



iClone 4 Help - 2010.01.18 Revision

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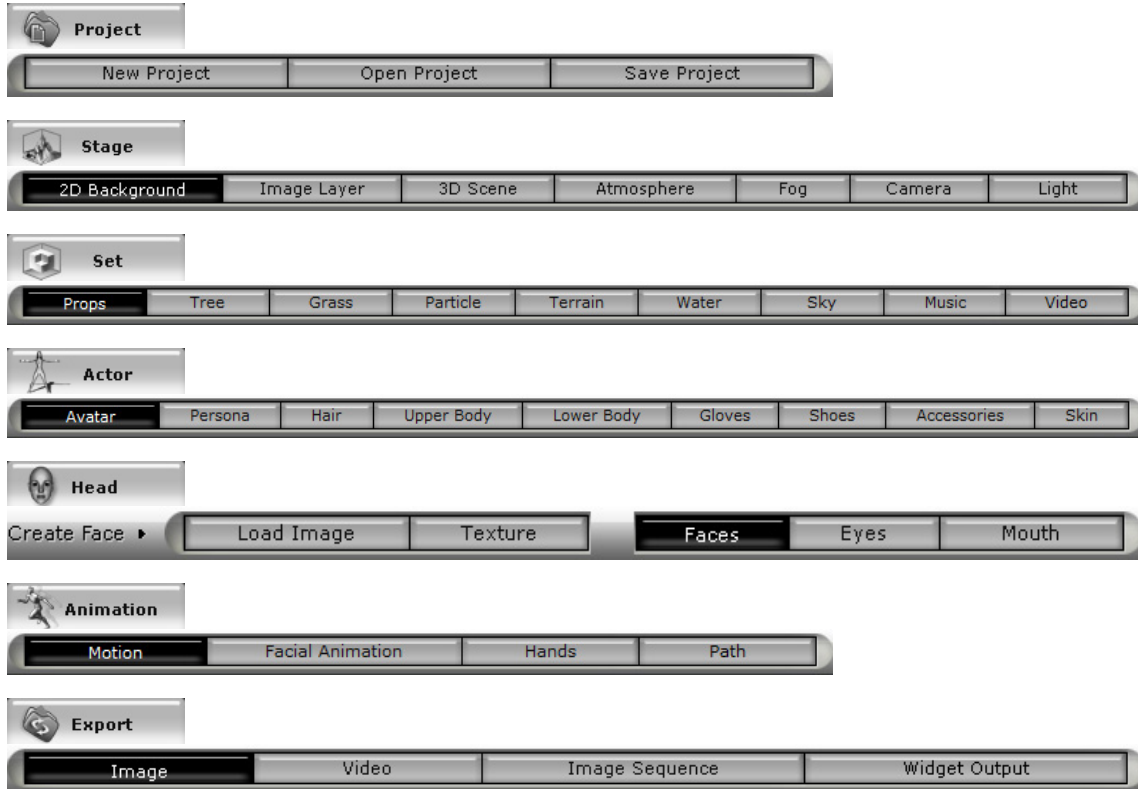
User Interface

🕒 Navigation Pane

The navigation pane includes 7 tabs. Click a tab to enter a particular interface mode.



Each tab possesses its own buttons for different functions:



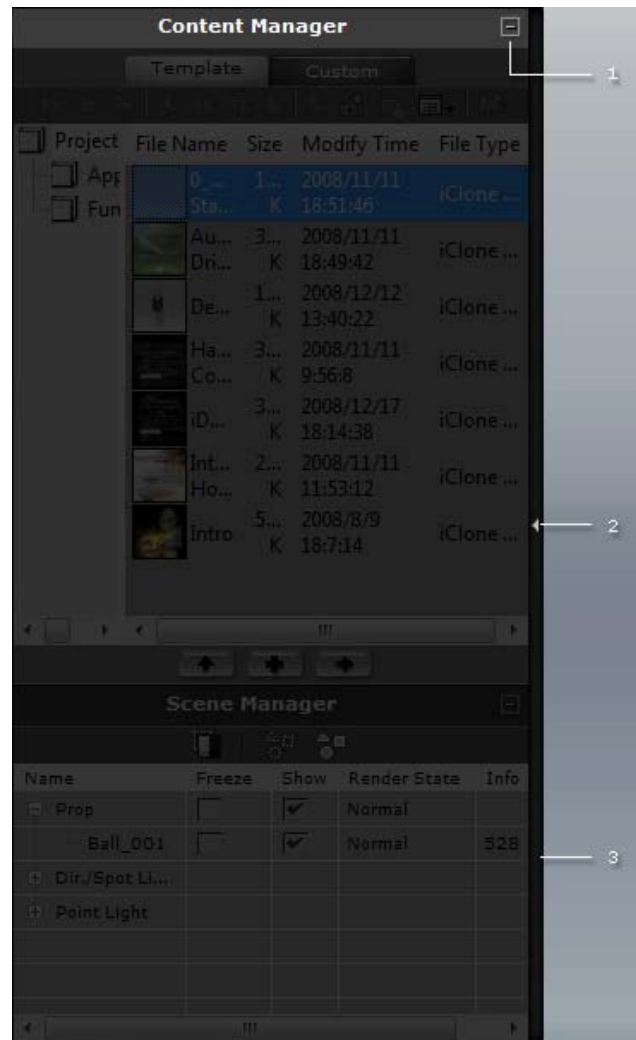
☉ The Tools Menu



The Tools menu is a drop down list which enables access to the different iClone editing modes and sub-items for quick switching to different editing features.

⦿ Content Manager and Scene Manager

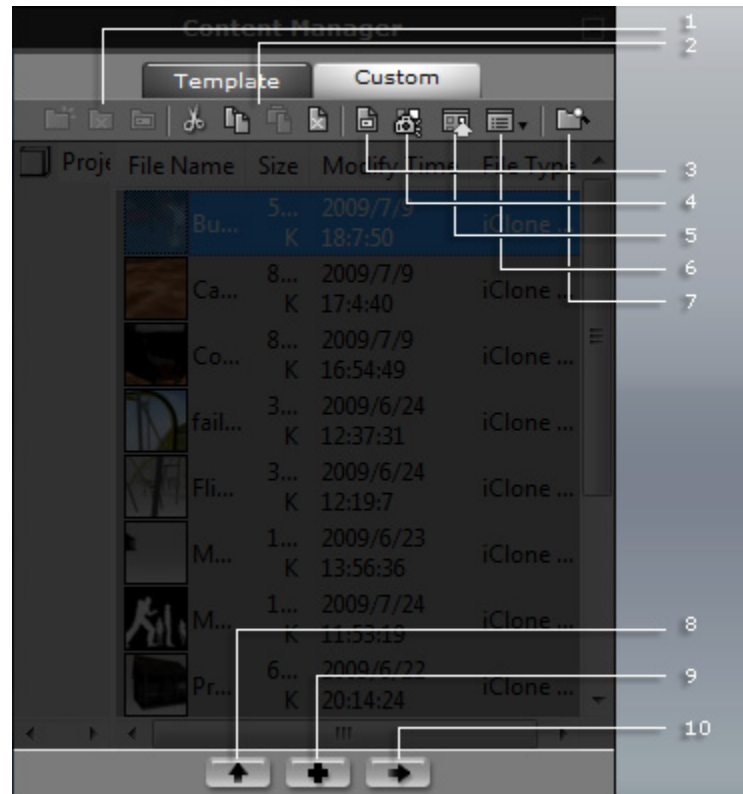
Content Manager and Scene Manager



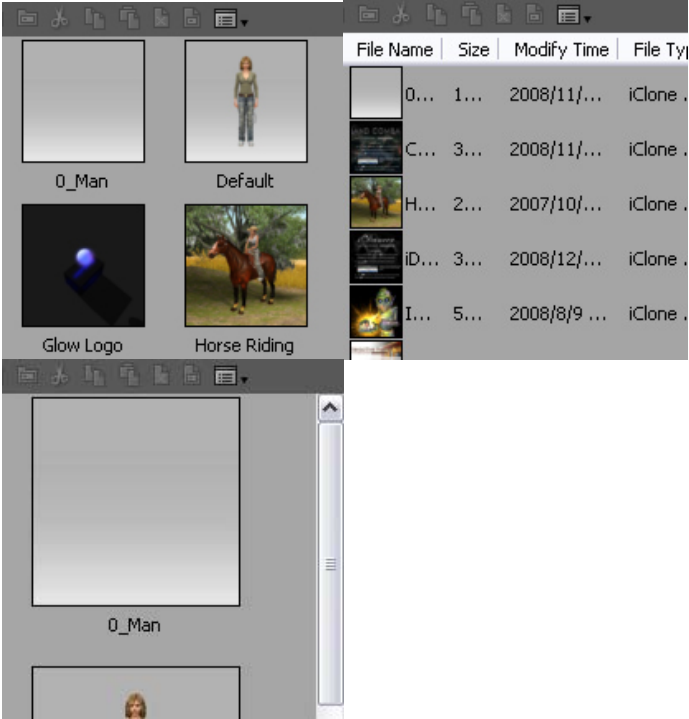
1	Collapse / Expand	Click the button to collapse/expand the Content Manager or Scene Manager individually.
2	Show / Hide	Click this button to show/hide the pane of the Content Manager and Scene Manager .
3	Resize	Drag the border to resize the pane of the Content Manager and Scene Manager .

Content Manager

The content manager is used for managing the various iClone 3D files including models, animations and contents associated with a project.



1	Folder Editing Tools	• : Create a new folder. • : Delete selected folder. • : Rename selected folder.
2	File Editing Tools	• : Cut selected file. • : Copy selected file. • : Paste copied file. • : Delete selected file.
3	Rename	• : Rename selected file.
4	Capture Thumbnail	• : Replace the thumbnail of the selected file with the current view in the preview window.
5	Load Thumbnail	• : Replace the thumbnail of the selected file with

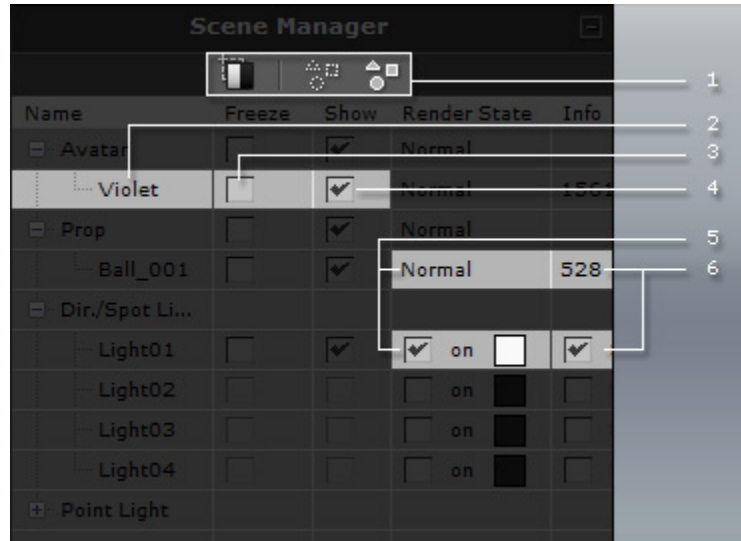
		prepared image file.
6	View	• : Cycle through the content display options. 
7	Find File	• : Open the file location with the default explorer of your operating system.
8	Overwrite	• : Select an item then click the Overwrite button to replace it with the content from the current project. Only content in the Custom tab can be overwritten.
9	Add	• : Add the current content being edited to the Custom tab to save it for later use in any iClone project.
10	Apply	• : Apply the selected content to the current project. This does the same as double-clicking the content thumbnail.

* Clicking on the **Modify Time** header to sort content can help you find recently added contents more easily.

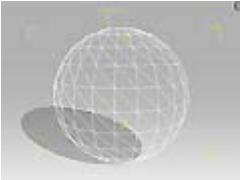
* In most cases the content manager has two tabs, **Template** and **Custom**. The **Template** tab contains all the predefined content. The **Custom** tab contains all the custom content you have created with iClone and saved to the various Custom asset libraries.

Scene Manager

The Scene Manager displays all the objects and actors included in the current project. You may select multiple items, show/hide the objects altogether, or even adjust the render state of them. It also shows the face count of each object for your reference.



1	Object Selection Tools	• : Click this button to invert your current selection (unselects your current selection and selects all others instead). • : Click this button to uncheck all the boxes in the Show column of unselected objects so these will be hidden in the 3D viewer. This also saves you from unchecking the boxes individually. • : Click this button to display all objects in the 3D viewer, and check all the Show boxes of the objects in the current project.
2	Renaming	• Click on the desired object once to select it, click on its name again shortly after to enter the name editing mode. You may rename all the items as you wish.
3	Freeze Status	• Check the box so the object can not be picked in the Preview window. • Please refer to Locking and Freezing Camera for more information.
4	Show / Hide Status	• Show or hide the selected object. This status does not affect the export result.

5	Render Status	• General Objects: You may specify the render status for each object to relieve the load on system resources. This status does not affect the export result. The status includes: Normal Smooth   Wireframe Bounding Mesh   • Light: You may turn the desired light on/off by checking the on box on/off in the Render State column. You may also change the color of the light. • Path: You may change the color of the path in the Render State column.
6	Information	The information may change according to the properties of the individual items. • Light: You may turn the shadow-casting ability of selected light on/off by checking the Shadow box on/off in its info column. • Video: You can decide if the imported video is a still image or dynamic when the project is playing by checking the Still Image box on/off in the info column. • Other Objects: Info column shows the face count of each item.

Note:

- Some items such as water, trees, grass, particle emitters, terrains can not be selected or are difficult to be selected from within the 3D viewer. Use the **Scene Manager** panel instead to select them easily.
- The **Scene Manager** will also show the parent/child node structure of a 3D object so you can use this behavior to select the child node directly.

Name	Freeze	Show	Render State	Info
[-] Prop	☐	☒	Normal	
[-] Ball	☐	☒	Normal	528
Box	☐	☒	Normal	12
[-] Dir./Spot L.				
Light...	☐	☐	☒ on ☐	☒ St
Light...	☐	☐	☐ on ☒	☐ St
Light...	☐	☐	☐ on ☒	☐ St
Light...	☐	☐	☐ on ☒	☐ St
[-] Point Light				
Point L.	☐	☐	☐ on ☐	---
Point L.	☐	☐	☐ on ☐	---

- The **Show / Hide** status of each item will be saved to **iClone** project files.

☉ Control Bar

The control bar is used to undo/redo actions, manipulate the view of the camera and the objects' position and rotation, align objects to the terrain, render the current view into an image and to enter full screen mode. You can find the **Control Bar** on the top of the 3D viewer.

Undo/Redo

		
1	Undo	To undo the last action made for the current project. The maximum number of actions you can undo can be set in the Preference panel. It is also limited by the amount of space on your hard disk.
2	Redo	To redo the last action.

Camera Tools

		
1	Home	To snap the camera to a 45 degree perspective to the selected object.
2	Zoom	To zoom in and out of the scene.
3	Pan	To pan the camera.
4	Orbit/Roll	To rotate the camera. Click its down arrow to switch to Rotate or Roll mode.
5	Camera View	To switch the camera to different view, click the down arrow and choose from Front, Right, Top, Left, Bottom, Back, Face or All.

6	Center	Click this button so the camera snaps to view the selected object in the current project.
7	Walk/Fly	Switch the camera into Walk or Fly mode. You can then move the camera in game-like fashion by using the W.A.S.D., or other specified keys on your keyboard. If you want to switch back to the normal camera mode, press ESC key.

Manipulation Tools

		
1	Select Object	Toggles the Select mode. You may then directly pick the object in the 3D viewer. You may also drag a rectangle around multiple objects to select them in this Mode.
2	Move Object	To switch to Move mode. You may then directly move the selected object in the 3D viewer instead of manually entering the values on the Modify page. Left Mouse Button: Move object along X-/Y-axis. Mouse Wheel: Move object along Z-axis. Right Mouse Button: Rotate object on Z-axis.
3	Rotate Object	To switch to Rotate mode. You may then directly rotate the selected object in the 3D viewer instead of manually entering the values on the Modify page. Left Mouse Button: Rotate on Z axis. Right Mouse Button: Rotate on X axis. Both Mouse Buttons: Rotate on Y axis.
4	Scale Object	To switch to Scale mode. You may then directly scale the selected object in the 3D viewer instead of manually entering the values on the Modify page. Left Mouse Button: Uniformly scale object. Right Mouse Button: Scale object along Z axis.

		Both Mouse Buttons: Scale object along X - Y axis.
In Move Object, Rotate Object or Scale Object modes, you may also: Alt + Left Mouse Button: To Pan the camera. Alt + Right Mouse Button: To Rotate the camera. Alt + Both Mouse Buttons: To Zoom the Camera.		
5	Align to Terrain	Click this button so the selected objects will always be moved along the terrain, if present. If you switch to Snap to Terrain or Follow Terrain modes, movement is constrained to the ground and will follow the contours of the terrain as you move. You must select Off to cancel the constrain.

Preview and Full Screen

1	Preview	To render the current view of the 3D viewer into an image. You may then save this image afterwards.
2	Full Screen	To enter full screen mode.

🕒 3D Real-time Viewer (Preview Window)

The incredible power of iClone real-time 3D filmmaking is seen inside the 3D viewer pane which displays the current camera view and is also your workspace when creating an iClone project.



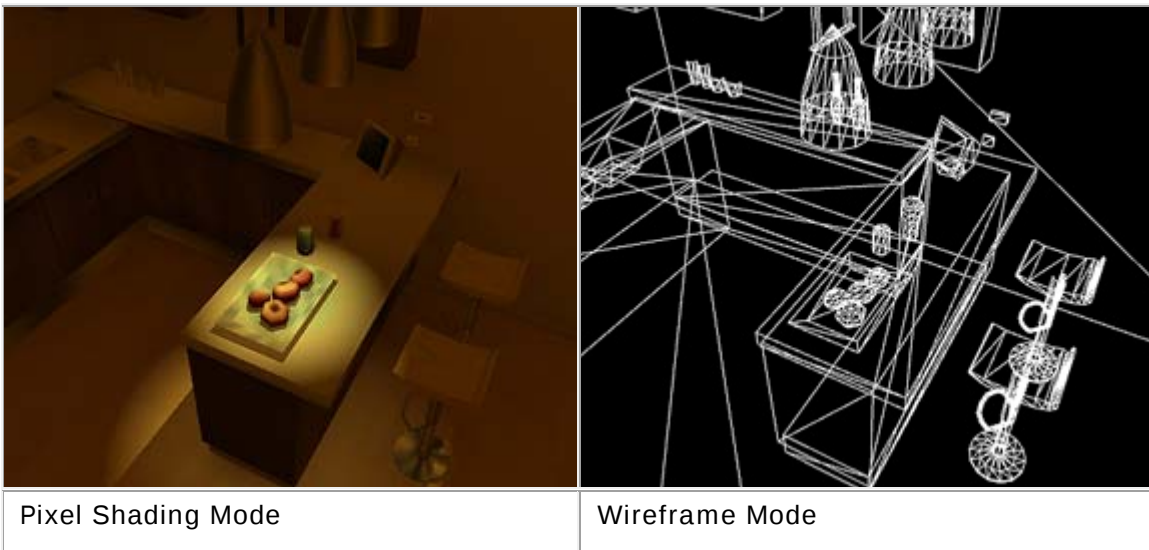
1	Camera List	Click this drop down list to switch to different camera view.
2	Shading List	To set the 3D Viewer to a different rendering mode .
3	Mode Information	This tab shows the current mode, Editor Mode or Director Mode .

► Shading Methods of 3D Viewer (Preview Window)

3D viewer provides several shading methods when you are using **iClone**. It may reduce the workload of your system resource for editing or recording. Each method supports various mapping methods or effects individually. You may find them in the **Shading List** on the top of the 3D viewer.

Wireframe

It displays all the objects in Wireframe, which increase the performance most of your system.



Smooth, Quick, Vertex and Pixel Shading

	Smooth Shading	Quick Shading	Vertex Shading	Pixel Shading
Diffuse Map		Support	Support	Support
Opacity Map		Support	Support	Support
Bump/Normal Map				Support
Specular Map			Support	Support
Glow Map			Support	Support
Reflection Map			Support	Support
Blend Map		Support	Support	Support

Reflection Effect			Support	Support
Refraction			Support	Support
Diffuse Color	Support	Support	Support	Support
Ambient Color	Support	Support	Support	Support
Specular Color	Support	Support	Support	Support
Opacity		Support	Support	Support
Self-Illumination		Support	Support	Support
Specular	Support	Support	Support	Support
Glossiness	Support	Support	Support	Support
2 - Sided	Support	Support	Support	Support
Tree	Support	Support	Support	Support
Grass		Support	Support	Support
Water		Support	Support	Support
Channel UV Offset and Tiling			Support	Support
Animated Texture			Support	Support
Pixel Lighting				Support
Self-cast Shadow			Support	Support
DOF			Support	Support
HDR			Support	Support

► Drag-and-Drop to Preview Window

Instead of using the **Content Manager** or **Import** methods to load your assets, you can drag and drop them into the **iClone Preview Window** from your system explorer.

This way you can store all your desired files in a single folder and use the **Drag-and-Drop** feature to quickly load them into **iClone**.



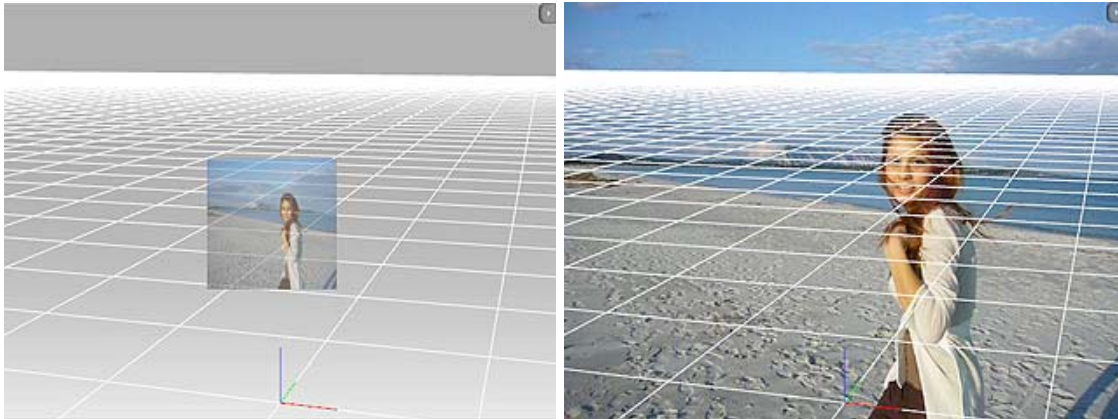
If you are using a dual-monitor environment, you can have multiple explorers displaying your assets on one monitor and then drag the assets into **iClone** running on the other monitor to increase your production efficiency.



Drag and Drop

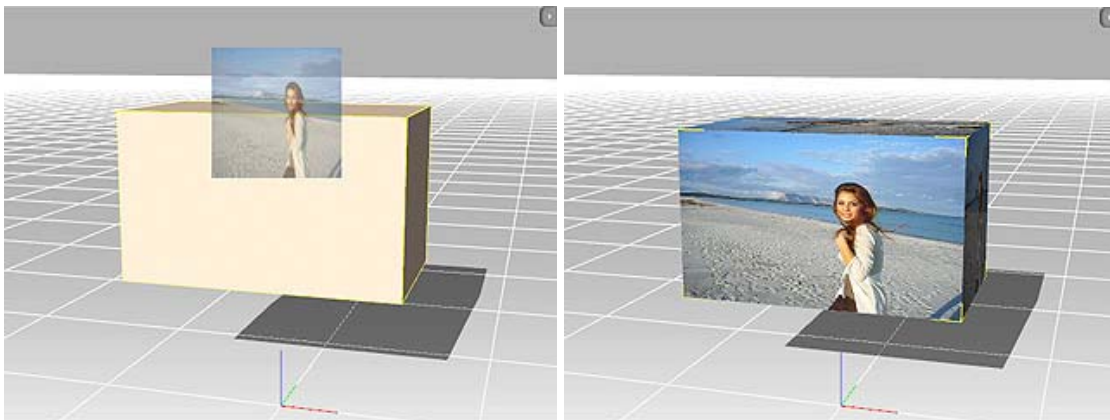
Drag and Drop Media to Space

If you drag and drop an image or video onto the space of the project, it will be set as 2D background.



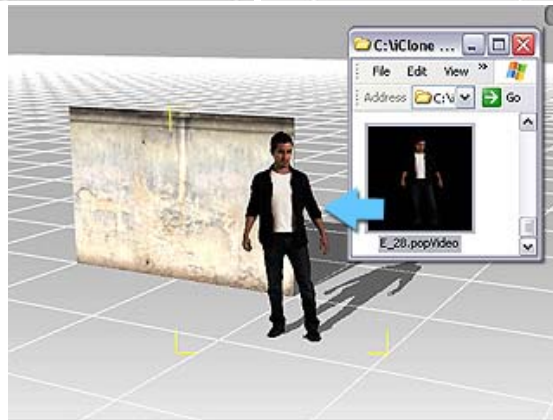
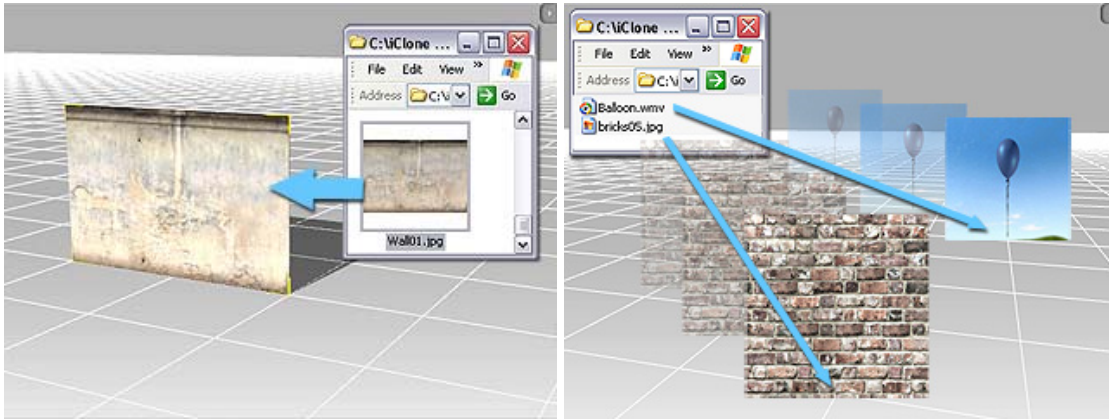
Drag and Drop Media to Object

Drag and drop an image or video onto an object and it will be mapped to the **Diffuse** channel of the object.

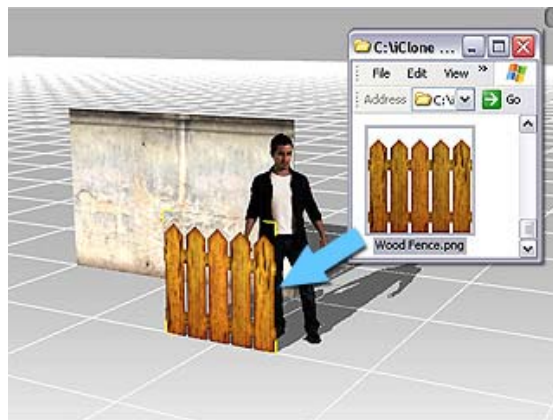


Drag and Drop With Ctrl Pressed

- If you drag and drop an image or video while holding the **Ctrl** key, a simple board that is mapped with the image or video will be generated. And it works great with **popVideo** as well.



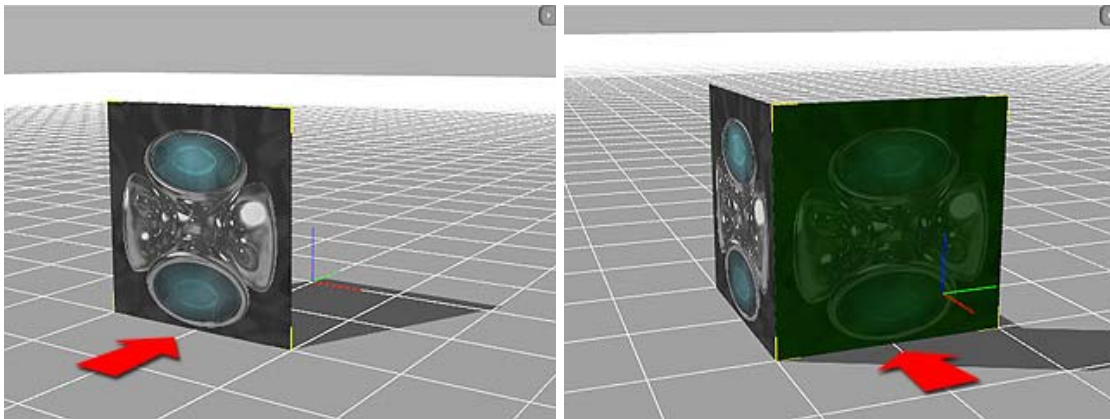
- If you drag and drop a PNG image that contains alpha channel data, **iClone** will automatically take care of the masking for you.



- You can modify the transformation data of the board to increase its size, width, depth, etc.



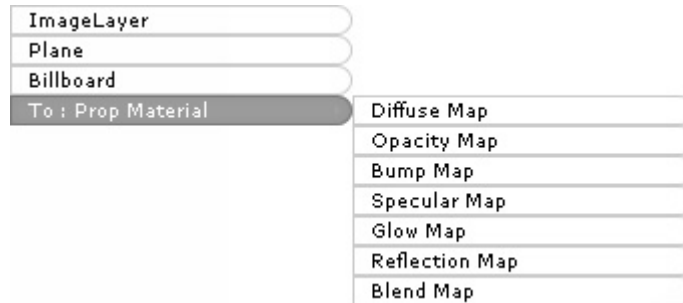
- The board will snap to the grid differently depending on your viewing angle to the world axis.



Drag and Drop Media with Right Mouse Button

When you drag and drop a media files with right mouse button, you are prompted with a menu to select the desired action for how the media is applied.

- **Image or Video:** If you want to apply an image or video to a specific channel, please select the **To: XXX** entry, where the XXX is the material name of the target object, and select the target channel in the submenu.

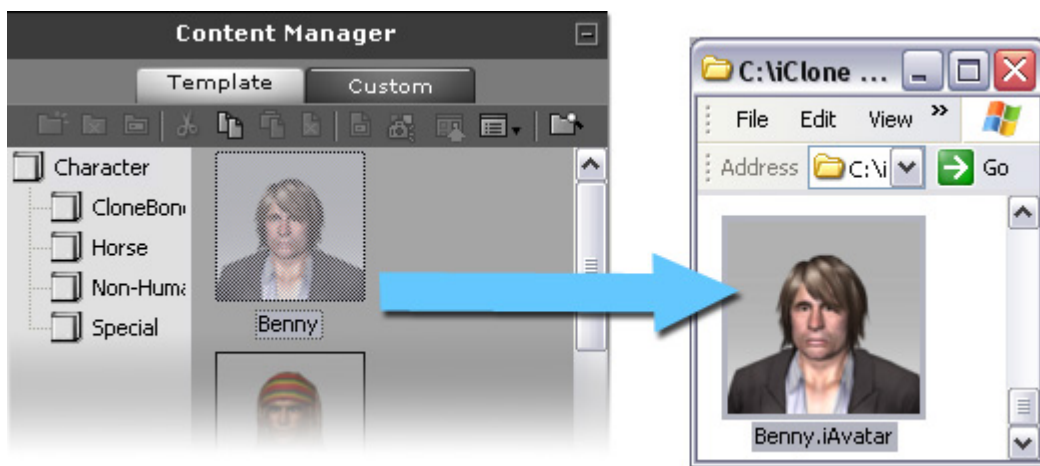


- **Video Replacement:** If you want to replace the current video mapped to one of the seven channels, please select the **Replace Video** entry and select the target channel in the submenu.



Drag and Drop from Content Manager to Folder

Not only can you drag and drop assets into **iClone** but also the other way round. Assets can be dragged from the **iClone Content Manager** to any target folder for better management.



Drag and Drop Mesh Objects

You can drag any object with meshes such as **Actors**, **Props**, **Accessories**, **Terrain**, **Sky...** etc. into **iClone** to load it at the location you drop it.

Variations of Accessories

If you drag and drop an accessory file (.iAcc) on an actor, it will follow the accessory's conventional behavior; if dropped on the floor, it will become a prop.



Drag and Drop Non-Mesh Objects and Media

Non-mesh objects (**Particles, Grass, Material...**) and Media (**Images, Videos, Audios...**) can also be applied into iClone by using the drag-and-drop method.

Material

Drag and drop a material file (.iMtl) to any draggable object (with mesh, trees excluded) and the images in the seven channels will be replaced with the ones saved in the material file.

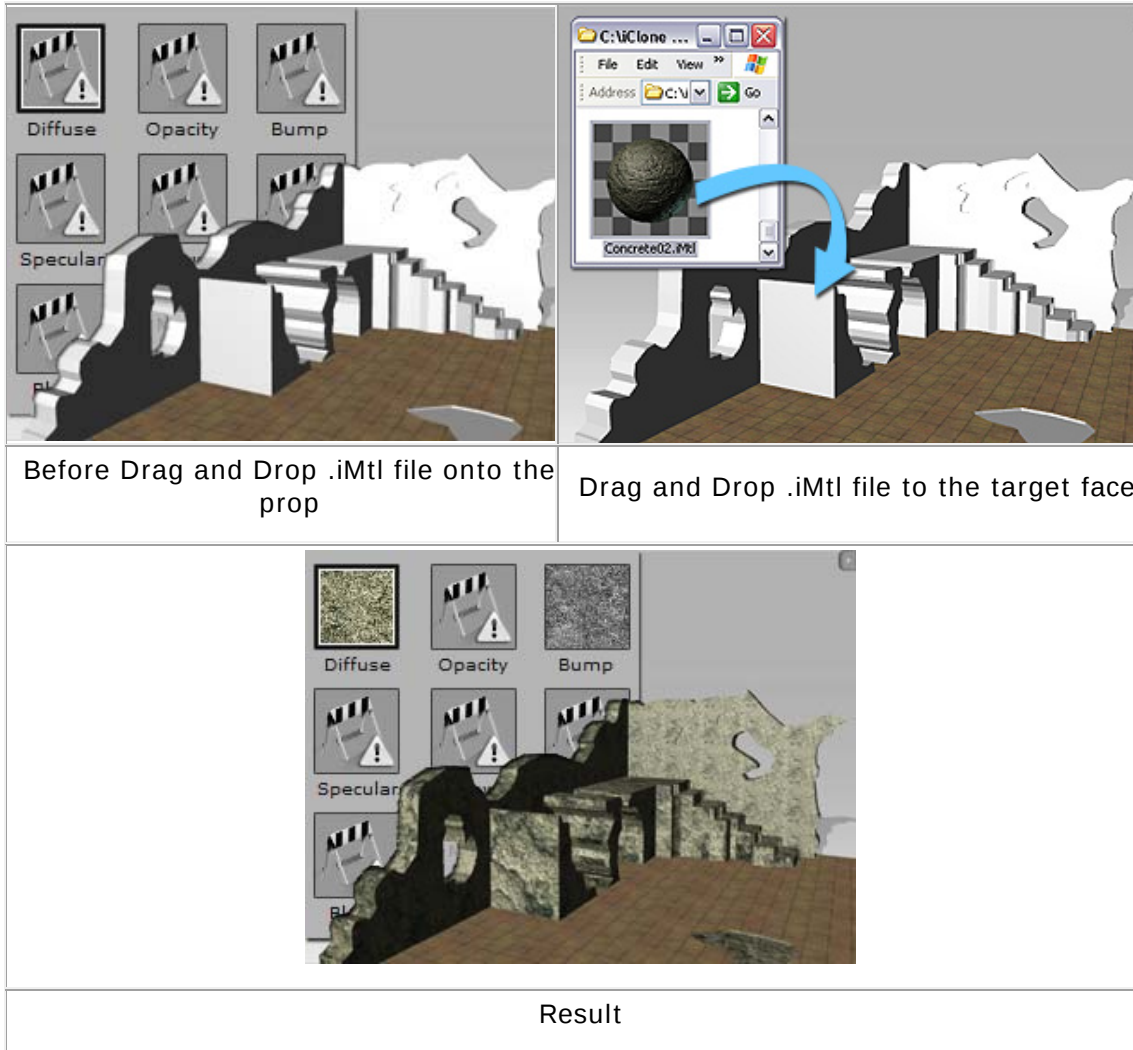
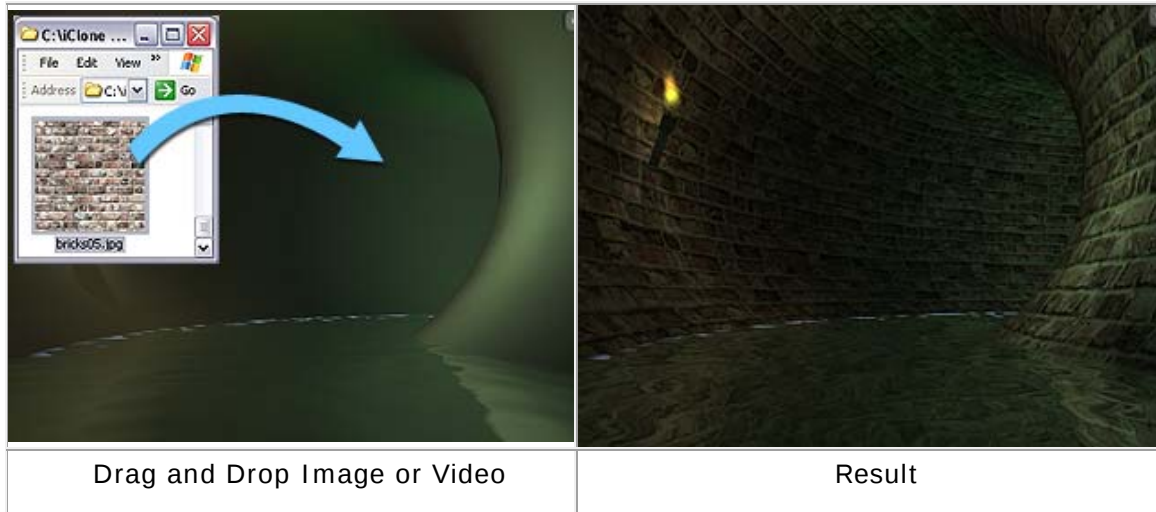


Image and Video

By dragging an image or video and dropping on any draggable object (with mesh, trees excluded) or sky, you can replace their original image in the **Diffuse** channel.

