APP) Sequencer included in VI pro. The Articulate Sequencer also fully supports these and therefore allows you to use all three sequencers (Logic's main sequencer, APP sequencer & Articulate Sequencer) simultaneously, to create orchestral mockups that are as close to a real orchestral performance as possible.

Controlling the Articulate Sequencer

The Articulate Sequencer can either be controlled by a single key or continuous controller (analogous to the bank controller) or by three corresponding control elements, i.e. either keys or CCs (see the Articulate Macro section for details). You can access the different sequencer transport controls depending on either how often you press the single control element in a row (without playing an ordinary note in between) or by pressing the dedicated control elements.

Single-press or first control element: Toggles  play on/off

Double-press or second control element: Toggles  record on/off, but this does not automatically start the sequencer transport

Triple-press or third control element:  Skip to start, i.e. this stops both play and record (if active) and rewinds the sequence to the beginning (the step display will show step 0, but it is not part of the sequence, which only starts with step 1)

In order that the Articulate Sequencer can distinguish single- or double-presses when using a single control element, you have to play ordinary notes in between.

With these controls you can set the sequencer into various transport modes, that even include different record modes, all of which are displayed in the “Seq” panel of the Articulate Monitor:

Stop:

In stop mode the articulation sequencer is inactive and you can (and have to) change articulation versions yourself. If you change an articulation version the corresponding control events, i.e. the program change (PC) message and the dedicated continuous controllers (CC2, 3, 4, 20) used by Articulate Presets are nevertheless buffered (outside of the articulation sequence) so that the sequencer knows at all times what the currently active articulation version is. And these most recent buffered values are also used in Replace recording mode, described below.

Play:

In play mode the sequencer automatically plays back the articulation switches as you play the notes

of your musical line. I.e. it sends immediately before each note the five associated control events that have been previously stored in one of the record modes described below. In Play mode you cannot change articulations manually at all, because whatever changes you make before you press a note key, they will be altered again by the stored values in the articulation sequence that are sent immediately prior to the note. When the sequence reaches its end in play mode it will start again from the beginning.

 **Recording setup:** Turn on record when in stop mode

In recording setup mode no data is recorded, yet. It merely allows you to activate certain control events for Replace recording. You could think of this as activating certain tracks for multi-track recording in your DAW. Simply send the corresponding control events to activate them. The active control events are shown by corresponding symbols (program change: , vertical controller (CC2): , horizontal controller (CC3): , section controller (CC20): , A/B-switch (CC4):  in the Articulate Monitor. The values of the control events you send are also buffered and will be used in Replace recording mode, described below, until you send them again. Pressing any note deactivates all control events for Replace recording.

 **Replace recording:** Activate play after record has been activated

In Replace recording mode all control events that have been activated in Recording Setup mode (or simply all of them if you did not make a selection) are stored in the current step, overwriting previously stored data by their present value (i.e. the last value you had adjusted before), even if you did not actively send these control events in the current step. Thereby anything that was stored in the sequence before is replaced and overwritten for the activated control events. While activating Replace recording mode you will automatically pass through Recording setup mode, but it is not necessary to select particular control events for recording. If you leave record setup mode without activating any events (e.g. by directly pressing record and play), *all* control events will be activated and set to neutral values of zero (see below for more details).

 **Adjust recording:** Activate record while the sequencer is playing

In Adjust recording mode the control events are only altered if you send them in the current step. If not they remain at the value that had been stored in the sequence before. I.e. only those events in the sequence are overwritten, that you actively change by altering their value during the current step. The control events that will be changed in the current step are shown in the Articulate Monitor.

In both of the two recording modes play and record are activated, and which mode is realized depends only on the order in which they are activated. Replace Recording mode is entered from Recording setup mode by a single press of the sequencer control element (activating play) and Adjust recording mode is entered from Play mode by a double-press of the corresponding control element (activating record). When you reach the end of the sequence in either Replace or Adjust recording mode, record is automatically deactivated and the sequence plays from the beginning.

