

DAZ Mimic Pro Lip Sync Studio for Carrara Plug-in User Documentation



Revision Initial

25 April 2008

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Revision History

Revision	Description	Date
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What is Mimic Pro for Carrara?

Mimic Pro for Carrara is an advanced tool that creates and edits facial animations for 3D figures by making them accurately mimic the correct lip movements for a prerecorded speech segment, allowing figures to "talk" and "sing" during animations. You can import existing .wav or .aif audio files in any language and let Mimic do the work for you then complete the effect by adding expressions and gestures such as smiles, winks, and nods to transform your figure into a fully expressive speaker.

Mimic's Talkback™ engine creates the expressions for you, saving time and boosting productivity. With Mimic, your characters will come alive with life-like speech and mannerisms.

Like all DAZ tools, Mimic allows you to achieve incredible realism quickly without the need for advanced knowledge or training.

Mimic gives hobbyists and occasional users the tools they need to create great lip-synched animations while giving professionals the extra controls and high-end functionality that take results to the next level.

Mimic for Carrara is a plug-in application designed to create lip-synched animations within Carrara while taking advantage of Carrara's powerful animation capabilities

What Can Mimic do for Me?

Creating realistic speech animations is one of an animator's most difficult and time consuming tasks. For example, your figure's lips should be pursed when making an "oo" sound. And even after achieving realistic mouth movements, you often need to add accompanying gestures such as eye blinks, raised eyebrows, and head nods to give your animation a convincing feel. Adding idiosyncrasies to speech can be extremely difficult and time consuming. Mimic automates these processes, bringing Pro-level animations within reach of anyone.

Want even more control? Mimic allows you to adjust the timing, duration, and magnitude of every event in your animation down to the millisecond. You can also control how events transition in and out using several interpolation settings. You can even split individual phonemes into separate modifiable parts for added control.

Mimic gives you a complete lip-sync production laboratory that allows you to develop custom libraries of reusable elements including phonemes, complex expressions, and finely tuned gestures for future use. Access a figure's individual settings for a phoneme, expression, or gesture, then fine tune each element for use with your specific character. As you work with Mimic and begin creating custom configuration files for your character(s), you will create shortcuts that you can reuse over and over again. This will result in a faster workflow, giving you shorter production times and better animations. Adjust subtle mannerisms, create compound gestures, and synchronize complex facial changes in a single timeline.



NOTE! This user guide assumes that you are familiar with Carrara's animation tools. It will not teach you how to create animations in Carrara but it will familiarize you with the additions to the Carrara animation tool set when Mimic Pro for Carrara is installed.

Key Features

Mimic for Carrara includes the following features:

- Lip synching based on imported audio file
- Create gesture animation based on imported audio file
- Match text to audio sound and display next to the sound
- Read DMC configuration files for content.
- Full integration in the Non-Linear Animation (NLA) engine of Carrara
- Create custom phonemes and gestures
- Lip Synching with content figures
- Lip Synching with models created in Carrara
- Animation using Emotions
- Animations can be adjusted using the regular animation tools of Carrara

Conventions

This User Guide describes both the Windows and Macintosh versions of Mimic. It includes several formatting conventions that present information clearly and make learning and working with Mimic easier.

Unordered Procedures

Lists or procedures that do not be performed in a specific order have bullets next to each item, as shown here:

- Item 1
- Item 2

Ordered Procedures

When you need to follow steps in a specific order, it will have numbers next to each step, as shown here:

1. Do this first...
2. Next, you have to do this...

Keyboard Entries

If you need to press a specific key on your keyboard, you will see the key label in bold letters with the Macintosh key label first followed by a slash and the Windows key label. (for example, **Cmd/Ctrl**.) If you need to press two more keys simultaneously, the notation will appear as **Key1+Key2** (for example **Cmd/Ctrl+V**).

Mac OS Conventions

The following additional conventions apply for Macintosh users:

- Where instructions in this manual specify a right-click, Macintosh users may press **Ctrl** while clicking to access the same functionality.

Commands and Prompts

Screen prompts, menu and window names, fields, buttons, boxes, etc. appear in bold type. The syntax used to demonstrate accessing a palette or submenu is **Menu > Submenu**. For example **Edit > Preferences** means that you should open the Edit pull-down menu and then select Preferences to open the Preferences dialog box.

Tips, Cautions, and Notes



TIP! Tips contain helpful advice and other information that makes the software easier and more enjoyable to use.



CAUTION! Cautions warn of potential problems that you will want to avoid.



NOTE! Notes contain other points worth mentioning.

ReadMe

At the end of the Mimic installation process, the Readme file will automatically appear. This file includes late-breaking developments and other information that were too recent to be included in the User Guide or Install Notes. Please take a few moments to read this information carefully as it may affect how you use Mimic.

System Requirements

In order to install and run Mimic for Carrara, you must have either a Windows PC or Macintosh that meets or exceeds the minimum requirements for Carrara Standard or Pro. Please be aware that these are just the minimum requirements. Computers that exceed the recommended specifications will be able to process animations faster and/or store more content. For processing speed, RAM is the largest contributing factor followed by your graphics card, then your processor speed. To store more configuration (.dmc) files and/or finished animations, add hard drive space.

The above recommendations are valid for both Windows PCs and Macintoshes.

Software Requirements

Requires Carrara 6 Standard 6.2 or Pro 6.2 (or higher)

Will not work with Carrara Express

Compatible Content

As you begin using Mimic for custom sessions, you'll eventually need to obtain additional figures beyond the starter content supplied with the program. For complete scenes, you'll also need clothing, props, textures, and more.

DAZ figures are a wonderful addition to any existing 3D library. The Millennium figures are completely set up and ready to work in Mimic. They give artists realism and versatility that is unmatched by any other commercially available 3D models. We release updates and other additions for each figure on a regular basis, giving you an ever-expanding array of options.

Beyond figures, DAZ both produces many other items and partners with leading modelers and artists to bring you a huge variety of content that you can use in your Mimic animations. This content includes clothing, morph targets, maps, poses, hairstyles, props, and more.

"In my experience, I have never seen 3D models that compare to our Millennium figures in quality and versatility," says Chris Creek, Vice President and Art Director of DAZ Productions. Chad Smith, Product Development Manager adds, "We still have a few

tricks up our sleeve. These figures are still very young products and have a lot more potential and versatility that will be implemented. Much of our focus is in finding ways to push the limits of realism in virtual worlds."

Be sure to visit DAZ regularly at www.daz3d.com to see the latest additions to our ever-expanding library of excellent 3D content!

Support

This manual addresses as many questions about Mimic as possible. Should you need it, there are several ways to get additional help.

Contacting Technical Support

Need support? Please contact DAZ as follows:

- Toll Free Phone: (800) 267-5170
- Local Phone: (801) 495-1777 (Our technical support hours are Monday through Friday, from 9:00 a.m. to 5:00 p.m. Mountain Standard/Daylight Time).
- Fax: (801) 495-1787
- Online Direct: <http://daz.custhelp.com>
- US Mail: 12637 South 265 West, #300, Draper, UT 84020

Other DAZ Resources

- Web site: <http://www.daz3d.com>
- Support database: <http://daz.custhelp.com>
- Community Forums: <http://forum.daz3d.com>
- Online Documentation and Tutorials:
<http://artzone.daz3d.com/wiki/doku.php/pub/software/mimic/start>

Installation

This section describes the installation process for Mimic Pro for Carrara on both Windows and Macintosh computers. Before installing Mimic Pro for Carrara, you must read, understand, and agree to the End User License Agreement (EULA) and learn how Mimic protects artists' copyrights. The EULA appears during Mimic installation.

Program requirements: Carrara 6 Standard 6.2 or Pro 6.2 (or higher).