- **Image formats:** JPG, BMP, GIF, PNG and HDR.
- **Video formats:** AVI, WMV, RM, RMVB, MPEG, ASF, MOV, FLV, iWidget and any video that can be played on your system.



Audio

When you drag and drop an audio file (.wav, .mp3) into the preview window, the file will be imported and set as the background music of the project.

Supported Asset Files

In general, any asset file with an extension that starts with "i" can be dragged and dropped into the preview window.

Navigation Pane Tabs	Sub Tool	Ext. File Name	Sub Tool	Ext. File Name	Sub Tool	Ext. File Name
Project	Open Project	.iProject				
Stage	Image Layer	.iImageLayer	3D Scene	.iScene	Atmosphere	.iAtm
	Fog	.iFog	Camera	.iCam	Light	.iLight
Set	Props	.iProp	Tree	.iTree	Grass	.iGrass
	Particle	.iParticle	Terrain	.iTerrain	Sky	.iSky
	Music	.wav, .mp3				
Actor	Avatar	.iAvatar	Hair	.iHair	Upper Body	.iUpper
	Lower Body	.iLower	Gloves	.iGlove	Shoes	.iShoe
	Accessories	.iAcc	Skin	.iSkin		
Head	Faces	.iFace	Eyes	.iEye	Mouth	.iOral
Animation	Motion	.iMotion	Hands	.iHand	Path	.iPath
* Please note that asset files from before version 3 (.VNS files) can only be imported using the drag and drop method by switching to their correspondent tabs first - i.e. Set > Props for props, Actor > Avatar for characters, etc.						

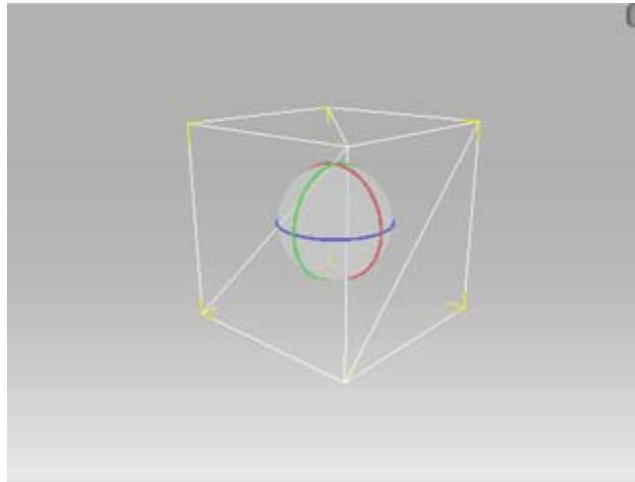
► Gizmo of Objects in Preview Window

The **iClone Preview Window** provides a visualized **Gizmo** to handle and modify the **RTS** (Rotate, Transform, Scale) data of selected objects by dragging the **Gizmo** on the preview window.

You may turn on the **Gizmo** mode by means of the **Preference** panel or using the specified hotkey, **Ctrl + Q**.

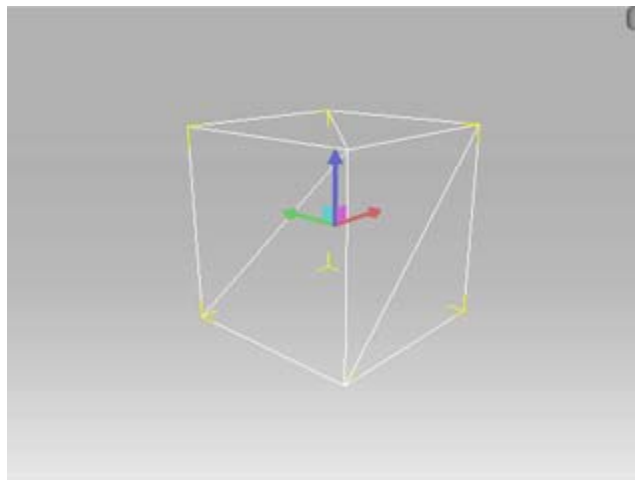
Rotate

Drag the three circles around the object to rotate it along the 3 axes.



Transform

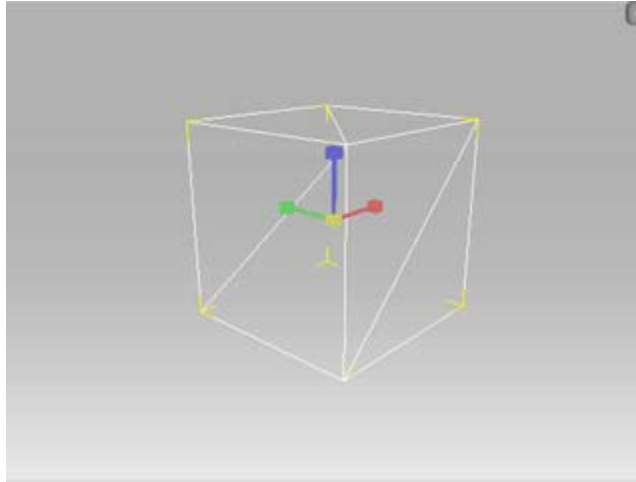
Drag the handles to move the object along the 3 axes.



You may also drag the square at the corner to move the object on the planes of two intersecting axes.

Scale

Drag the handles to scale the object along the 3 axes.



You may also drag the yellow cube in the center of the gizmo to scale the object in recent ratio.

Note:

Only **Actors**, **Accessories**, **Props**, **Emitters**, **Trees** and **Paths** possess a **Gizmo**.

- **Gizmo with RTS:** **Accessories**, **Props**, **Trees** and **Paths**.
- **Gizmo with RT only:** **Actors**, **Emitters** and **Control Points** (of a path).

⦿ Play Bar

The play bar is used to control the real-time playback of **iClone** scenes.



1	Editor/Director Mode	To toggle between Editor Mode and Director Mode .
2	Play	To play back current project.
3	Stop	To stop playing.
4	Jump to Start Frame	To jump to the cue in frame of the playback range or the start frame of the whole project.
5	Previous Frame	To jump one frame backward.
6	Next Frame	To jump one frame forward.
7	Jump to End Frame	To jump to the cue out frame of the playback range or the end frame of the whole project.
8	Play Head	Shows the current frame of the project. You may also drag it to any desired frame quickly.
9	Loop On/Off	To toggle playback loop on/off.
10	Action Segment	Highlights the existing or recorded clips of animation.
11	Vocal Volume	To adjust the volume of the sound effect.
12	Music Volume	To adjust the volume of the background music.
13	Show Timeline	To evoke the Timeline .

14	Mark In/Out of Playback/Export Range	Drag this mark to set the mark in/out frame for playback or exporting.
15	Reset Project Animation	Click this to Reset all recorded animation data for this session.
16	Current Time	To show the current time/frame.
17	Action Tabs: Next & Previous	To move the Play Head to the beginning or the end of each Action Segment .
18	Action Track Selector	To switch to another track in the list.
19	Time Setting Panel	Use the Time Setting panel to set the total length of the current project and the time unit to be shown in the Current Time box.
20	Delete	To delete the current Action Segment .

☉ Modify Page

The **Modify Page** contains adjustable parameters (**Editor Mode**) respectively along with the selected functions of the tabs in the [Navigation Pane](#) or commands (**Director Mode**).

▶ Setting Parameter Value in the Modify Page

There are 4 methods to set values for the parameters in the **Modify Page**.

Dragging Sliders

When there is a slider present in addition to the numerical parameter, you can drag it to adjust the value.



Clicking Arrow Buttons

You can use the **Up** and **Down** arrows to increase and decrease a parameter's value by one.

Integer Parameters:

Clicking the arrows of these parameters will adjust the value by 1.



Decimal Fraction Parameters:

Clicking the arrows of these parameters will adjust the value by 0.1.



Typing into Numeric Fields

You can also focus on the numerical field, type desired value and confirm it by pressing the **Enter** key.



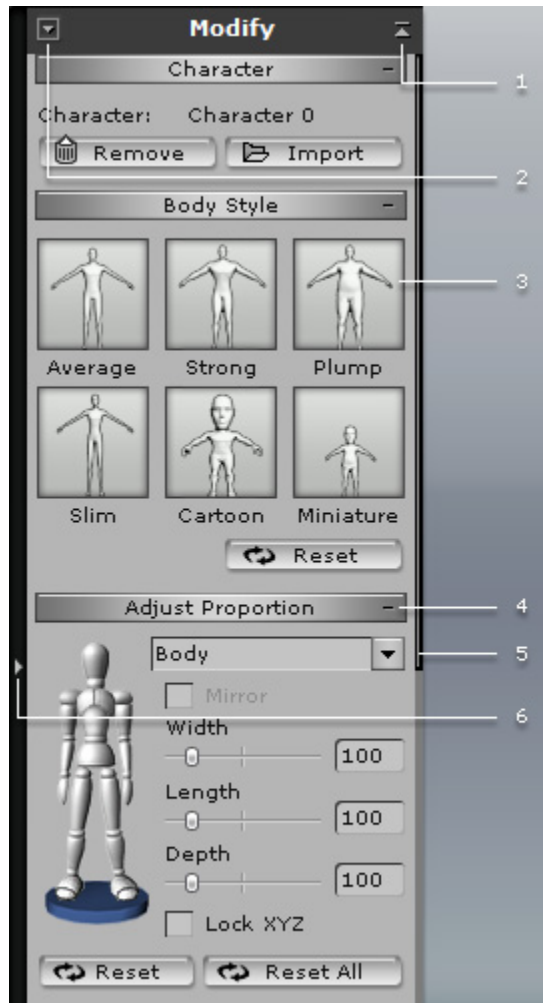
Utilizing Transform Tools

If you use the [manipulation tools](#) or transform [gizmo](#) to move, rotate, or resize an object, the value will automatically be updated in increments or decrements of 1.

Transform Hotkeys:

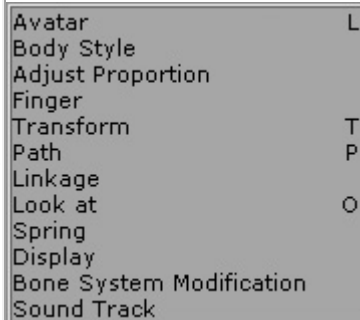
- **Alt + Up/Down/Left/Right** arrow keys: Move object by 1 unit on the X-Y plane.
- **Ctrl + Up/Down** arrow keys: Move object by 1 unit along the Z axis.
- **Ctrl + Left/Right** arrow keys: Rotate object by 1 degree on the Z axis.
- **Shift + any of the above hotkeys**: Commands are increased tenfold (for faster transformation).

► Modify Page in Editor Mode



1 Click this button to return to the top of the modify panel.

Click to open another menu that allows you to skip to the desired section in the modify panel. The items in the menu alter automatically according to the currently selected function.



The letters at the right of the items indicate hotkeys you can use to jump to that section. Please refer to the [Global Shortcuts >> Modify Panel](#) for more information.

3 The modify page is contained in the panel on the right of the screen and is used for adjusting the different parameters associated with the objects in the current project.

4 You may expand or collapse each section by clicking the + / - symbol.

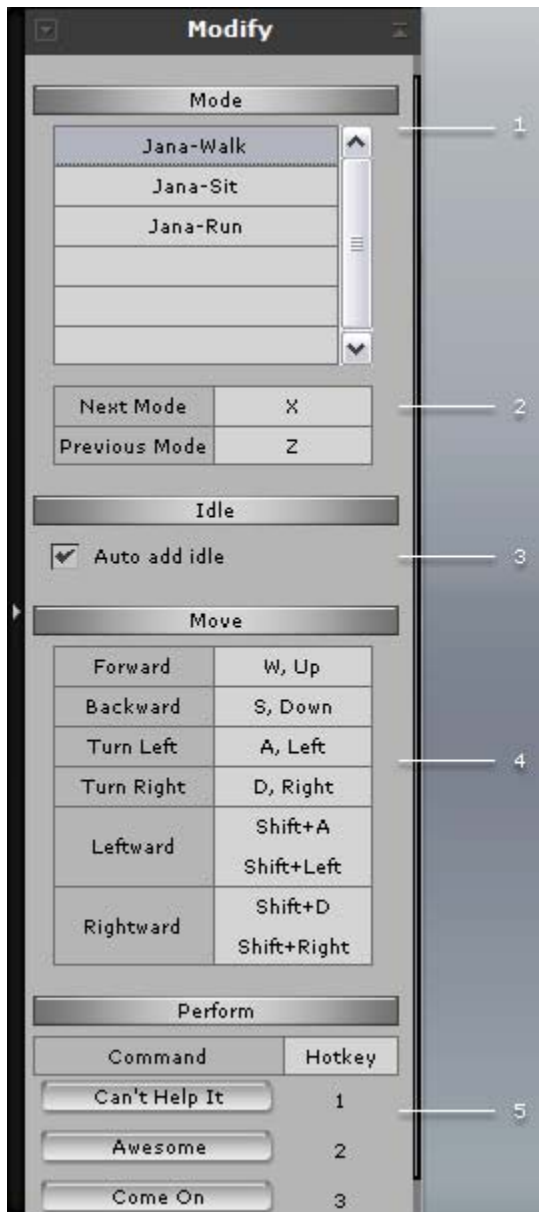
5 There is a scroll bar at the right of the panel. Click and hold the mouse down anywhere on it and drag up/down to navigate the whole panel when it is longer than one page. Alternatively, you may click on the empty space of the panel then drag to scroll it up/down.

6 You may click the triangle in the middle of the left border to show/hide the whole panel.

► Modify Page in Director Mode

When you click the **Mode Switch** button to toggle to the **Director** Mode, the **Modify** page changes as well.

Actor



1 The modes the actor/iProp possesses are displayed in this list. You may click on the item to change to the desired mode.

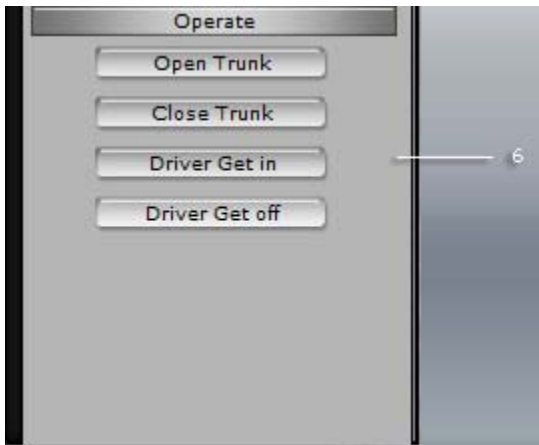
2 Alternatively, you may also use the hotkeys shown under the list box to switch back and forth between modes.

3 Check this box if you want to add **Idle** motions automatically to the selected actor/iProp when there is no command given to the actor.

4 This table lists all the **Move** commands that can be given to the selected actor/iProp and the corresponding hotkeys.

5 During the recording process, you can have the selected actor **Perform** the specified motions by clicking the buttons listed in this section. You may also use the corresponding hotkeys shown next to the buttons.

iProp



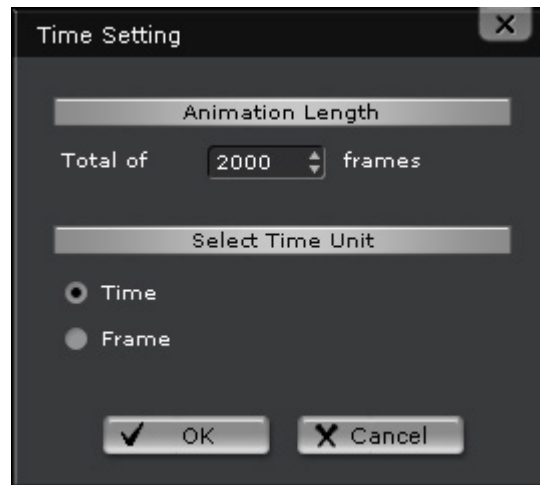
6 If the selected object is an iProp, the **Perform** section will change to **Operate**. You may then utilize the listed buttons to have the actor and the iProp interact.

⌚ Time Setting Panel

The **Time Setting** panel enables you to adjust the **Length** and **Time Unit** of the project. Click the clock button next to the current time counter below the 3D view port window to open the Time Setting Panel.



This button opens the **Time Setting** dialog box for further adjustment.



- **Animation Length:** Shows the total length of the project in frame count. The default length for each project is 2000 frames and the maximum number is 18000.
- **Select Time Unit:** You may decide to display the time unit in either frame or time format.

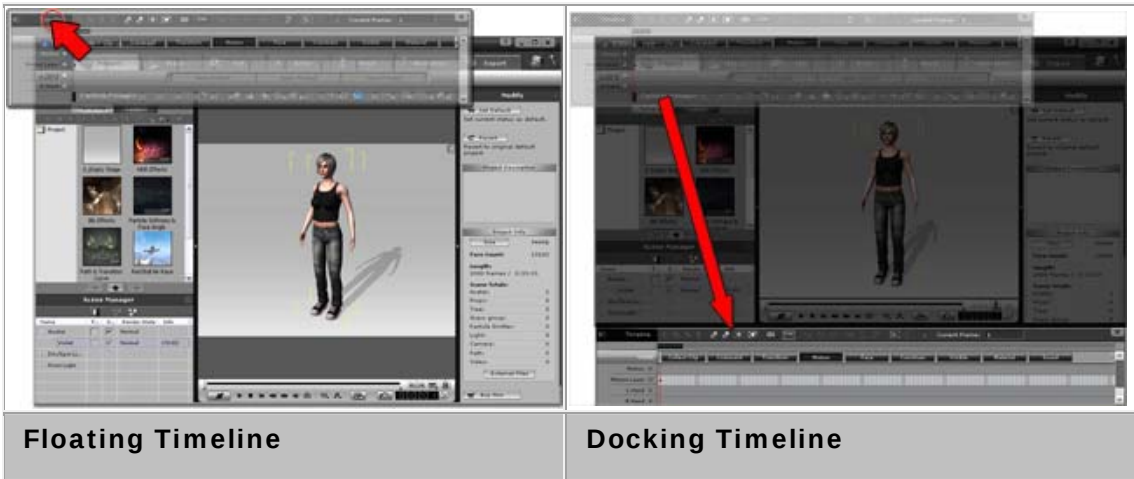
Tip:

- If you intend to set desired project length as the default length, please switch to **Project/Modify** page and click **Set Default** button after you change the **Animation Length** in this panel.

⦿ Docking Timeline

An advanced timeline placement has been built in this version of **iClone4**. You can now dock the Timeline at the very bottom of the iClone program. With this option you do not have to worry about where to place the **Timeline** when you are in editing mode.

Double-click the **Timeline** zone to dock or to float it.



Note:

- o You may use **F3** to toggle the visibility of the timeline panel.

⦿ Timeline Editor

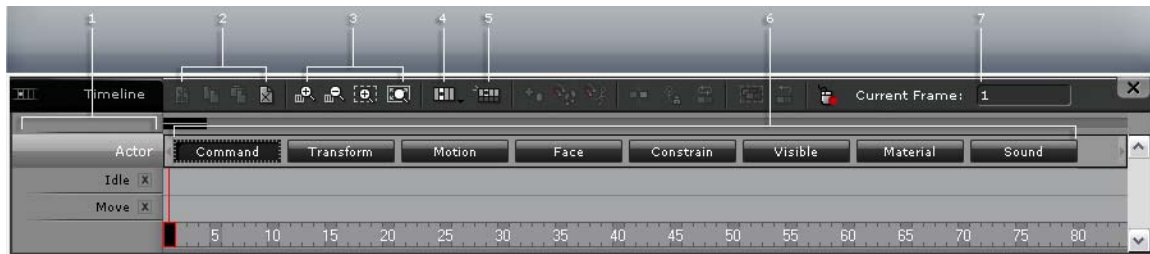
Click the **Timeline**  button on the [play bar](#) to open the **Timeline Editor**.

The **Timeline Editor** is where you edit animation keys and clips for actors, accessories, props, LiveProp animations, cameras, lights and hand gestures etc. See [Animation Timeline Editing](#) for more details.

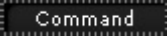


► Timeline Operation-Basic

Timeline Operation Basic



1	Track Name	• This panel shows an object's name and its sub track names. • Single click on the name to select the object. • Double click on the name to select all the data in the track. • Click the Cross icon besides the track name to collapse the track.
2	Cut/Copy/Paste/Delete	• Cut (for Pro only): Click the Cut button to cut the target key or clip into the clipboard. • Copy (for Pro only) and Paste (for Pro only): Click on the copy and paste button, or use hotkey Ctrl + C on selected keys or clips to copy, and Ctrl + V to paste to the target frame (single or multiple keys) • Delete: Click on the Delete key or Delete button to delete highlighted keys or clips.
3	Zoom in/out Actual size Fit window	• Click the Zoom in/out buttons to increase or decrease the time (cell) unit size. • Click the Actual Size button to show the time unit represented as 60 frames per second. • Click the Fit window button to view the whole timeline items within the timeline window space.
4	Track list	Click the Track list drop-down list and select the items and their Group buttons you want to show/hide on the Timeline .
5	Object-related track	When you pick an object on the 3D viewer with this button down, the Timeline will only display the tracks of the picked object.

6	Track Groups	Click these buttons to show/hide the grouped sub tracks of the picked object. Group Button Status: •  - Show all of its sub tracks. •  - One or more of its sub tracks are hidden. Click on it again to show all of its sub tracks. •  - Hide all of its sub tracks. Group Buttons Containing Multiple Sub Tracks: • Command: Idle, Move, Perform and Operate tracks. • Motion: Motion, Motion Layer, L Hand, R Hand tracks. • Face: Viseme, Expression and Facial Layer tracks. • Constrain: Look At, Path and Link tracks.
7	Current Frame	This field shows the current frame number when you click on the target frame on the timeline. You may also type in the frame number to jump to the target frame. This allows you to go to your precise target location; especially convenient for animation with clear timing control.

► Timeline Operation-Advanced

Timeline Operation Advanced



1	Add key (for Pro only)	• Double click on the timeline cell area to add key, or press this button to add key. • The key also can be automatically added when users alter any key information in the Modify Panel. • Add Key button only works for the Transform, Motion Layer, Visible, and all tracks for cameras and lights.
2	Zero Transform Key (for Pro only)	• The Zero Transform Key works only for the Transform track. • Click the Zero Transform Key button to add a neutralizing key. • This key is used to add a key to ignore all of the transform keys in the same track.
3	Reset Pose Key (for Pro only)	• The Reset Pose Key works only for the Motion Layer track of Actors. • Click the Reset Pose Key button to add a key to disable all the anterior Motion Layer Keys in the same track.
4	Break (for Pro only)	• Break works for Clip type data in all tracks/groups except for clips in the SoundTrx group. • Click the Break button to split the selected clip at the current frame into two new clips.
5	Reset Motion Pivot (for Pro only)	• Reset Motion Pivot button works only for the Motion track. • When a clip contains motion that offsets the actor away, you may click this button to have the whole motion to proceed on the same position where the

		motion starts. You may then store your own animations into the library to be prepared for being used by the AML, so you may create your own perform, walk or operate animations.
6	Loop/Speed Switch (for Pro only)	- The Loop/Speed Switch button works for Clip type data in all tracks/groups except for clips in the SoundTrx group. - Press the Loop/Speed Switch button UP and drag the clip's right edge rightward/leftward to decelerate/accelerate the speed. - Press the Loop/Speed Switch button DOWN and drag the clip's right edge rightward to repeat the clip.
7	Collect Motion (for Pro only)	- The Collect Motion feature merges all the clips in the Command Group into a single clip and puts the clip onto the Motion track. - The clips in the L Hand/R Hand, Viseme, Expression and Sound tracks will be merged individually and be put onto where the clips initially are.
8	Motion Reverse (for Pro only)	The Motion Reverse feature reverses the data of a clip so you may create back-and-forth motions with only the forward-motion clip.
9	Facial Puppet	The Facial Puppet feature creates unique facial expressions by recording expression clips as you move the mouse to puppeteer the facial features in the preview window.

Operating with Camera and Transform Tools

For the ease of use and convenience, **iClone** is designed with the same mouse controls for both camera operation and object transformation. This method of control allows you to edit scenes with one hand on the mouse and the other on the keyboard, saving you from moving your hand back and forth among the keys.

	Camera Tools					
	Zoom In/Out	Pan	Rotate	Focus to Selected - Perspective view	Focus to Selected	Walk/Fly Camera
Icons						
Mouse Operations (Buttons pressed and drag)	- Roll Mouse Wheel - Both Mouse Buttons	Left Mouse Button	Right Mouse Button	Select the object and press the hotkey.	Select the object and press the hotkey.	- Toggle Walk/Fly mode to navigate your selected camera view to specific spot. - Press + or - to Accelerate or Decelerate the movement of the camera.
Hotkeys	Z	X	C	Home A: Left S: Right D: Back F: Front G: Top H: Bottom J: Face K: All		N/M

	Camera Tools			
	Zoom In/Out	Pan	Rotate	Focus to Selected - Perspective view
Icons				
Mouse Operations (Buttons pressed and drag)	- Roll Mouse Wheel - Both Mouse Buttons	Left Mouse Button	Right Mouse Button	Select the object and press the hotkey.
Hotkeys	Z	X	C	Home A: Left S: Right D: Back F: Front G: Top H: Bottom J: Face K: All

Note:



- Throughout all the documents, we assume that you are using your right hand to control your mouse. Therefore, clicking the **Left Mouse Button** means click the **A** button as shown in the illustration, while **Right Mouse Button** means the **B** button.
- Quick Switch:** Press the ~ key to switch between **Camera Mode** and **Transform Mode**.
- Temp Switch:** Hold down the **ALT** key will switch to the **Pan** of the **Camera Mode** temporarily.
- Accelerating:** Hold the **SHIFT** key to 10X the operation unit
- Ctrl + G:** Turn on/off the **Grid** for 3D space reference
- Snap to Terrain:** Located at the top toolbar. Press it and the Z movement will be locked to the terrain as you manipulate the camera or objects. Please refer to the [Snap To or Follow Terrain](#) section for more information.

- **Follow Terrain:** Located at the top toolbar. Press it and the Z movement will be locked to the terrain as you manipulate the camera or objects. Besides, the angle of the camera or objects also aligns to the face normals of the terrain. Please refer to the [Snap To or Follow Terrain](#) section for more information.
- **Snap to Grid/Custom Grid:** Please refer to the [Grid Options Section](#) for more information.
- **Angle Snap:** Please refer to the [Grid Options Section](#) for more information.

Picking and the Right-click Menu

Picking

- **Editor Mode:**
 - o You are allowed to pick almost every object directly in the 3D viewer window except the **Grass**, the **Sky**, the **Terrain** and the **Particle Emitter**.
 - o You may use the **Transform Tools** above the 3D viewer to **Move/Rotate/Scale** objects.
- **Director Mode:**
 - o You can only pick the **Actors** and the **iProps**.
 - o The **Transform Tools** are disabled in this mode.

Right-click Menu

- **Editor Mode:** Click the right mouse button on the objects to pop up the **Right-click Menu** in which various operation functions relevant to the object can be found.
- **Director Mode:** Click the right mouse button on the **Actor** or **iProp** to pop open the **Right-click Menu** in which only the **Move**, **Perform**, **Operate** and their sub entries exist.

Application Key

You may also use the **Application Key**  on the keyboard to have the right-click menu shown on the top left of the **Preview Window**.

Project

☉ Sharing Projects and Props with External Files

Instead of saving everything in your project, **iClone** also gives you the option to load texture images and videos as external files. When sharing or moving such a project or prop, the external files that the project or prop refers to have to be moved along with it.

Before sharing project or prop file, please click the **Project** tab and click the **External Files** button. A text file that contains a list of all external files and their locations - **[External Image List]** and **[External Video List]** - will be opened.

Sharing Projects with External Files

After you move a project to a new folder, the external files it refers to **MUST** also be moved to one of the following:

- the project's new folder.
- the **video** or **popVideo** folder (if any) in the new folder.
- by default, the **C:/Documents and Settings/All Users/Documents/Reallusion/Shared Templates/Video** (XP) or the **C:/Users/Public/Documents/Reallusion/Shared Templates/Video** (Vista/Windows 7) directory.
- by default, the **popVideo**, **ImageLayer**, **Intro**, **Facial Animation**, **Water**, or **Digital Juice** folders under the **C:/Documents and Settings/All Users/Documents/Reallusion/Shared Templates/Video** (XP) or the **C:/Users/Public/Documents/Reallusion/Shared Templates/Video** (Vista/Windows 7) directory.

Sharing Props with External Files

If you want to move a custom prop with external files to a new folder, you **MUST** also move the external files to one of the following:

- the props' new folder.
- the **Texture**, **Textures**, **image**, **images**, **img**, **picture** folders (if any) in the new folder.
- by default, the **iClone Diffuse**, **iClone Opacity**, **Aniamted**, **Face Normal**, **IBL**, **iClone Bump**, **iClone Blend**, **iClone Glow**, **iClone Normal**, **iClone Reflection**, or **iClone Specular** folders under the **C:/Documents and Settings/All Users/Documents/Reallusion/Template/iClone 4 Template/iClone Template** (XP) or the **C:/Users/Public/Documents/Reallusion/Template/iClone 4 Template/iClone Template** (Vista/Windows 7) directory.

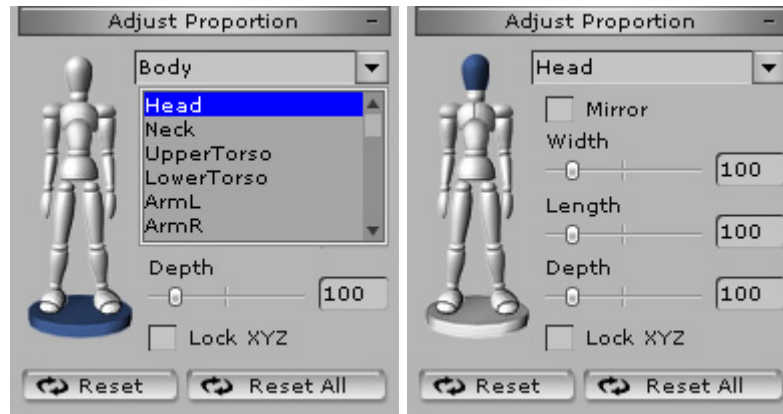
Actor

⦿ Adjust Sub Nodes of Actors

iClone allows you to adjust the size, length and thickness of each sub node (parts of the body) of the actors. You may adjust the sub nodes of each finger as well.

Adjust Proportion

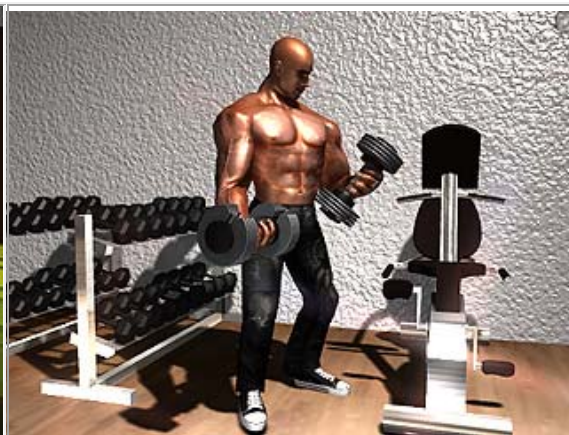
1. Select the sub node of the actor from the drop-down list. You may also click directly on the nodes of the dummy.



2. Adjust the **Width**, **Length**, or **Depth** to change the proportion of the node.



Slim Model



Strong Man

Note:

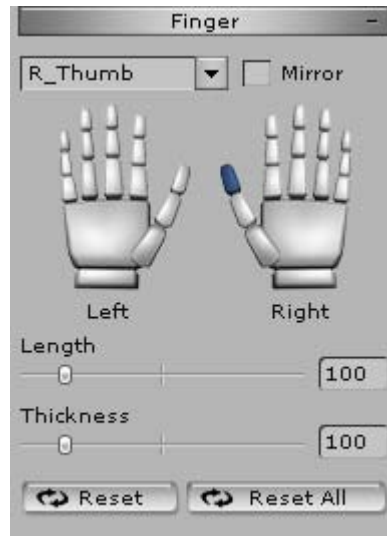
- If you plan to adjust the size of the actor, in addition to the six preset templates in the **Body Style** section, you may select the **Body** part from the drop-down list, or use the dummy image, and then adjust the **Size** value.
- If you want to adjust the node of the limbs of both sides at the same time, activate the **Mirror** option and repeat steps 1 and 2 to modify the node.
- The **Width**, **Length** and **Depth** settings can be locked according to the node

you picked.

- The **Mirror** feature may not be used when you are using a **Non-Human** actors; in addition, the **Length** and **Width** values are switched for **Non-Human** actors.

Adjust Finger

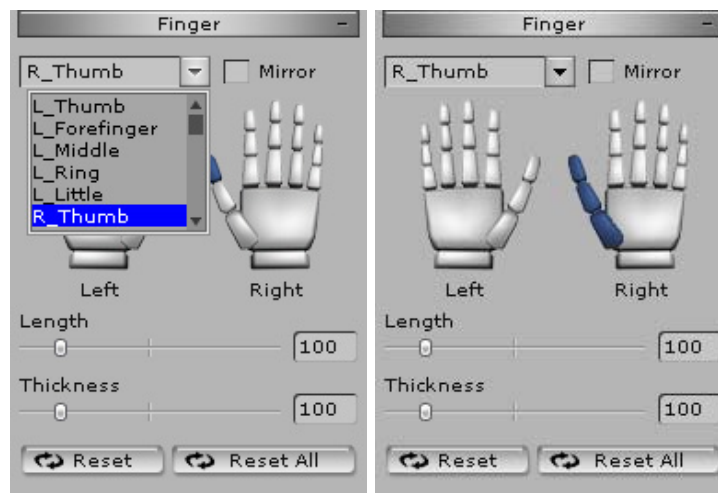
1. Select the sub node of the fingers for the left or right hand from the drop-down list.



2. Adjust the **Length** or **Thickness** to change the look of the target finger.

Note:

- To select the whole finger, you need to select it from the drop-down list first.



- Activate the **Mirror** option and repeat steps 1 and 2 if you want to adjust the node of the fingers or the whole finger of both hands at the same time.

⦿ Adjusting Sub Nodes of Non-Human Actors

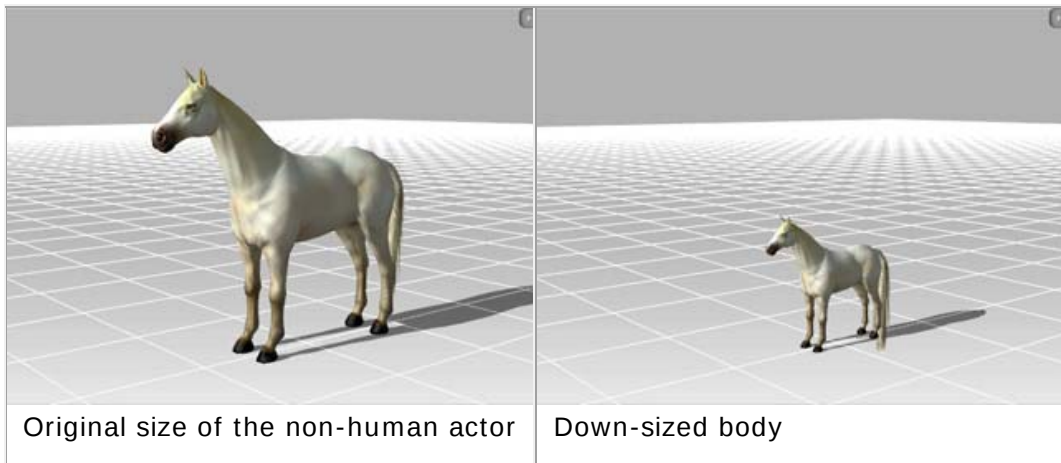
Non-human actors may be built in actors or actors converted in from **3DXchange4**. Since the bone structure of non-human actors differs from standard actors, adjusting the body or sub nodes of these actors may be slightly different.