When you change the articulation or any of the controllers they are *not* immediately recorded (in the record modes). Instead they change a buffer (in any transport mode, i.e. even in Stop mode) and only once you play the corresponding note, buffered data is actually stored in the current step of the articulation sequence (in the record modes). I.e. you can still stop the recording process without

changes if you realize that you sent a wrong control event in the present step and did not press the note, yet.

Using the Sequencer

Replace recording ( ) is the standard recording mode. It works like a step sequencer (similar to a tape machine) that only records the control events selected in Recording setup mode and replaces whatever was present in the sequence before. You can simply press record and play your melody line once with the corresponding control events that change the articulation version. The tool stores all changes in the process and can perform them automatically in subsequent performances of the melody so you can concentrate on other aspects of the music.

If you want to keep it simple and do not want to dive into the advanced features of the sequencer, all you need to remember is that you always have to activate first record and then play (starting the sequencer transport) to start recording. In case you do not make further adjustments in Recording Setup mode all 5 control events are recorded and the buffers are set to neutral values of zero. This is called *simplified replace recording* mode and it is what you typically want to use when you record a new sequence from scratch.

Since even with sufficient time it can be hard to keep track of 5 different control events in each step, by selecting only a single or some control events for replace recording you can also record the different events in different takes (e.g. first the program change messages and then the individual controllers). This way you can record the different control events one by one (similar to consecutively recording different tracks in multi-track recording). Control events that have been recorded before and are not activated for recording, already play back correctly so that you can successively refine your sequence. This is particularly useful for Articulate Preset's 3D control: you can for instance first record the distinct articulations (, and where necessary ) and then adjust the nuances (by adding the (quasi-)continuous controllers ,  and  one by one). To do this you should when you start recording a new sequence from scratch nevertheless record all five control events in simplified replace recording mode to overwrite the 3D control events (,  and ) with neutral values.

Adjust recording ( ) is very useful to improve and change parts of a previously recorded sequence. You can play the sequence to the point where you want to make changes, activate record, alter only those control events that you want to change and deactivate recording again. Everything else will remain unchanged. In adjust recording mode you do not have to activate tracks for recording and the settings made in record setup mode don't apply to it. Instead, all control events can be changed in the present step when you send the appropriate control event. Nevertheless, as long as you do not send any control events Adjust recording is just like Play mode and there is no danger that anything is overwritten. Moreover you will get instant feedback via the corresponding control event symbols (, , , , ) in the Articulate Monitor when you changed the buffer for a given event and are about to make changes to the sequence in a particular step. Therefore you can just as well activate Adjust recording right away step through your sequence and make all required changes at various places without deactivating recording in

between. If you realize in the Articulate Monitor that in Adjust recording mode you have accidentally sent a control event that you do not want to change, you can still prevent it from being overwritten by stopping the recording process.

Due to the universal layout of Articulate Presets you can use the same articulation sequence to record the same musical line for different instruments if you want them to play it unisono or successively at different points in the same piece of music. In contrast to simply copying the entire Midi sequence in Logic, you can this way still take into account that different instruments behave slightly differently in general (more or less agile) and with respect to velocity or velocity Xfade in particular, and this way get the best possible result, without significantly more effort. However, since the Articulate Sequencer has only a single articulation sequence, that is always overwritten, you will have to do this right away, before you record a different articulation sequence.