Macintosh®

To install Mimic Pro for Carrara on a Macintosh system:

1. Unpack the zip file to access the installer.
2. Double-click on the Mimic installer icon to start the installation.
3. Read the *Welcome screen* and click on **Continue**.
4. Read the *Software License Agreement* and click on **Accept** to continue.
5. Click on **Select Folder** to locate the Carrara installation folder.
6. Click on **Update** to install.

Windows®

To install Mimic Pro for Carrara on a Windows system:

1. Double-click on the Mimic installer icon to start the installation.
2. Read the *Welcome screen* and click on **Next**.
3. Read the *Software License Agreement* and click on **Yes** to accept the agreement and continue.
4. Once the plug-in has been installed, click on the checkbox to view the readme then click on **Finish**.

Reference Section

Supported File Types

This section provides some basic information about the different file types used by Mimic. These are:

- **Sound:** Sound files contain the speech to which you want to lip-sync your characters.
- **Text:** Mimic includes additional tools that analyze text files to better identify phonemes in the sound file. Text files are not necessary but can help improve your results. Imported text also appears in the Timeline, giving you additional reference points when editing your sessions. These files must be plain ASCII text (with the extension .txt on a Windows PC).
- **Configuration:** Configuration files store definitions for phonemes, gestures, and expressions.

- **Character:** Mimic applies speech and gestures to Curious Labs Poser character files. Each character file references a polygonal mesh and defines its shape and size and a corresponding character file that defines how that mesh bends and morphs. Selecting a character file determines the figure you are working with when creating an animation. Please refer to your Poser documentation for more information about the CR2 file format and its relationship to figures. DAZ Studio by DAZ Productions supports the CR2 format, meaning that you can bring your Mimic sessions into DAZ Studio.

Supported Sound Formats

Mimic supports uncompressed .wav (PC) or .aif (Macintosh) sound files sampled at rates between 8bits at 5,000kHz to 24-bits at 192kHz that are 5 minutes (300,000 ms) or less in duration. The sampling frequency must be greater than or equal to 8kHz and not more than 48kHz. Existing sound files may be in stereo.

Mimic Configuration Files (DMC)

Mimic configuration files have the extension .dmc. These files define the phonemes, expressions, and gestures available for your current session. You can use them as either generic Mimic assets with no specific character in mind, or as part of a larger library of configuration files that contain customized phonemes, expressions, and gestures for use with specific characters.

Mimic ships with a few default configuration files. The included default.dmc file is intended for use with the reduced-resolution Victoria 1 figure included with your copy of Mimic. Each default or custom configuration file contains a library of phonemes, expressions, and gestures. You can customize each library's default elements to create customized phonemes, expressions, and gestures. You can modify phonemes already defined by the configuration file using the Timeline and save these customized definitions for phonemes and gestures, and/or new or customized expressions to new configuration files for later use.

Customizing configuration files inside Mimic involves modifying the basic configuration file elements by modifying its stored phonemes and gestures, and/or adding or customizing its stored expressions. Saving these modified files expands your library for future use.

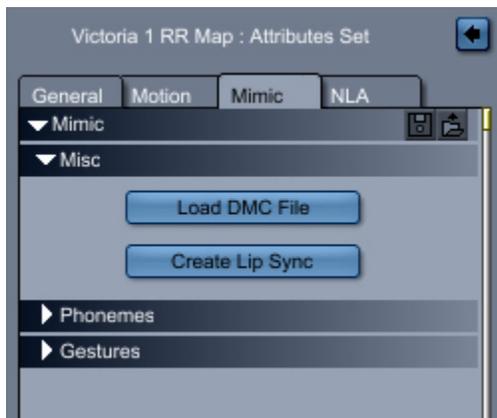
You may need several configuration files in order to complete a project. For example, different people behave and express emotions differently. Also, any one person might behave and emote differently in varying situations. To accommodate this, you might want to develop several configuration files for different characters and even for different moods. When developing storyboards, you should consider which of your available configuration files to use or modify to achieve your desired effect.

Mimic ships with several configuration files, some of which are specific to DAZ figures such as the reduced-resolution Victoria 1 figure included with your Mimic package.

Other files are designed for less specific characters. These basic configuration files are simple and address basic speech behaviors. They work with a few of the fundamental shapes involved in forming words. For example, there are a couple of configuration files designed to be used with custom characters. These files are intended to show modelers what types of speech morphs they might want to create for these figures. Mimic also includes the P3Standard.dmc file for use with the standard figures included with MicroSmith Graphics Poser versions 3.0 and higher. Please refer to your Poser documentation for information on applying and using morph targets within Poser.

Mimic Session Manager

The **Mimic Session Manager** is accessed through the Properties tray.



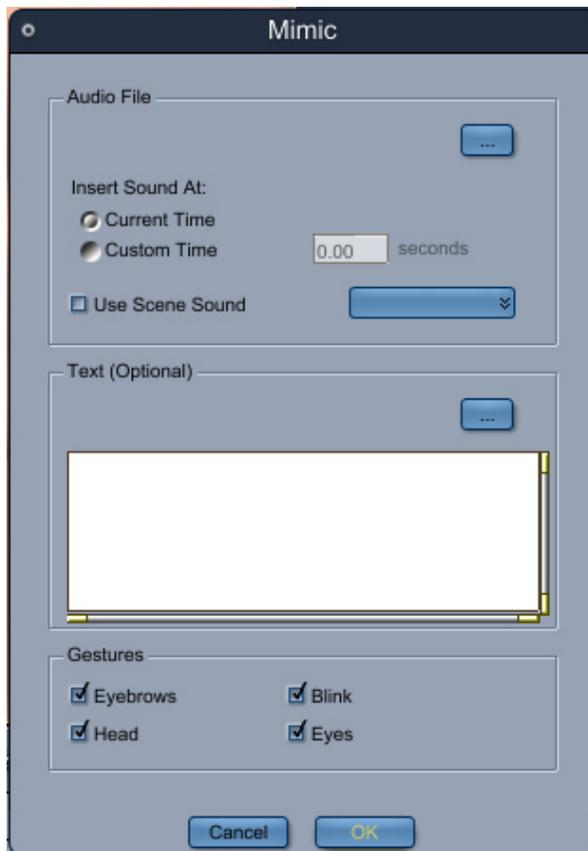
The following options are available in this dialog:

- **Load DMC File** - The **Configuration File** area of the Mimic tab is where you load Mimic configuration (.dmc) files. Configuration files contain phoneme, expression, and gesture definitions, as well as a character's Mimic visibility settings. If the character does not have a configuration file, see "[Creating a New Configuration Setting](#)" on defining custom settings for the figure.

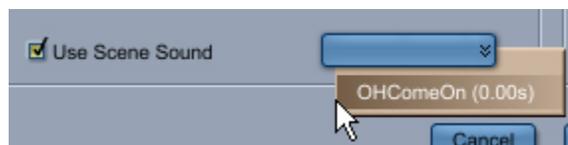


NOTE! The DMC file must be loaded before loading the audio and/or text file in order for Mimic to correctly analyze the audio and text for the figure.

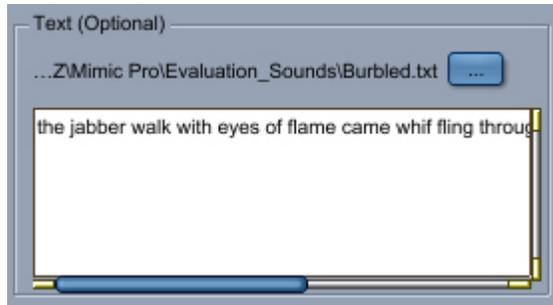
- **Create Lip Sync** - Clicking on this button brings up the **Mimic Session Manager** where you load the .wav (PC) or .aif (Mac) sound files that will become the basis for your lip-synching session and the matching text files. This dialog can also be brought up by selecting **Animation > Mimic** from the menu.