Adjust the Whole Body

1. Select the **Body** of the actor from the drop-down list.



2. Adjust the **Width**, **Length**, or **Depth** to change the body size.



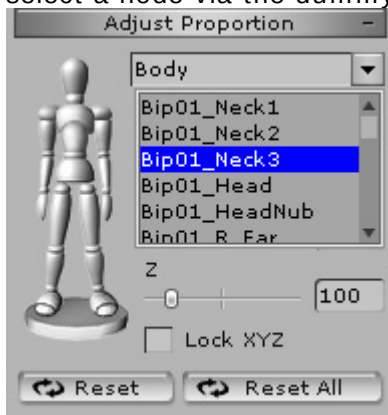
Note:

- o The **Mirror** feature may not be used when you are using a **Non-Human** actor; in addition, the **Length** and **Width** values are exchanged for **Non-Human** actors.

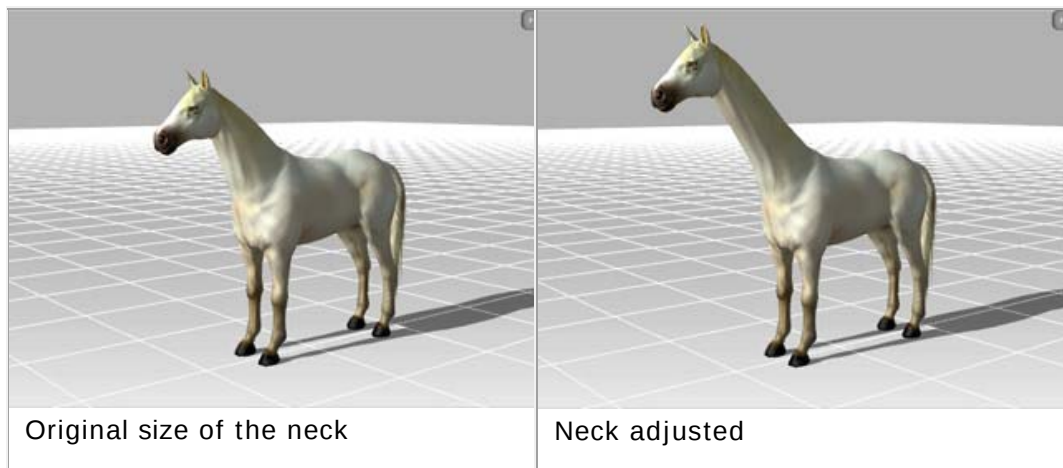
Adjust the Sub Nodes

If you want to adjust the sub nodes for a **Non-Human Actor**, you must be aware of some limitations:

- You may only select the sub node from the drop-down list. You **CANNOT** select a node via the dummy.



- To adjust the selected sub node, follow the same manner of adjusting the body size as described above.



- The **Mirror** feature will be disabled.
- The **Width**, **Length** and **Depth** results may be different from the standard actor due to the various modeling method.

⊙ CloneCloth - Creating Your Own Fashion Designs and Collections (G3 and G2 Actors Only)

iClone provides you an easy and powerful method to create a custom actor wardrobe. Using an image-editor application installed on your system, you can be a fashion designer too.

Please note that there are two categories of G3 and G2 actors. One is with only a single layer of skin, like the G1 actors. The other is more realistic since the actors are designed to be garmented with clothes on them, which means there are two layers (the body layer and the cloth layer) for each avatar. Simply modify the opacity texture of the upper body and you will see the differences. CloneCloth is designed to work only with G3 and G2 avatars that possess an outer garment 2nd layer mesh.



Single Layer



Double Layers (body & cloth)

Note:

- The **Upper Body**, **Lower Body**, and **Shoes** for the G3, G2 and G1 are not interchangeable due to the different skeletal systems used by each actor body style.
- For purchasing more actors, please visit our website:
<http://www.reallusion.com/templates/linkcount/linkcount.asp?lid=iceus59>.

☉ Gloves and Shoes

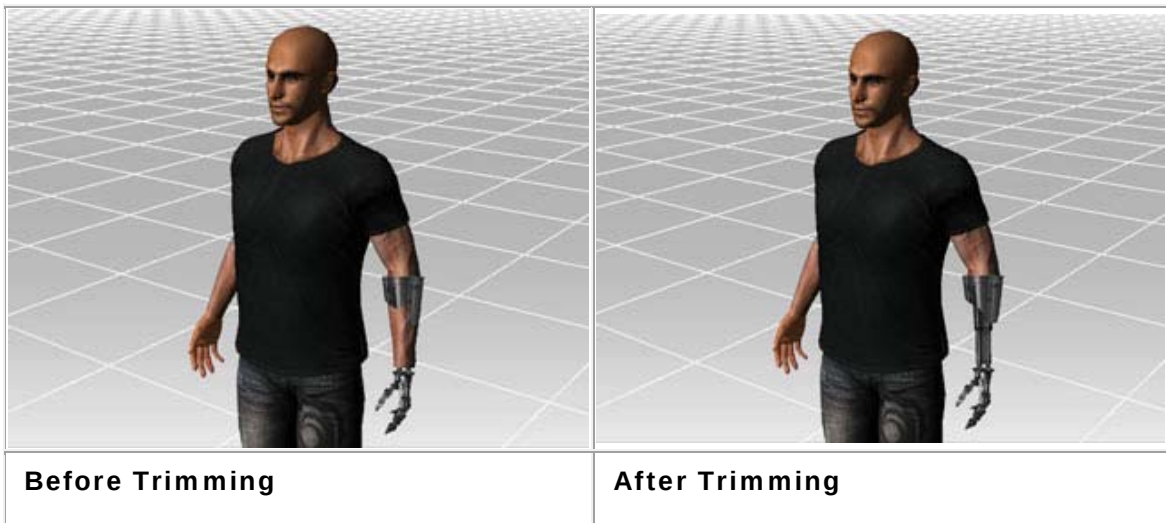
Gloves and shoes templates are available for you to bring out the characteristics of the avatar.

Gloves

Toggle to the **Actor / Gloves** menu and apply different glove templates.

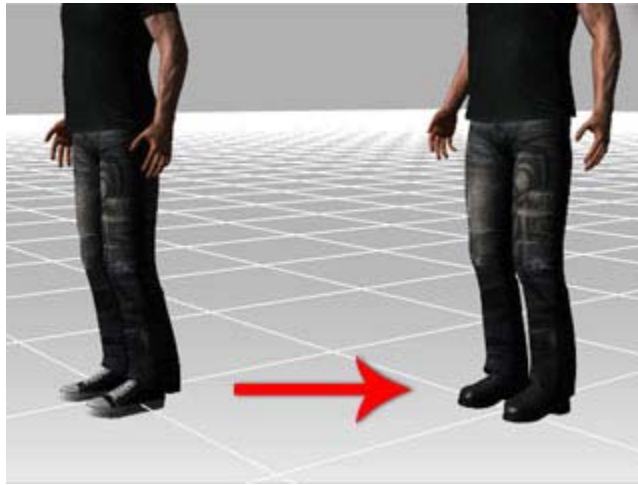


When you have applied gloves that do not fit properly to the hands, you may use the **CloneCloth** technique to trim off the extra cloth/skin.



Shoes

You may also apply shoes templates to the character.



⦿ Actor - Look At

Instead of manually adjusting the head of an actor to look at a moving target, you may use this time saving feature.

Look At

1. Double click on the desired actor.
2. Go to the **Actor/Avatar/Modify** page. In the **Look At** section, click the **Pick Target** button.
3. In the 3D viewer, click on a target.

Note:

- You can have the actor **Look At** the target object over a certain period of time and then have it stop looking outside that time range.
- You may optionally select the sub node of the target by clicking on the  button and select a desired node in the tree view.



The actor looks at the whole object



The actor looks at the sub-node
(the front wheel)

Look At the Camera

If you want the actor to **Look At** a camera all the time, simply click the **Look At Camera** button.

The actor rotates her head and looks at the camera all the time even if the camera moves away.

	
The actor looks at the camera	The camera moves away (the actor rotates her head to keep looking at the camera)

Weight and Convergence

You may drag the **Look At Weight** slider to adjust the rotation weight of the eyes or the head.

	
The slider near the Head end	The slider near the Eyes end

To adjust the **Eye Convergence**, drag the slider to the **Inward** or **Outward** side.



The slider near the **Outward** end



The slider near the **Inward** end

⦿ Persona

What is Persona

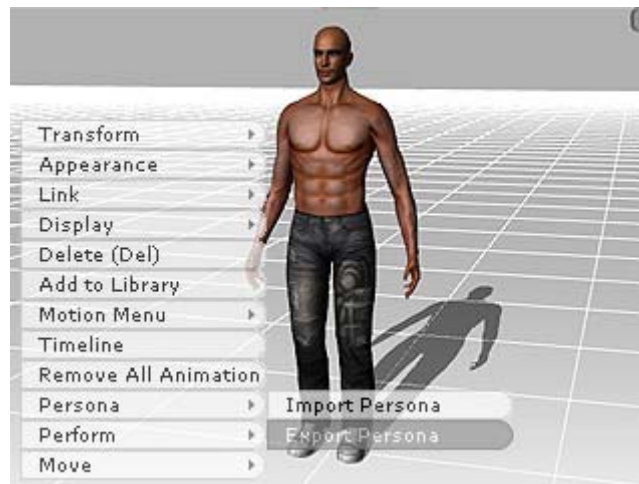
A **Persona** is the characteristics given to the actor so that the actor can animate in a unique style, e.g. a sexy dancer acts differently from a ninja warrior. The definition of the persona is stored in an **AML** file (Action XML), which defines the actor's multiple idle animations, keyboard moving behaviors and special perform actions. One **Persona** file may include several sets of movement behaviors. Use **Behavior Mode Switch** (hotkey X/Z, next/previous mode) to trigger different animation sets, such as walk mode, run mode, or even a custom defined fly mode. Animation defined in the **Persona** can be either triggered by hotkey or right-click menu.

Export and Import Persona

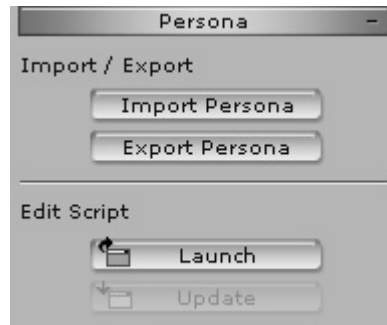
You may export the persona of a specific actor, modify the content of the file and apply it to the original or another actor.

To export a persona, you may:

- Right click on the actor and select **Persona/Export Persona**.



- Alternatively, you may go to **Actor/Persona/Modify** page and click **Export Persona** button.



What does Persona do

In the AML file, codes and index tables are contained to populate different animation files (called iMotion files) for the target actor. Basically, you can have your actor possessing unlimited animations. An **iClone** actor is embedded with several mode presets for **WASD** keyboard movement, you can use **X** to toggle **WALK** and **RUN** mode for moving a character. Even if you don't command the actor to act, the actor acts the **Idle Motion** embedded in the **Persona**. Please refer to the [Idle Track](#) section for more information.

When is Persona Available

You can toggle the **Director Mode** to activate the **Persona** for actors. In the **Director Mode**, you may direct actors to move or act and record these motions for further tuning. It is a game-like method, in which you use **W**, **A**, **S**, **D** or **X** or some other previously specified keys to command your selected actors to do different actions.

Please refer to <http://www.iclonewiki.com> for more information about creating and modifying **Persona**.

Please also refer to [Idle Track](#) section for more information.

⦿ Bouncing Body Parts

iClone simulates the effects of gravity on the female body with spring effects. Please refer to the [Spring Props](#) section for description on parameter tuning.

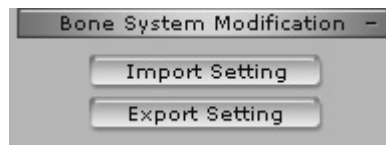
Click the thumbnails below to view demo video.



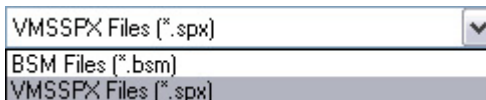
Turn On Bouncing Body Parts for G2 and G3 Characters

For G2 and G3 female actors without prior setting of bouncing effect, you may turn on this effect through the following process.

1. Select the G2 or G3 character (female only).
2. Go to the **Avatar/Modify** page and scroll down to the bottom. Click **Import Setting** button in the **Bone System Modification** section.



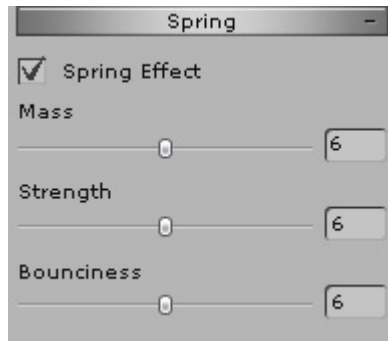
3. Switch the file extension to VMSSPX files (*.spx).



Select either **Soft-Breast.spx** or **Mild_Soft.spx** and click **Open** button.

(The .spx files are located, by default, in C:/Documents and Settings/All Users/Documents/Reallusion/Template/iClone 4 Template/iClone Template/Avatar Setting for **Windows XP** and C:/Users/Public/Documents/Reallusion/Template/iClone 4 Template/iClone Template/Avatar Setting for **Window 7** and **Vista**)

After the target character is assigned with the spring settings. You may turn on the **Spring Effect** and modify parameters to create your custom effects.



Note:

- To enable the real-time rendering of spring effect, please turn on the **Flex / Spring FPS Sync** option in the **Preference** panel.
- Turning on **Flex / Spring FPS Sync** option may increase graphics process loading, you may check it off to keep the optimal rendering speed.
- The **Flex / Spring FPS Sync** setting only applies to the 3D viewer. If you export a project with spring props, **iClone** always renders with **Flex / Spring FPS Sync** setting enabled even if the setting is disabled in the **Preference** panel.

☉ CloneBone

CloneBone is an universal human bone with which users can create any creature by attaching props as body parts. Since **CloneBone** is designed with the standard human bone structure, any **CloneBone** actor can share standard human motion data, or do motion editing in **iClone**. Once you attach a prop to the selected bone segment, it turns into an accessory of the **CloneBone** actor. You may then save the whole actor as a custom **CloneBone** actor. Please view the **CloneBone** download page for more information:

http://www.reallusion.com/contentstore/csproduct.aspx?contentid=080808-2&MenuItem=ic_bonus&Type=Bonus

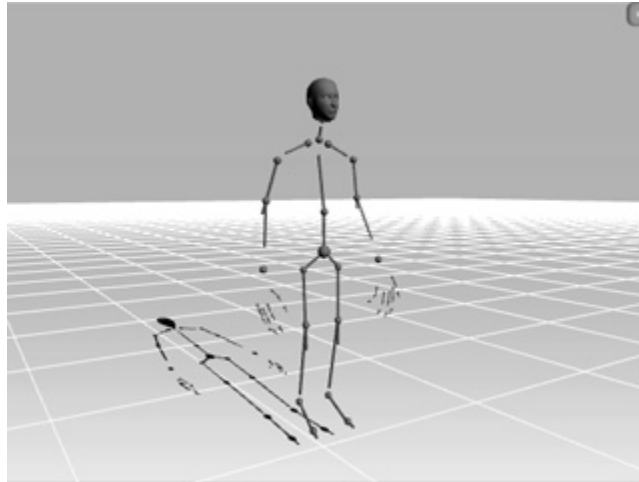
Benefits

- You may attach any downloaded prop to the **CloneBone** to create your ideal actors, especially for creating robots.
- Easily transform any body part before or after attachment to **CloneBone**.
- Accessories are able to have an option for inheritance, which means you can scale the bone and the **CloneBone** attached parts scale accordingly.
- Directly pick specific parts of **CloneBone** actors for quick motion editing - just like with regular avatars.

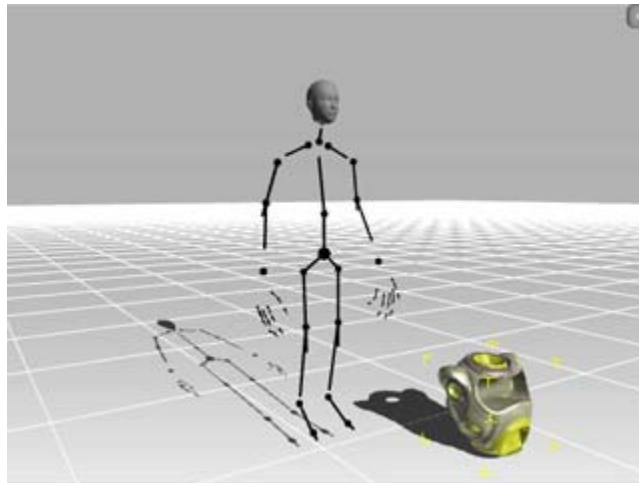
► Creating CloneBone Actors

If you plan to create a **CloneBone** actor, please follow the steps below:

1. Apply a **CloneBone** actor from the **Content Manager**.

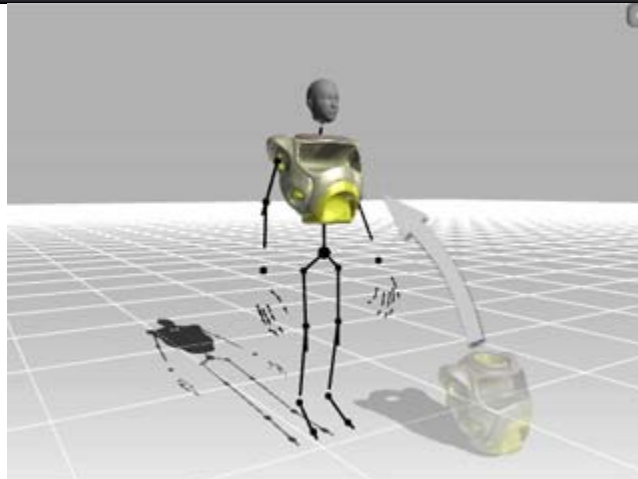
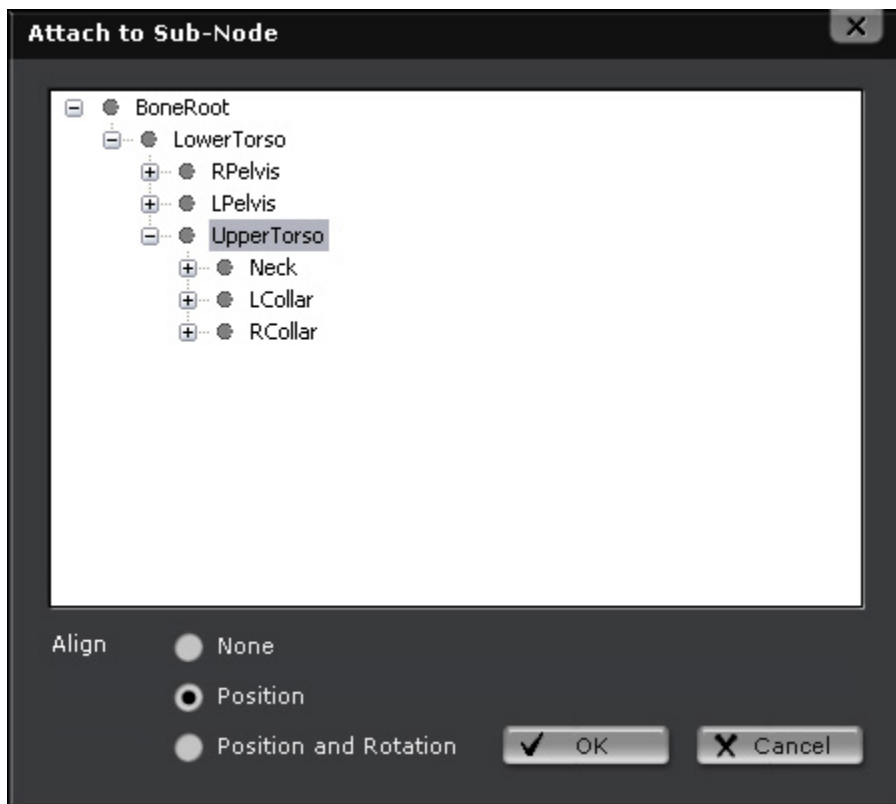


2. Prepare desired prop for one bone node.

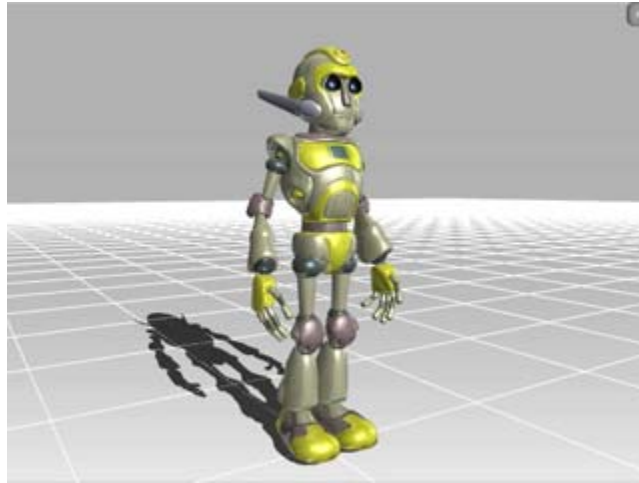


3. Right-click on the selected prop and select **Attach**, then click on the target bone node.
4. Make sure the prop is selected and go to the **Accessories/Modify/Attach** section. Activate the **Move**, **Rotate** and **Scale** options (this step will ensure that the prop follows the motion of the bone)

5. Click the  button, in the coming dialog box, make sure the target bone node is picked and select the **Position** option. Click **OK** to confirm.



6. Repeat above steps to attach your props piece by piece until your actor is completed.



► Adjusting Body Parts of CloneBone Actors

Adjusting after Attaching

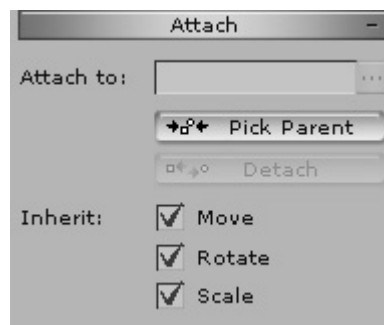
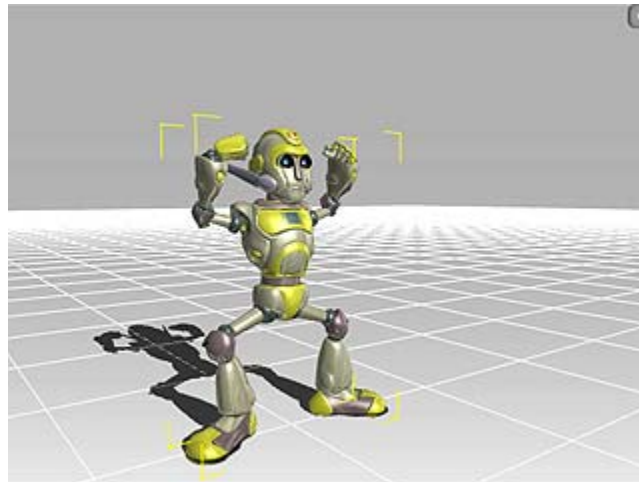
After you attach and align a prop to the **CloneBone**, the position, size or orientation may still be in need of some adjustment:

1. Pick the desired part (if you are using any camera tools, you may not select the specific piece of the part but the **CloneBone** only. Please switch to the  tool to click on or the  tools to double-click on the desired part to select it instead of picking the whole **CloneBone**).
2. Go to the **Accessories/Modify** page and adjust the data in the **Transform** section to fine tune the part.

Adjusting Along the Body Proportion

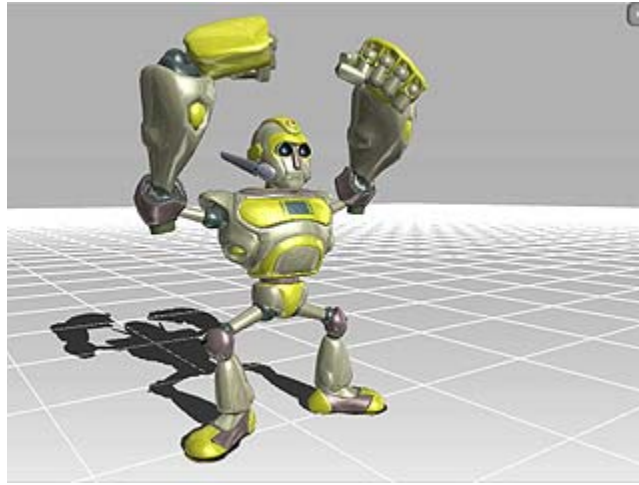
If you intend to have the part to be changed along with the **CloneBone**'s specific bone node, you may follow the steps:

1. Pick the actor and make sure the **Inherit [relationship boxes](#)** (Move, Rotate, Scale) between the target part and the bone node are all checked.



2. Go to the **Actor/Avatar/Modify** page.

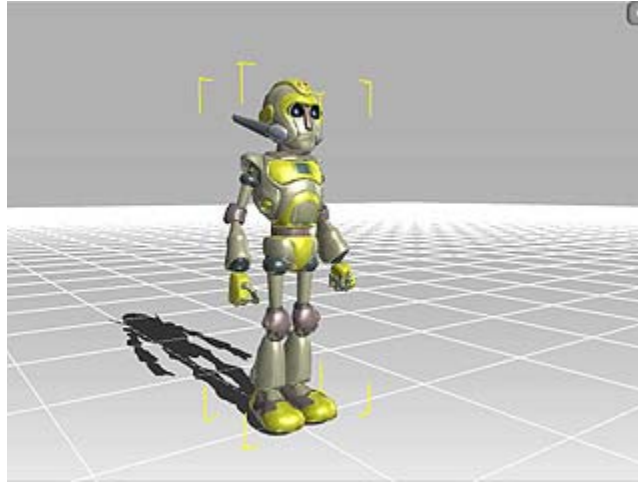
3. Change the body proportion in an ordinary manner. Please refer to the [How to Change the Proportion of Each Sub Node of an Actor](#) section for more information.



► Motion Editing for CloneBone Actors

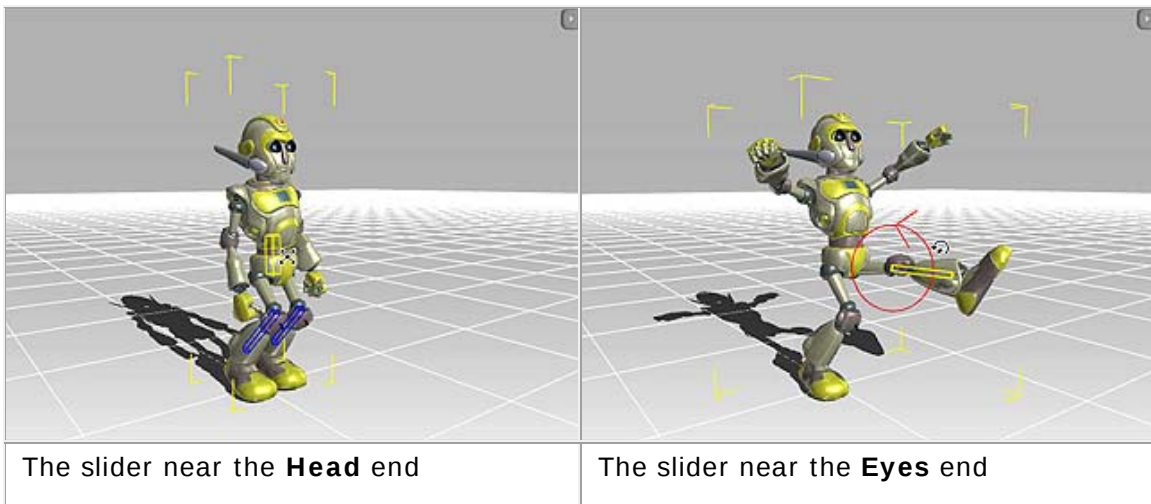
Since a **CloneBone** actor behaves exactly the same as the standard actors, you may modify its motion the same way as with normal human actors.

1. Pick the **CloneBone** actor and right click on it.



2. Select **Motion Menu/Edit Motion** item in the right-click menu.

3. Select  or  tools to utilize the IK or FK method to modify the motion of the **CloneBone** actor.



Note:

- You may directly pick the specific bone node without being hindered by the props or accessories attached to it when you are using IK or FK methods.
- Please refer to the [The Concept of Motion Layer Editing](#) section for more information.

Head

⦿ Creating a Head

▶ Loading the Facial Image

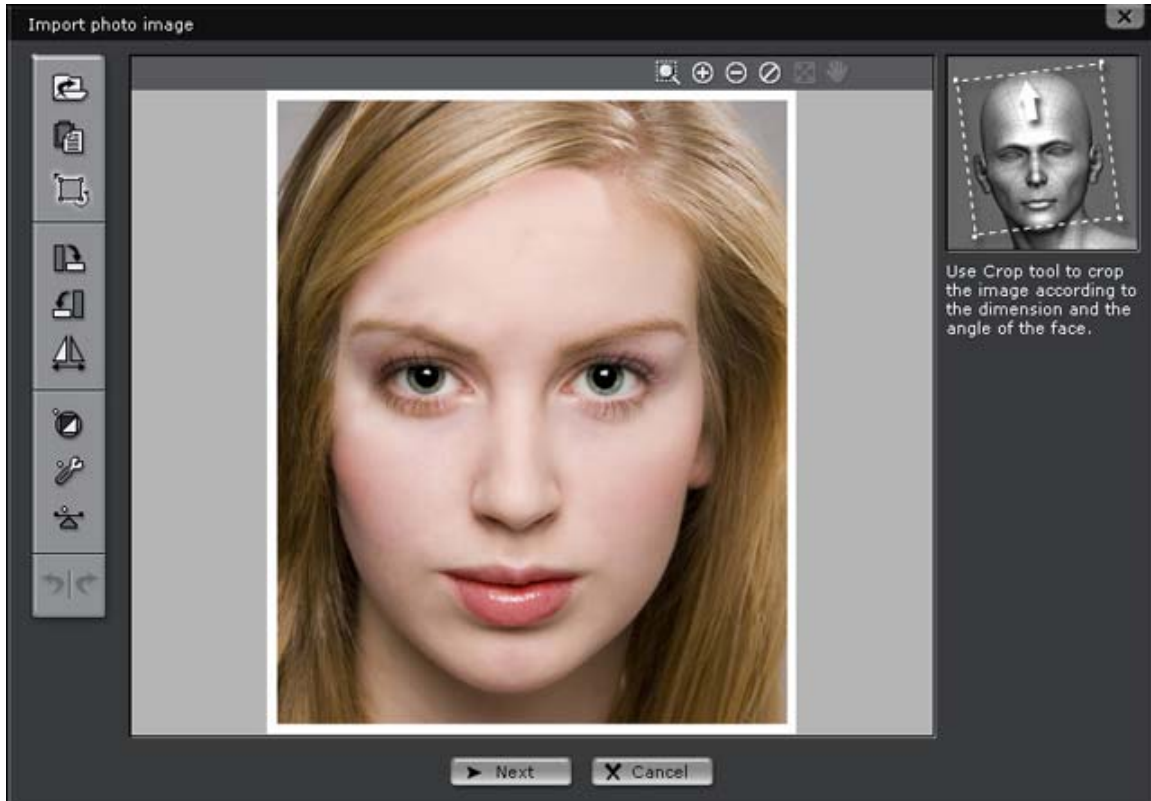
If you choose to use a photograph to create the head of your actor, it should be a clear, well lit picture of a full head facing front, with nothing obscuring the facial features. It can be a BMP, JPG, GIF, PNG or TGA image file.

To load the image:

1. Click the **Head**  **Head** tab.
2. Click the **Load Image**  button to open the browser window.
3. Browse to the location of the facial photo and click the **Open**  button to load the selected image file.
4. The facial image is loaded and can be adjusted and enhanced if necessary. Please see next step [Photo enhancement](#).

► Photo Enhancement

The photo enhancement screen helps you adjust an imported facial image to make it ready for creating a head. After [importing a head image](#), the photo enhancement screen is displayed.



Use the tools on the left side of the image processing menu to adjust the usable area, quality and color settings of the image as follows.

- | | | | |
|--|---|---------------------------------------|---|
| | 1 | Import an Image | To open the browser window and select another face image. |
| | 2 | Paste the image from Clipboard | To paste the image from Windows clipboard. This works only when an image has already been copied to the Clipboard. |
| | 3 | Cropping an image | To select only a part of the image. This can be useful when you want to select a face from a group photo or remove a large background area which is not needed for the model. You can also refer to Defining the facial angle . |
| | 4 | Rotating an image clockwise | To rotate the image by 90 degrees in the clockwise direction. |

- | | | |
|---|---|--|
| 5 | Rotating an image
counterclockwise | To rotate the image by 90 degrees in the counter clockwise direction. |
| 6 | Mirroring an image | To create a mirrored reflection of the image. This function is useful for images obtained from scanners or cameras. |
| 7 | Adjusting color
levels
automatically | To adjust the color levels of the image automatically. The program analyzes the color levels and adjusts the brightness, contrast, hue, and saturation levels to achieve optimum image quality. |
| 8 | Adjusting color
levels manually | To adjust the brightness, contrast, hue, and saturation levels of the image manually. Use the sliders in the menu box to adjust the values or enter the numerical values for each parameter in the boxes next to the sliders. |
| 9 | Adjusting color
balance | To adjust the color balance manually. Drag the sliders to adjust the Cyan - Red, Magenta - Green, and Yellow -Blue levels. The box next to each of the respective properties shows positive or negative values depending on the position of the slider, with the center being zero. Click Highlights to apply these color settings to emphasize the brighter areas. Click Midtones to apply these color settings to the entire image with average intensity. Click Shadows to apply these color settings to emphasize the darker areas in the image. |

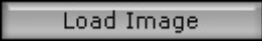
For more details about importing a photo, see the [Importing a face photo](#) tutorial.

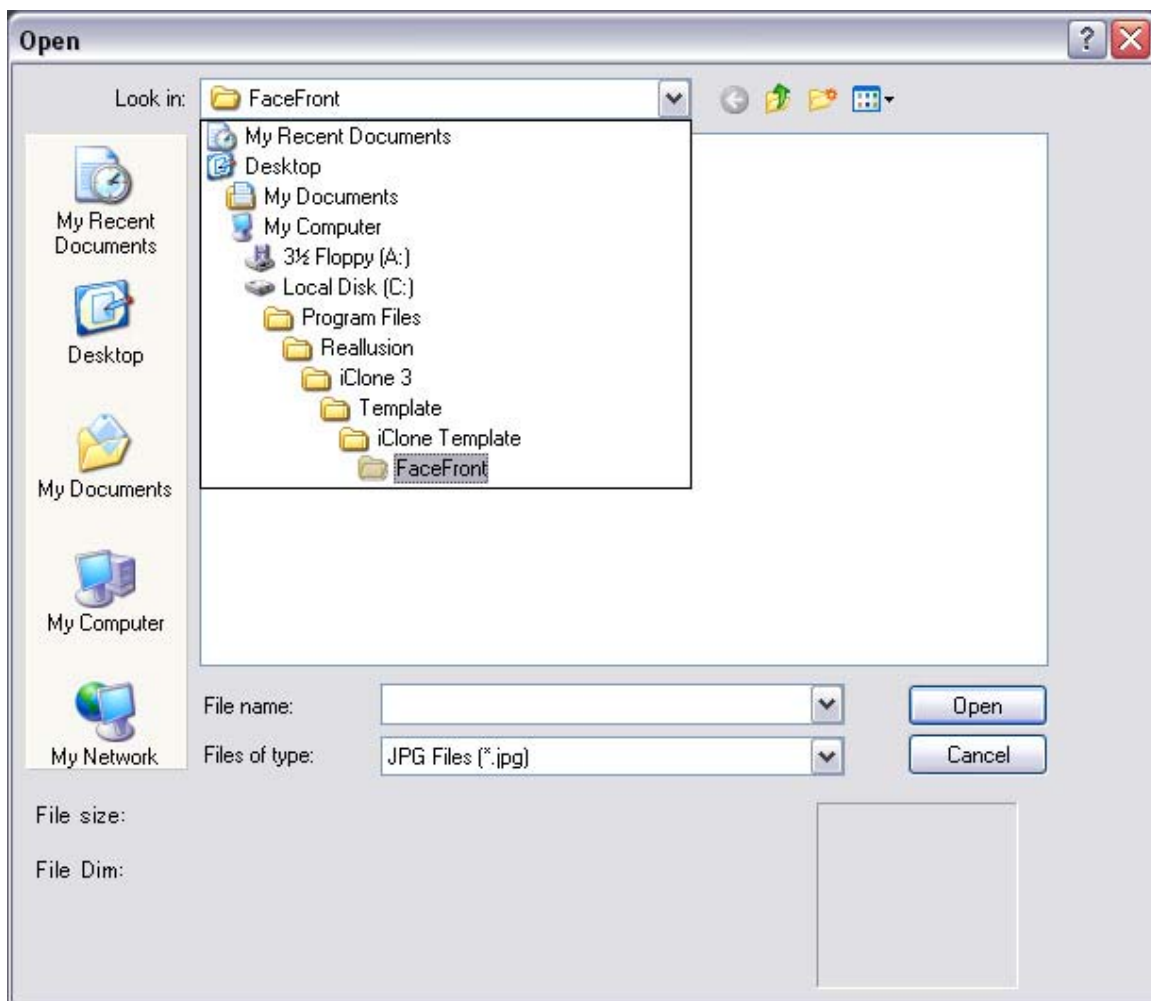
► Importing Photo Image

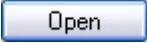


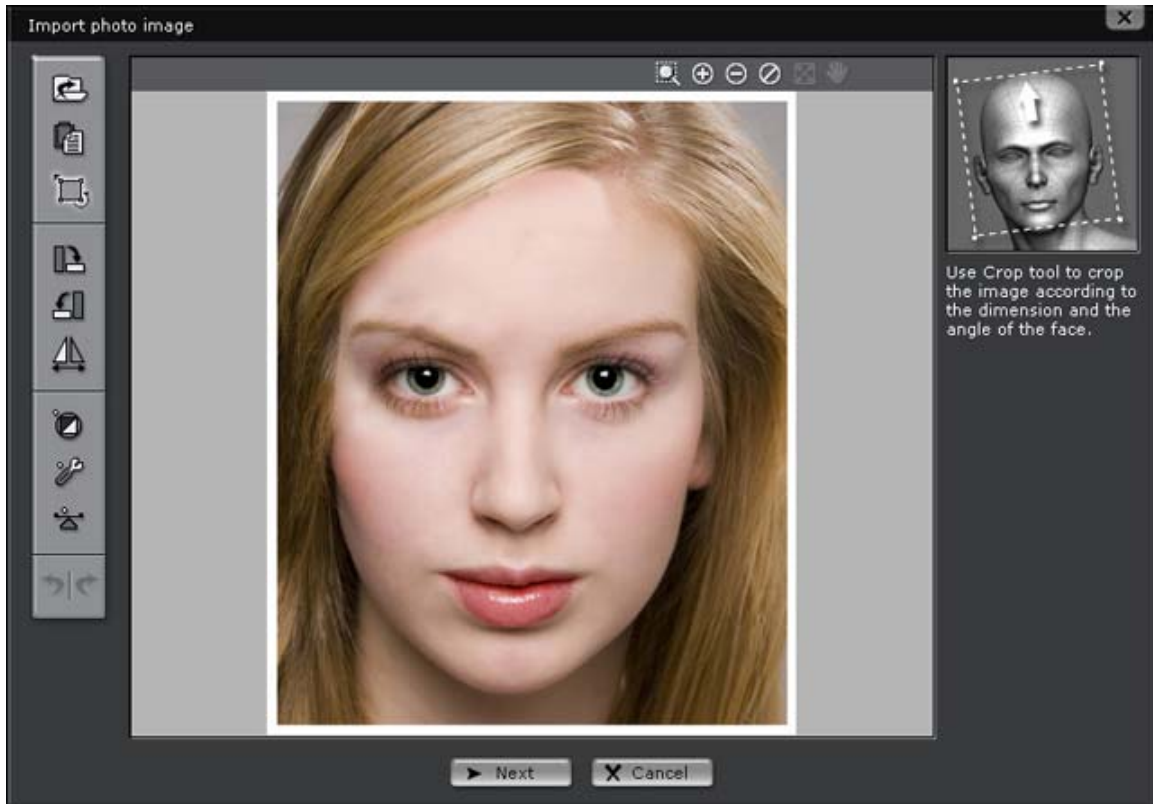
Creating a face for your actor is simple. Click the head  **Head** tab on the top of the iClone user interface to begin the facial settings. You can select one of the pre-made face styles from the selection in the file manager pane, or you can create one from a photo of your own. If you decide to use a photo, be sure to use a clear, front-view photo with no hair hanging or blocking the view of the face. The mouth of the face in the picture should be closed and with a normal emotionless expression. You may crop and adjust the image using a photo editing application before you attempt to use it with **iClone**.