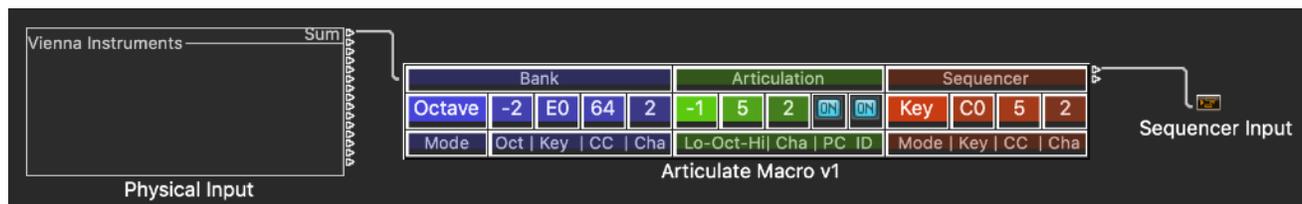
It is important to note again that the Articulate Sequencer is global (as part of the Articulate Macro that affects all Midi events before they even reach Logic's sequencer). It has only a single sequence and also a single buffer, which are used for all tracks! Therefore, when you switch to a different instrument, the control events that are buffered will reflect the current state of the previous instrument, but generally not yet the state of the instrument to which you switched. Therefore, Recording setup mode generally requires you to set these buffers to the appropriate values when you activate the control events that you want to record. In particular when you start to record a new sequence for another instrument you have to send the appropriate values of the control events while selecting them—even if the desired articulation and controller values are already active in the corresponding track(!)—so that everything is consistent when you start recording in Replace recording mode. This is particularly important in case you do not have the VSL licenses to access all content of a particular Articulate Preset and e.g. cannot use the Section Controller. In this case you will have to make sure that the Section Controller is buffered with a value of zero before you start recording, since otherwise this will lead to undesired results. Yet, when you use simplified replace recording mode and do not select particular control events in Recording setup mode (and thereby do not manually update the buffers) all control events are automatically set to neutral values of zero to prevent glitches.

Articulate Macro

The processing engine under the hood

The *Articulate Macro* Logic Environment Macro provides the processing necessary to realize both the next-generation key-switching, the complete overview over your sounds via the *Articulate Monitor*, and the *Articulate Sequencer*. But once set up you generally do not have to care about it anymore. You can access the Articulate Macro via the *Clicks & Ports* pane of the Logic's Environment window. It has to be inserted in between Logic's Physical Input and the Sequencer Input and thereby affects incoming Midi data before they even enter Logic. Based on key switches it creates e.g. the appropriate program change messages used by Articulate Presets, so that the key-

switch notes do not even reach Logic's sequencer or could appear in the score. Moreover, it sends further control events that enable the functionality of the Articulate Monitor and of the Articulate Sequencer directly in Logic's main window.



Logic's environment is project specific and therefore the Articulate Macro has to be present in your project in order to offer the functionality provided by Articulate Tools. This way the Midi processing in other projects that do not require VSL orchestral instruments is not affected at all by the Articulate Macro. Incorporating the Articulate Macro is most conveniently done by using a template including the fully set up Articulate Macro, when you create a new project, but you can also add the Articulate Macro to existing projects, as described below.

The Articulate Macro does not have dedicated control or display elements that you would have to use one a regular basis, since it is completely controlled by external Midi events and its current status is shown in the Articulate Monitor, described in more detail below. Nevertheless, it has various faders that control its general behavior and you could think of them as the "Settings" of Articulate Tools. I.e. you have to adjust them according to your preferences once, but then you typically do not have to care about them anymore while using Articulate Tools.

The Articulate Macro offers three color-coded sections, labeled *Bank*, *Articulation* and *Sequencer*. The first two set which external Midi events control the next-generation key-switching and the latter which Midi events control the Articulate Sequencer, as described in more detail below.

Bank					Articulation				Sequencer				
Octave	-2	E0	64	2	-1	5	2	ON	ON	Key	C0	5	2
Mode	Oct Key CC Cha	Lo-Oct-Hi Cha PC ID			Mode Key CC Cha								

Bank Section

The Articulate Macro offers several modes. In all cases you need (at least) *one octave of keyboard keys* for key switching. However, in the modes *Key 2* and *CC 2*, explained in more detail below, this octave is not permanently assigned and can also be used for normal playing. In addition you need further resources and there are 6 different modes, depending on the resources you can/want to allocate for key switching:

The environment macro allows you to select which mode to control the next-generation key-switching you want to use as well as to set up all the detailed settings.