- **Audio File** - The **Sound area** of the Session Manager is where you load the .wav (PC) or .aif (Mac) sound files that will become the basis for your lip-synching session. Click on the **Load File** button to navigate to your desired file.
- **Insert Sound At** -
 - **Current Time** - When selected, will insert the new animation at the current time.
 - **Custom Time** - When selected, enables the seconds field where a custom time can be entered. The new animation will be inserted at the selected time.
 - **Use Scene Sound** - When selected will use the sound file currently loaded in the scene and align the starting time of the new animation with the audio. When selected, enables the drop down button where a sound file can be selected from those loaded into the scene.

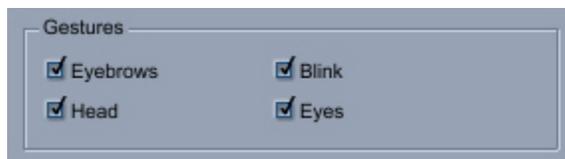


- **Text (Optional)** - The **Text area** of the Session Manager is where you load plain ASCII text (.txt on a Windows PC) files. Alternatively, you can click in the **Text Display field** and then type in your desired text. Your text must quote the sound file verbatim. This step is optional, but typically improves results. Mimic analyzes this text file (if present in conjunction with the sound file) to ensure maximum phoneme accuracy. It does this by reading each syllable, applying standard English pronunciation rules, and selecting the best available phoneme for the job.



TIP! Phonetic spelling often yields more accurate results than correct spelling, especially when working with non-English words.

- **Gestures** - Most figures include a series of morph targets and parameters, or deformations, that allow artists to customize their appearance. Morph targets have nearly unlimited uses, such as transforming skinny figures into muscle-bound superheroes, adding ethnic and individual diversity- and animations such as lip-synching. Mimic has the ability to use a figure's head morphs (morph targets assigned to a figure's head) and parameters to make the figure look more realistic while speaking. People tend to move their heads, look around, arch their eyebrows, and blink while speaking. This natural body language sends important non-verbal cues that add impact to the spoken words. Without these gestures, your Mimic animations will display a perfectly still character with moving lips. This may be perfect for some uses. If, however, you want Mimic to automatically add animated gestures for you, you may select your desired option(s) using the **Gesture area** of the Session Manager.



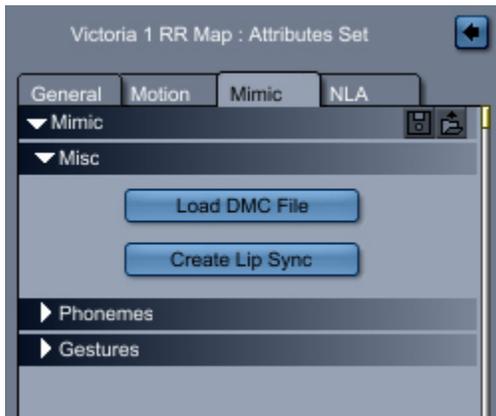
Your available options are:

- **Head:** Selecting the Head radio button enables head movements during speech such as nodding.

- **Eyes:** Selecting the Eyes radio button enables slight eye movements during speech. If the Head radio button is checked, the eyes will be animated such that they counteract the head animation by making the character look in a fixed direction.
- **Eyebrows:** Selecting the Eyebrows radio button enables eyebrow movements during speech such as arching.
- **Blink:** Selecting the Blink radio button enables eye blinking during speech.
- **Cancel** - When selected, cancels loading the Mimic animation files.
- **OK** - When selected, loads the Mimic animation files into the scene. The Session Manager is also cleared.

Creating a New Configuration Setting

The Mimic tab provides a way to create the equivalent of a custom DMC file in order to create animations with Mimic for characters that do not have a DMC file or for any animation group created in Carrara (not just content either!). These settings do not change the current settings for the loaded figure or animation group but are used to analyze sound when the audio and text files are loaded.



To create a new configuration setting:

1. Load the figure or create a new animation group.
2. Select the root figure in the Sequencer under the Universe section.
3. In the Properties tray, click on the **Mimic** tab.
4. Edit Phonemes:
 1. Expand the **Phonemes** listing to view a listing of all phonemes.
 2. Locate the phoneme to edit and click on the **Select Clip** button next to that phoneme.

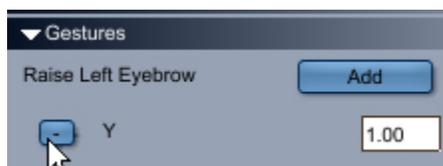


3. In the **Master Clip Selection** dialog, locate the clip to assign to the selected phoneme, select it and click on **OK**.

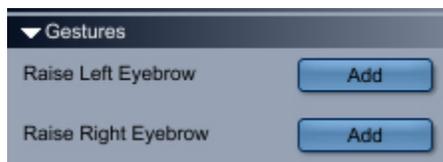


5. Edit Gestures:

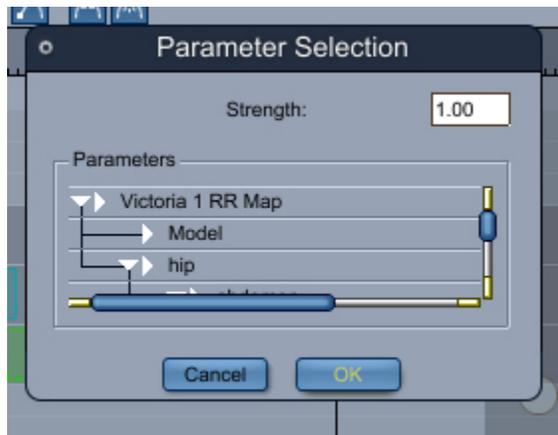
1. Expand the **Gestures** listing to view a listing of all gestures.
2. Locate the gesture to edit.
3. To delete a parameter already assigned to the gesture, click on the **Delete** button next to the parameter.



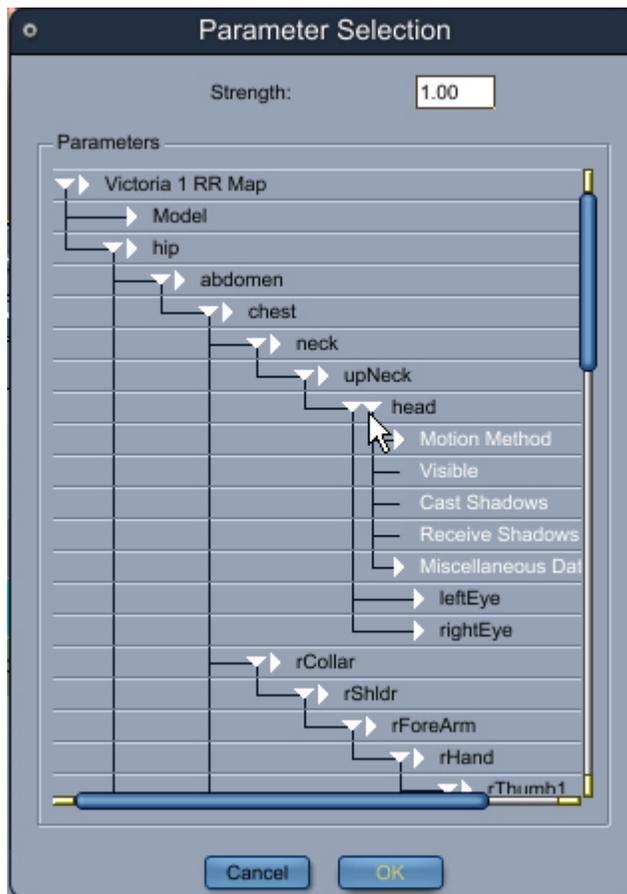
The parameter will be deleted.