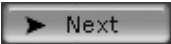
To import a face photo:

1. Click the Load Image  button to open the browser window.
2. Browse to the folder where your face image file is saved using the **Look in** drop down menu.



3. Click the Open  button to select the highlighted image file.
The Import Photo Image Window opens.

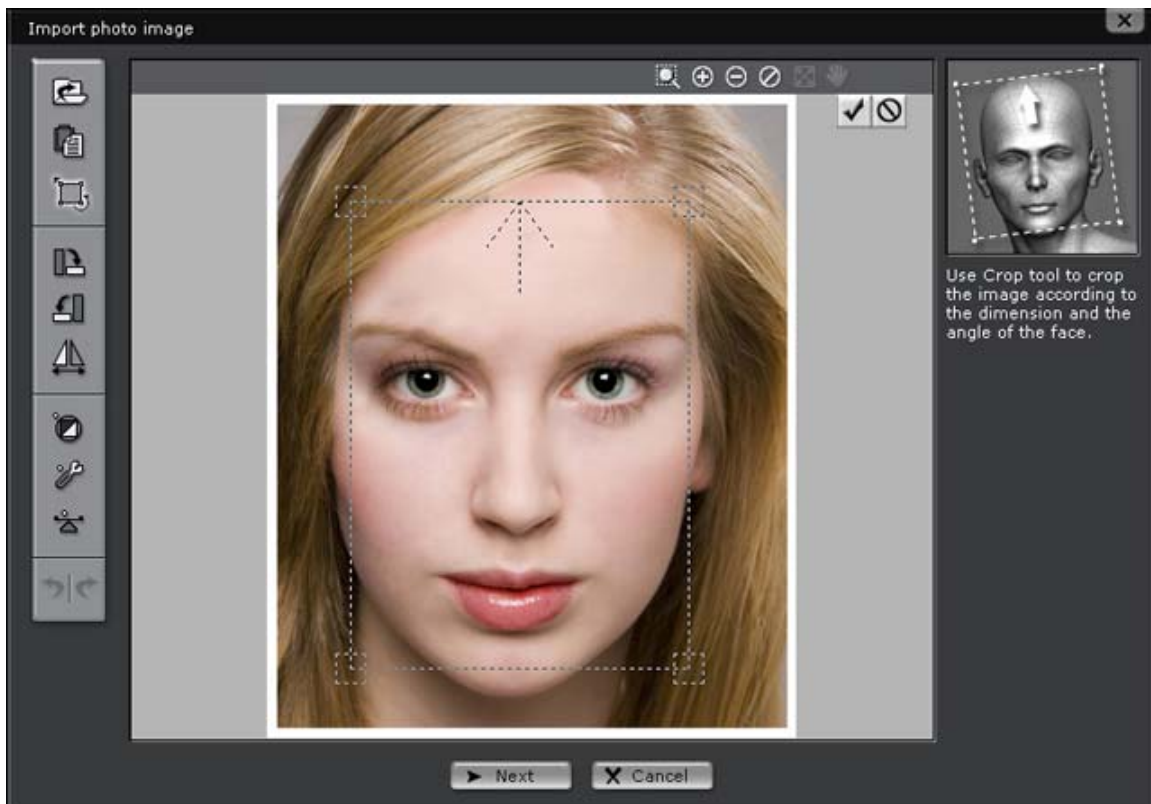


4. Use the side toolbar to make any adjustments to the image as required.
For more details about photo enhancement, see [Photo enhancement](#).
5. Click the next  button to proceed to the next step, or if the head in your photo isn't straight and needs adjustment, go to [defining the facial angle](#).

► Defining the Facial Angle

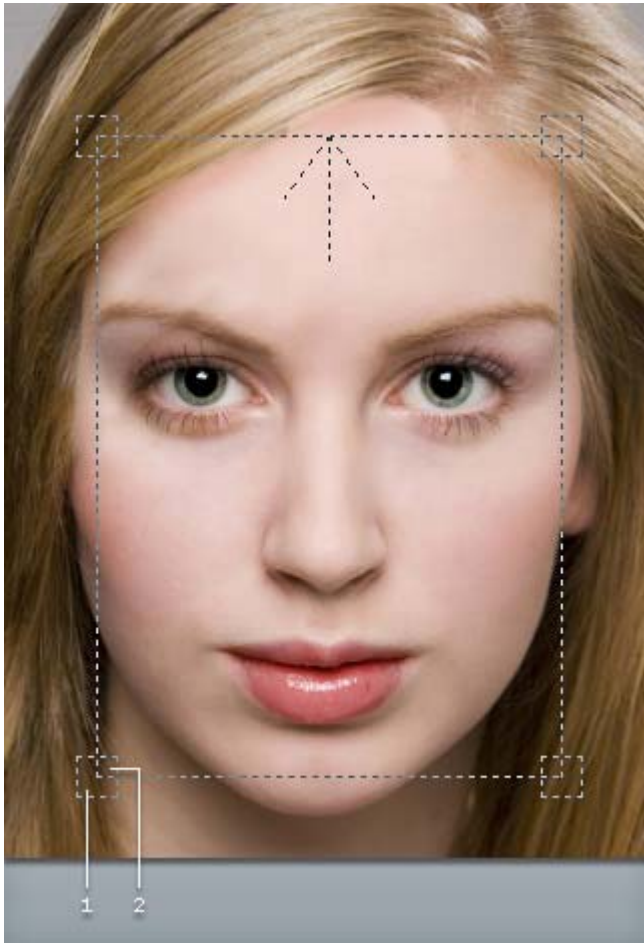
If the picture is not straight you will need to correctly define the angle of the image.

Use the **Crop**  tool to frame the outline of the face with the arrow pointing to the top of the head. Draw the rectangle around the face and drag the corners with the mouse to rotate it. Use the guide in the upper right corner to see how to properly correct a tilted head.



Note:

- Each corner of the rectangle has a small square around it. Click in the square inside the rectangle to resize the rectangle. Click the square outside the rectangle to rotate it. Click and drag inside the rectangle to move it.
- Click and drag outside the rectangle to redraw it.



Click point 1 to rotate.

Click point 2 to resize.

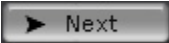
When your face is properly framed with the rectangle, click the check mark  button. Click the abort  button to abort.

Tip:

- Zooming during the fitting process is recommended to ensure a good fit for your facial image.

Use the buttons on the left-side toolbars to rotate or flip the image, or adjust the color balance or contrast settings.

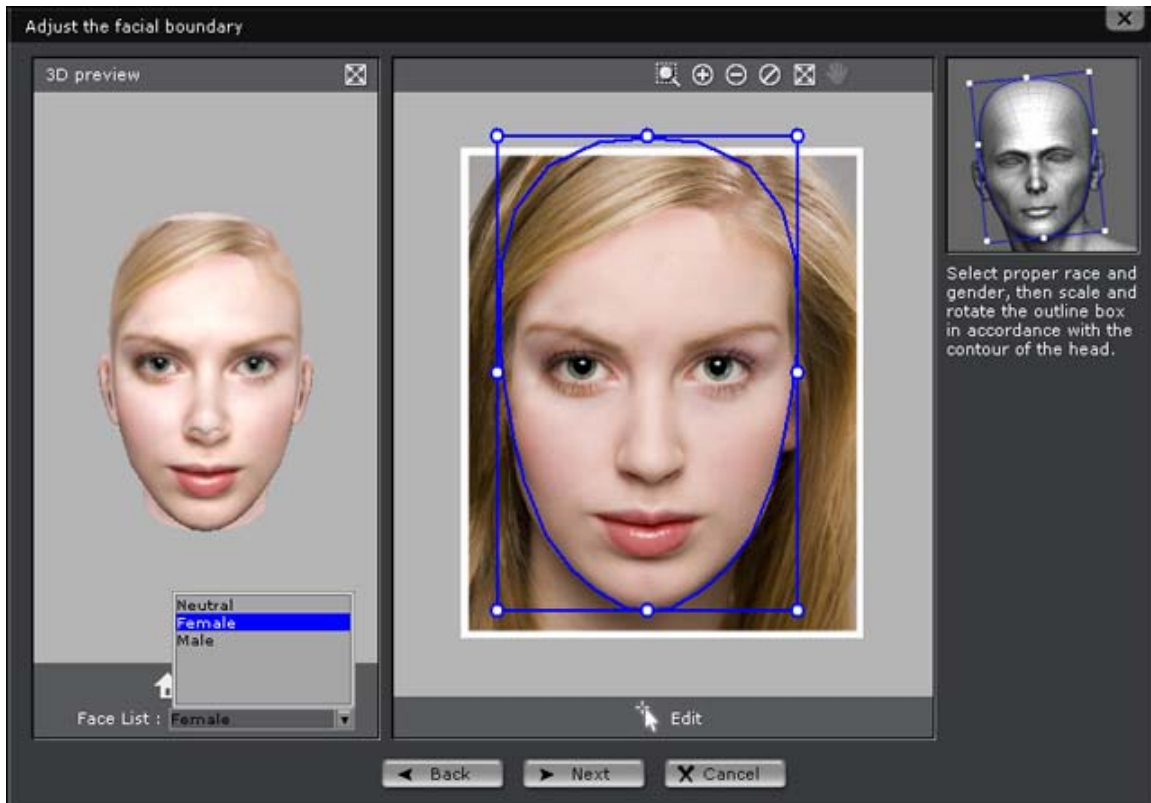
For more details about photo adjustment, please see [Photo enhancement](#).

When your image is properly edited, click the **Next**  button to proceed to the next stage, [setting the facial boundary](#).

► Adjusting the Facial Boundary

When you import an image to use with **iClone**, you must define facial boundaries.

1. First, Use the drop-down menus below the 3D view port to define the gender of the face.



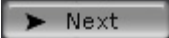
2. Then drag the facial boundary points to frame the oval face exactly.

Click and drag inside the rectangle to move it.

Drag the left or right boundary points to scale the rectangle horizontally.

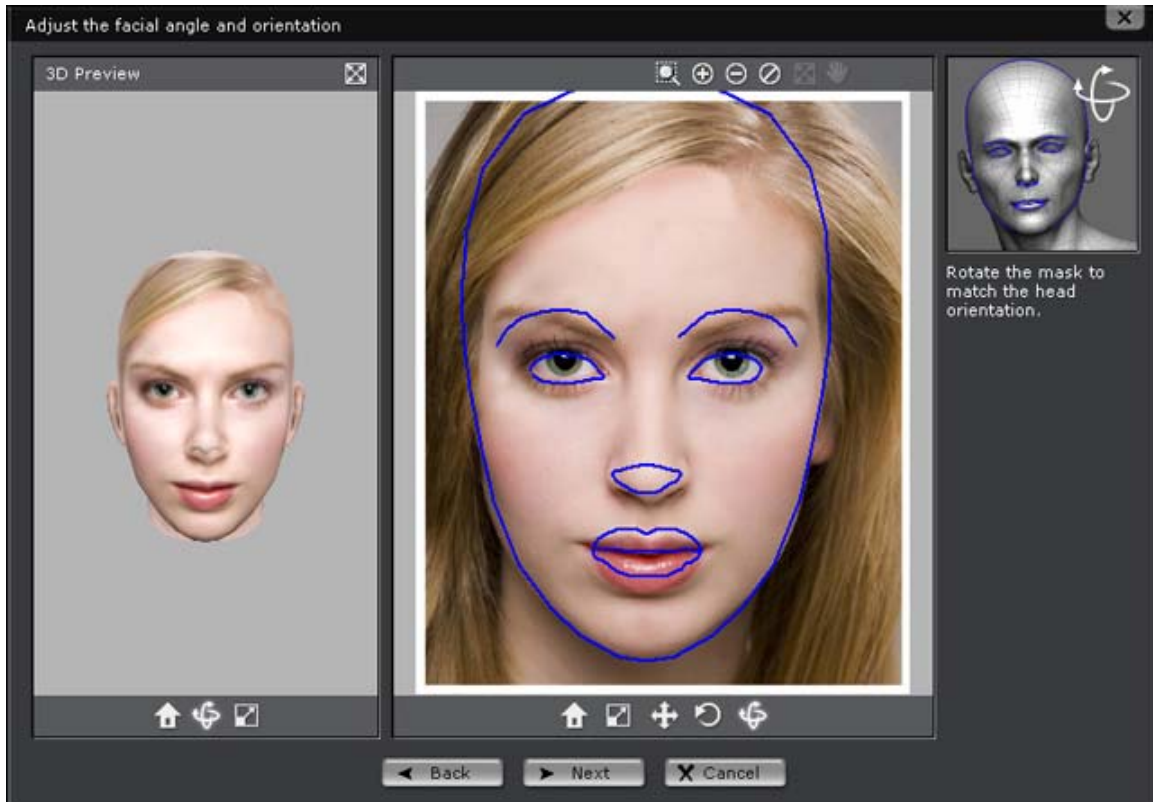
Drag the top or bottom boundary points to scale the rectangle vertically.

Drag the corner boundary points to scale or rotate the rectangle.

Click the next  button to proceed to the next stage, [adjusting the angle and orientation of the face](#).

► Adjusting the Angle and Orientation of the Face

The face you have imported may not be facing directly forward. In this case, adjust the angle of the face slightly using the Roll X-Z  tool. Drag the mask left and right or up and down to match the mask to the angle of the face in the photo.



The other tools below are:



Home: reset the position and angle of the 3D contour.



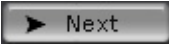
Zoom: adjust the scale of the 3D contour.



Pan: move the 3D contour.

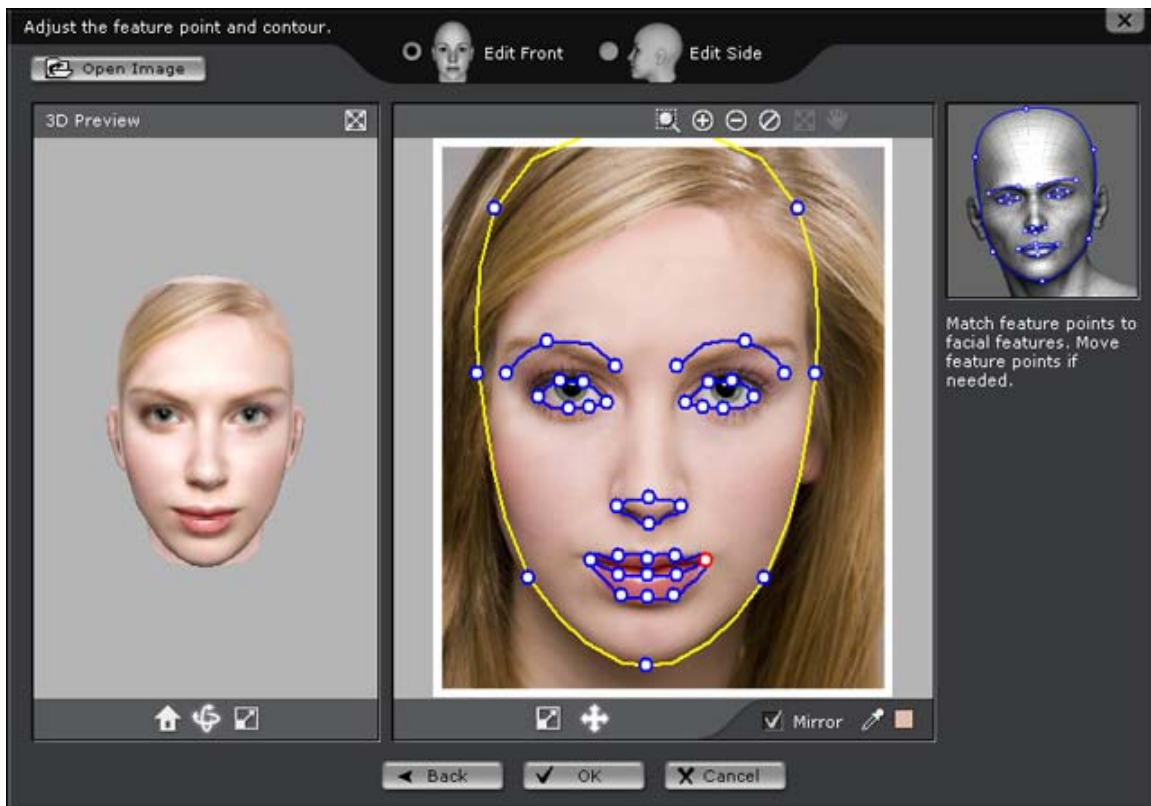


Roll X-Y: roll the 3D contour.

Click the next  button to proceed to the next stage, [Adjusting feature points and contours](#).

► Adjusting Feature Points and Contours

Adjust the eye, nose, mouth and eyebrow points to exactly match your imported picture.



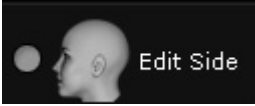
Select the Pan  tool and drag a point to move it or drag on a contour (ex. the mouth contour) to move the group of points.

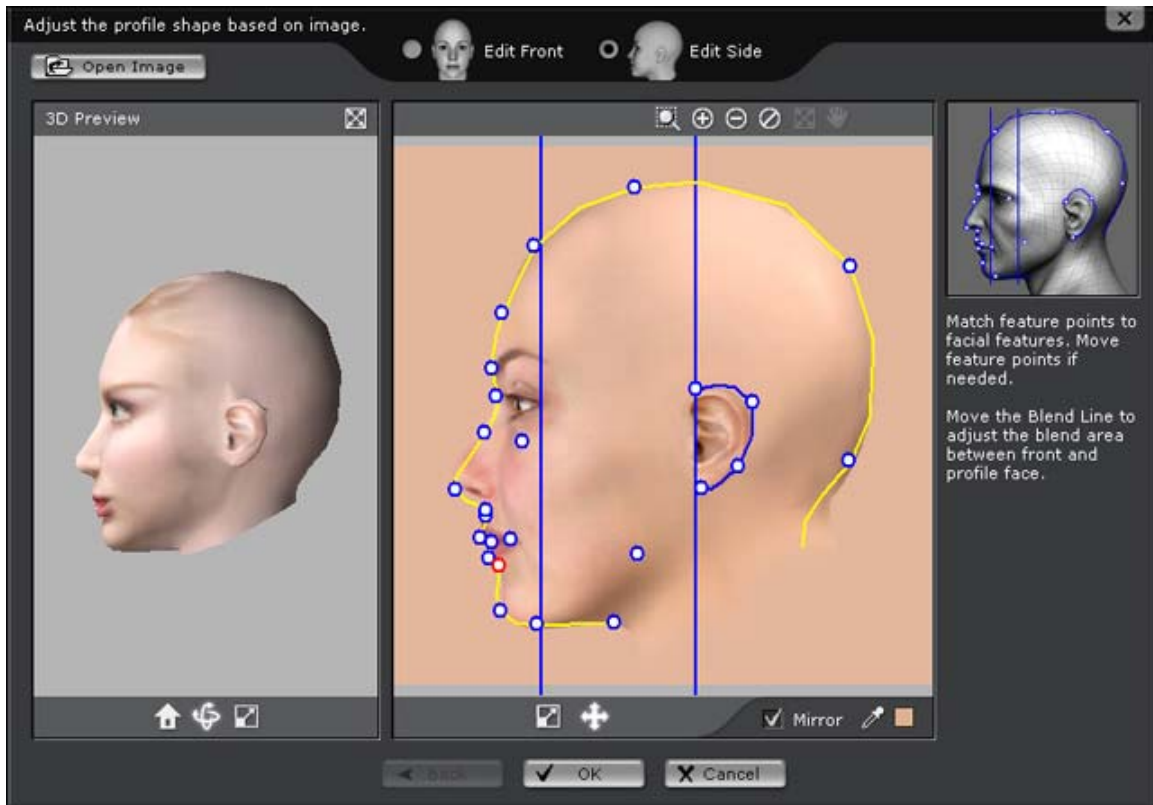
Select the Zoom  tool and drag on a contour to scale the group of points.

Check the Mirror  ☒ Mirror option to adjust the points symmetrically, uncheck it to switch to independent point adjustment. The default setting is on.

Use the Dropper  tool to pick the middle tone of the skin color. iClone samples the skin tone automatically for matching the skin color. Check how the front photo blends with the profile image, if the skin tone does not match properly (this could happen when the face is covered by something or the contrast of the photo is too high), you can pick the middle skin color manually and check the 3D head to get a better result.

When the features and contours on the front of the face are properly set, click the

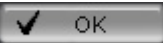
Edit Side  button to set the profile if necessary.



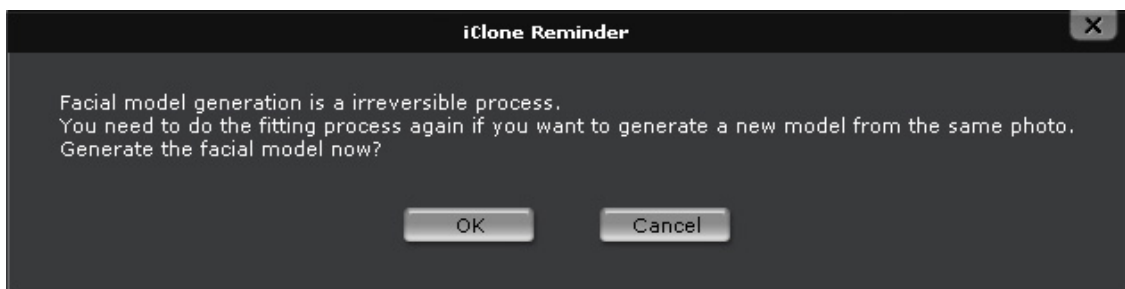
Move the points or the group of points the same way as front. Drag the 2 vertical lines to define the texture blend area and check the result on the 3D head.

You can import your own profile photo by clicking the Open Image

 Open Image button.

Click the OK  button when you are happy with your settings.

When the following dialog box appears, click the **OK** button to apply the changes.



Give the 3D head a name and save it in the default facial folder. The new head you have created is automatically applied to the current project.

You have now created a 3D head that can be applied to any new project by double-clicking it. The new head you have created can be found in the list of custom faces.

To find a custom face, click the  **Head** tab to begin facial settings and click the **Custom** tab to display the list of custom heads.

◎ The Texture of Face

▶ Channel Mapping

iClone provides you with multiple channels to modify the texture individually. The channels are **Diffuse/Glow/Opacity/Bump** and **Reflection**. With the **Paint Tools** provided, you may draw on the pane directly or edit the channel in your **Image Editing Software**.

- **Diffuse:**

1. Select **Diffuse** in the **Map Channel** drop-down list.
2. Change the brush color and adjust the brush size/opacity.
3. Paint directly on the plan window.
4. The 3D view port will change instantly to reflect the changes.

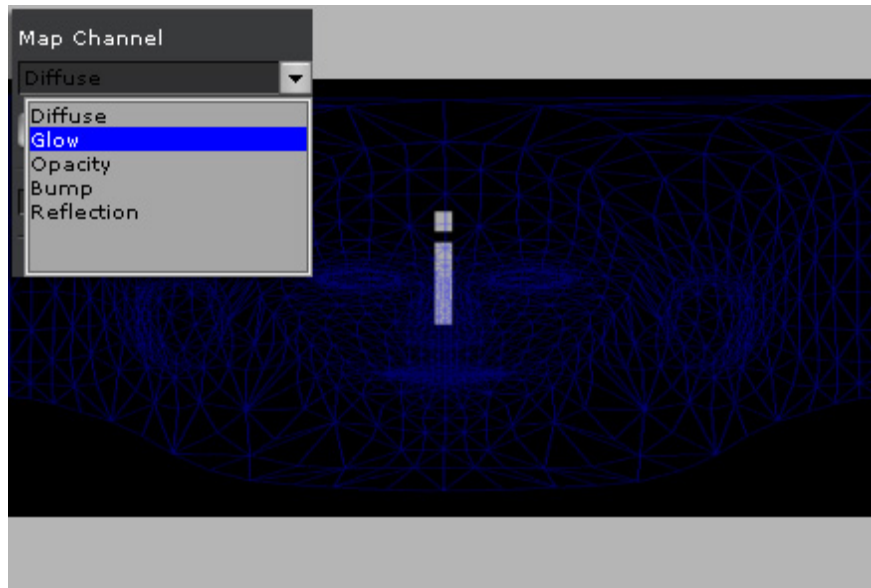


Diffuse Channel Modified

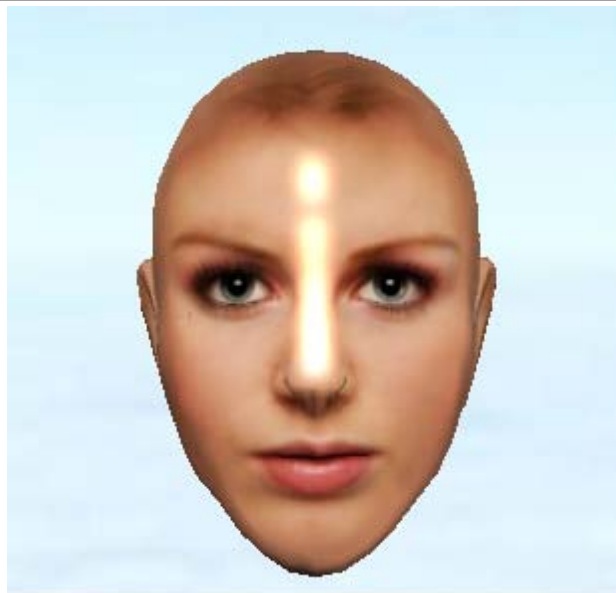


- **Glow:**

1. Select **Glow** in the drop-down list.
2. Repeat the steps you did for the Diffuse texture to modify the image.

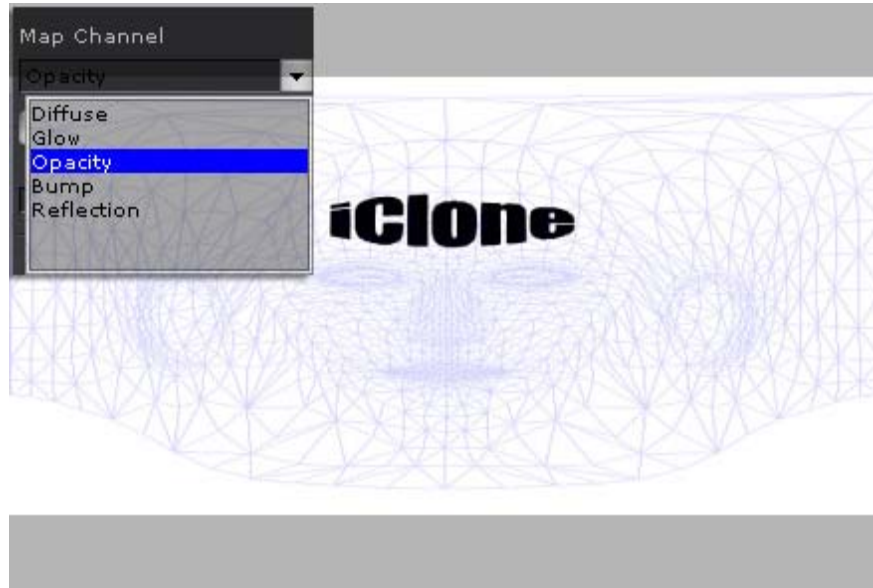


Glow Channel Modified



- **Opacity:**

1. Select **Opacity** in the drop-down list.
2. Repeat the steps you did for the Diffuse texture to modify the image.



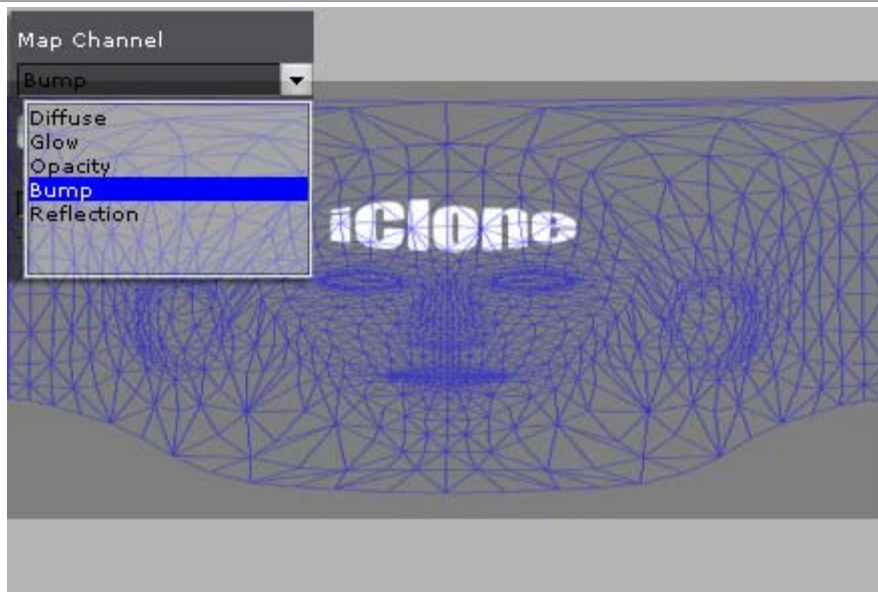
Opacity Channel Modified



- **Bump:**

You may add a grayscale image or a [Normal Map](#) to create bump or wrinkle effect on the face.

1. Select **Bump** in the drop-down list.
2. Repeat the steps you did for the Diffuse texture to modify the image.

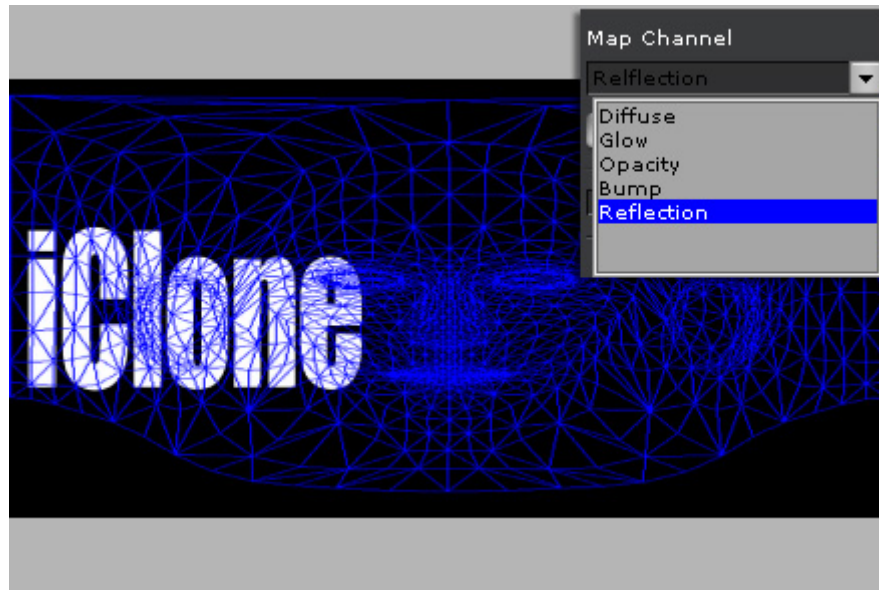


Bump Channel Modified



- **Reflection:**

1. Select **Reflection** in the drop-down list.
2. Repeat the steps you did for the Diffuse texture to modify the image.



Reflection Channel Modified



► Normal Map and Wrinkle Effects

iClone provides the bump map channel to add facial wrinkle effects. You may import the normal maps from iClone program folder \iClone Template\texture\face normal. Using **Pixel shader**, normal map can create sophisticated texture effects without increasing the face count of the head.

Custom facial normal maps can be generated from ZBrush or 3DS Max, please check our developer forum for the facial map developer resources.



The original head without normal map

Import Normal Map

1. Select **Bump** in the drop-down list.
2. Click the **Import**  button.
3. In the bottom of the browser, check the **Import as normal map** ☐ **Import as normal map** box. Select your normal map image and click **OK**.
4. Click **OK** to exit the **Adjust the facial texture** panel.



The Normal Map image



The result after the normal map is applied

Shortcut to Import Normal Map

Other than importing normal map via the **Adjust the facial texture** panel, you have another shortcut to import it.

1. Go to the **Actor/Skin/Modify** page.
2. Scroll down to the **Material & Texture Settings** section.
3. Select the **Face** in the **Select Material** drop-down list.
4. Select the **Bump** channel and click the **Import** button.
5. Check the **Import as normal map** ☐ Import as normal map box. Select your normal map image and click **OK**.

Please refer to the [Load and Save Materials](#) section for more information.

Enhance the Normal Map Effect

To enhance the normal map effect after applying, you may need to adjust some objects to enhance the normal map effect.

- Click the **Head/Texture** button to invoke the **Adjust the facial texture** panel. Increase the **Specular** value.

The normal map effect turns to be more obvious.



- Decrease the **ambient color** in the **Adjust the facial texture** panel and the **ambient light** brightness.



► Reflection and Refraction

If you wish to change the overall **Reflection** and **Refraction** effect of the face, please follow the steps below.

- **Reflection:**

1. Check the **Reflection** box.
2. Drag the slider to adjust to the desired effect.



Initial look of the head

The scene is reflected on the head

Note:

- o The **Reflection Channel** reflects a given **2D image**. However, the **Reflection** setting specifies the head to reflect only the surrounding **3D objects**.

- **Refraction:**

1. Check the **Refraction** box.
2. Drag the slider to adjust to the desired effect.



Initial look of the head

The scene is refracted through the head

Note:

- o The **Refraction** forces the head to become transparent so above result can be seen.

► Texture Settings

You may adjust other settings to change the appearance of the head.

Diffuse, Ambient, and Specular Color Settings

These three settings specify how the head reflects the surrounding light. The **Diffuse Color** specifies the overall color reflected from the head when the light hits it and the **Specular Color** represents the color of the brightest spot of the head.



Original Appearance

Diffuse Color: 
(Adjust the skin color)



Specular Color: 
(Create the suntan effect)

- You have to increase the value of the **Specular** to see the color effect.

Independent from the Diffuse Color

Self-illumination defines how the actor's head ignores the **Diffuse** color. The higher the value, the less the **Diffuse** color affects the head.