Mode: sets if the next-generation key-switching is active and which Midi events control it

Octave: this is the most convenient option and requires even a second permanently assigned octave of keyboard keys to switch banks. I.e. you need a separate 2-octave keyboard (or two

octaves on a larger second keyboard) for key switching, where one octave selects banks and the other one selects articulations. The Articulate Monitor shows in this case the available articulations in the current bank. Yet, while you press any bank key, it shows the directory of the available banks instead.

CC: A permanently assigned switch controller (e.g. a piano pedal) changes the, likewise permanently assigned, octave between bank (when pressed) and articulation selection (when not pressed)—i.e. the switch controller acts similar to a modifier key on your computer keyboard. In this case a single octave is used to select both banks (when the switch is pressed) and articulations (otherwise). This mode typically requires a large keyboard, where the lowest octave is (exclusively) used for key switching. This only works as long as you do not use ultra-low instruments (like the contrabassoon) in your music and otherwise you have to choose CC+ instead.

CC+: This mode is similar to CC, but in this case the octave is not permanently assigned but you can specify two control key ranges of 1 octave each (a lower and an upper one) and you use the same switch controller to toggle between the two control octaves: a single press of the switch controller switches articulations/banks and pressing the switch twice toggles lower/upper octaves for key switching. You could think of this as a “double-click” on your mouse, i.e. you press the switch two times in a row without pressing a keyboard key in between. Important: in contrast to your mouse it does not matter how long the time interval between the two presses is. The CC+ mode allows you to take advantage of full-featured key switching even on a smaller keyboard by using the lower key range for high-pitched instruments and the upper key range for low-pitched instruments—or, in the rare case that the key-range of the used instrument actually covers your entire keyboard, depending on which register your music currently requires.

CCs+: This mode is similar to CC+, but instead of a single continuous controller two consecutive controllers are used, where one switches bank and articulation selection and the other toggles lower and upper key ranges. The CC number # of the first controller can be selected below and the second controller has send CC number #+1.

Key: This mode is analogous to CC explained above. However, instead of a switch controller a permanently assigned keyboard key takes the role of the bank switch. This way you can use Articulate Presets even when you merely have a large 88-key piano keyboard by using e.g. the lowest key on the keyboard (which is very rarely used for orchestral instruments anyway) as a bank switch as well as the lowest full octave for articulation/bank switching. This can work as long as you do not use the lowest register of instruments like the Contrabass in your music.

Key+: This mode is analogous to CC+ explained above. Another key is permanently assigned to toggle the switchable octave between articulation and bank selection (when pressed once) and at the same time between an upper/lower octave (when pressed twice in a row). I.e. a single octave is used to select both banks (when the key is pressed) and articulations (otherwise).

Keys+: This mode is analogous to *CCs+* explained above. Two adjacent keys are permanently assigned to switch bank/articulation selection and toggle lower/upper range, respectively. The first key can be selected below.

Off: The next-generation key-switching is deactivated. You can chose this if you don't have the necessary resources for key-switching (e.g. if you use a small keyboard on the go) and are fine with selecting articulations by program change messages. You will in this case nevertheless get full overview via the Articulate Monitor and even the Articulate Sequencer described below can be used.

Oct: sets the bank selection octave (only available in *Octave* mode)

Key: sets either the single bank selection key (in *Key*, *Key+* modes) or the lowest of the two keys that control the key-switching (in *Keys+* mode)

CC: sets either the single bank selection (in *CC*, *CC+* modes) or the controller number of the lowest of the two switch controllers that control the key-switching (in *CCs* mode)

Cha: sets the Midi channel on which all bank selection events are accepted (all modes)

Important: All *CC* modes require switch controllers that behave like a sustain pedal: i.e. send a non-zero controller value when pressed and a value of zero when released again (similar to a keyboard key sending a note-on/-off pair). On many master keyboards it can be specified how a given switch controller (pedal, button, ...) behaves and the appropriate mode is typically called "momentary", "instantaneous", or similar.