4. To add a new parameter to the gesture, click on the **Add** button next to the gesture name. The **Parameter Selection** dialog will come up. Expand the listing by dragging on the circle icon at the bottom right of the dialog.



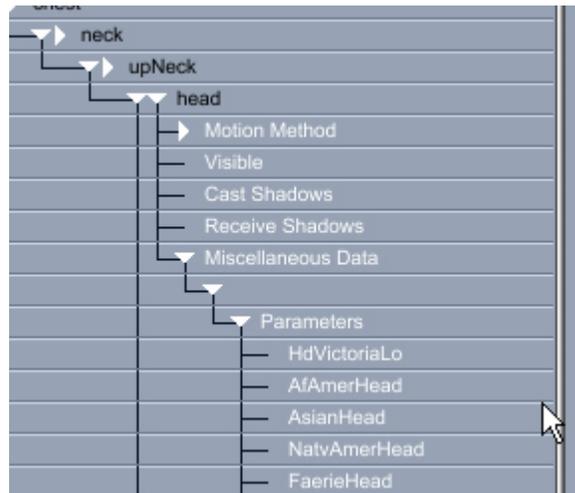
5. Scroll down until you locate the body part containing the parameter(s) to add. Expand the listing by clicking on the second arrow next to the listing.



6. To modify the body part position, expand the **Motion Method** sub-listing. To modify morphs associated with the body part, expand the **Miscellaneous Data** sub-listing.

Once the correct sub-listing is expanded, expand the **Parameters** listing

to locate the morph settings.



7. Scroll down until you locate the parameter to add, click on it to select it, and set the parameter strength in the **Strength** field.



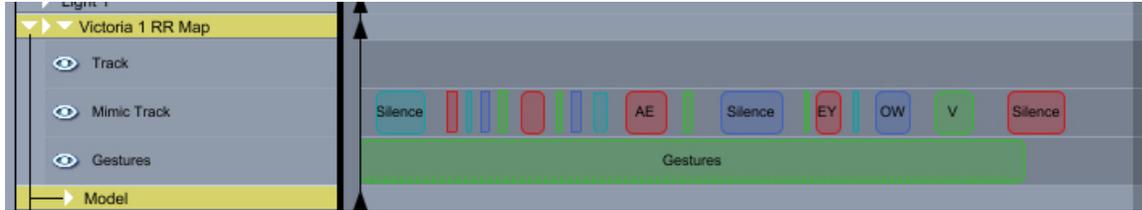
8. Click on **OK** and the parameter will be added to the gesture.



9. Repeat as needed to add additional parameters to the gesture or to additional gestures.
6. Once all phonemes and gestures have been modified for the current figure or animation group, load the audio and text file as shown in "[Mimic Session Manager](#)" then move on to editing the animation in the "[Mimic Sequencer](#)."

Mimic Sequencer

Once the DMC, audio, and text files have been loaded, the phoneme, expression, and gestures tracks will be available in the Sequencer.



- **Expressions Track** - The Expressions Track (labeled just Track) is where expressions are added to the timeline. Expressions can also be added to the Mimic Track but that can get messy as they overlay the phoneme clips. Expressions convey emotions and include Happy, Disgusted, Afraid, Neutral, etc.

See "[Working with Expressions](#)" for more information on expressions.

- **Mimic Track** - The Mimic Track contains the phoneme sound clips created when the Mimic TalkBack engine analyzed the sound and text files.

See "[Working with Phonemes](#)" for more information on phonemes.

- **Gestures Track** - The Gestures Track contains one large gestures clip. Double-clicking on this clip will highlight in red all tracks that contain gestures. While phonemes convey sounds and expressions convey emotions, gestures convey other non-verbal cues such as eye blinks, head movements, etc. The combination of phonemes, expressions, and gestures are what give your Mimic animations their realism.

See "[Working with Gestures](#)" for more information on gestures.

- **Model Tracks** - The Model tracks contain a listing of all body parts for the figure along with tracks for keyframing gestures, poses, expressions, and phonemes.
- **Soundtrack** - The Soundtrack contains a visible waveform of the loaded sound track. The text matching the sound wave is shown under the soundwave. Soundtracks can be made sticky at the bottom of the Sequencer.



Working with Phonemes

Phonemes are specific to mouth movement in order to create the visible speech movements for the figure.

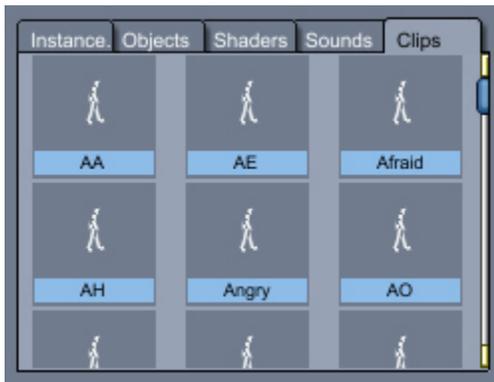
- Each phoneme clip is indicated by a rounded rectangle that can be resized to adjust the length of time for the phoneme sound and moved to adjust when the sound is played.



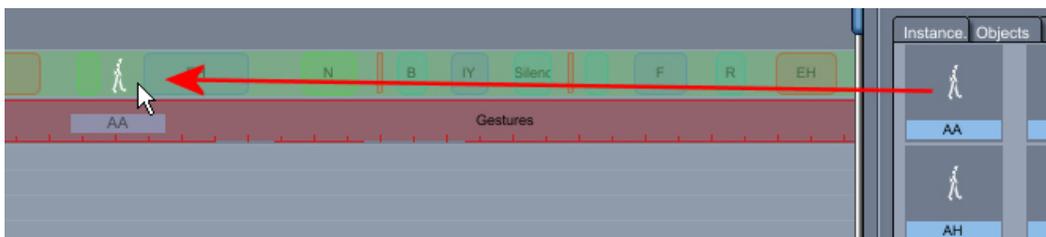
- Each phoneme clip is a different color to help distinguish between them. This color can be changed in the Properties tray.

Adding Phonemes to the Timeline

- Phoneme clips are found in the Master Clips tab although they are mixed in among the Expression clips.



- Phoneme clips can be dragged on to the Mimic track then resized to modify the time between phoneme changes. The shorter the space between expressions, the more quickly they will change.



Editing Phoneme Keyframes

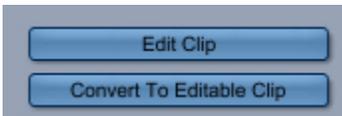
While Mimic creates phonemes as part of the audio analysis, these phonemes will probably need to be tweaked in order to create more realistic mouth movements.

To edit keyframes for phoneme clips:

1. Click on the phoneme clip to select it. It will turn yellow.



2. In the Properties tray, click on the **Convert to Editable Clip** button.



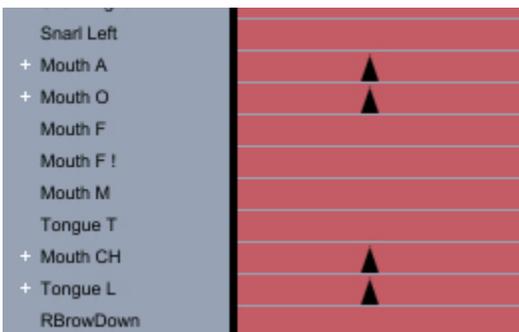
The clip name will change to Clip (Editable) with tick marks along the bottom of the clip.



3. Click on the **Edit Clip** button in the Properties tray. The clip outline will turn red and available tracks will turn red.