	
Diffuse color:  Self-illumination: 15	Diffuse color:  Self-illumination: 100
• It is very easy to create a cartoon look by using the Self-illumination feature. • The Light color is white in this example. • The Diffuse color is totally ignored as the value is 100.	

Independent from the Light Effect

Self-illumination defines how the actor's head ignores the effect from the light. The higher the value is, the less the light affects the head.

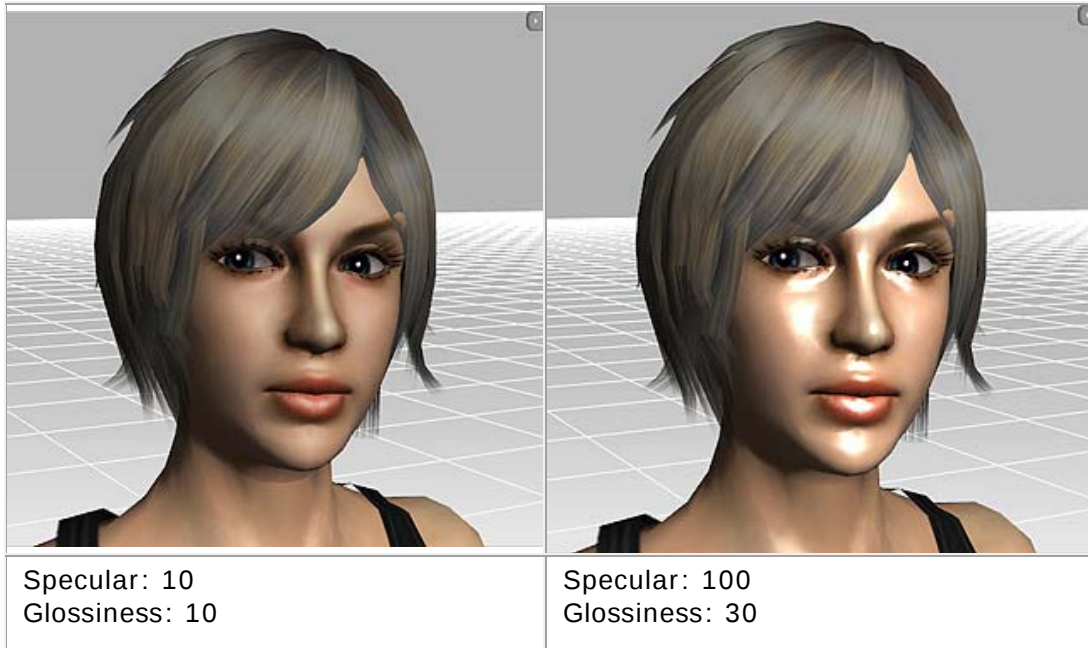
	
Light color:  Self-illumination: 15	Light color:  Self-illumination: 100
• The Light color is totally ignored as the Self-illumination value is 100. • When the light effect is ignored, the shadow effect will decrease as well.	

Create Oily or Wet Look Face

If you plan on creating an actor with oily or wet looking face, you need to adjust two parameters: **Specular** and **Glossiness**.

Specular reflection is the mirror-like reflection of light from the head, in which light from a single incoming direction is reflected into a single outgoing direction.

Glossiness is based on the interaction of light with physical characteristics of a surface. Materials with smooth surfaces appear glossy, while very rough surfaces appear mat.



⦿ Synchronizing Skin Color of Head and Body

To synchronize the skin color of a head and a body after applying a different head, please follow the steps below:

1. Select an actor for the head change operation.



2. Apply a different head from the head library. The skin color of the head might differ from the body.



3. Go to the **Actor/Skin/Modify/Material & Texture Settings** section, use the **Pick** tool and click on the head to pick its color.
4. Activate the **Effect All Materials** option to synchronize the skin color of the head and the body.



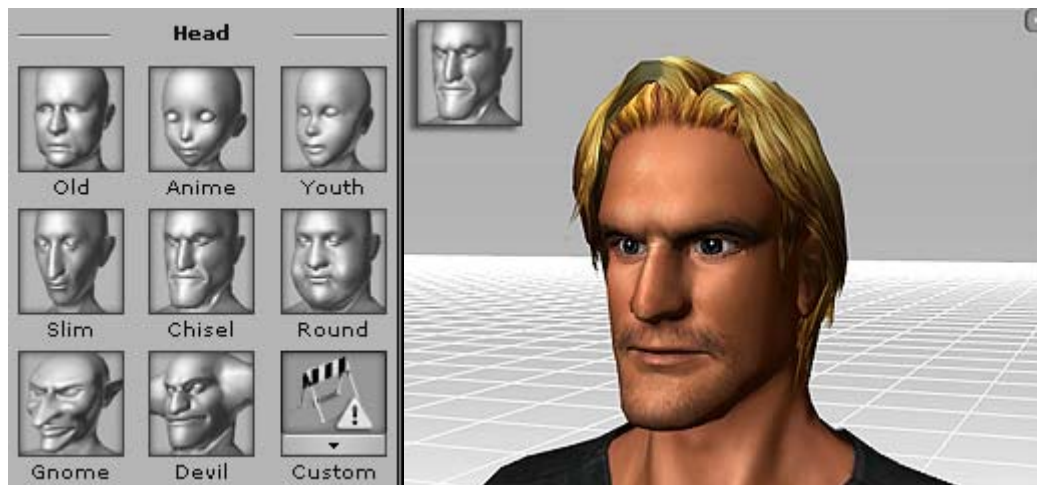
⦿ Full Head Morph

After you create a head for the actor, you may adjust the features on the face individually. However, you can also apply one of the built in **Full Face Morph** templates to automatically change your actor's look in one click.

1. Double click the desired actor and switch to the **Head/Faces/Modify** page.



2. Select the icon in the **Facial Features** section.
3. Pick one of the templates to apply the full facial morph.



4. Drag the **Weight** slider to adjust the strength of the facial features. You may click the **Reset** button at any time to remove the effect of the template.





Note:

- o You may adjust facial feature deformation after the **Face Morph** has been applied, however, you can only apply one **Full Face Morph** template at a time.

Multi-Full Head Morph Effects

If you want to blend two or more **Face Morph** templates to one actor, please follow the steps:

1. Pick the desired actor and apply one **Face Morph** template. Adjust the **Weight** value.



2. If you want to blend two **Face Morph** templates together, you may first apply one of them, save it by adding it to the **Content Manager/Custom** library, apply it back and then add the other **Face Morph** template.

3. Pick any other **Face Morph**.

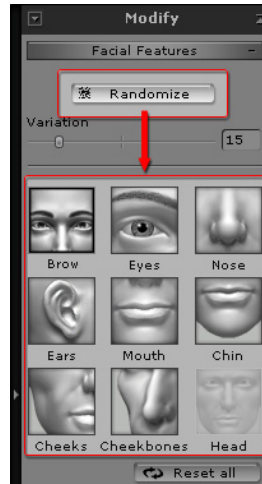


Thus, two **Face Morph** templates take effect on the same actor.

⦿ Randomizing Facial Features

iClone gives you the opportunity to randomize facial features by setting the variation strength.

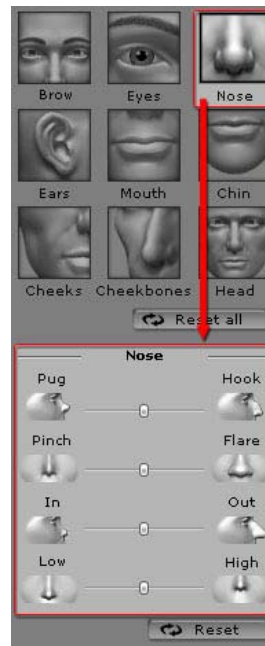
1. Have a character in selection.
2. Toggle to **Head / Faces / Modify Panel**.
3. iClone randomizes the 9 facial features from below to create a new face.



4. Set the variation strength and click the **Randomize** button.



5. You are satisfied with the randomized face, but you want to further enhance each feature of the face.



Adjust the sliders to refine each part of the nose.

6. A whole new look has been created.

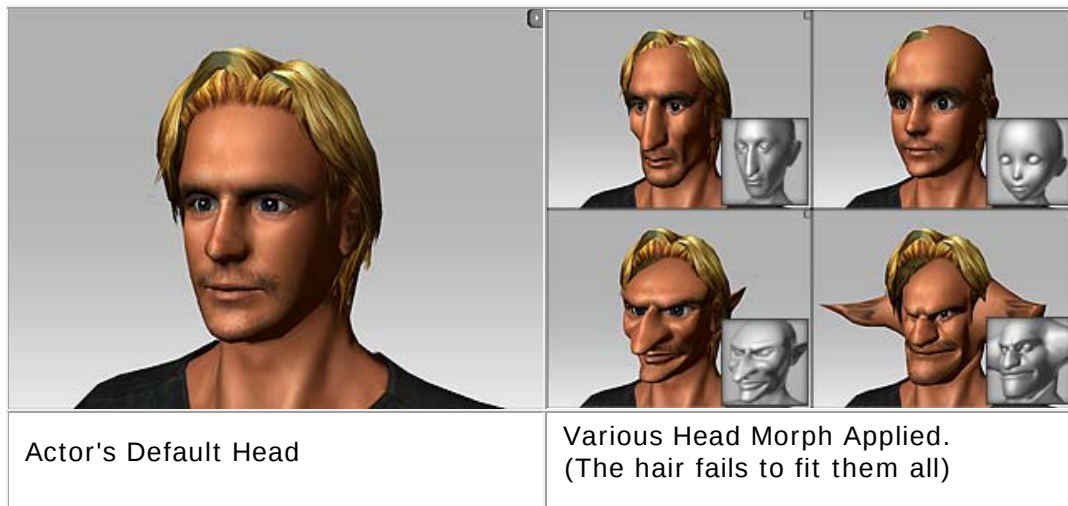


Note:

- o The randomizing function accumulates each face feature's value by the value you set in the parameter. You may press the **Reset All** button to start from the original face or simply press the **Reset** button to reset each facial feature channel.

⦿ Full Head Morph and Hair Offset

iClone provides the **Full Head Morph** feature for you to change the whole face features altogether. Due to the head shape variations which can be caused by photo fitting, scale, and morph, no simple rule can be applied to perfectly fit any hair to the head without adjustment. **iClone** provides a new UI which allows users to keep the hair offset setting, and store the values in the head. When another hair is applied, it offsets correctly to fit the particular head.



iClone provides a new UI to keep the offset relation between the head and the hair. The offset data will always be stored in the **Head**. Thus, whenever you apply a new hair, it will always follow the setting defined.

1. Double click the actor that has been applied with one of the face morph templates.
2. In the **Modify** page, scroll to the **Hair Offset** section. Modify the parameters to fit the hair to the head.



3. Apply another hair style from **Actor/Hair/Content Manger**. Since the hair offset is kept, the hair applied will be fit perfectly to each head.



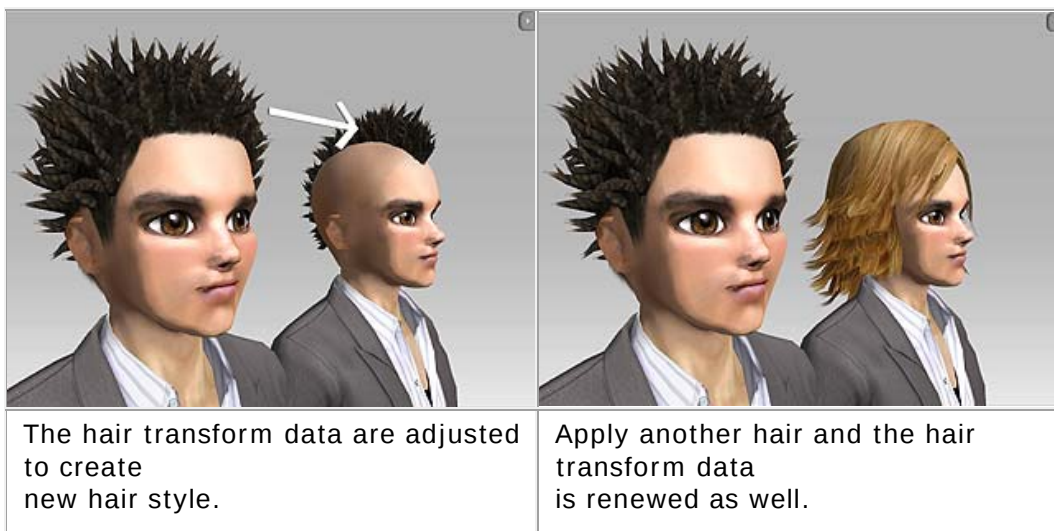
Hair Offset VS. Hair Transform Data

Hair Offset (in **Head/Faces/Modify** page):

- Maintains the offset relationship between hair and head.
- The offset data is stored in **Head**.
- No further adjustment is needed after another hair is applied to the same head.

Hair Transform Data (in **Actor/Hair/Modify** page):

- For adjusting and customizing the hair style only.
- The transform data is stored in individual **Hair**.
- The transform style is refreshed when a new hair is applied.



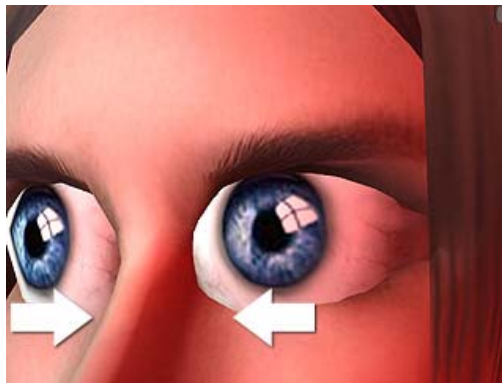
☉ Basic Eye Settings

The basic eye settings involve **adjusting the size** and **changing the textures** of the eyes.

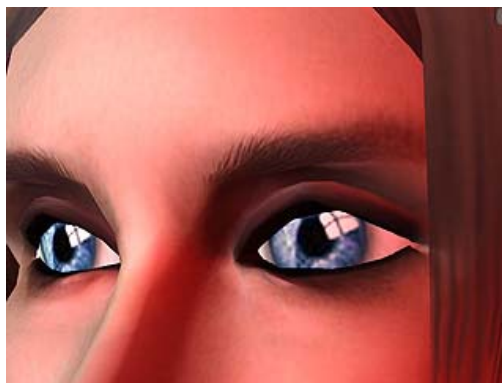
Eyeball Size

The recommended flow for adjusting the transform data of the eyeballs is as follows.

1. Zoom in to the eyes of the target actor.
2. Change the size by modifying the value in the **Scale** field. Do not worry if the eyeballs pop out. We will rectify this issue later.
3. Use the **Narrow / Wide** slider to adjust the distance between the two eyeballs.



4. Adjust their position by modifying the **Move** data.



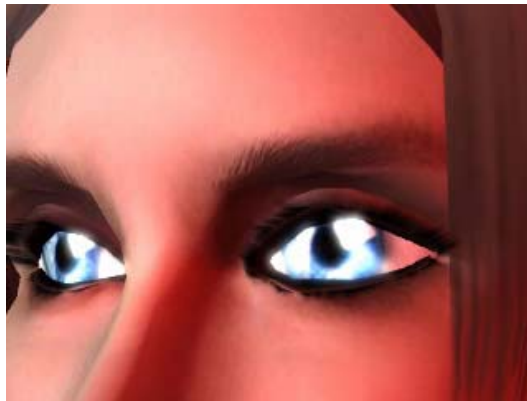
Changing Textures

The eyes' texture channels can be used to create various effects. Utilizing videos will create even more specific effects.

- Video applied to the **Diffuse** channel to create "burning eyes".



- Video applied to the **Glow** channel to create "sparkling eyes".



- Video applied to the **Specular** channel to create "teary eyes".



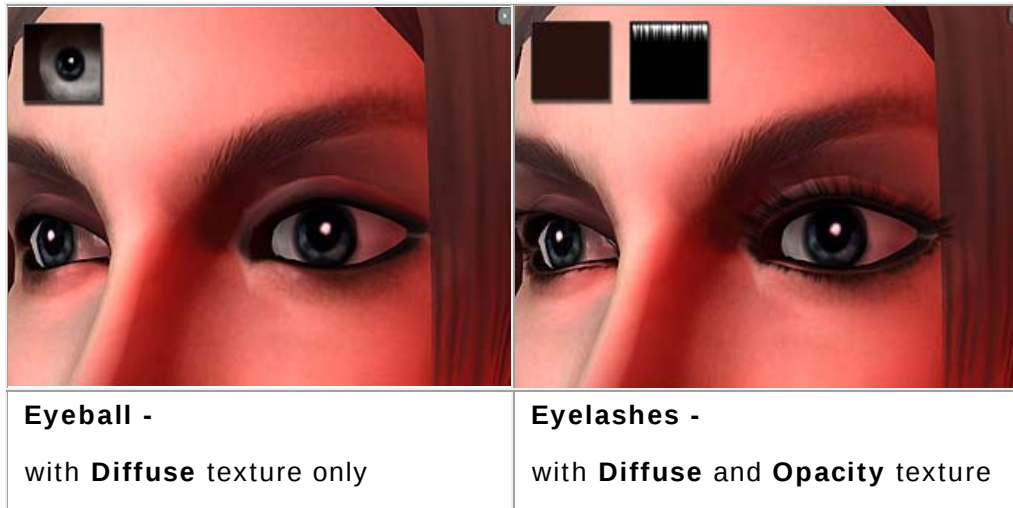
⦿ Advanced Eye Settings

An iClone actor's eye can further be customized by adjusting the **Texture**, **Color**, **Eyelashes** and **Specularity Settings**.

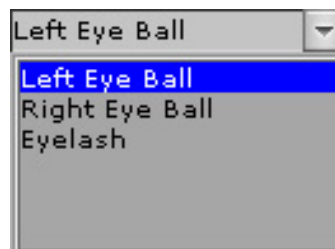
Texture Settings

You can generate various eyes and eyelashes by modifying the six texture channels that are provided for an actor's eyes and eyelashes. Please refer to [Types of Maps](#) for more information about the texture channels.

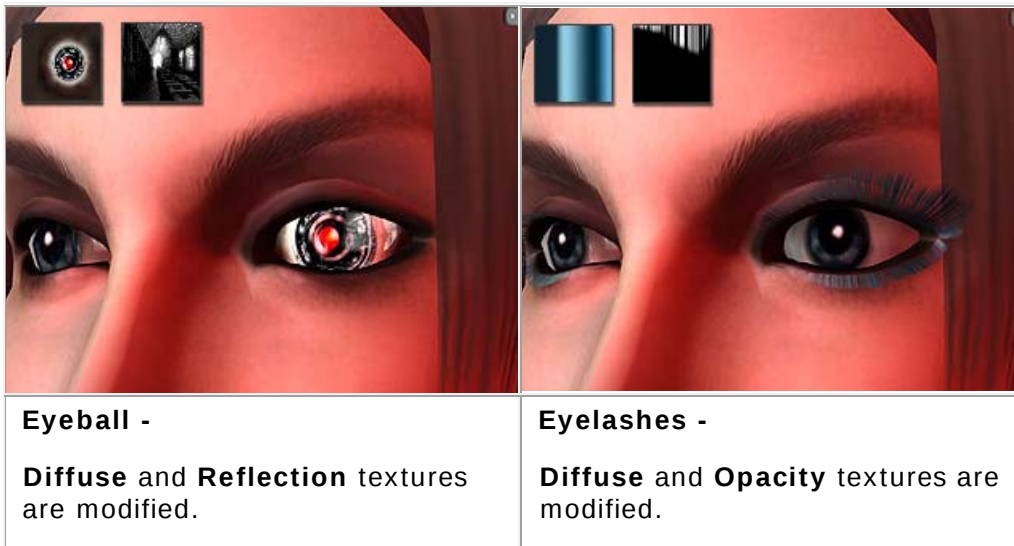
1. Select the desired actor and access **Head/Eyes**.



2. Select a target eyeball or the eyelashes from the drop-down list in the **Eye Map** section.



3. Change the textures of the eyeball or the eyelashes.

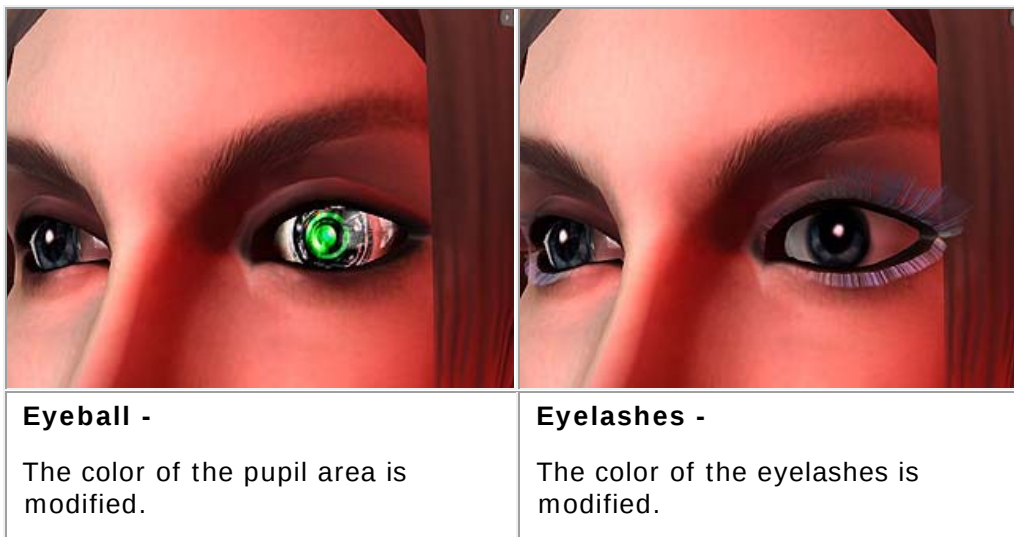


4. Please do not resize the **Diffuse** image if you want to adjust the color settings of the pupil or the white for the eyeballs.

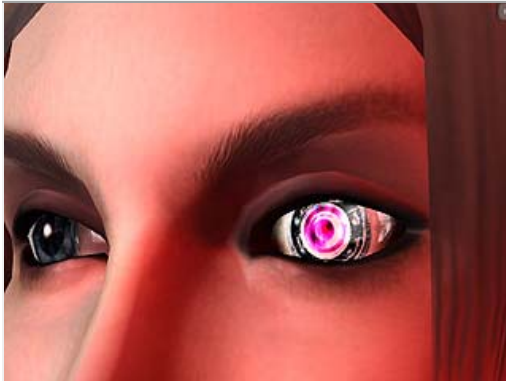
Color Settings

Each eye's and the eyelashes' color can be modified by adjusting the **Color Settings**.

1. Choose the **Pupil** or **The Whites** option.
2. Assign values to the **Brightness**, **Contrast**, **Hue**, and **Saturation** parameters.



3. The **Mirror** option can be activated to adjust both eyes while the **Image Invert** option will invert the colors of the pupils' or whites' diffuse map.



Eyeball -

The color of the pupil area is inverted.



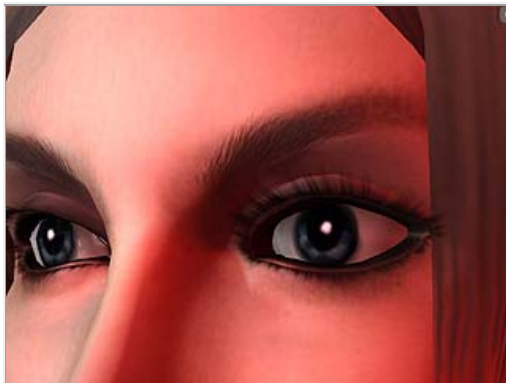
Eyelashes -

The color of the eyelashes image is inverted.

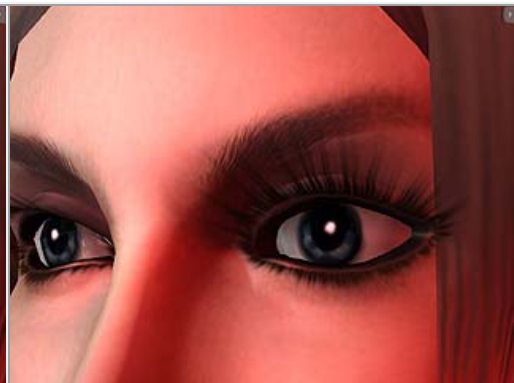
Eyelashes Settings

An actor's eyelashes can be toggled and the length of the eyelashes can be adjusted subsequently.

- Activate the **Eyelash** option in the **Eye** section to show or hide an actor's eyelashes.
- Adjust the **Eyelash Length** slider to change the length of the eyelashes.



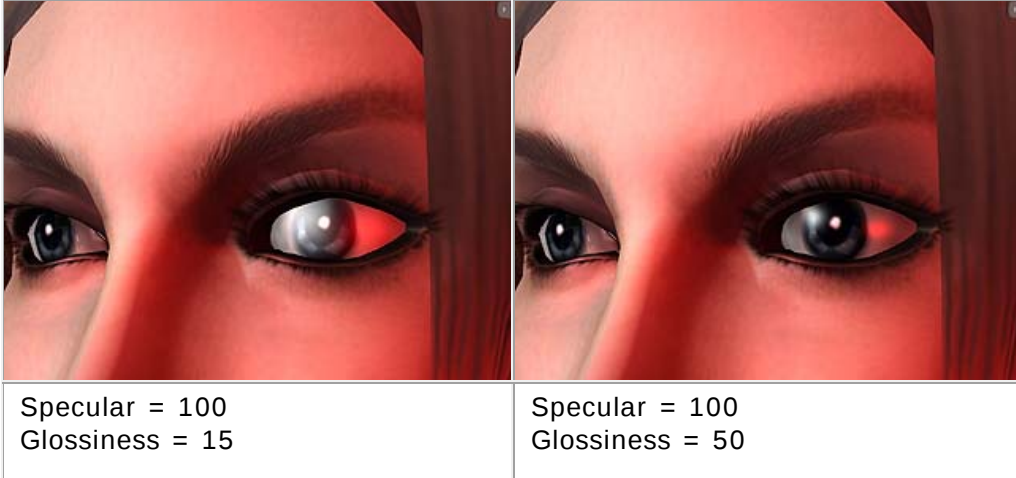
Initial length.



Length increased.

Specular Settings

The **Specular Settings** define the strength of the reflection from the light, as well as the glossiness of the specularity.



Animation

☉ Director Mode vs. Editor Mode

iClone splits the program into two exciting and revolutionary ways to unleash your creativity , **Director Mode** and **Editor Mode**. With this new design, **Machinima Filmmaking** and **Animation Creation** are integrated into one single program. Not only that but **iClone** actors and iProps are now preset with interactive controls for immediate use. In **Director Mode**, users can simply use the **WASD** hotkeys and the right-click menus to control movement across any user defined terrain.

The Workflow of Director/Editor Mode

The recommended steps to begin creating movies with **iClone** is as follows:

1. Use the **Editor Mode** to build your 3D world, including placing the actors, the props, the terrain and so on.
2. Switch to the **Director Mode** to move your actors or iProps automatically as if you were playing a 3D game. The animations and movement are recorded as you "play".
3. Switch back to the **Editor Mode** to edit all the animations and motion clips recorded in the last step.
4. Export your project as a media file.

Director Mode

- In **Director Mode**, only the actors and iProps can be picked and act.
- You may use the right-click menu system of the actors or props to direct them to move, perform actions or operate iProps such as cars or bikes. It is so-called **Play to Create** technology since all the motions in this mode will be recorded as soon as you direct the actors to act. You use the keyboard to control the selected actor or iProp, just like you do in a game.
- You are free to switch to different cameras to film in **Director Mode**. If the desired object you select is an actor or an iProp, you may have two more cameras named **Follow Cam - Actor** and **Follow Cam - Bird** to record the movie with game-like perspectives. Using **F7** toggles between these two cameras. The recorded result of each camera may be sent back to **Editor Mode** for further editing.
- Press the **Space Bar** to start/pause recording. You may pause recording anytime if you are not satisfied with the result and the drag the play head back to re-record.

Editor Mode

- You may fine tune the motion/animation clips recorded from the **Director Mode** to customize your own movie even further.
- There are many items in the right-click menu for you to use, saving you a lot of time searching the interface for certain commands. More objects can be picked and manipulated in this mode in addition to the actors and iProps.
- Pressing the **Space Bar** in **Editor Mode** allows you to play/pause the current project to preview the result.

⦿ Clearing Clips

iClone provides several methods to clear multiple clips for objects.

Reset All (Edit / Director Mode)

1. Please make sure that you really intend to remove all the motion/animation clips.
2. Press the **Reset** button on the play bar.

All the motion/animation clips of **All Objects** will be removed.

Clear Clips of a Specific Object (Edit Mode)

1. Right-click on the target objects whose clips you want to remove.
2. Select **Remove All Animation** from the pop-up menu.



Clear Specific Clip of a Target Actor (Edit / Director Mode)

1. Select the target actor.
2. In the **Play Bar**, select the desired track from the **Action Track Selector** list.
3. Click the **Next / Previous Action Tab** (⏮️⏭️) to move the play head to the start frame of the clip you want to delete.



4. Click the **Delete** (🗑️) button to remove the clip.

Please refer to the [Quick Tab Bar for Simple Timeline Editing](#) section for more information.

Clear All Clips in a Single Track (Edit/Director Mode)

1. Select an object whose specific track you want to clear.
2. Press **F3** to show the **Timeline** and turn on the target track.



3. Double-click on the title of the track to select all the clips in it. Press the **Delete** button. All the clips in the track will be removed.



⦿ Facial Animation

► Introducing the Puppeteering Panel



1. Puppet Profile	Select one of the built-in profiles with different personality from the list. Each profile contains various expressions.
2. Full Face Control	Select one of the expressions with pre-defined weight settings for various facial features.
3. Preview	Click this button and then press the Space bar to preview the expressions triggered by your input device (Mouse by default).
4. Record	Click this button and then press Space bar to start recording a motion clip. The recording will be added into the Avatar / Face / Expression Track in Timeline.
5. Setting	Click this button to invoke the Puppeteering Settings panel.

► Face Control Puppeteering

1. Click the **Puppet**  **Puppet** button from **Animation / Facial Animation** modify panel.
2. Pick a desired profile from the **Puppet Profile** list.



3. Choose a preset in the **Full Face Control** list.



4. Click the **Preview**  button and press the **Space bar** to start previewing.
5. Move your mouse to puppeteer your model. Press the **Space bar** again to stop previewing.
6. Click the **Record**  button and press the **Space bar** to start recording the motion as puppeteered by your mouse. (Press the **Enter key** to start half-speed recording mode)
7. Once the recording stops, keys will be added into the timeline **Expression Track** automatically.

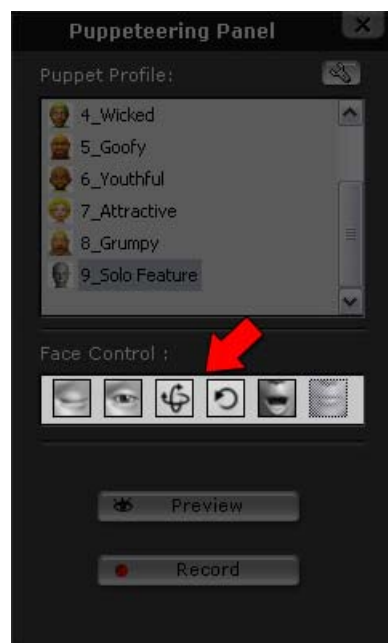
► Solo Feature Selection Puppeteering

Solo feature selection region allows you to select individual/multiple features and create expressions all at once.

1. Click the **Puppet**  **Puppet** button.
2. Select **Solo Feature** from the **Puppet Profile** list.



3. Select one of the **Solo Feature** from the **Face Controls**.



Note:

- o The highlighted features will have keys added to the **Expression** track in Timeline.
- o You may optionally select the **Head Rotation** or **Head Tilting** features to be recorded as well.

4. Click the **Preview**  button and press the **Space bar** to start previewing.

5. Move your mouse to puppeteer your model. Press the **Space bar** again to stop previewing.

6. Click the **Record**  button and press the **Space bar** to start recording the motion as puppeteered by your mouse.

7. Once the recording stops, keys will be added into the **Expression Track** automatically.

▶ Recording Blinking

Blinking eyes can easily be recorded as motion clips in the **Expression Track**. They are recognized as CTS as you record the blinking in iClone.

Quick Blink

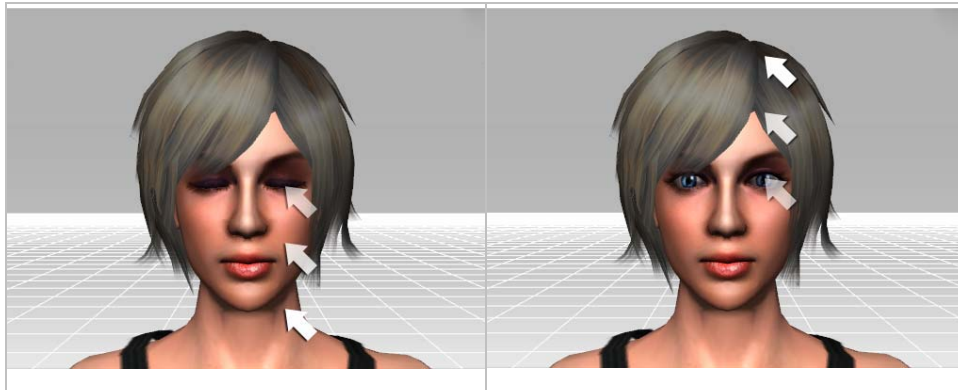
When both upper eyelids are selected, a left mouse click will cause the eyes to blink. If you only select one of the upper eyelids, you can have that eye wink.

1. Select any of the features below.
2. Click the **Preview**  button and press the **Space bar** to start previewing.
3. The speed of the blinking is determined by how short or long you click the left mouse button.
4. Click the **Record** button and press the **Space bar** to start recording and press the mouse button or move your mouse cursor whenever you want the model to blink.
5. The blinking of the eyes will be overlaid into the **Expression** track in the timeline once the recording finishes or you have stopped by pressing the space bar.

Control the Speed

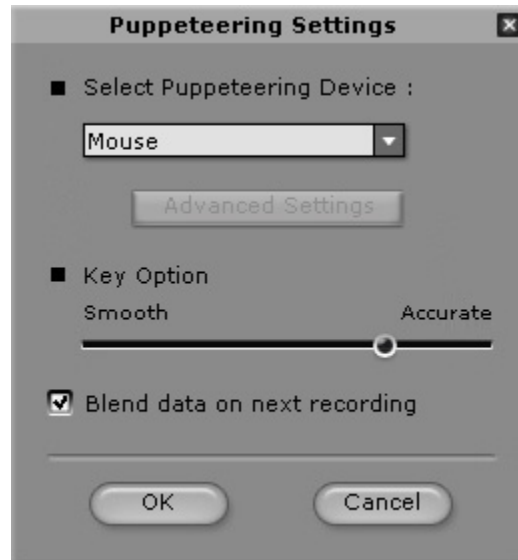
In order for a character to blink his or her eyes slowly you have to move your mouse accordingly. This method can also be used to make the character close the eyes for as long as you want.

1. Select the upper eyelids in the Puppeteering Panel.
2. Click the **Preview**  button and press the **Space bar** to start previewing.
3. Click the **Record**  button and press the **Space bar** to start recording at normal speed.
4. Press the **Enter** key instead of the **Space bar** and the recording will be done at half-speed.
5. Move your mouse up and down slowly.



► Puppeteering Settings

In the Puppeteering Panel, click the **Setting** button to invoke the **Puppeteering Settings** panel.



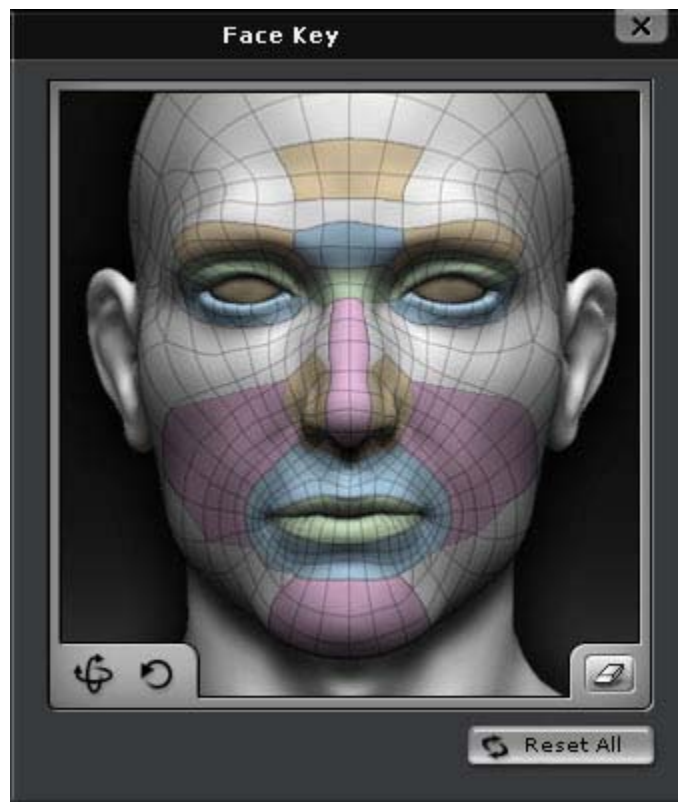
- **Select Puppeteering Device** - You may specify the input device that is used to trigger the movements of your character during recording.
- **Key Option** - Recording in various levels of accuracy. The closer the slider is moved to the **Accurate** end, the more details will be recorded as the mouse moves.
- **Blend data on next recording** - Activate this checkbox so the new motions of the selected features are blended into to existing keys after recording.