Articulation Section

Lo-Oct-Hi: the left field sets the single or lower control key range octave for articulation (and bank) selection, the right field is only available in *CC(s)+* and *Key(s)+* modes and sets the upper octave for articulation and bank selection

Cha: sets the Midi channel on which articulation selection key switches are accepted

PC: sets an offset of -1 for program change messages that are sent directly from your master keyboard (not those resulting from key switches) - you will have to activate it if you realize an offset between the program change messages sent from your keyboard and those displayed in the Articulate Monitor (since selecting the first program on your keyboard sends PC1 instead of the lowest value PC0). I.e. this button does **not** active program change message, but they are always accepted even when key-switching is turned off via the *Mode* menu.

ID: must be activated if you want to encode articulations directly into Articulation IDs when recording sequences. This is standardly the case in all Articulate Templates and Articulate Patches and requires an *Articulate Set*. You can uncheck this checkbox if you do not want to encode articulations into Articulation IDs and rather want to use program change messages. In this case you will have to remove the corresponding Articulate Sets from the track parameters of all your tracks. This button is active even when key-switching is turned off via the *Mode* menu.

Standardly the entire Physical Input, i.e. the sum of all ports, is transmitted through the Articulate Environment Macro. If you have several Midi inputs, you can also cable the Midi routing so that only certain Midi ports are transmitted through the Articulate Macro—see the Logic documentation for details.

Although, it is standardly assumed that articulations and banks are selected by a range of keyboard keys, you could likewise use a set of 12 drum pads or assignable physical buttons on your master keyboard—or even virtual keys or buttons realized in a tablet or smartphone app, in case they can be configured to send Midi note events.

Sequencer Section

Mode: sets if the Articulate Sequencer is active and which Midi event(s) control(s) it—see the Articulate Sequencer Section for more details.

Key: A single keyboard key is permanently assigned to control all functions of the sequencer. A single press toggles play/pause. A double-press toggles record on/off and a triple-press skips to the beginning of the sequence, i.e. stops record and play and rewinds the sequence to step 0. Since this key is fixed and cannot be used for ordinary playing at all, you should only assign the lowest or highest key if you have a large main keyboard.

Keys: Three adjacent keyboard keys are permanently assigned to control the sequencer. The key set by the key fader to the right toggles play/pause. The next higher key toggles record on/off and the next key skips to the beginning of the sequence, i.e. stops record and play and rewinds the sequence to step 0. Since these keys are used exclusively to control the sequencer and cannot be used for ordinary playing, you should only assign the lowest or highest keys if you have a large main keyboard.

CC: A single switch controller is permanently assigned to control all functions of the sequencer. A single press toggles play/pause. A double-press toggles record on/off and a triple-press skips to the beginning of the sequence, i.e. stops record and play and rewinds the sequence to step 0.

CCs: Three consecutive switch controllers (e.g. the pedals on a digital piano or a range of buttons on your master keyboard) are permanently assigned to the sequencer. The controller set by the CC fader to the right toggles play/pause. The next higher controller number toggles record on/off, and the next higher controller number skips to the beginning of the sequence, i.e. stops record and play and rewinds the sequence to step 0.

Off: The Articulate Sequencer is completely deactivated.

Key: sets either the single key (in *Key* mode) or the lowest of the three keys that control the sequencer (in *Keys* mode)

CC: sets either the single switch controller (in *CC* mode) or the controller number of the lowest of the three switch controller that control the sequencer (in *CCs* mode)

Cha: sets the Midi channel on which sequencer control events are accepted

Adapting Articulate Tools to your system

As just discussed Articulate Tools offer different ways for key switching and sequencer control, that should be chosen depending on your Midi hardware, and the options range e.g. from a single small keyboard for both playing and key switching to a separate two octave keyboard exclusively for key switching. You only need to deal with the Articulate Macro when you want to adapt Articulate Tools to your system. This only has to be performed once and afterwards you can save the project containing the customized Articulate Macro as a custom template.