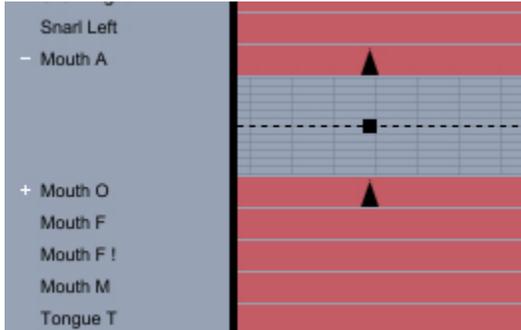


4. Scroll down in the listing for the figure until you see a triangle in the track which indicates a keyframe is available for that parameter.

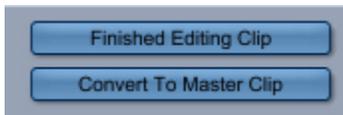


5. Click on the **plus signs (+)** to expand the listing then on the parameter label to select it. Use the properties tray to change parameters for the clip or adjust the

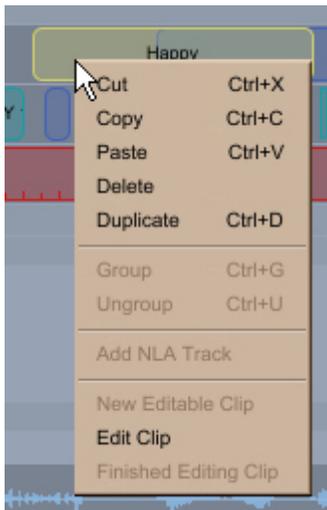
keyframe and clip as needed by moving them in the timeline.



- When you have finished editing the keyframes, select the main clip again and then click on the **Finished Editing Clip** button.



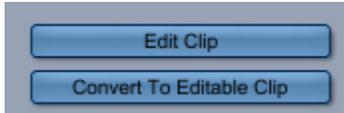
- Right-clicking on a clip will bring up a context menu where you can choose to cut, copy, paste, delete, and duplicate a clip. If the clip is editable, the Edit Clip option will allow you to edit the clip.



Creating a Master Phoneme Clip

To create a Master Phoneme Clip:

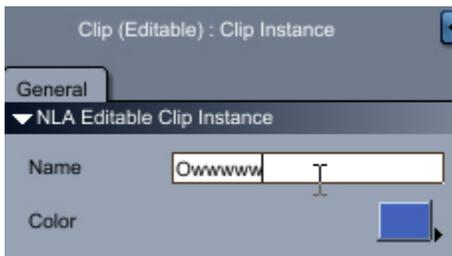
- Add a phoneme clip to the Mimic Track or copy/duplicate a similar phoneme.
- Click on the phoneme clip to select it. It will turn yellow
- In the Properties tray, click on the **Convert to Editable Clip** button.



The clip name will change to **Clip (Editable)** with tick marks along the bottom of the clip.



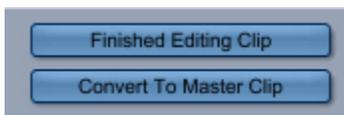
4. In the Properties tray, edit the name of the clip to the new clip name.



The clip will update to reflect the new name.



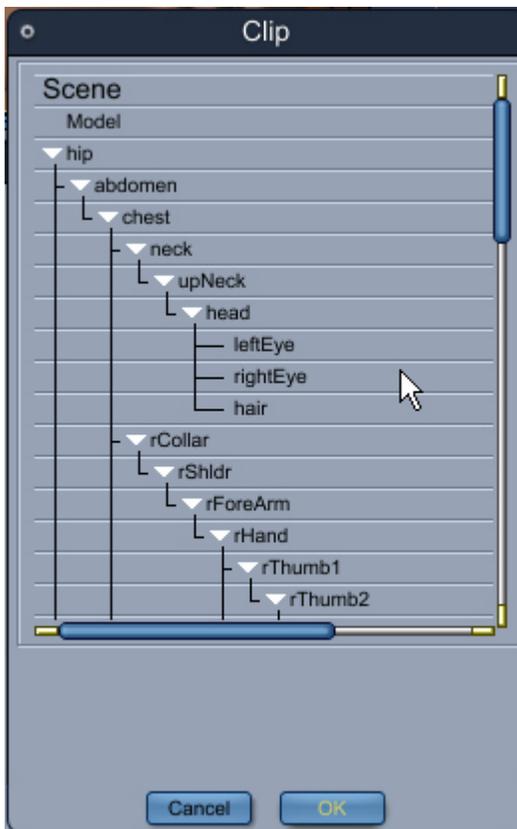
5. Edit the associated parameters by selecting them in the Sequencer and editing in the Properties tray. See "[Editing Phoneme Keyframes](#)" for more information on editing clips.
6. When finished editing, select the main clip again and then click on the **Finished Editing Clip** button.



7. Click on the **Convert to Master Clip** button. The **Clip Conversion** dialog will come up. If needed, change the clip name in the **Name** field.



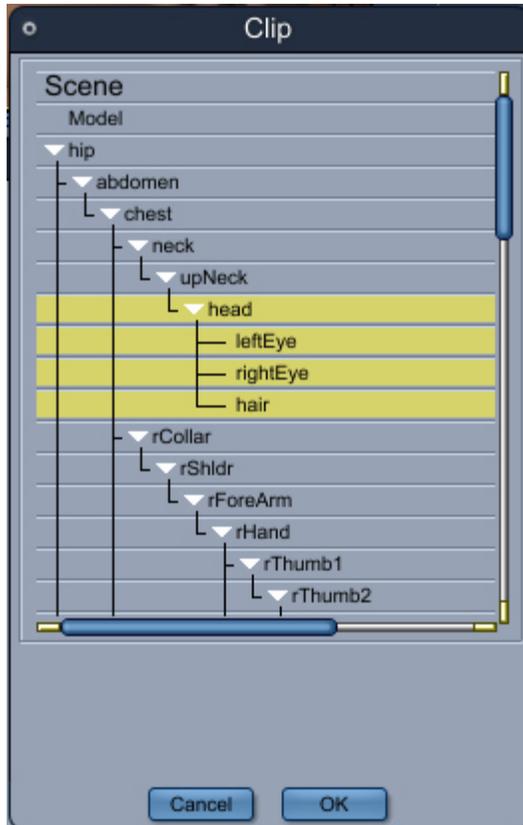
8. Click on the browser button in the **Loop Offset** panel. The **Clip** dialog will come up with the object tree listing.



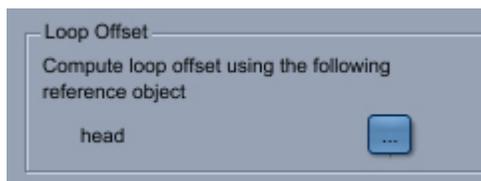
When converting an editable clip to a Master clip, Mimic needs to know what object / joint / node to use as a reference when repeating the clip. For instance, if you are creating a walk cycle, you can use the left foot as a reference. What this

means is that the NLA engine will try to make sure that the left foot position is the same at the beginning of a new cycle as it was at the end of the cycle. This will allow the character to move forward instead of walking in place.