☉ Adding Face Keys - Muscle vs. Detail

You may use face keys to fine tune your animation, layer subtle expressions to your characters. Click the **Face Key**  **Face Key** button under the **Facial Animation** modify panel to create individual face keys by adjusting the feature regions.

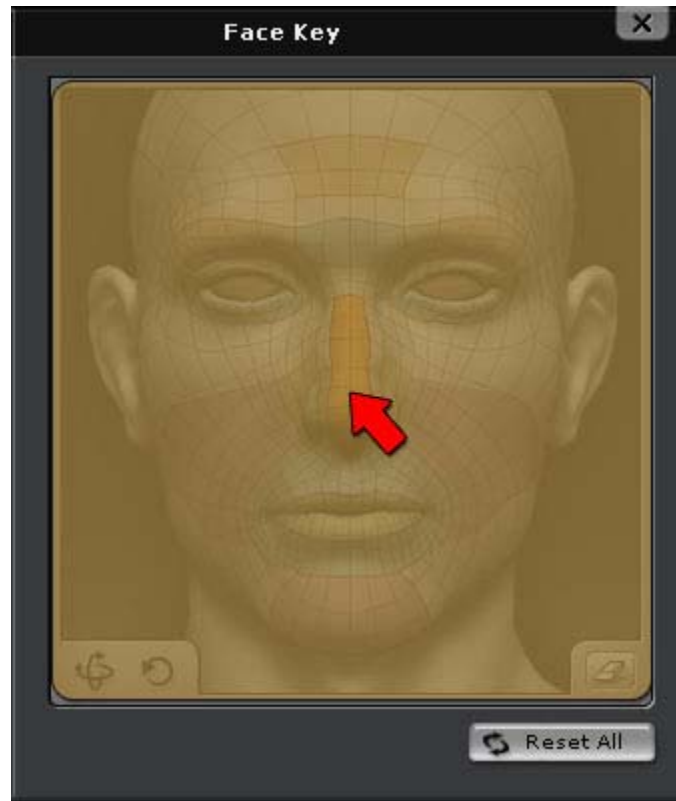
Muscle

Muscle allows you to adjust each region highlighted on the face, but it cannot fine-tune the details of the face. When you are using **Muscle** mode to add facial expression keys, you can control up to 19 regions.

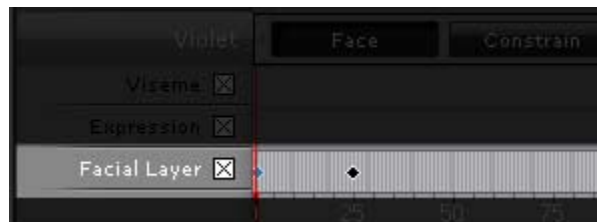


1. Select the character and go to **Animation / Facial Animation / Face Key**  **Face Key**.
2. The **Face Key** window appears. Select the **Muscle**  **Muscle** tab.
3. Highlight one of the features.

4. Move your mouse in the interaction area to create a new facial key.



5. Drag the timeline slider to a new position.
6. Create another expression to blend in with the first key. Now, both keys appear in the **Facial Layer** track.



You may click the **Reset All** button to return to the default facial expression before creating another face key.

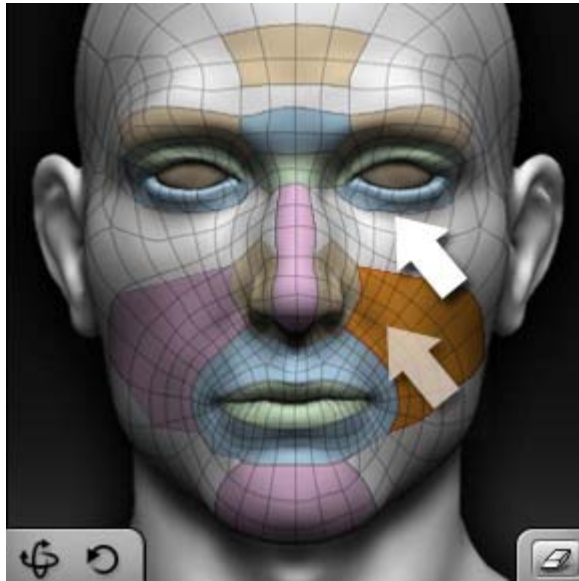
Note:

- o If you do not want the avatar to blink during the puppeteering session, you may go to **Head/Eyes** to disable **Blink**.

⦿ Adding Face Keys - Layer Editing

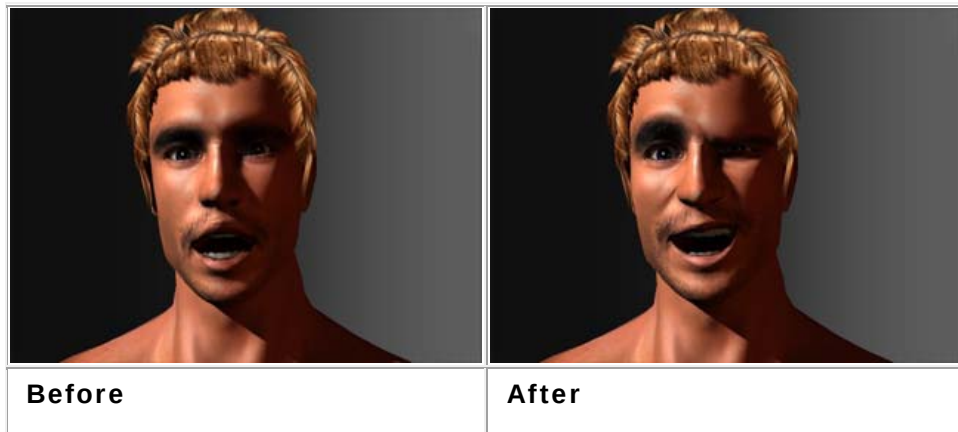
After you have created facial expressions for your character you can fine-tune the expression by using the **Face Key** technique. These keys will be overlaid and blended with any already existing facial expressions.

1. You may first record expressions by using the puppeteering technique.
2. After you have created the clips, open the timeline panel. The clips will be recorded in the **Expression** track.
3. Focus on the **Facial Layer** track and move to the frame you want to enhance the expression in.
4. Open up the **Face Key** panel.
5. You may select **Muscle** to create the **Facial Layer** keys.
6. Click and select the facial muscles you want to create an expression with. Drag in the **Face Key** window and the facial expression will change instantly.



7. Fine-tuning the expression using this method will create a new key in the **Facial Layer** track.

8. Here is a typical result of fine-tuning a facial feature.



Create any facial expressions from the Puppeteering technique. Then fine-tune them with the **Muscle** function in the **Face Key** panel if necessary.

⦿ Director Mode

▶ Starting the Director Mode

iClone splits the program into two exciting and revolutionary ways to unleash your creativity, **Director Mode** and **Editor Mode**. With this new design, **Machinima Filmmaking** and **Animation Creation** are integrated into one single program.

1. Pick an actor and click on the  button to enter the **Director Mode**. You will see the selected mode displayed in the bottom left corner of the 3D viewer.



2. Now you can work as a movie director to command and control the interactive scene elements (e.g. actors and cars). Use the **WASD** keys to have the object **Move** or **1, 2, 3...** keys to have the object **Perform**. Please refer to the [Two Methods to Direct the Actor](#) and the [Two Methods to Direct the iProp](#) sections for more information.
3. iClone locks all the user interface elements of the **Editor Mode** to separate the **Editor Mode** from the interactive **Director Mode**. You may then focus on **Directing the movie**.

4. Double click to select the actor. A pyramid indicator shows the currently selected object.



5. Click the **Record**  button or alternatively press the **Space bar** to start the action recording (you may press the **Space bar** again to **Pause** recording at any time).

Note:

- After you click the  button, you will see the **Director Mode** panel.
 - Click the **Action** button to start recording.
 - Press the **Enter** or **X** button at the right-top of this panel to adjust the camera or switch targets before recording. You may press the **Space bar** later to start recording.

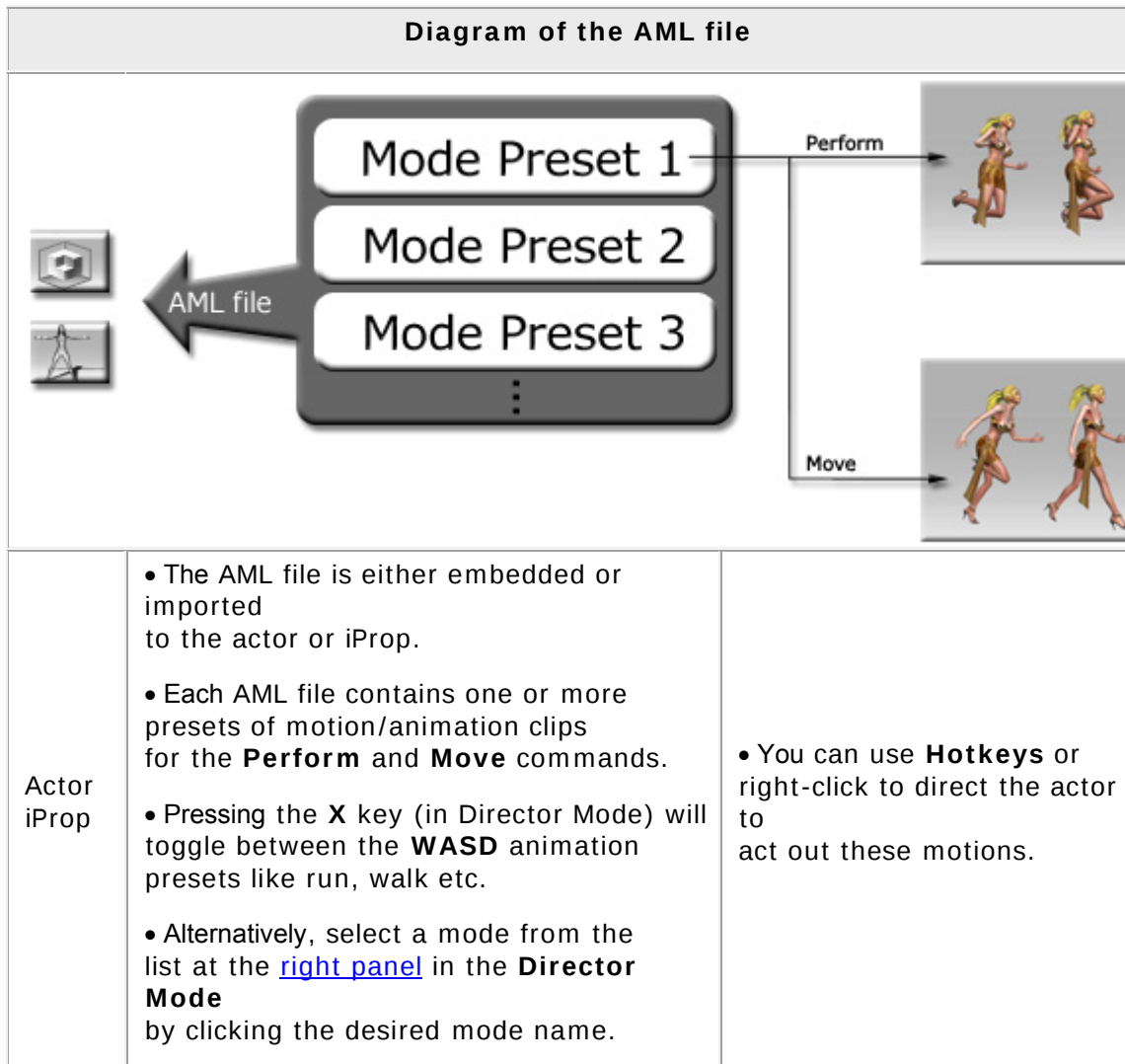


- Press **F7** to switch between follow cam-actor and follow cam-bird.
- If you don't do anything, you will see the play-head advancing along the timeline and the time meter will begin counting up, while your actor stands there with life-like idle motions.
- You can start to interact anytime with your actor.
- Please refer to the [Director Mode Shortcuts](#) section for more information.

⦿ Director Mode – The Actor

► Behavior Switch

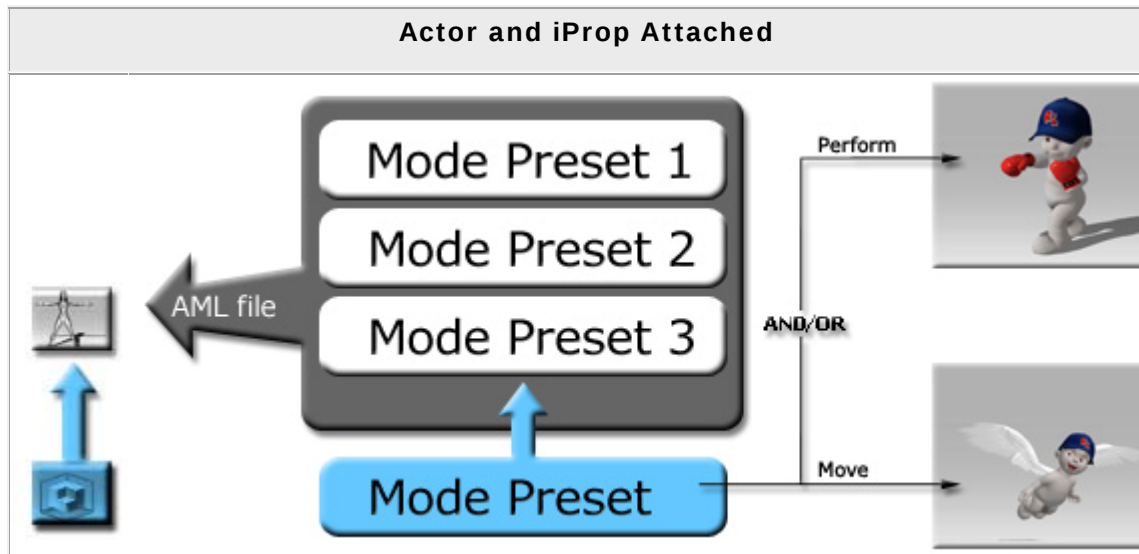
The term **Behavior Switch** means to change an **Actor's Persona** or **iProp's Action Behaviors**.



Also see:

- [Two Methods to Direct the Actor](#)
- [Two Methods to Direct the iProp](#)
- [Human Centric Control](#)

If you have an actor and an iProp connected using the **Attach to** function, the actor will have access to the iProp's presets.



► Persona

What is Persona

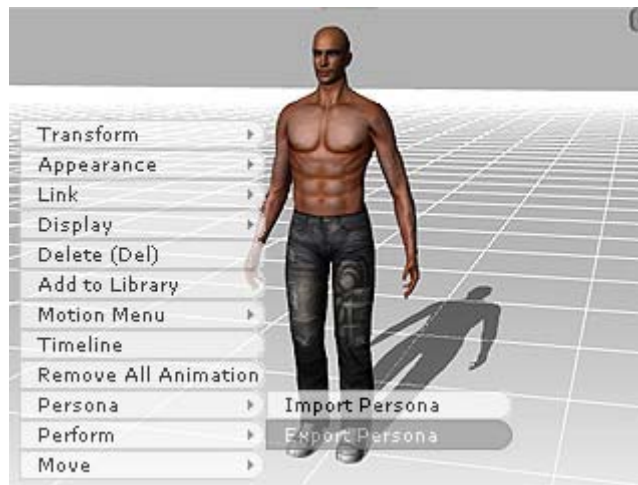
A **Persona** is the characteristics given to the actor so that the actor can animate in a unique style, e.g. a sexy dancer acts differently from a ninja warrior. The definition of the persona is stored in an **AML** file (Action XML), which defines the actor's multiple idle animations, keyboard moving behaviors and special perform actions. One **Persona** file may include several sets of movement behaviors. Use **Behavior Mode Switch** (hotkey X/Z, next/previous mode) to trigger different animation sets, such as walk mode, run mode, or even a custom defined fly mode. Animation defined in the **Persona** can be either triggered by hotkey or right-click menu.

Export and Import Persona

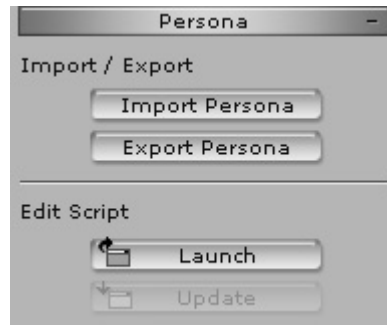
You may export the persona of a specific actor, modify the content of the file and apply it to the original or another actor.

To export a persona, you may:

- Right click on the actor and select **Persona/Export Persona**.



- Alternatively, you may go to **Actor/Persona/Modify** page and click **Export Persona** button.



What does Persona do

In the AML file, codes and index tables are contained to populate different animation files (called iMotion files) for the target actor. Basically, you can have your actor possessing unlimited animations. An **iClone** actor is embedded with several mode presets for **WASD** keyboard movement, you can use **X** to toggle **WALK** and **RUN** mode for moving a character. Even if you don't command the actor to act, the actor acts the **Idle Motion** embedded in the **Persona**. Please refer to the [Idle Track](#) section for more information.

When is Persona Available

You can toggle the **Director Mode** to activate the **Persona** for actors. In the **Director Mode**, you may direct actors to move or act and record these motions for further tuning. It is a game-like method, in which you use **W**, **A**, **S**, **D** or **X** or some other previously specified keys to command your selected actors to do different actions.

Please refer to <http://www.iclonewiki.com> for more information about creating and modifying **Persona**.

Please also refer to [Idle Track](#) section for more information.

► Actor and the Right Menu

Once you load an **AML** file to an actor, a preset of motion clips is assigned to this actor. You will find the names of these clips in the **Right-Click Menu**. Select the desired clip name and the actor will then start to perform the content of the motion clip.

Director Mode - Move

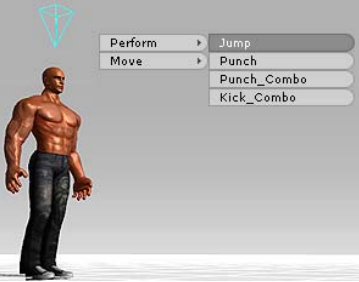
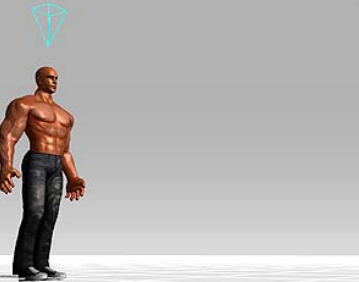
Since the **Director Mode** presents you with an easy to use **Game-like** control mode, there are only few commands in the **Right-Click Menu**.

1. Switch to the **Director Mode**.
2. Right click on the desired actor to animate.
3. You may select the sub-items in **Move** to command the actor to move with specific motions. Please refer to the [Two Methods to Direct the Actor](#) section to find out how to control the actor with **Hotkeys** or your mouse.
4. Click on the destination spot you desire the actor to move to.



Director Mode - Perform

1. Select the sub-items in **Perform** to command the actor to act out motions other than walk or run.
2. If the actor is in **Moving** process, this will force the actor to perform the motion specified and then finish the rest of the **Moving** phase. Please refer to the [Two Methods to Direct the Actor](#) section on how to control the actor with **Hotkeys** or your mouse.

		
Select Perform/Jump.	The actor performs instantly.	The actor retrieves the pose or motion before the Perform command was used.

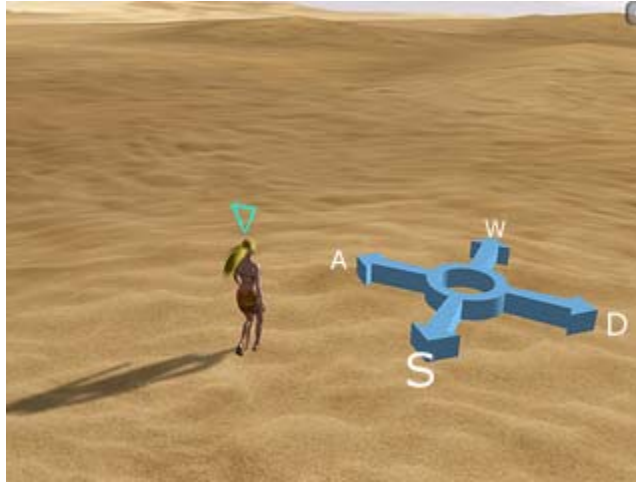
Please refer to <http://www.iclonewiki.com> for more information about creating and modifying **Persona**.

► Two Methods to Direct the Actor

In the **Director Mode**, you have two ways to direct the virtual actor in **iClone** like playing games. You may also refer to the [Director Mode Shortcuts](#) for more information.

Hotkey (Keyboard Control)

You may use the **WASD** keys to move your actor just like you would playing a computer game.

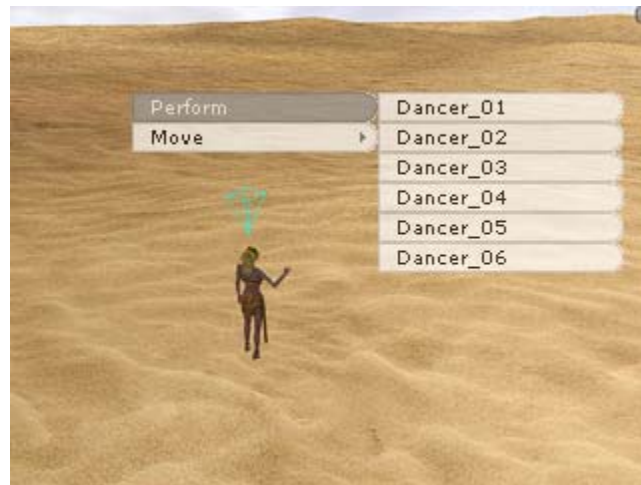


- **W**: Move Forward
S: Move Backward
A: Turn Left
D: Turn Right
X / Z: Toggle among different modes for moving.
- While holding **W** or **S** key, press **A** or **D** key to turn while walking.
- **Shift + A**: Slide to the Left
Shift + D: Slide to the Right
- You may use the **Number** keys (1, 2, 3...) to start the actor's preset animations.

Mouse and Menu (Mouse Control)

- **Ctrl + Click Left Mouse Button on the ground** to set the target location for the actor to walk to.
- **Ctrl + Double Click Left Mouse Button on the ground** to set the target location for the character to run to.
- **Ctrl + Click Left Mouse Button on the target object** to trigger the default action. e.g. Ctrl + click on a car, the currently selected actor gets into the car.

- Click the **Right Mouse Button** on the target actor to bring up the list of actions available for that character.



Please refer to <http://www.iclonewiki.com> for more information about creating and modifying **Persona**.

⦿ Director Mode – The iProp

▶ Two Methods to Direct the iProp

In the **Director Mode**, you have two ways to direct an iProp in **iClone**. It is done in much the same way as with **Actors**. You may also refer to the [Director Mode Shortcuts](#) for more information.

Hotkey (Keyboard Control)

You may use the **WASD** keys to move your iProp.

- **W** or **Up Arrow**: Move Forward
S or **Down Arrow**: Move Backward
A or **Left Arrow**: Turn Left
D or **Right Arrow**: Turn Right
E: Turn Down
Q: Turn Up
X: Toggle between different presets containing different movement animation clips.
- While holding the **W** or **S** key, press the **A**, **D**, **E** or **Q** key to turn during the move motion.
- Shift + A: Shift Left (only for certain types of vehicles)
Shift + D: Shift Right (only for certain types of vehicles)
Shift + E or **Page Up**: Ascend (only for certain types of vehicles)
Shift + Q or **Page Down**: Descend (only for certain types of vehicles)
- Use the **Number** keys (1, 2, 3...) to trigger pre-defined performance actions (if any are applied to the selected iProp).

Mouse and Menu (Mouse Control)

- **Ctrl + Double Click Left Mouse Button on the ground** to set the target destination the iProp should move to.
- **Ctrl + Click Left Mouse Button on a target object** to trigger the default action. E.g. Ctrl + click on a car and the currently selected actor will start to get into the car.
- Click the right button of the mouse on a target iProp to bring up the action list from the **Right-click Menu**.

Please refer to <http://www.iclonewiki.com> for more information about creating and modifying **DramaScript**.

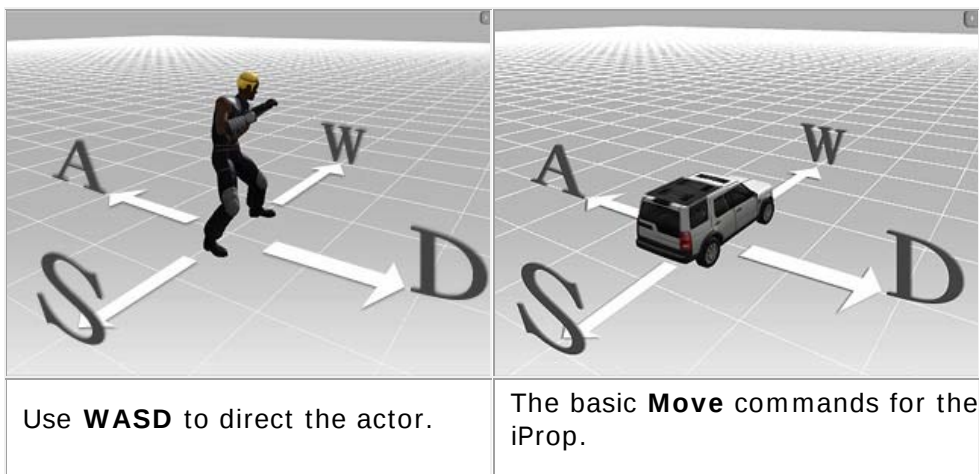
⦿ Director Mode – The actor and the iProp

► Move, Operate and Perform

Each Actor or iProp can contain three types of animations: **Move/Operate/Perform**. Which may be triggered under different circumstances.

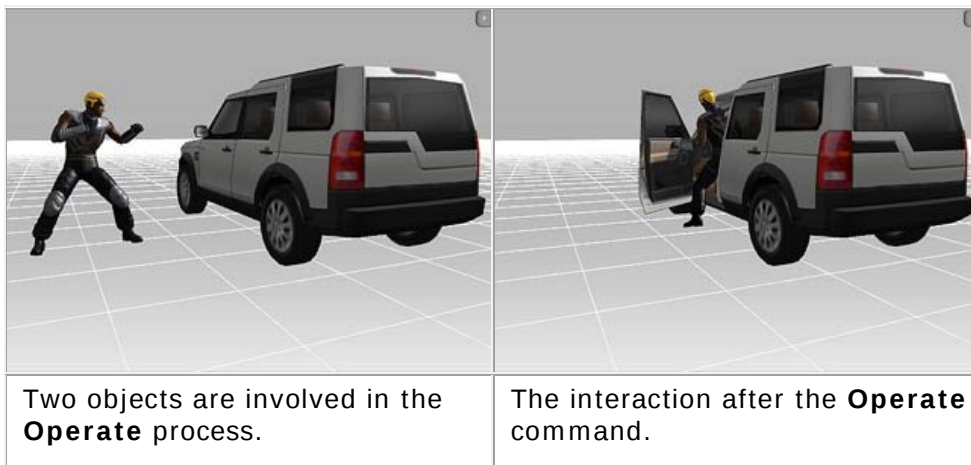
Move

When you use the **WASD** keys in the **Director Mode** or the **Right-click Menu/Move** list in both the **Director Mode** and the **Editor Mode** to direct the Actor or iProp to move, the selected animations will be recorded into the **Move** track.



Operate

As the selected actor interacts with the iProp, the **Operate** animations will be recorded into the **Operate** tracks of both the actor and the iProp; therefore, there are two objects involved: The iProp and the Actor.



Perform

When you command an Actor or an iProp to **Perform**, it will then add an animation clip for the actor or iProp accordingly. In addition, it may also add an animation for other objects that are already connected to it.



Please refer to the [Two Methods to Direct the Actor](#) and [Two Methods to Direct the iProp](#) sections for more information.

Please also refer to <http://www.iclonewiki.com> for more information about creating and modifying **Persona** and **DramaScript**.

► iProp Interaction

iClone presents you with a brand new type of props: iProps. Each iProp contains built-in animation clips that enables you to **Perform Actions**, **Move Around** or even allow your actor to **Operate** it.

Operating an iProp allows your target actor to interact directly with the iProp. For our example we will take an iProp jeep to describe the way you use the iProp in your scenes.

Default Interaction

If you want your actor to interact with the iProp using its default action, please follow the steps below:

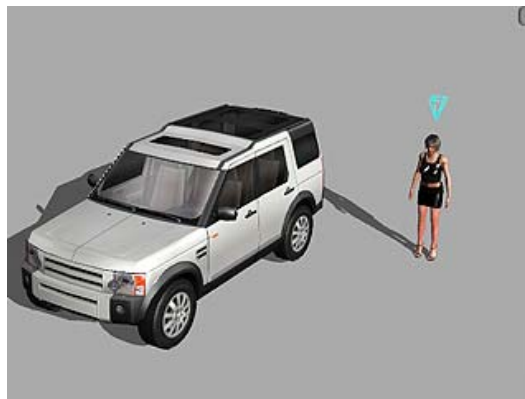
1. Select the actor you want to use first.
2. Press and hold the **Ctrl** key and click on the target iProp.

The actor will then walk towards the iProp and start to interact with the iProp using the default animation.

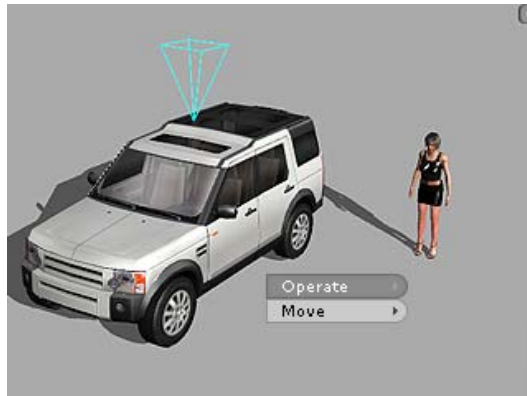
Additional Interactions with iProp

If you want the actor to interact with the iProp using a different action, please follow the steps below. In this example, the jeep is the target iProp and the man is the actor.

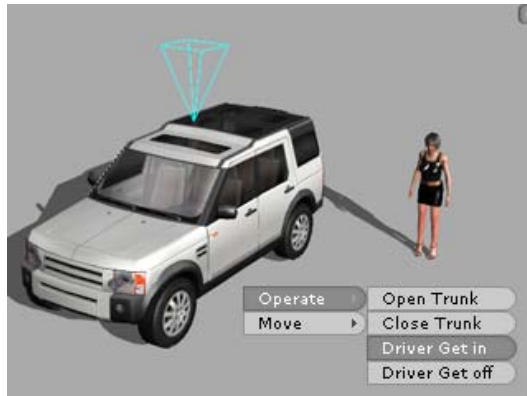
1. Drag and drop the jeep from the library.
2. Select the actor who is supposed to interact with the jeep.



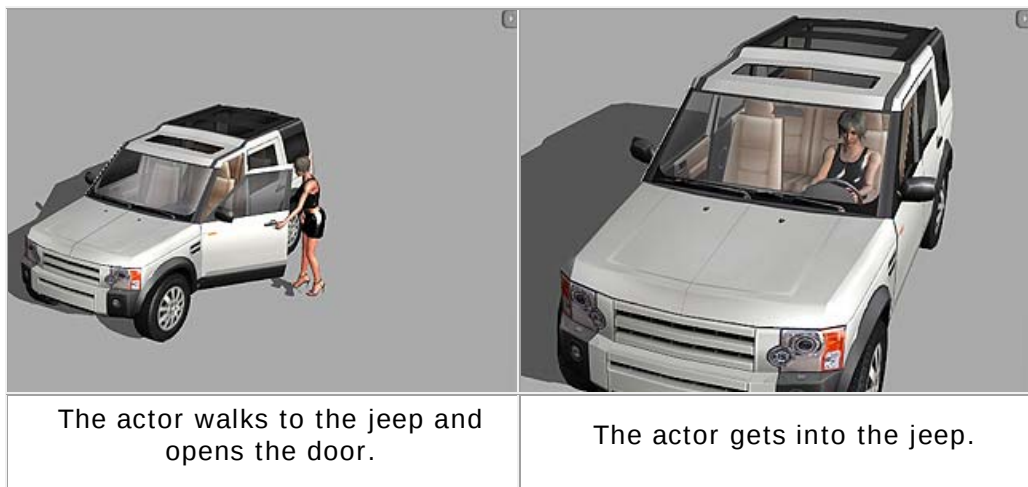
3. Click the right mouse button on the jeep to pop up the right-click menu. Move your mouse over the **Operate** entry.



4. Select the desired Operate function from the sub-menu.



5. The actor then automatically interacts with the jeep, performing your chosen action.



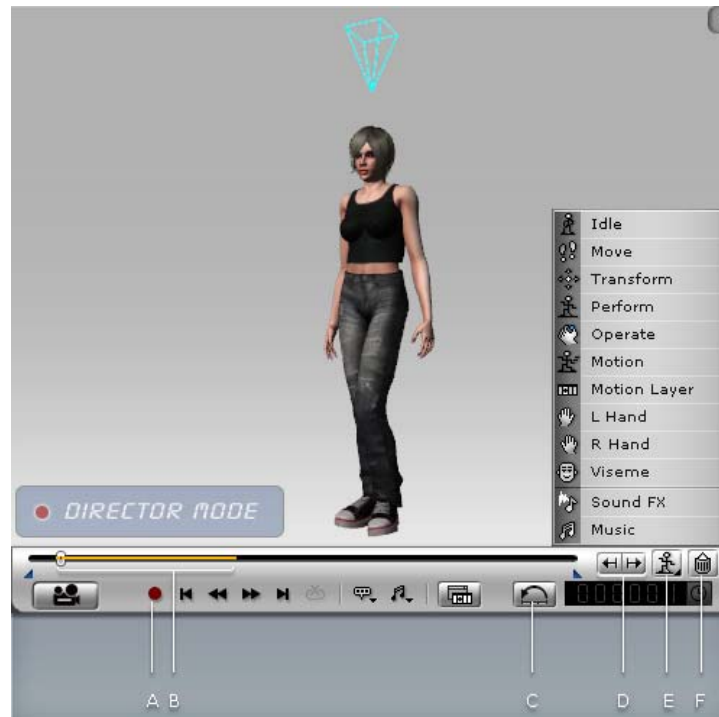
Please refer to <http://www.iclonewiki.com> for more information about creating and modifying **Persona** and **DramaScript**.

⦿ Quick Tab Bar for Simple Timeline Editing

iClone uses the **Play Bar** instead of the **Timeline** to modify keys or clips. The simplified **Quick Tab Bar** allows you to easily tab between animation segments and locate the key editing points. The **Track Selector** allows you to switch to a target track to edit the clips in it.

► Director Mode

In the **Director Mode**, like real-life movie directing, you do not have to anticipate how your actors will move by having your actors move and perform exactly the way you want them to using the **Quick Tab Bar**.



- A. Click the **Record / Pause** button or press the **Space Bar** to start/pause **Action Recording**.
- B. Recorded action segments will be highlighted in yellow on the play bar.
- C. Clears all keys and clips in every track except for keys on the **Transform** and **Motion Layer** tracks in the start frame.
 - o An actor's look or pose in the first frame caused by clips and/or a **Motion Layer** key will be merged into a single key and added to the start frame of the **Motion Layer**.
- D. Click the **Action Tabs** buttons or the **Tab/Shift Tab keys** to move to the next/previous action segments.
 - o Move to the desired action segment and press the **Space Bar** to play the recorded result.

- o Please note that any command or action performed while previewing the results in the **Director Mode** will overwrite the existing action segments.
 - o Move the time head to any frame to start recording by using **Hotkeys** or the **Right-click Menu**.
 - o **Delete Clip**: Please refer to the [Clearing Clips](#) section for more information about deleting clips with the play bar.
- E. The relevant action segments will be recorded into their corresponding tracks. You can click the **Action Track Selector** button to toggle to another track to see the action segments.
- o This feature allows you to fix action segments by tracks.
 - o Click on the **Action Track Selector** button and you will see a list of available tracks to switch to. Please refer to the [Animation Timeline Editing](#) section for more information.
 - o Walking actions will be recorded in the **Move** track while other motions such as jumping will be recorded in the **Perform** track.

F. Click the trash button to delete the action segments.

Please also refer to the [The Rules of Animation Tracks](#) section for more information.

▶ Editor Mode

In the **Editor Mode**, you can select and edit different clips in their corresponding tracks with the **Quick Tab Bar**.



- A. Recorded action segments will be highlighted in yellow on the play bar.
- B. Clears all keys and clips in every track except keys on the **Transform** and **Motion Layer** tracks in the start frame.
 - o An actor's look/pose in the first frame caused by clips and/or a **Motion Layer** key will be merged into a single key and added to the start frame of the **Motion Layer**.
- C. Click the **Action Tabs** buttons or the **Tab / Shift Tab keys** to move to the next/previous action segments.
 - o Move to the desired action segment and then press the **Space Bar** to play the recorded result.
 - o You can further fine-tune the action clips by setting keys in the **Motion Layer**, **Transform**, **Look At** etc. tracks.
 - o **Delete Clip**: Please refer to the [Clearing Clips](#) section for more information about deleting clips with the play bar.
- D. Click the **Action Track Selector** button to toggle to another track to see the action segments.