To do so you can start with a project based on one of the Articulate Tools factory templates. If you already have a custom Logic template see the next section on how to integrate the Articulate Macro into it. In the corresponding project open an Environment window, select the *Clicks & Ports* layer and you will see the Articulate Macro. Make the required changes to the parameters discussed in detail in the preceding sections and then save this project as a custom template by choosing

File > Save as Template...

from Logic's main menu. Name the template accordingly and it will be available the next time you start Logic or create a new project from a template.

Including the Articulate Macro into existing Logic projects

If you already have your own Logic template or old projects that you want to use with Articulate Tools, you can include the Articulate Macro into them to do so. There are basically two ways to do this:

- If you haven't made any changes in the environment of your project, you can simply import the *Clicks & Ports* layer of a Logic project based on one of the factory Articulate Tools templates or your personal Articulate Tools template. To do this select in the Environment submenu *Options > Import Environment > Import Layer* select the corresponding project as well as the *Clicks & Ports* layer in the pop-up menu and press the *Import* button.
- If you already made changes in the *Clicks & Ports* layer in the environment of the project you want to use with Articulate Tools, select the *Clicks & Ports* layer in a project based on one of the Articulate Tools templates or in your personal Articulate Tools template in which you already adapted the Articulate Macro to your system, select the Articulate Macro and copy it. Then go to the *Clicks & Ports* layer of your project and paste the Articulate Macro. Finally cable it somewhere in between the path from the *Physical Input* and *Sequencer Input* (see the figure above as an example).

Appendix

List of Articulation IDs & Quick Access bank

Table I lists the different Articulation Banks, the bank selection key to access them as well as the range of program change messages to access the articulations in these banks, respectively the corresponding Articulation IDs they are encoded in. The full list of the particular articulations in these banks is given in the Articulate Presets manual—or directly in the Articulate Monitor.

Table II shows the detailed layout of the Quick Access bank, including the effect of the different controllers. The single octave Quick Access bank actually gives you direct access to much more articulations than explicitly labeled in the articulation column. This is shown in detail in the Horizontal/Vertical columns in table II. For instance, the *Long* articulation (corresponding to *sustained* (PC1) in the Articulate Presets / VSL terminology) allows you for wind instruments to blend from sustained to long portato and eventually to (single-note) marcato by changing the Vertical Controller, whereas the Horizontal Controller dials the vibrato intensity from strong via light to no vibrato. Similarly, *Short* and *Staccato* give you access to all sampled short note versions. For the strings, the Legato articulation allows to blend from normal legato via slurred legato to a full-fledged portamento via the Vertical Controller. The first column of table II also shows the (program change and Articulation ID) number of the corresponding Articulate Presets matrix.

Table III lists the Articulation IDs included in Articulate Sets. The first 128 correspond to the individual matrices included in Articulate Presets and merely send the corresponding program change message. The remaining 127 Articulation IDs allow you for articulations that feature several sampled versions to directly access a particular version without the need for any additional Midi events besides the note (i.e. also automatically sending the required additional continuous controllers). They cover the most used articulations: in particular *all* dynamics, repetitions and trills both in standard and muted versions.

Table I: Articulation Banks

#	Key	Bank	PC / Art ID	
I	C	basic	1-12	includes the basic articulations orchestral instruments offer
II	C#	interval	13-24	contains all performance interval and trill matrices
III	D	repetition	25-36	contains all performance repetition matrices
IV	D#	phrase	37-48	includes sampled phrases that have an inherent time structure
V	E	dynamics	49-60	includes all sampled dynamic transitions
VI	F	special	61-72	contains instrument-specific articulations and correspondingly has a different layout for different instruments or instrument classes (see the Articulate Presets Manual)
VII	F#	muted basic	73-84	muted standard articulations and dynamics (analog to I and V)
VIII	G	muted advanced	85-96	muted performance instruments and phrases (analog to II - IV)
IX	G#	sequencer	97-108	contains VSL factory matrices that use the APP sequencer of VI pro
X	A	individual	109-120	this bank contains patches that are otherwise part of larger matrices (e.g. individual strings, vibrato intensities, dynamic levels, interval speeds) for direct access
XI	A#	custom	121-128	in this (partial) bank you can add your own custom matrices (by editing the corresponding Articulate Preset - saving it under a new name)
XII	B	quick access	—	this last bank contains the most used articulations from other banks (see below)