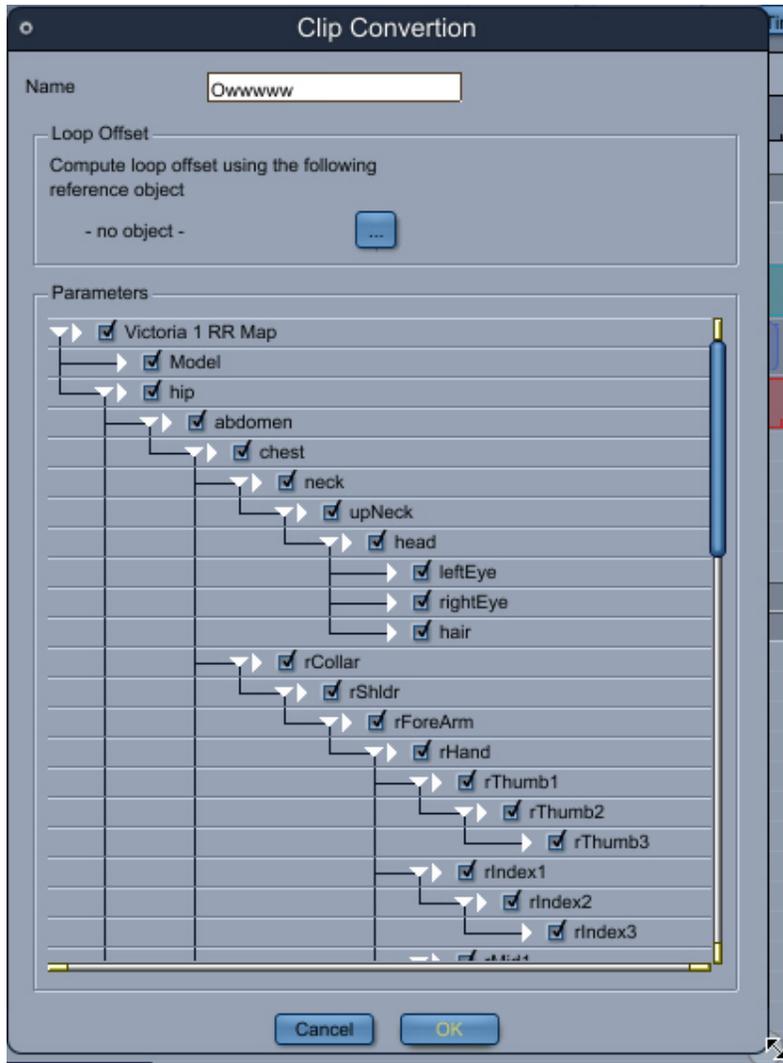
9. Select the body part to use to compute the loop offset and click on **OK**.



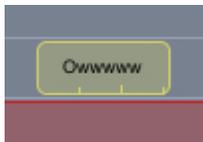
The selected body part will be added to the dialog.



10. Expand the dialog to view the **Parameters Object list**. Deselect any parameter that you do not want to save with the master clip.



11. Click on **OK** to close the conversion dialog. The clip in the timeline will be updated to remove the editable tag.

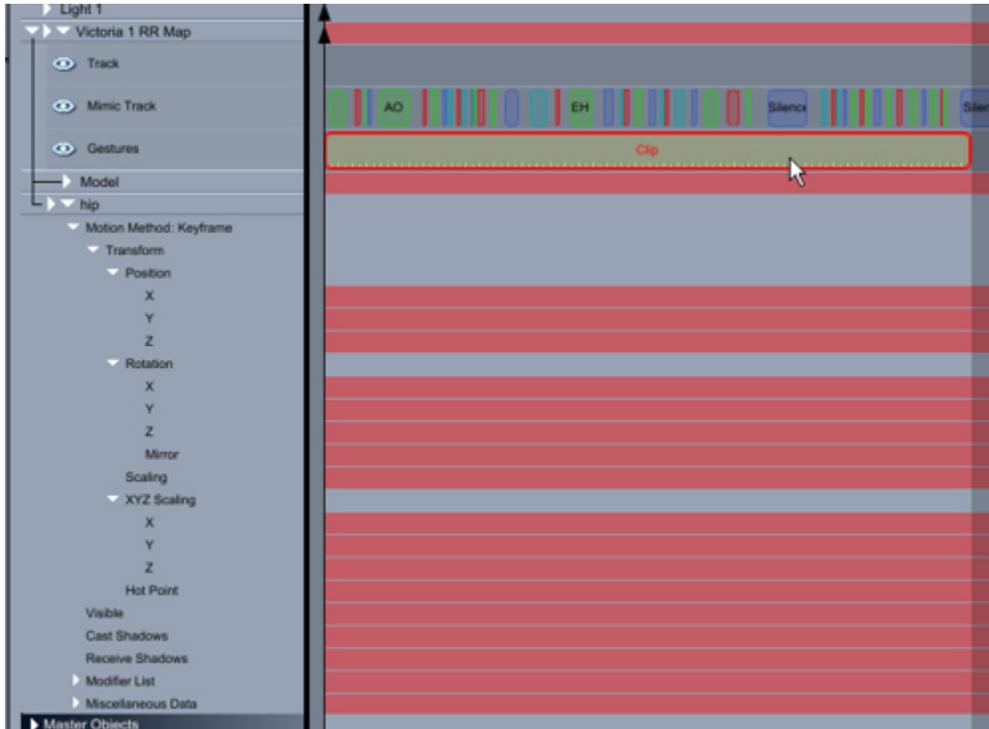


And will be added to the Clips tab.

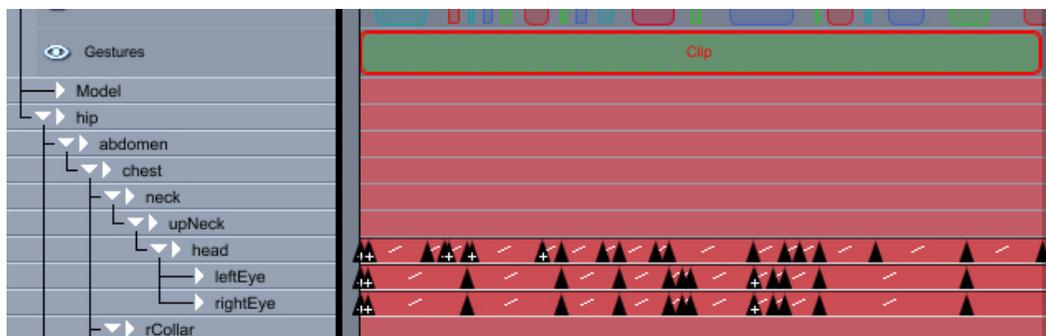


Working with Gestures

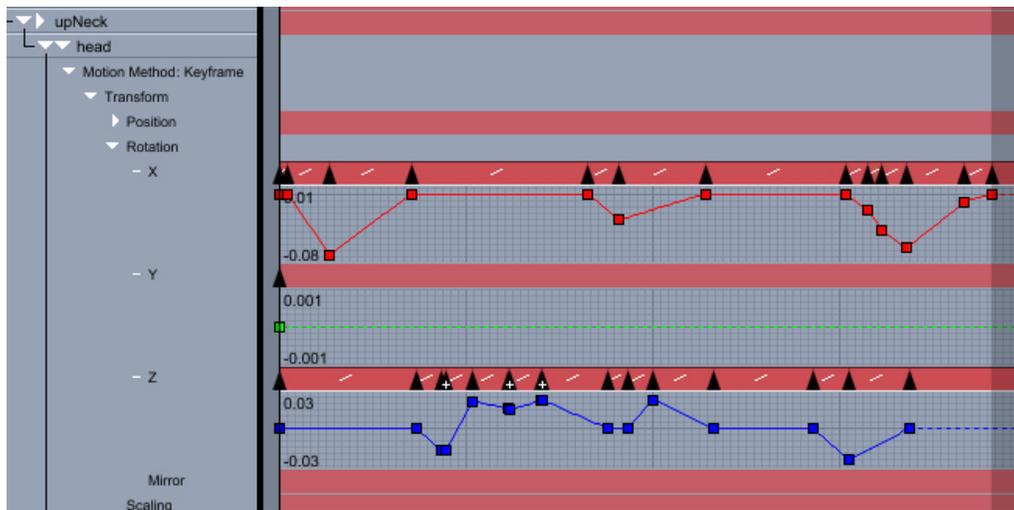
Gestures apply to head movements such as blinking, moving the head, moving the eyes, and moving the eyebrows.