- o This feature allows you to fix action segments by tracks.
- o Click on the **Action Track Selector** button and you will see a list of available tracks to switch to. Please refer to the [Animation Timeline Editing](#) section for more information.
- o Walking actions will be recorded in the **Move** track while other motions such as jumping will be recorded in the **Perform** track.

E. Click the trash button to delete the action segments.

Please also refer to the [The Rules of Animation Tracks](#) section for more information.

⦿ Editor Mode

▶ The Concept of Motion Layer Editing

After you use **Director Mode** to generate a motion clip of an actor, you may want to fine tune the offset (position) for each bone for more precise control. This can be done via the **Motion Layer** feature. The pose with the edited bones will be kept as a key in the **Motion Layer** track, and it will remain in effect throughout the clip unless another key is set to replace it.

1. Record a motion clip in **Director Mode**, or apply a motion clip from the template library in the **Content Manager**.
2. Switch to **Editor Mode**.
3. Go to the specific time when you want to overlay the offset key to the clip.
4. Click the **Edit Motion Layer** button in the **Animation/Motion/Modify**.
Alternatively, you may click the secondary button of your mouse on the actor and select **Motion Menu/Edit Motion**.
5. Adjust the bone you wish to edit with IK or FK. The key will be automatically added into the **Motion Layer** track.

For more information, please see:

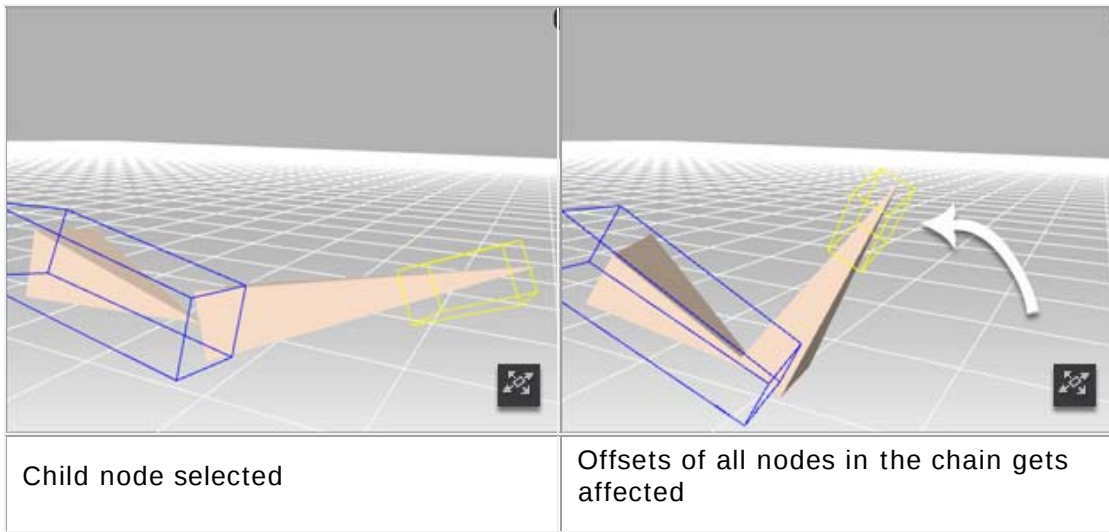
- [What is IK/FK](#)
- [How to Use IK](#)
- [How to Use FK](#)

► What is IK/FK

What is IK

IK, **Inverse Kinematics**, refers to a process utilized in 3D computer graphic animation. In this process, the parameters of each articulation, in a jointed flexible object (a kinematic chain), will be automatically calculated to achieve a desired pose, especially when the end point moves.

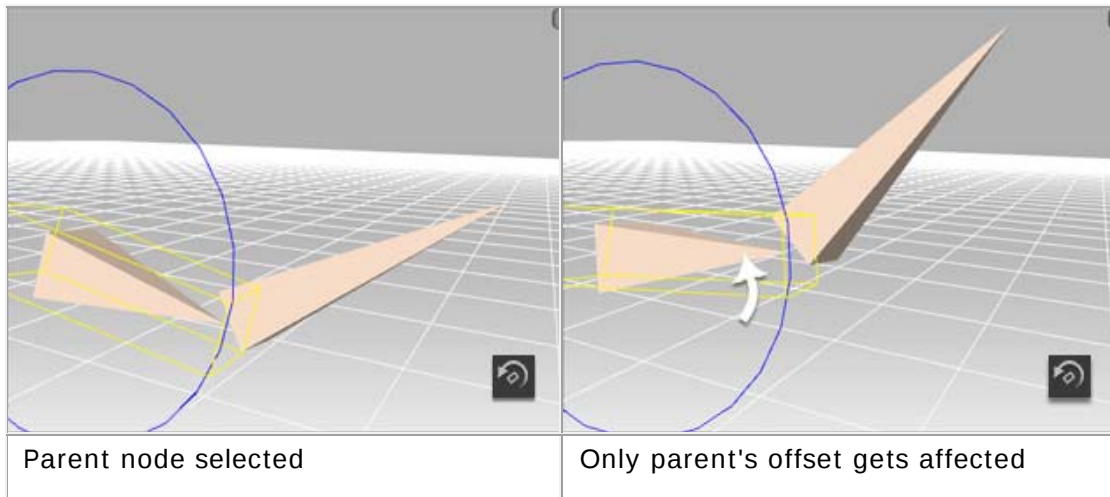
Basically speaking, IK is how the child node, as it moves, effects all the parents' position and orientation values.



What is FK

FK, **Forward Kinematics**, is how the positions of particular parts of a model at a specified time are calculated from the position and orientation, together with any information on them of an articulated model.

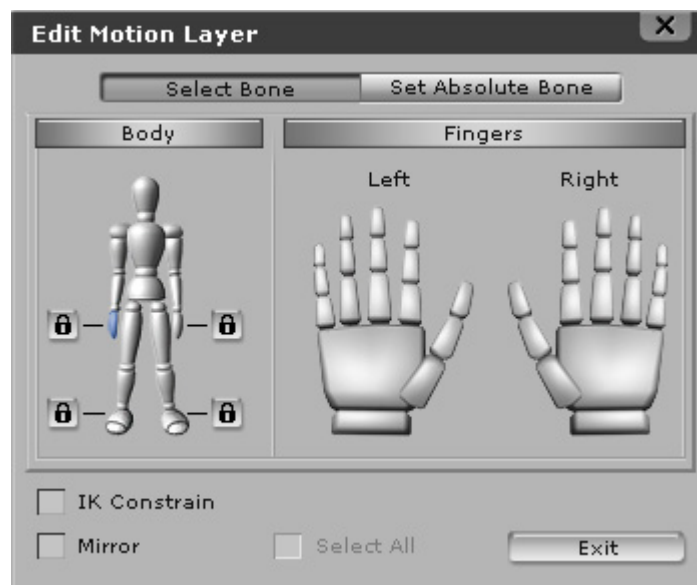
To sum up, FK refers to the effect on the child nodes as the parent moves or rotates.



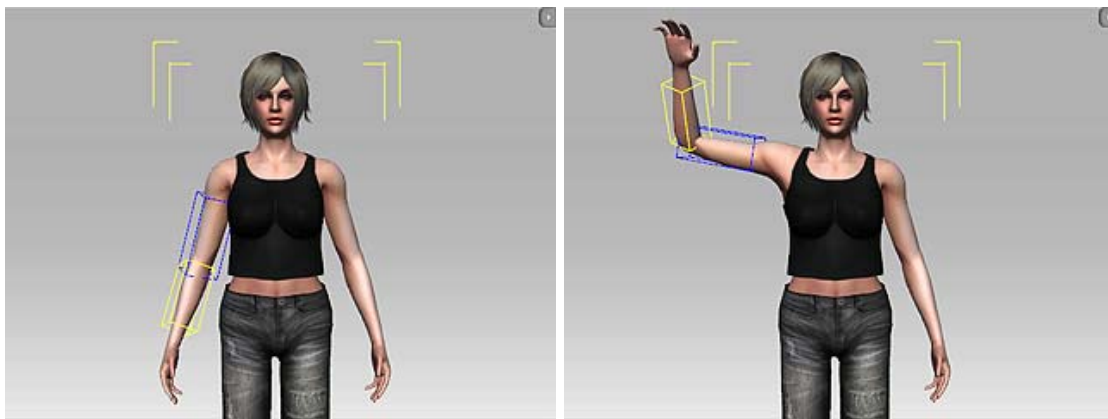
► How to Use IK

Before you utilize IK to animate your actor, be sure that you have switched to the **Editor Mode**.

1. Double click on the target actor.
2. Click the **Edit Motion Layer** button in the **Animation/Motion/Modify** page.
Alternatively, you may click the secondary button of your mouse on the desired actor and select **Motion Menu/Edit Motion**.
3. Change to the  tool in the [Control Bar](#).
4. In the **Edit Motion Layer** panel, pick the hand shown in the illustration below.



5. Drag your mouse in the 3D viewer, the right arm thus moves along with your cursor in the 3D scene. To precisely move the target node in the 3D scene from a 2D mouse movement, please make your target body parts face right to the camera.



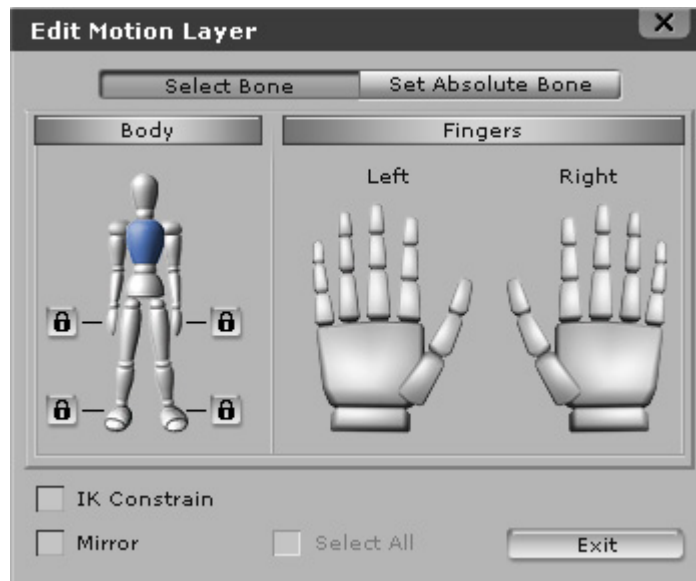
Note:

- The blue box shows the start bone of the IK chain, which means the parent of the start bone will be fixed to prevent from moving, so only from the Blue Box to the Yellow Box will move.

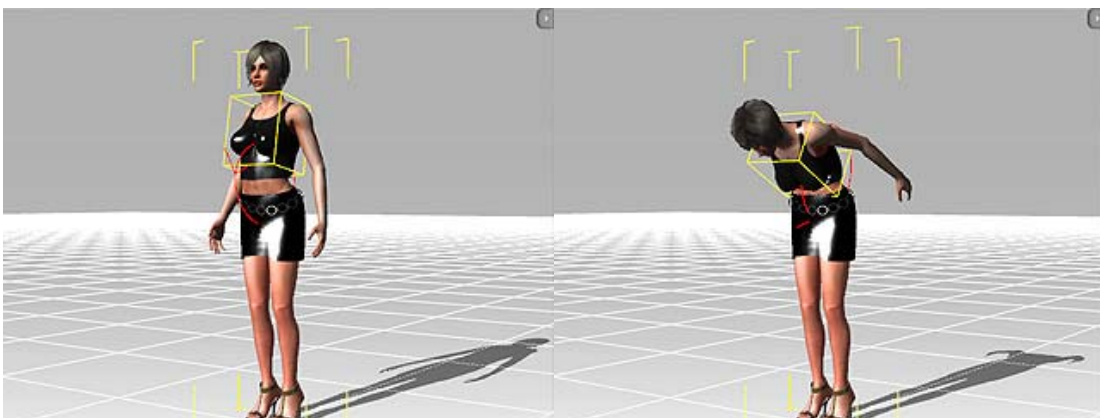
► How to Use FK

Before you utilize FK to animate your actor, be sure that you have switched to the **Editor Mode**.

1. Double click on the target actor.
2. Click the **Edit Motion Layer** button in the **Animation/Motion/Modify** page.
Alternatively, you may click the secondary button of your mouse on the desired actor and select **Motion Menu/Edit Motion**.
3. Change to the  tool in the [Control Bar](#).
4. In the **Edit Motion Layer** panel, pick the upper torso shown in the illustration below.



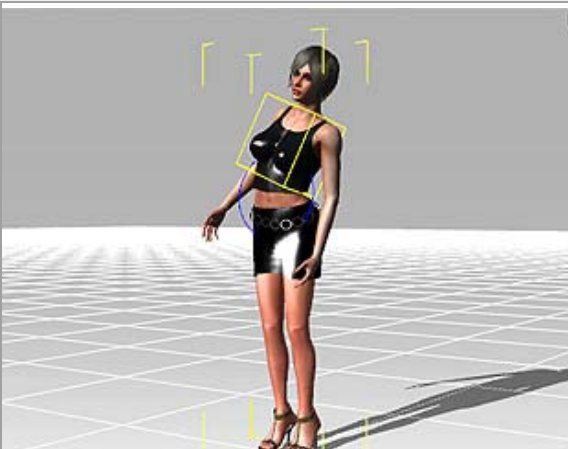
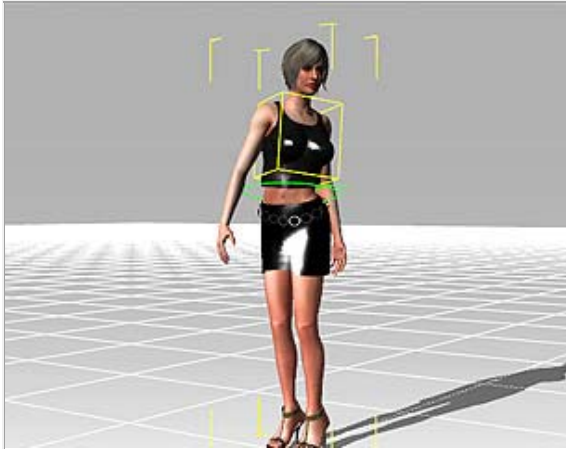
5. Drag your mouse or roll the mouse wheel on the 3D viewer.



Note:



- You may toggle among rotation axis by right-clicking in the 3D viewer and then either drag on the 3D viewer or roll the mouse wheel to rotate the selected bone.



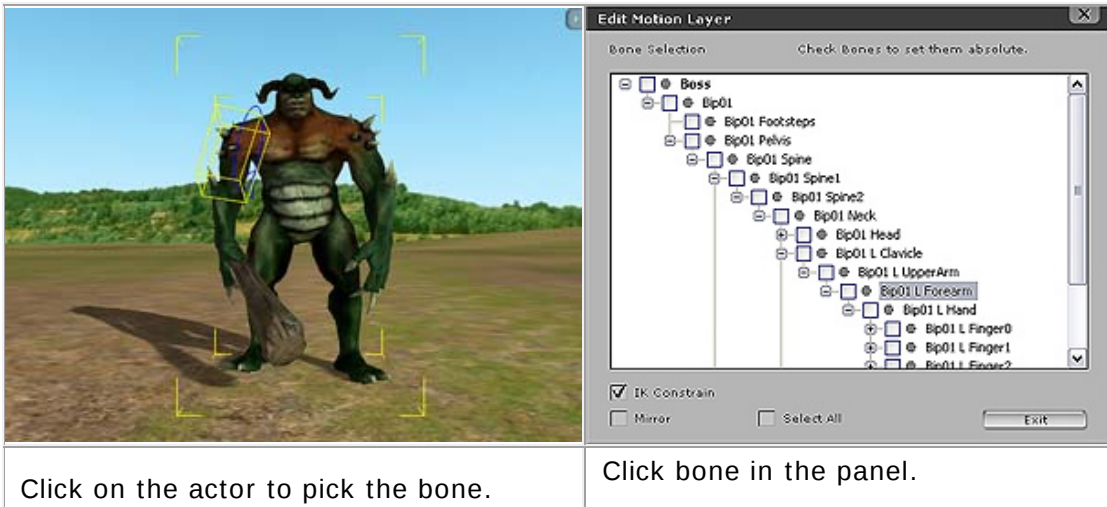
Right-click to change the axis and drag or roll the wheel to adjust offset position.

► IK, FK for Non-Human Actor

If you have non-human actors in **iClone**, you may also utilize IK and FK to adjust the poses and generate motions for them.

FK for Non-Human Actor

1. Right-click on the non-human actor and select **Motion Menu/Edit Motion**.
2. Select **Rotate**  tool in the [control bar](#).
3. Click on the non-human actor to pick a bone. Alternatively, you may pick a bone by clicking on the node in the tree view in the **Edit Motion Layer** panel.



Click on the actor to pick the bone.

Click bone in the panel.

4. Drag **Left Mouse Button** to rotate the selected bone.



Please refer to the [What is IK/FK](#) and [How to Use FK](#) sections for more information about FK.

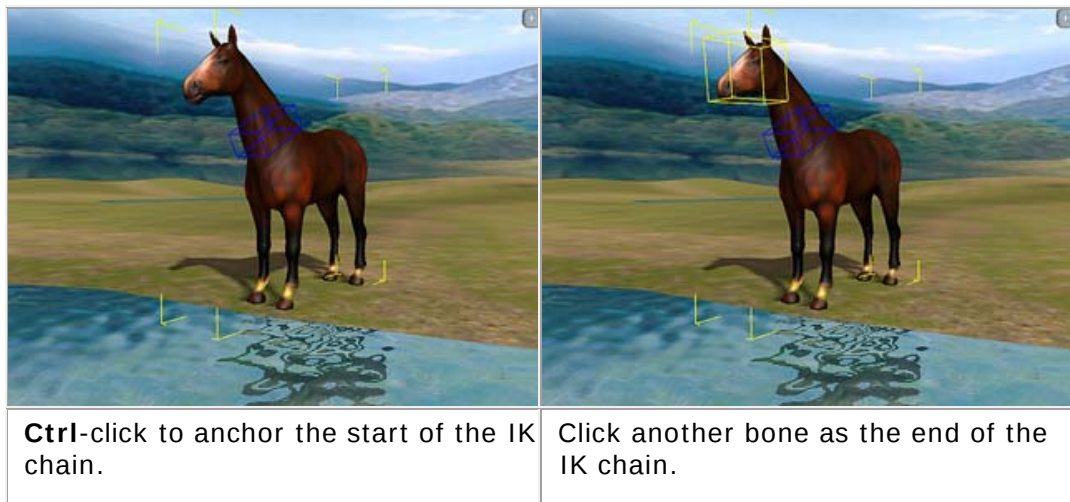
IK for Non-Human Actor

Since IK relates to a chain of nodes, it is necessary to anchor the head of the chain so you may move the end node with IK method.

1. Right-click on the non-human actor and select **Motion Menu/Edit Motion**.
2. Select the **Move**  tool in the [control bar](#).
3. Hold down **Ctrl** key and click on a node to define it as the start of the IK chain. It then is marked with a blue box.

You may **Ctrl** click again to cancel the anchor.

4. Pick another node to be the end node of the chain. (don't hold Ctrl key)



5. Drag across the 3D viewer to modify the whole chain with **IK** control.



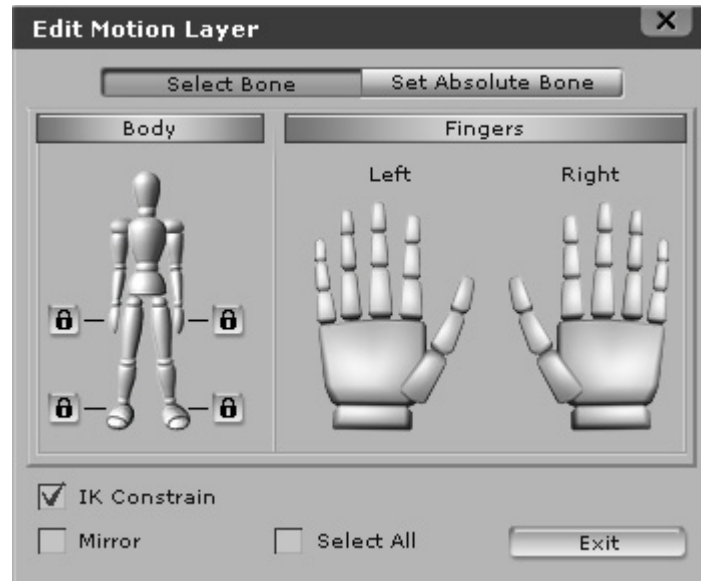
Please refer to the [What is IK/FK](#) and [How to Use IK](#) sections for more information about IK.

Note:

- If you intend to set a node as **Absolute**, check the box next to the node in the **Edit Motion Layer** panel.
- For more information about **Absolute/Relative**, please refer to the [Absolute and Relative Bone](#) section.
- You may also refer to the [Select Bone](#) section for more information about the **IK Constrain** and the **Mirror** features.

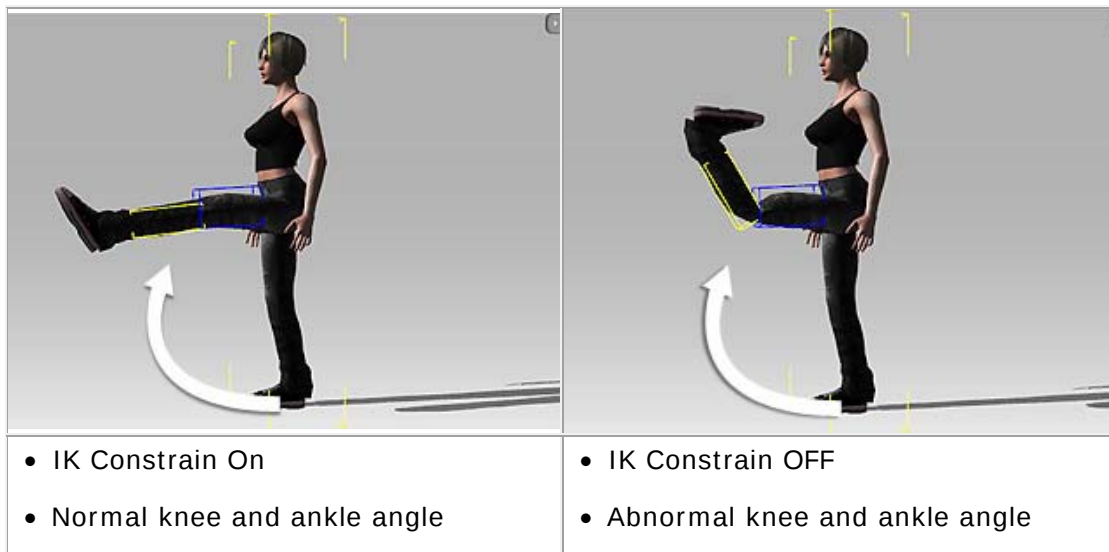
► Select Bone

Once you open the **Edit Motion Layer** panel, you are ready to set a **Motion Layer** key with **Pose** and **Absolute / Relative** data.



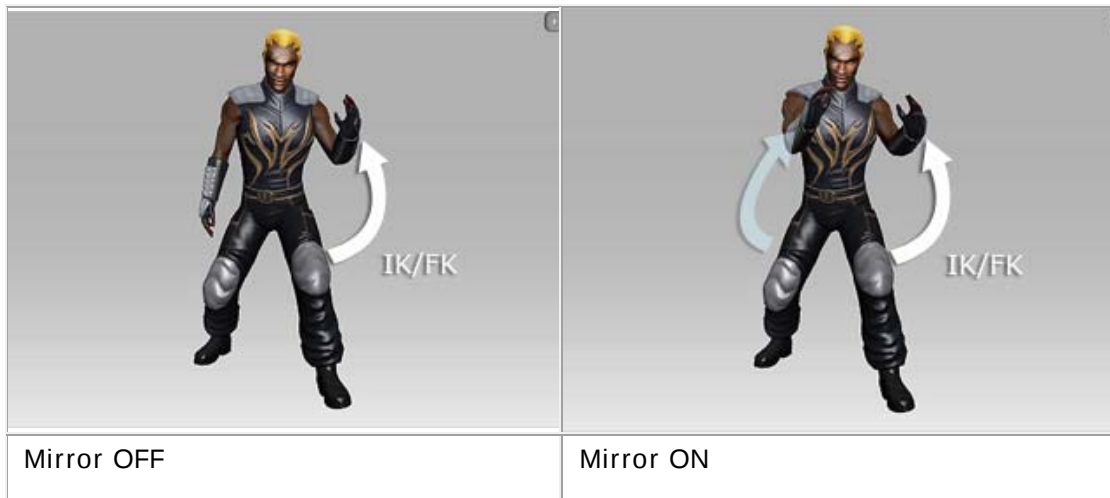
IK Constrain

IK Constrain is designed especially for the **IK** operation. When you check this button, **iClone** calculate the most logical angle for each bone as you move the end node of the **IK** chain. However, this may slow down the performance for repeating calculations. Basically IK Constrain prevents you moving your actor into a position that is physically impossible for a human to naturally achieve.



Mirror

Check this box so you may adjust both arms or legs by **IK** or **FK**, at the same time.



Please refer to [Lock bone](#) and [Set Absolute Bone](#) for more information about the operation of the four locks beside the dummy in the **Body** pane of this panel.

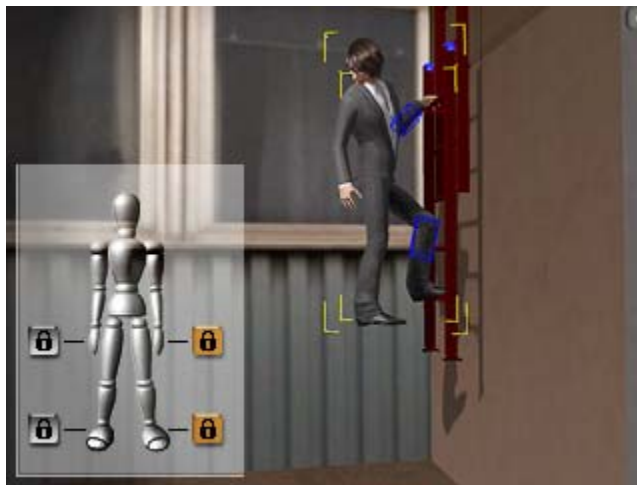
► Lock Bone

This feature locks up the position of specific bones to prevent them from moving as you are posing the actor with **IK** operation. It is very useful when you want to put the actor's hands on another object and move the rest of the bones away or even to have the actor to squat without affecting the location of the feet.

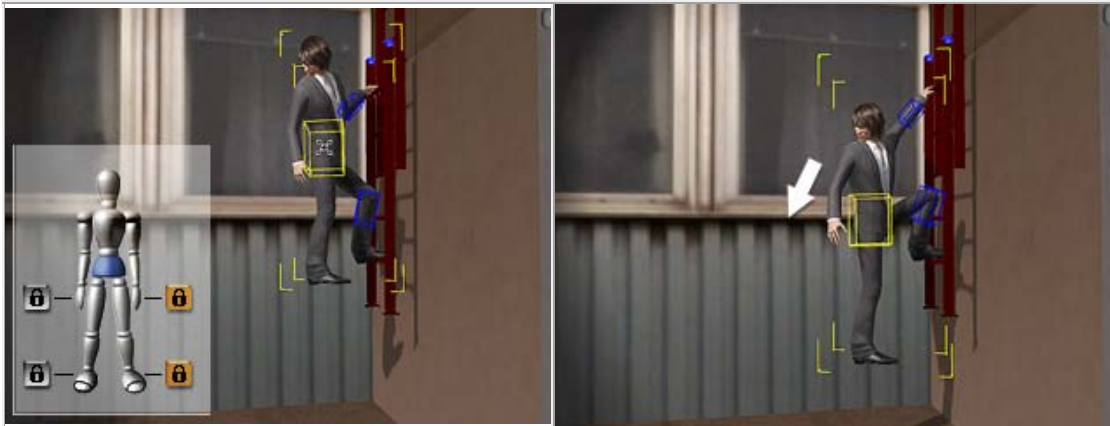


The original pose of the actor

1. Right-click on the actor and select **Motion Menu/Edit Motion**.
2. In the **Edit Motion Layer** panel, click one or more of the **Lock** icons to set the desired bone to be locked.



3. Pick one of the bones that you want to move by the **IK** operation. In this example, the pelvis bone.



The pelvis bone is selected for moving while the actor's left hand and foot are locked in position.

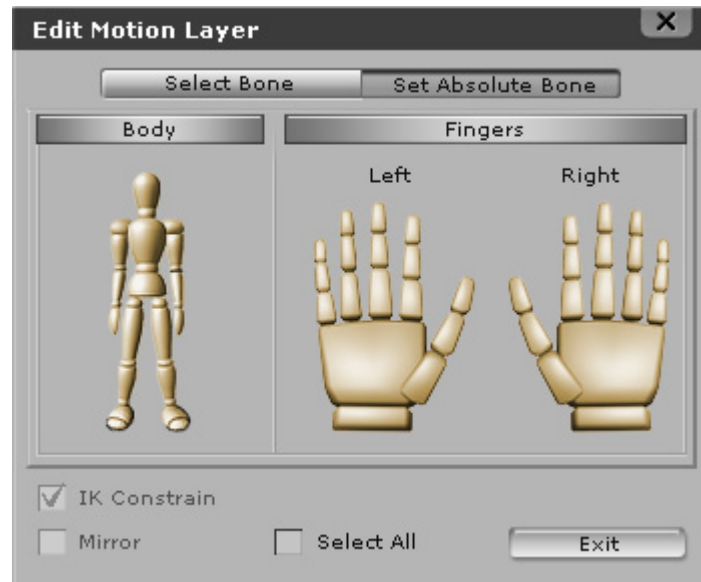
Move the bone to see the result.

Note:

- The pelvis bone (LowerTorso) can be rotated in **FK** mode. However, in **IK** mode, you must enable at least one of the four locks to have the pelvis be moved.

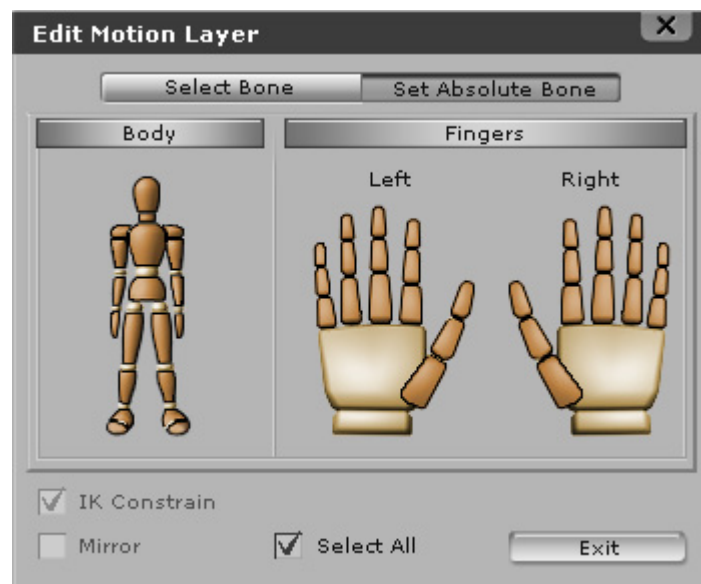
► Set Absolute Bone

When you want to have specific bones be free from the effects of the motion clips from the **Perform**, **Walk** or **Operate** tracks, you may need to set the desired bone to be **Absolute**.



Switch to **Set Absolute Bone** if you haven't already. Pick the desired bone in the panel by clicking on it in the graph, the selected bone then will be taken as **Absolute**. The absolute status of the bones are to be added into the **Motion Layer** key along with the pose data.

You may also select all the bones by checking the **Select All** box.



For more information about **Absolute/Relative**, please read [Absolute and Relative Bone](#) section.

► Absolute and Relative Bone

In the **Motion Layer** track, each key contains two pieces of data, one is the pose of the actor, the other is the **Absolute/Relative** status of each bone. In this section, we will describe the details of the latter.

Absolute? Relative?

Suppose we have a motion clip loaded into the **Perform** track in which the data tells the actor to walk with a natural swaying of the body.



	Set Absolute Bones • The actor's bones that are set Absolute. • If a bone is set to be Absolute, the result is to sum up the offset from the clip <i>in the current frame only</i> with the offset data from the key. • The result then remains and ignores any offset from the clip after that key.
	

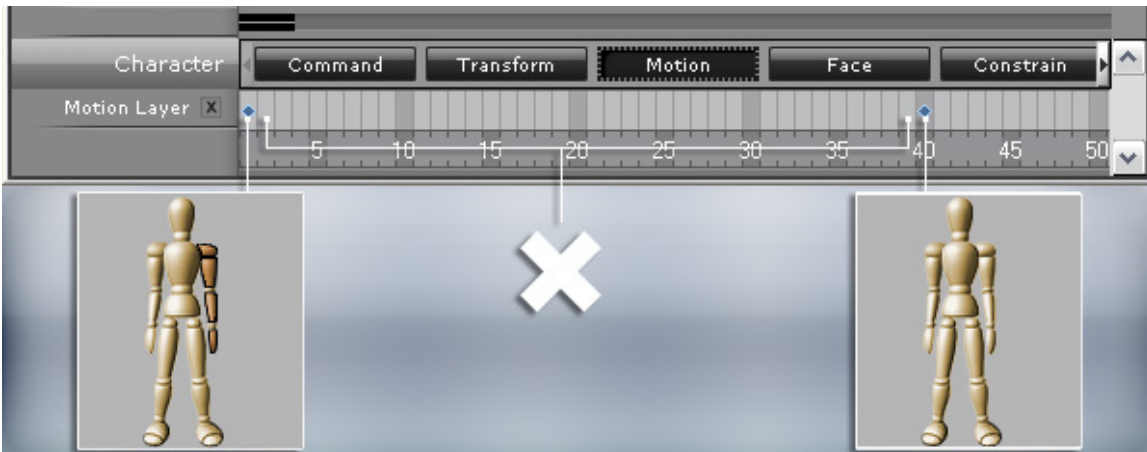
	Set Relative Bones • The actor's bones that are set Relative. • If a bone is set to be Relative, the result is to sum up the offset from the clip <i>in each frame</i> with the offset data from the key.
---	--



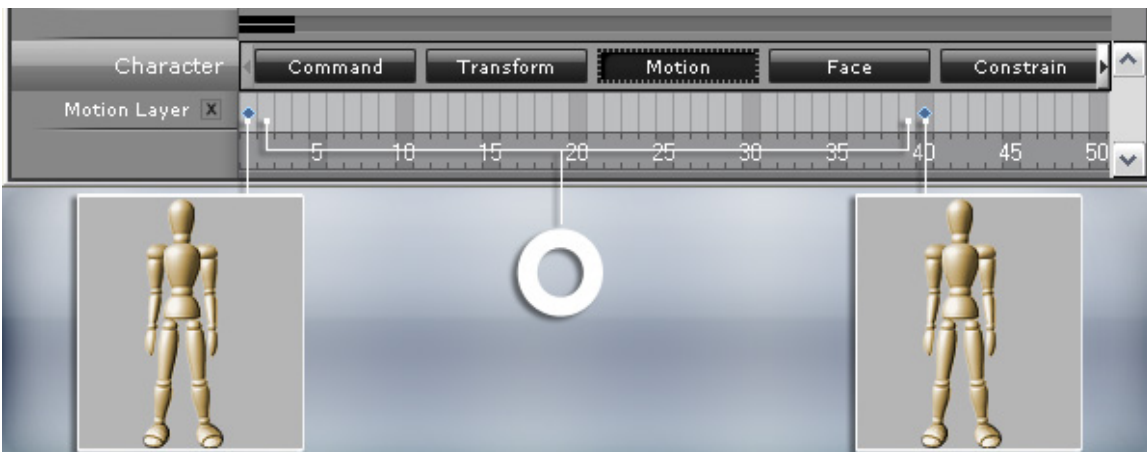
Absolute/Relative for Pure Key-Frame Motion

The **Pure Key-Frame Motion** means to generate motion only by keys in different frames. There is no other motion clips in another tracks.

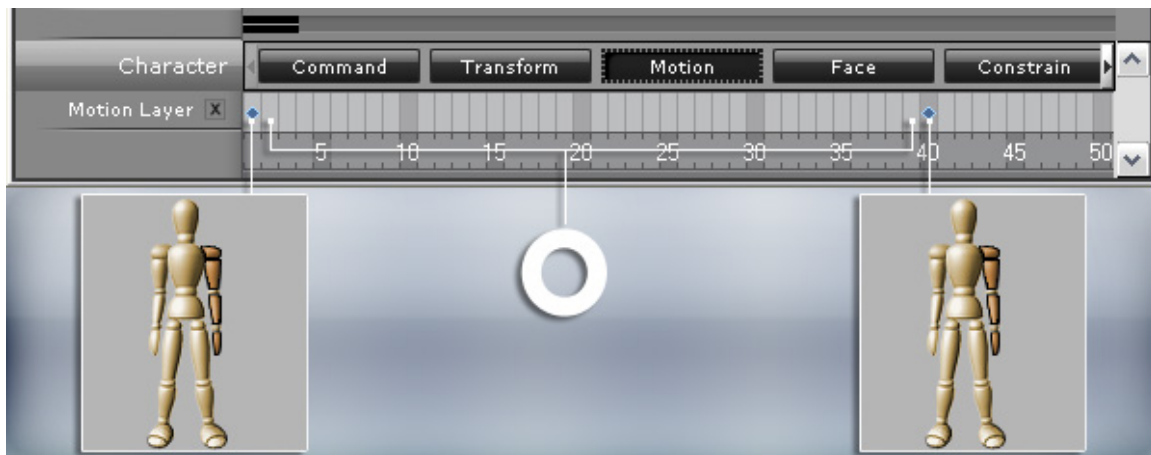
In this case, only the **Transition Effect** between two adjacent keys will be different in accordance with the status of these two keys. Here are the rules for the transition effect.