Table II: Key Switches of the quick access bank, following Art Conductor conventions

#	Key	Articulation	Availability	Vertical	Horizontal
1	C	Long	strings / winds	sustain normal \diamond fast attack / sustain \diamond long portato \diamond marcato	vibrato intensity: strong \diamond light \diamond none
13	C#	Legato	strings / woodwinds ex BCL / HOs, TB, CTB / other winds	normal \diamond slurred \diamond portamento / normal \diamond grace / normal \diamond glissando / —	— (interval speed)
15	D	Marcato	all ex TU	attack behavior	— (interval speed)
12	D#	Tremolo	strings / harp / winds	tremolo normal \diamond fast attack / bisbigliando / flutter tongue	tremolo intensity: tremolo \diamond normal
17	E	Spiccato	strings S & VI-L / M, L ex VI	\diamond harsh / —	— (interval speed)
8	F	Staccato	violins L / all others	long \diamond short	A/B: tight loose / —
5	F#	Short Tenuto	strings / winds	detache long \diamond short / portato medium \diamond short)	vibrato intensity
10	G	Pizzicato	strings M&L ex VC-M / VC-M / VI-S, VC-S / VA-S, DB-S	\diamond col legno \diamond snap	\diamond slow / \diamond vib. \diamond slow / \diamond secco / —
37	G#	Trills recorded	strings S&M / L; woodwinds ex CBA; HOs, TU, CTU / TRs	minor 2. ... major 3. (4)	std. baroque / — / slow fast
18	A	Trill performance	all ex BTR,BTB,CTB,TU	standard speed	— (speed: legato trill)
36	A#	Repetitions	all	legato \diamond portato \diamond staccato	— (repetition speed)
49	B	Dynamics	all	fortepiano \diamond sforzato \diamond sforzatisissimo	vibrato intensity

Table III: Articulation IDs of the Articulate Sets

Art. ID	Articulation Version	Art. ID	Articulation Version
1 - 128	Articulate Presets matrices	161 - 169	crescendo-decrescendo 1s - 10s
129	interval legato standard	170 - 183	strong crescendo 1s - decrescendo 6s
130	interval legato slurred	184 - 195	medium crescendo 1s - decrescendo 6s
131	interval portamento	196 - 207	light crescendo 1s - decrescendo 6s
132	repetitions legato standard	208 - 212	muted crescendo-decrescendo 2s - 8s
133	repetitions legato crescendo	213 - 222	muted strong crescendo 1.5s - decrescendo 6s
134	repetitions legato decrescendo	223 - 232	muted medium crescendo 1.5s - decrescendo 6s
135	repetitions portato standard	233	muted interval legato standard
136	repetitions portato crescendo	234	muted interval legato slurred
137	repetitions portato decrescendo	235	muted interval portamento
138	repetitions staccato standard	236	muted trills half tone
139	repetitions staccato crescendo	237	muted trills whole tone
140	repetitions staccato decrescendo	238	muted repetitions legato standard
141	repetitions spiccato standard	239	muted repetitions legato crescendo
142	repetitions spiccato crescendo	240	muted repetitions legato decrescendo
143	repetitions spiccato decrescendo	241 - 246	muted fast repetitions @ 140bpm - 190bpm
144	trills half tone	247	muted repetitions portato standard
145	trills whole tone	248	muted repetitions portato crescendo
146	trills minor third	249	muted repetitions portato decrescendo
147	trills major third	250	muted repetitions staccato standard
148	grace notes half tone up	251	muted repetitions staccato crescendo
149	grace notes half tone down	252	muted repetitions staccato decrescendo
150	grace notes whole tone up	253	muted repetitions spiccato standard
151	grace notes whole tone down	254	muted repetitions spiccato crescendo
152 - 160	fast repetitions @ 140bpm - 220bpm	255	muted repetitions spiccato decrescendo