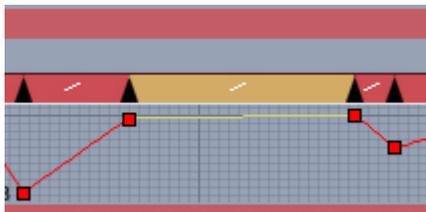
- If the listed body part parameters have associated gestures, the keyframes will be visible next to the parameter listing.



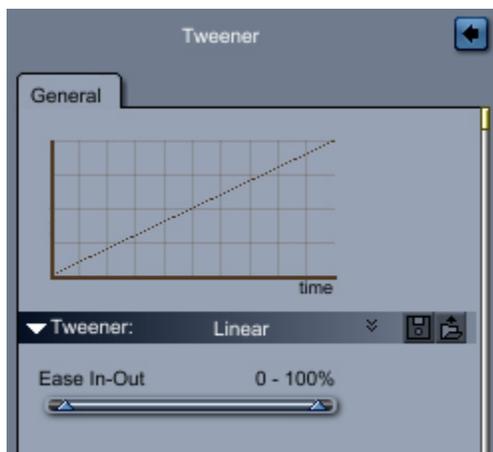
- Expanding the listings will show the NLA clips for the parameter with each clip joined by the Tweener (interpolation) lines. The clips can be moved up or down to adjust strength and left or right to adjust location on the timeline.



- The body part parameters can be adjusted using the properties tray or manipulators in the viewport. Just select the body part/parameter in the Sequencer or in the Properties tray, then adjust sliders or the manipulator. Changes made will be reflected from the current point in time until the end of the timeline, unless you add additional changes further down the track. For example, if you give the figure elf ears, it will have elf ears to the end of the track, unless you set them back to the default or apply a different morph at the end.
- The Tweeners can be adjusted by selecting the line or space above the line.



The Tweener Properties tray will activate where the interpolation method can be changed and adjusted.



Adding Gestures to the Timeline

Gestures are added to the timeline either automatically or manually using the Carrara add keyframes functions. The basic steps are:

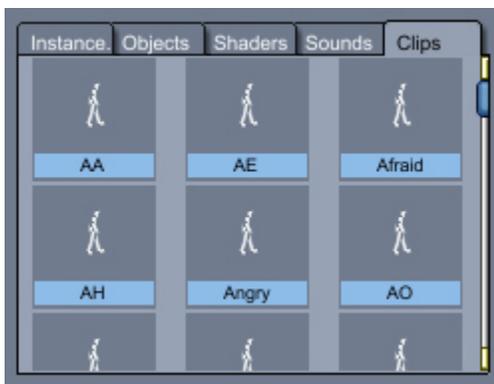
1. Select the parameter in the sequencer to add a keyframe to.
2. Move the scrubber to the location where you want to add the new keyframe.
3. Click on the **Create Key Frames** button. A new keyframe will be added.

Working with Expressions

Expressions are not automatically added to the Mimic tracks when the DMC, audio, and text file are applied to a figure. Instead, expressions must be added manually to the Expressions track. While phonemes affect only the head, expressions can affect the entire body.

Adding Expressions to the Timeline

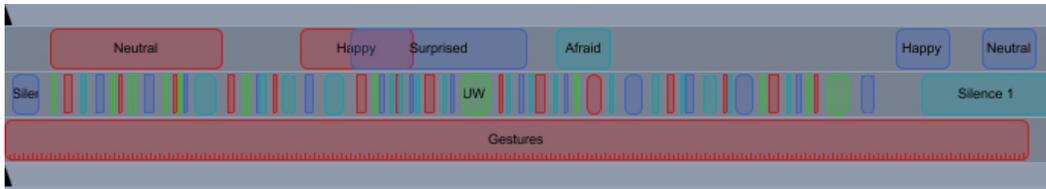
- Expression clips are found in the Master Clips tab although they are mixed in among the Phoneme clips.



- Expression clips can be dragged on to the Expressions track then resized to modify the time between expression changes. The shorter the space between expressions, the more quickly they will change.



- Expression clips can overlap each other as needed, for example, the Happy expression could overlap the Surprise expression to create a look of happy surprise.

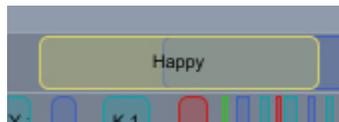


- Changes made will be reflected from the current point in time until the end of the timeline, unless you add additional changes further down the track. For example, if you add a happy expression, the figure will have that expression to the end of the track, unless you change the expression at the end or somewhere between.

Editing Expression Keyframes

To edit keyframes for expression clips:

1. Click on the expression clip to select it. It will turn yellow.



2. In the Properties tray, click on the **Convert to Editable Clip** button.



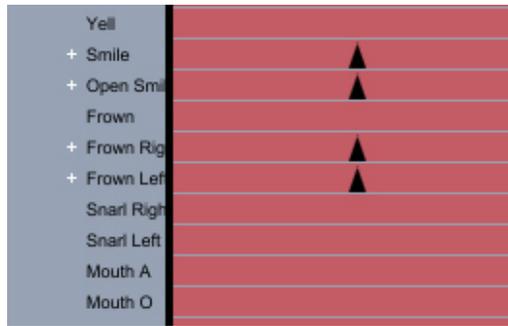
The clip name will change to Clip (Editable) with tick marks along the bottom of the clip.



3. Click on the **Edit Clip** button in the Properties tray. The clip outline will turn red and available tracks will turn red.



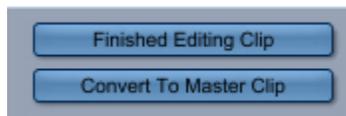
4. Scroll down in the listing for the figure until you see a triangle in the track which indicates a keyframe is available for that parameter.



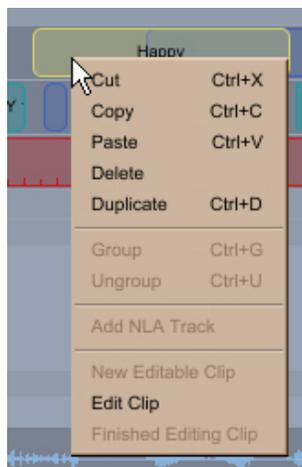
- Click on the **plus signs (+)** to expand the listing then on the parameter label to select it. Use the properties tray to change parameters for the clip or adjust the keyframe and clip as needed by moving them in the timeline.



- When you have finished editing the keyframes, select the main clip again and then click on the **Finished Editing Clip** button.



- Right-clicking on a clip will bring up a context menu where you can choose to cut, copy, paste, delete, and duplicate a clip. If the clip is editable, the Edit Clip option will allow you to edit the clip.



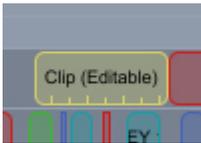
Creating a Master Expression Clip

To create a Master Expression Clip:

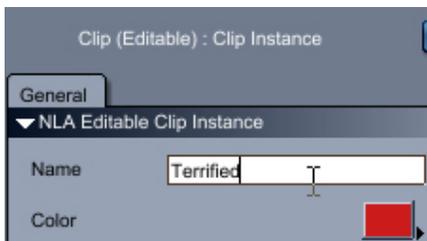
1. Add an expression clip to the Expressions Track or copy/duplicate a similar expression.
2. Click on the expression clip to select it. It will turn yellow
3. In the Properties tray, click on the **Convert to Editable Clip** button.



The clip name will change to **Clip (Editable)** with tick marks along the bottom of the clip.



4. In the Properties tray, edit the name of the clip to the new clip name.



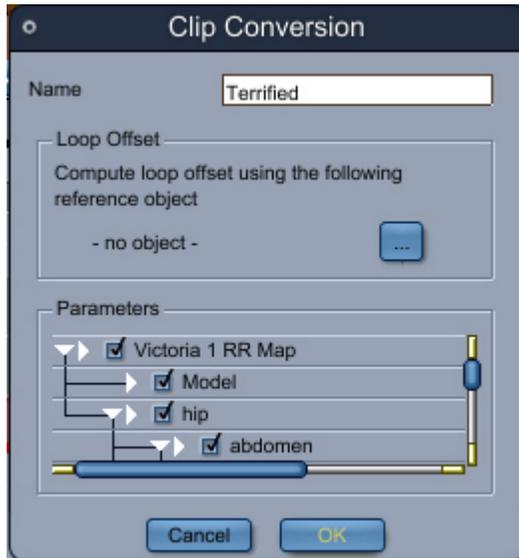
The clip will update to reflect the new name.



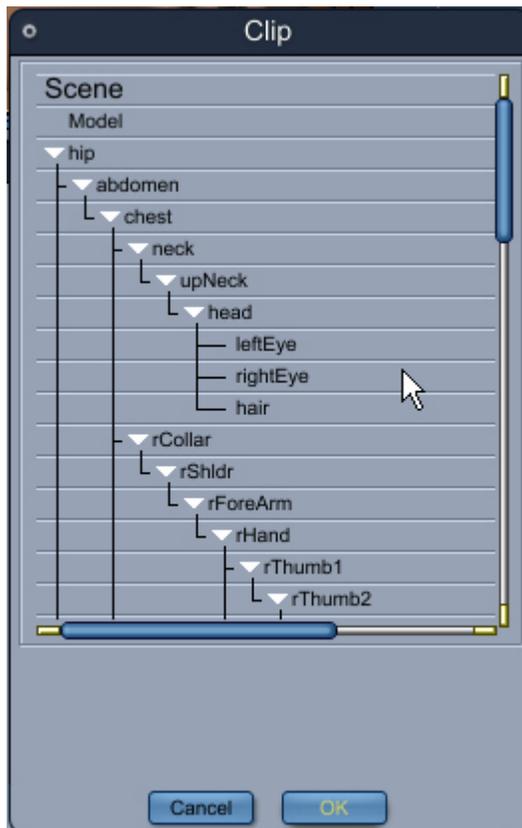
5. Edit the associated parameters by selecting them in the Sequencer and editing in the Properties tray. See "[Editing Expression Keyframes](#)" for more information on editing clips.
6. When finished editing, select the main clip again and then click on the **Finished Editing Clip** button.



- Click on the **Convert to Master Clip** button. The **Clip Conversion** dialog will come up. If needed, change the clip name in the **Name** field.

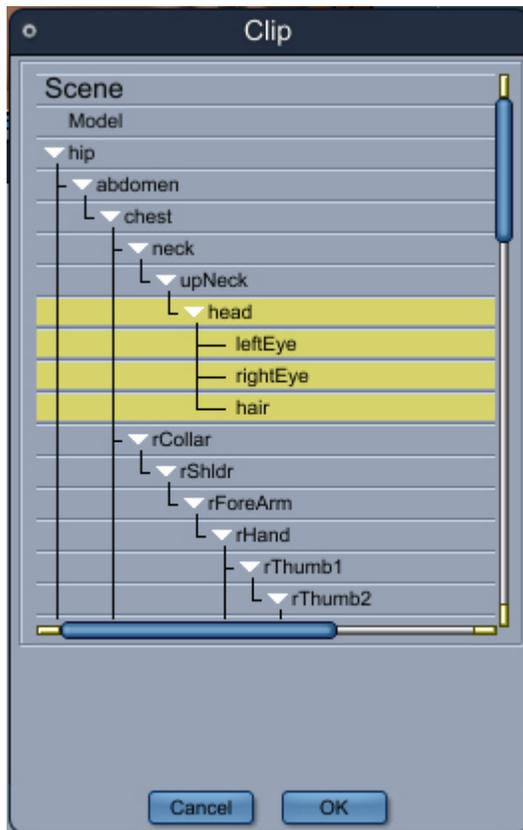


- Click on the browser button in the **Loop Offset** panel. The **Clip** dialog will come up with the object tree listing.

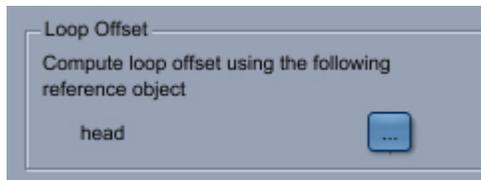


When converting an editable clip to a Master clip, Mimic needs to know what object / joint / node to use as a reference when repeating the clip. For instance, if you are creating a walk cycle, you can use the left foot as a reference. What this means is that the NLA engine will try to make sure that the left foot position is the same at the beginning of a new cycle as it was at the end of the cycle. This will allow the character to move forward instead of walking in place.

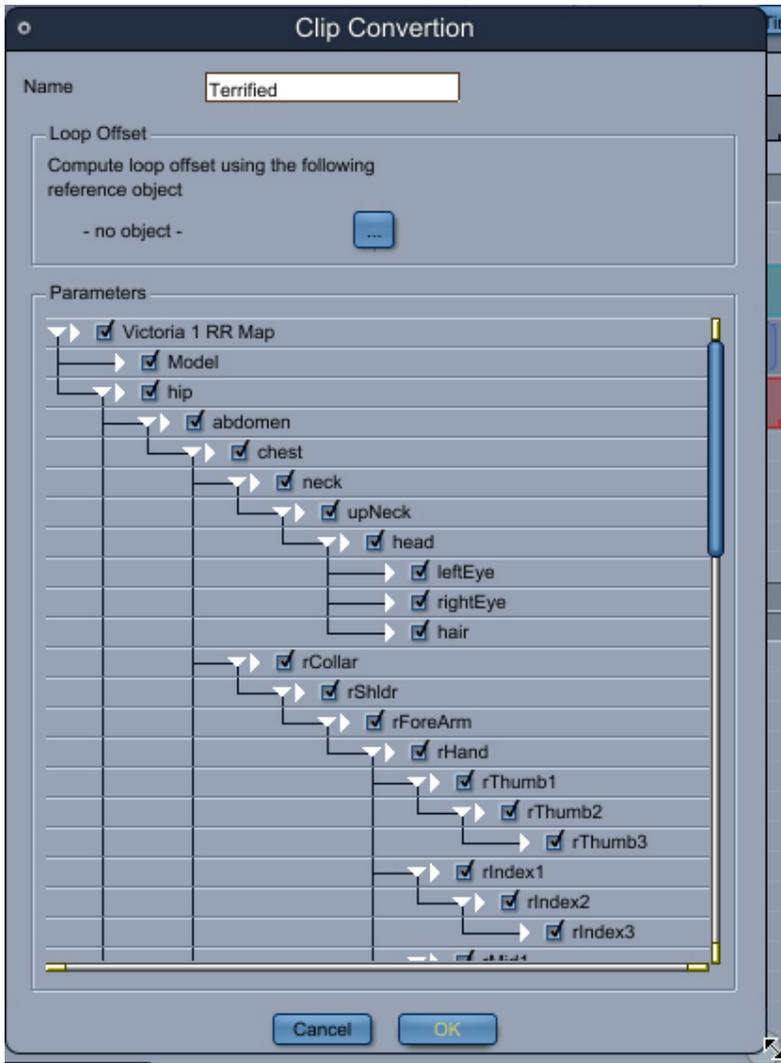
9. Select the body part to use to compute the loop offset and click on **OK**.



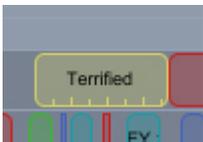
The selected body part will be added to the dialog.



10. Expand the dialog to view the **Parameters Object list**. Deselect any parameter that you do not want to save with the master clip.



11. Click on **OK** to close the conversion dialog. The clip in the timeline will be updated to remove the editable tag.



And will be added to the Clips tab.



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