No transition effect between **Absolute** and **Relative** keys.



Transition effect is generated between **Relative** and **Relative** keys.

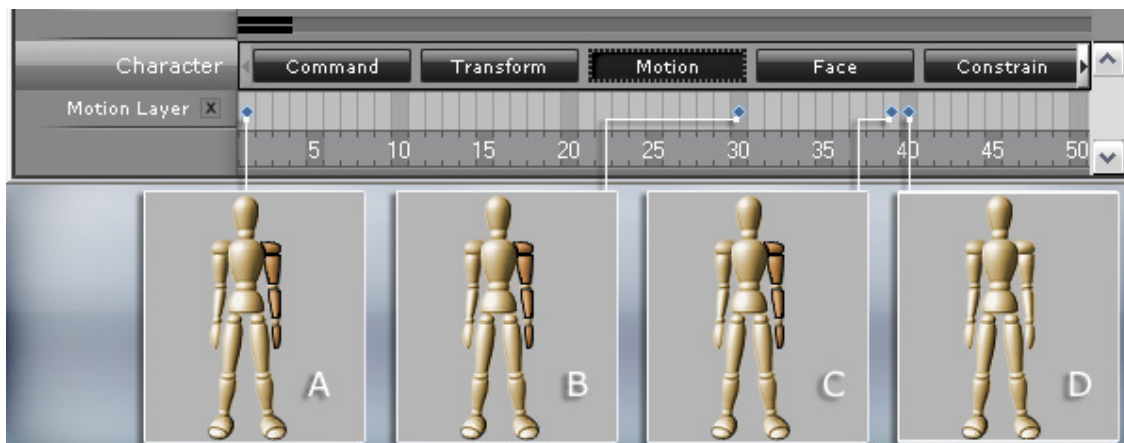


Transition effect is generated between **Absolute** and **Absolute** keys.

Absolute/Relative for Motion Clip

If we want to have the motion layer key affect the motion clips in **Move**, **Perform** or **Operation** tracks, we need to use both **Absolute** and **Relative** alternately.

Given a lady walking on the street (Walking motion applied already in the Perform track), we want her to hold her bag with her left hand from frame 0 to 30 and to reach down and swing the hand naturally from the 40th frame, we need to do it as described in the following illustration.





A. Set this key **Absolute** so the lady's hand hold the bag without being influenced by the motion clip from another track.



B. Since we don't want the lady to reach down her hand abruptly, we need to generate a transition effect from frame 30.



C. Set both the keys in frame 30 and 39 **Absolute** will then generate a transition effect of stretching hand. The key in frame 39 is relatively crucial hereupon.

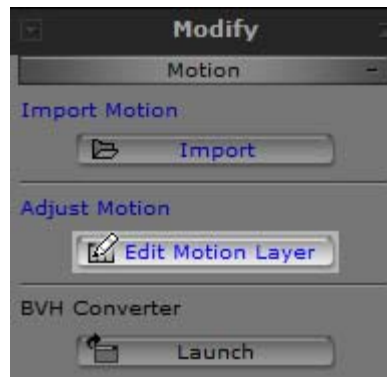


D. Set the key in frame 40 **Relative** so her hand starts to swing along with the motion clip in another track.

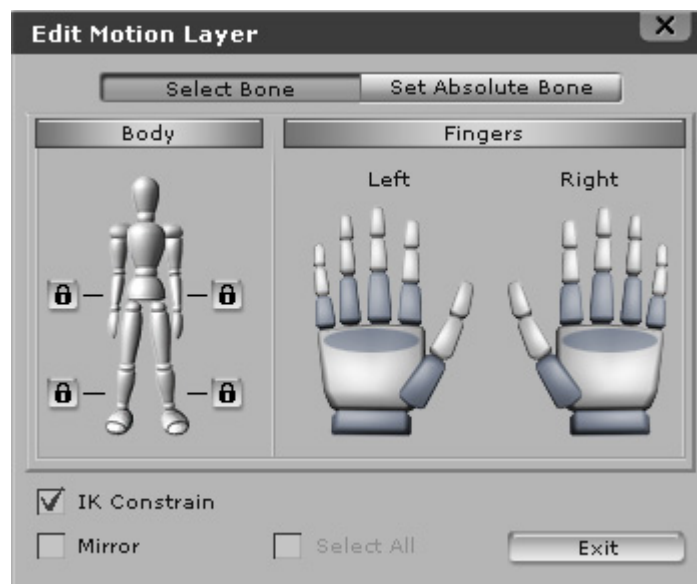
► Animating Hand Gestures

Hand gestures can be created within minutes, no matter if you need to hold a fist or create a gesture with fingers.

1. Import a character into the scene.
2. Toggle to **Animation**.
3. In the Motion Modify Panel, click **Edit Motion Layer**.

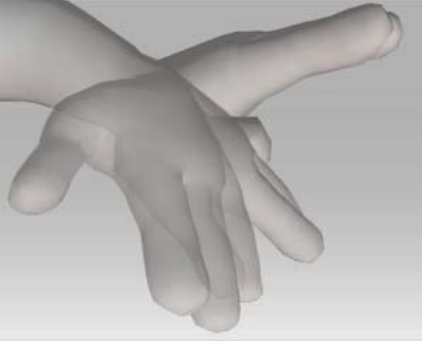
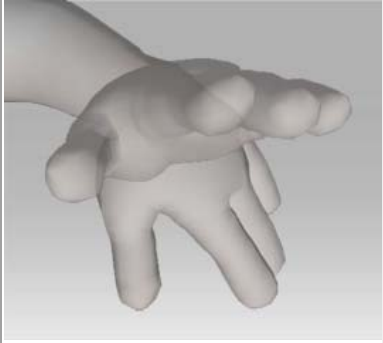


4. The **Edit Motion Layer** window appears for you to control.

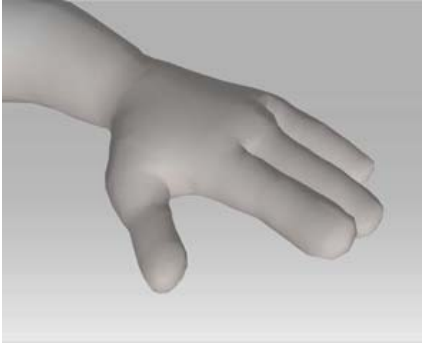


5. Focus to the character's hand.

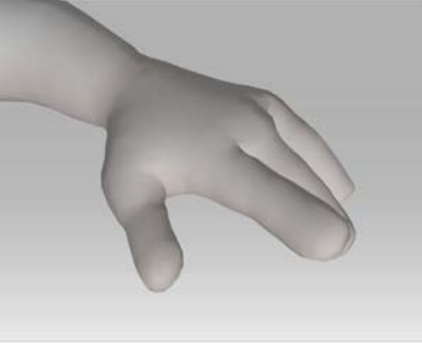
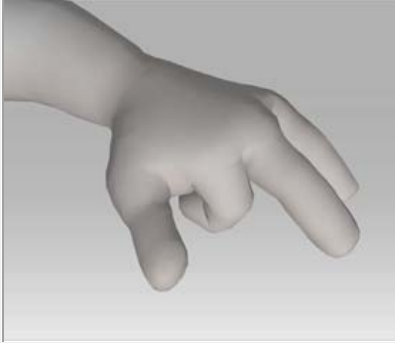
6. Rotate the wrist.

			
Dragging	Result: Rotating Wrist	Dragging	Result: Bending Wrist

7. You may also curl all the fingers all at once by dragging the palm control.

			
Dragging Up	Result: Fingers Curl Outward	Dragging Down	Result: Fingers Curl Inward

8. Press and drag the dummy's dark grey part of the fingers to set gestures.

			
Dragging Up	Result: Finger Curl Outward	Dragging Down	Result: Finger Curl Inward

⦿ Link and Attach

In **iClone**, the **Link** function is now enhanced. You are allowed to link your object to another one at a specific point of time and then unlink it at another time.

The **Attach** method allows you to combine objects into one piece while the individual sub nodes are still available for modifying.

Basically, the **Link** never changes the **Hierarchy Structure** of the current project while **Attach** does change the structure unless you detach a combined object.

Name	Freeze	Show	Render State	Info	Name	Freeze	Show	Render State	Info	Name	Freeze	Show	Render State	Info
Prop	☐	☒	Normal		Prop	☐	☒	Normal	528	Prop	☐	☒	Normal	528
Ball	☐	☒	Normal	528	Ball	☐	☒	Normal	528	Ball	☐	☒	Normal	528
Box	☐	☒	Normal	12	Box	☐	☒	Normal	12	Box	☐	☒	Normal	12
Dir./Spot...					Dir./Spot...					Dir./Spot L...				
Light...	☐	☐	☒ on ☐	☒ Sha	Light...	☐	☐	☒ on ☐	☒ Sha	Light...	☐	☐	☒ on ☐	☒ Sha
Light...	☐	☐	☐ on ☒	☐ Sha	Light...	☐	☐	☐ on ☒	☐ Sha	Light...	☐	☐	☐ on ☒	☐ Sha
Light...	☐	☐	☐ on ☒	☐ Sha	Light...	☐	☐	☐ on ☒	☐ Sha	Light...	☐	☐	☐ on ☒	☐ Sha
Light...	☐	☐	☐ on ☒	☐ Sha	Light...	☐	☐	☐ on ☒	☐ Sha	Light...	☐	☐	☐ on ☒	☐ Sha
Point Lig...					Point Lig...					Point Light				
Point...	☐	☐	☐ on ☐	---	Point...	☐	☐	☐ on ☐	---	Point L...	☐	☐	☐ on ☐	---
Point...	☐	☐	☐ on ☐	---	Point...	☐	☐	☐ on ☐	---	Point L...	☐	☐	☐ on ☐	---
Initial structure					After Link (Structure remains)					After Attach (Structure changed)				

► The Comparison of Linking and Attaching

This chapter provides a comparison table for **Linking** and **Attaching**.

	Linking	Attaching
When to Use	• Passing an object from one parent node to another at a specific time. • Changing a camera's view to another actor's or object's view. • Having a light follow another moving object.	• Creating a merged object and adding it into the Custom library of Props. • Adding an actor with accessories into the Custom library of Actor. • Converting a model with an iProp Helper to become a custom iProp. Please refer to Creating Animation Helper and Prop Animation with Helper sections for more information about Helper.
Same Behaviors	• The child node follows the parent's transform data - R/T (not optional) • The child can still be transformed after linking. • Picking the bone nodes directly is possible.	• The child node follows the parent's transform data - R/T/S (optional) • The child can still be transformed after attaching. • Picking the bone nodes directly is possible.
Picking Parent / Child	• Single click to pick the parent or the child. • When the parent is not selected, right-clicking on the child node will turn on its right-click menu.	• Single click on the parent or the child to pick the grouped object. • Double click to pick the child. • When the parent is not selected, right-clicking on the child node will turn on its right-click menu.
Generating Keys in Timeline	• Available.	• Not Available.
Saving Relations in Project	• Available.	• Available.

Multiple Objects	• Supported.	• Supported.
Saving Parent to Library	• Parent-child relation is broken. • Only parent is saved.	• Parent-child relation is saved.
Auto Align Position to Parent	• Not Available. • Align Position to Parent option in the Link to Sub-Node dialog must be activated manually.	• Not Available. • Align Position to Parent option in the Attach to Sub-Node dialog must be activated manually.
Prop to Actor	• The prop remains a prop.	• The prop converts to an accessory.
Levels	• Multiple levels available. • Recursive linking is forbidden.	• Multiple levels available. • Merging parent and child into a new object allows the attachment of more children.
Hierarchy in Scene Manager	• No change.	• Changes. • Child is moved under the parent node.
iProp Behavior	• Double-click to pick the child and use the Right-click Menu.	• Double-click to pick the child and use the Right-click Menu.

▶ Link

Link is a very convenient function for you to simultaneously move, rotate or scale one or more objects, such as an actor, accessories or props, without adjusting them one by one. You do this by linking them to a specific parent object.

The linking relationship can be set as a key, therefore, you may set a link key at one time and set an unlink key at another. By using this concept, you may have the object specified to be transformed during different time frames.

We will use props to describe the linking process.

Link

1. Drag and drop the desired prop(s) into current project.
2. Double click on the prop to pick it.



Drag and drop the crate

3. Scroll to the **Linkage** section and click **Pick Parent** button.

4. Navigate on the 3D viewer and click on the target object. The prop may be still at the wrong position.



Pick the lifter of the forklift as the parent of the crate

5. Adjust the position of the prop for better placement if necessary then click the  button and check the correct sub-node is selected in the **Link to Sub-Node** panel, select the **Position** option and click **OK**. The prop then will be forced to align to its parent.



The crater is aligned to the lifter

6. Move the parent object to test the result.

Note:

- The **Link** relationship can not be stored along with the parent if you add the parent into the **Content Manager/Custom** library. It can only be saved in the project.
- If you wish to keep the relationships between the parent and the child, the [Attach](#) method is highly recommended.

Change Link Parent

You may link your object in one frame to a target and then link to another target at another frame. The transform data of the object will then be driven by different parents in different frames. Following the example above, we will now describe this feature in more detail.

1. Go to the desired frame when the prop will be linked to another parent.



Go to the frame for changing the linking parent

2. Click the **Pick Parent** button again.
3. Click on the desired parent on the 3D viewer. Now the parent is changed.



The crater is now linked to the train.

4. Move the new parent object. The transform data of the prop will now be controlled by the new parent.



The train moves away with the crate

► Attach

Attach is more similar to the traditional **Merge** function used in previous versions of **iClone**. However, **Attach** allows you to modify each node individually in the attached objects. You may then add the combined object into your custom library without destroying the relationship.

We will use a prop to describe the attaching process.

Basic Attach

1. Pick the prop you wish to have become the child in the attaching relationship.
2. Go to **Set/Props/Modify** page and scroll to the **Attach** section, click the **Pick Parent** button. Alternatively, you may right-click on it and select **Attach** in the **Right-click Menu**.
3. Navigate in the 3D viewer and click on the target object.
4. a. If you are using any **Manipulating Tools**, clicking once on either parent or child node will pick the whole group; and double-click on the child to pick it.
b. If you are using any **Camera Tools**, double-click to pick the whole group. You may only use the **Scene Manager** to pick the child node.
5. You may optionally click  to pop up the **Attach to Sub-Node** panel and select the **Position** option to have the child aligned to the parent instead of adjusting it manually.
6. Click the  button in the bottom of the **Content Manger** to save the merged object into the library while the attaching relationship is kept as well.

Note:

- o Please notice that all the props attached to an actor will be converted into accessories. You may modify their parameters in the **Actor/Accessories/Modify** page.
- o The **Attach** relationship can not be set as keys throughout the current project. Please use the [Link](#) method for this purpose.

Inherit Move, Rotate, Scale

You may choose to have the child inherit the **Move**, **Rotate** and/or **Scale** data from the parent object. They are checked by default.

In the following example, the rear tire is already attached to the frame and inherits the move, rotate and scale data of it.

The front tire will now be attached to the frame while the **Move/Rotate/ Scale** boxes are **unchecked** for demonstration purposes.



Attach the front tire to the frame with
Move: **Unchecked**
Rotate: **Checked**
Scale: **Checked**



Move the frame away



Attach the front tire to the frame with
Move: **Checked**
Rotate: **Unchecked**
Scale: **Checked**



Rotate the frame



Attach the front tire to the frame with
Move: **Checked**
Rotate: **Checked**
Scale: **Unchecked**



Scale the frame

⦿ Utilizing Path

Most of the things around us are moving smoothly along a curve . By using this feature we can build a path for any object to follow without creating lots of transform keys. In iClone you can make almost anything to follow a path, including props, characters, lights, cameras and etc.

Note:

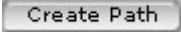
- o Path will not be rendered when you export the video.

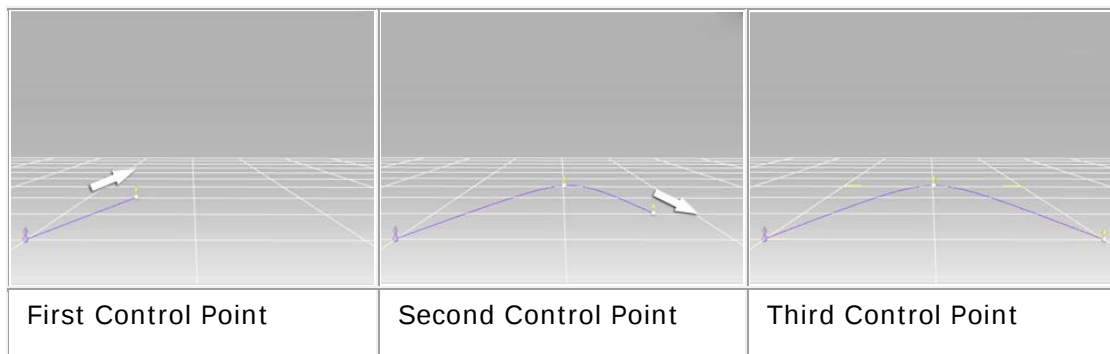
▶ Creating New Path

You can create any shape of path you wish either for characters or props.

Creating Paths on the Grid

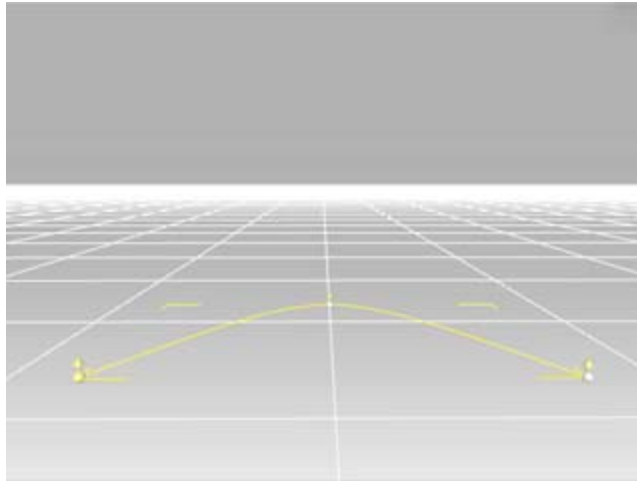
When you are creating a path on the grid, the path pointers will snap to the grid as you go.

1. Press **Ctrl+G** to toggle visibility of the grid.
2. Toggle to **Animation / Path** and click the **Create Path**  button to start.



3. You can click to position the control point and pull to extend the next control point.
4. You may right-click or press **ESC** to exit.

5. Now, we are done creating the path. We can now modify the color by selecting the  button besides the **Edit Path**  button.



These path colors will serve as ID color to identify which path a prop or character is currently attached to in the timeline.

Drawing on Terrain

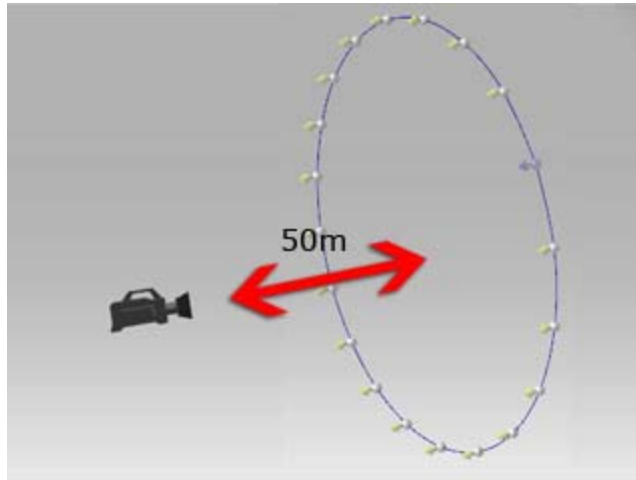
When creating paths on terrain, the control points follow the height and angle of the terrain. Whereas the grid only remains on a flat surface.



As you can see, the points snap right onto the surface's height once the pointer is positioned.

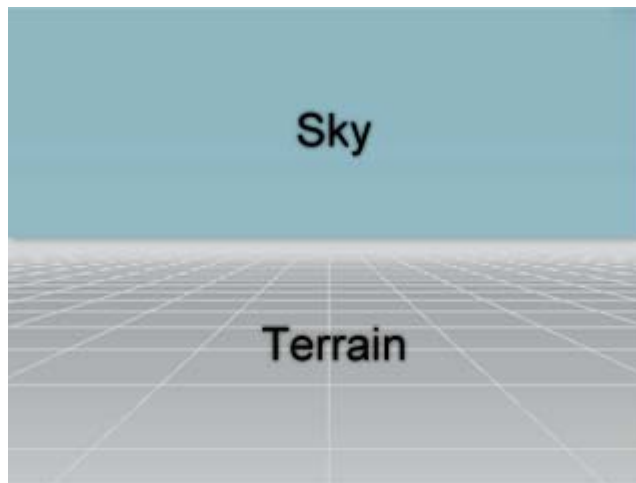
Drawing in the Sky

When creating paths in the sky, you create the path from the angle of the camera to the distance of 50m away from the camera.



Note:

- o Please do not create path both in the sky and on the terrain, you might get an unexpected result.

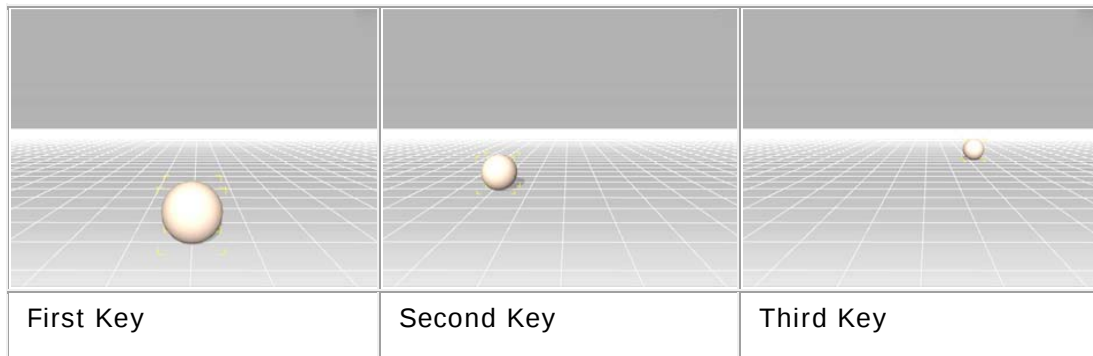


In order to get the best result, we suggest you to create a path on the terrain first, and then flip the path to place it in the sky.

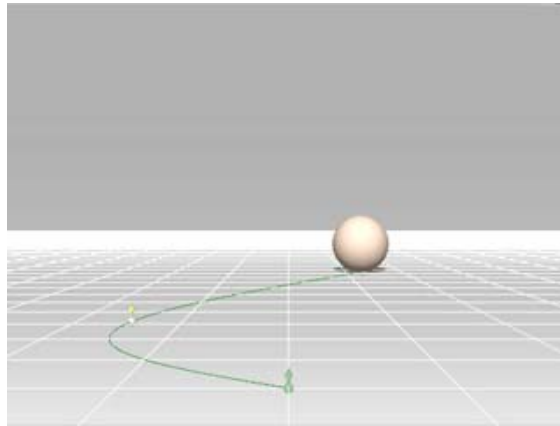
► Converting Animation Keys to Path

Here you will learn how to convert random position keys that you set for a prop into a path.

1. Add a prop into the scene and set some position keys for the prop.



2. Open up the Timeline and select all the **Transform** keys of the ball.
3. Right-click on one of the keys and select **Convert Position to Path** from the right menu.
4. A path will be created for the selected prop.



Note:

- o Once you have converted the prop's position keys to a path, they do not have a link relationship. A link relation will only be established when you use **Pick Path** either in the avatar's or prop's modify panel.
- o When you convert a camera's position keys to a path, the camera will only follow the control points from point to point and may not follow the curve of the path accurately.

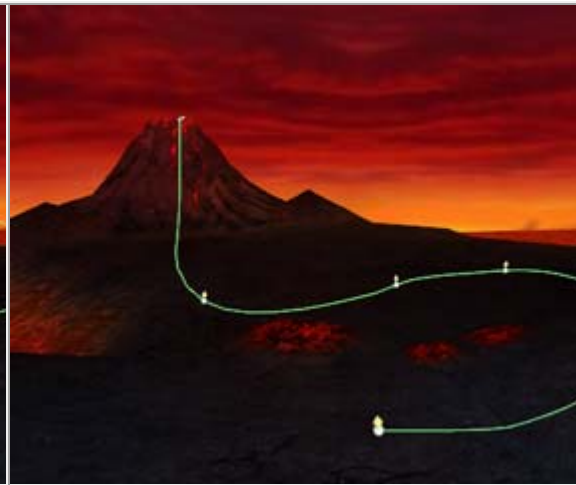
► Projecting to Terrain

Projecting to Terrain

After creating a path on the Terrain, you may use **Project to Terrain** to make the path attach closely and follow the shape of the Terrain.

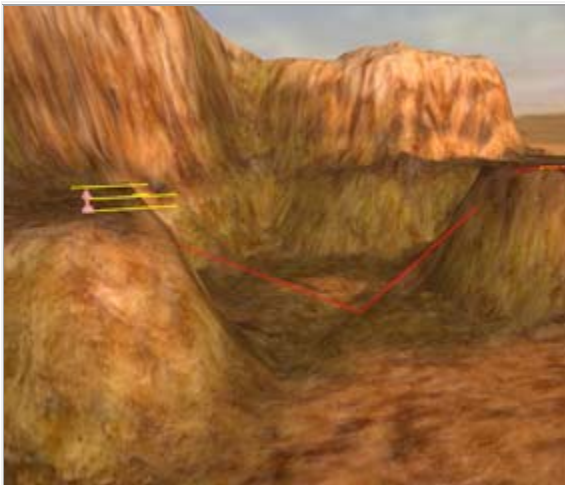


Before Projecting to Terrain

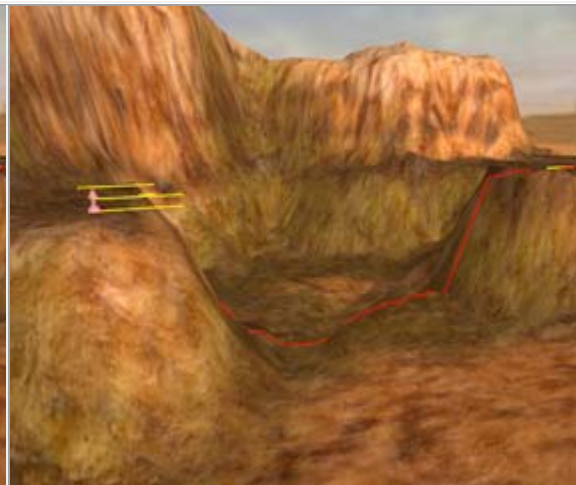


After Projecting to Terrain

Setting **Precision** to terrain allows you to enhance the preciseness between the path and terrain surface.



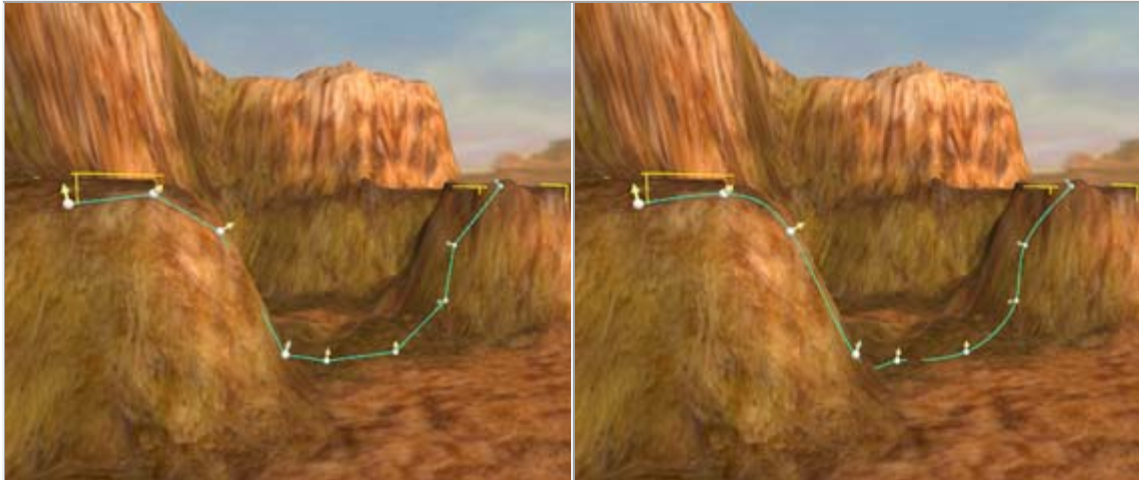
Precision: 10



Precision: 90

Tangent Type

When setting the tangent type of the path, you can define whether you want to have the path curved or straight/linear between point to point.



Linear

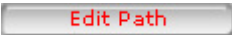
Smooth

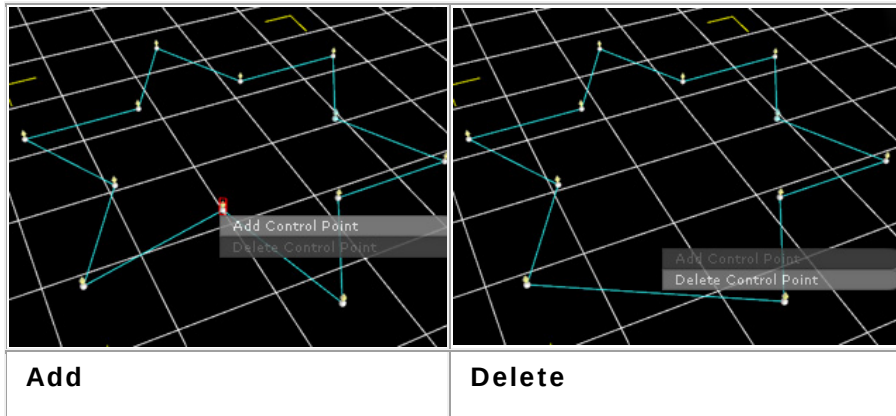
Note:

- o When you have both **Project to Terrain** and **Follow Terrain** enabled, **Follow Terrain** would be the layer that the prop will be following.

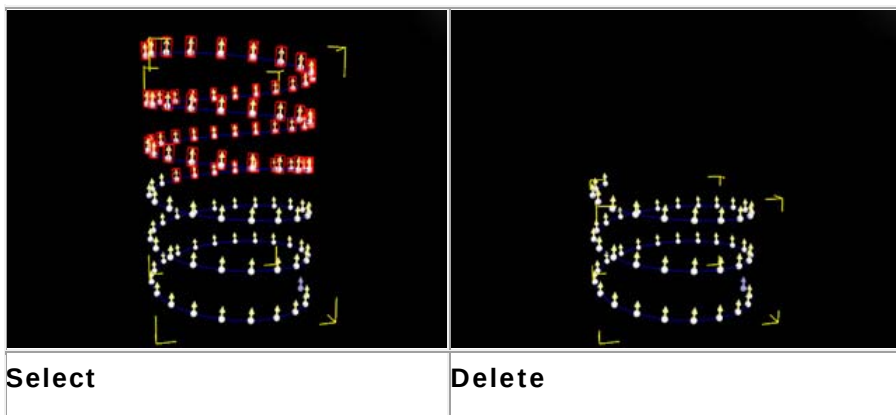
► Editing Path

By using the **Edit Path** function it is possible to enhance and modify a path to create any imaginable shape or fine-tune its positioning in the scene.

1. Create any shapes for the object to follow.
2. Select the path and click the **Edit Path**  button to go into path editing mode.
3. Right-click on the path to **Add** or **Delete Control Points**.

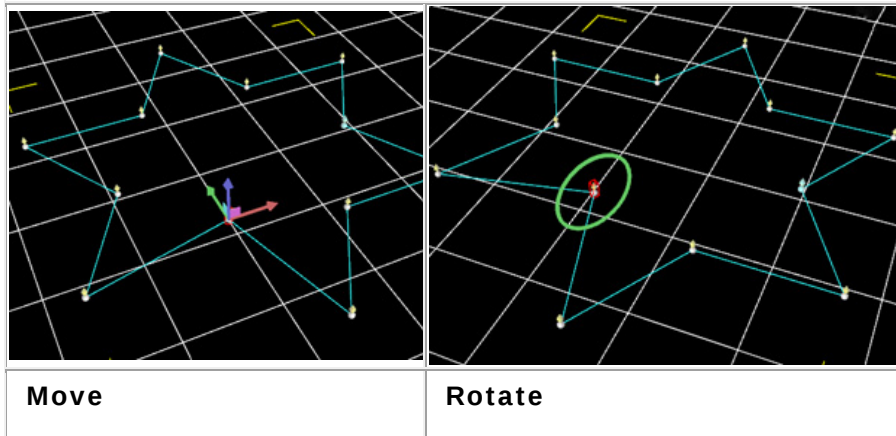


4. Press the **Ctrl** key to select multiple points for deletion.



5. You can also use the **Selection** tool to select multiple control points at once.

6. While a control point is selected you can use the **Move** and **Rotation** tools to set its transform data.



Note:

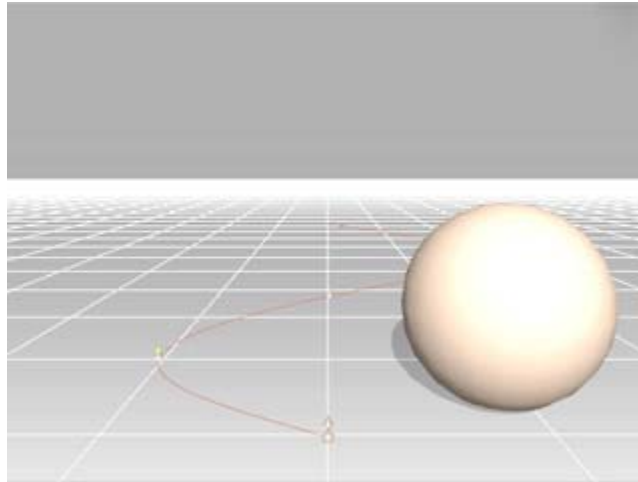
- o If you do not have the **Edit Path** Button enabled, you can only control the entire path instead of the control points.

► Prop Picking Path

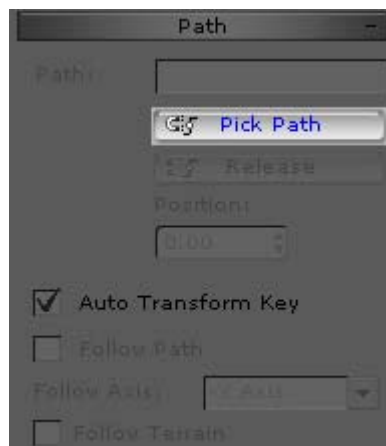
Props can pick a target path after a path is created in the scene. This simple technique allows you to save time by creating key frame by key frame.

Prop

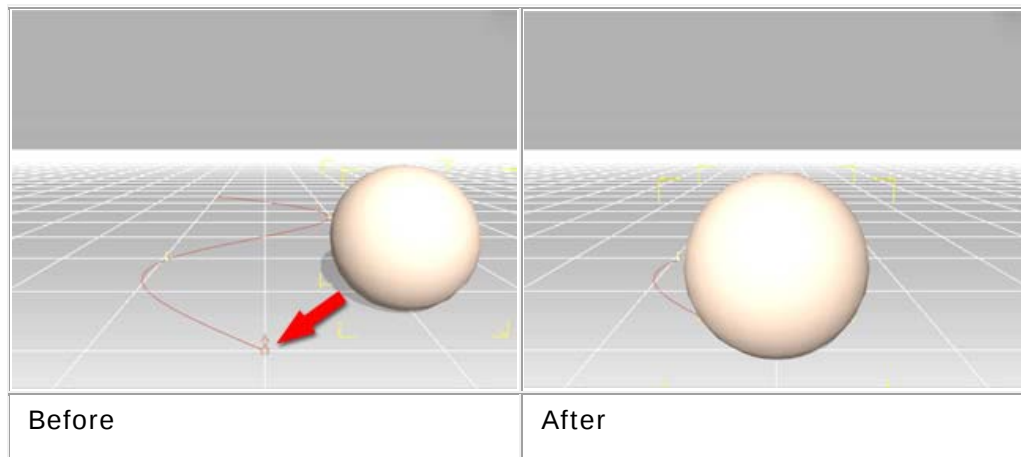
1. Create a path and add a prop to the scene.



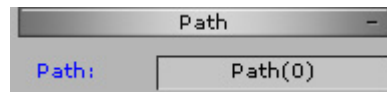
2. Select the prop and click the **Pick Path** button in the prop's modify panel.



3. Select the path for the prop to attach to.



4. The path name in here represents the path that the prop is currently attached to.



Note:

- o A link relationship between paths and props and characters will only be established when you use **Pick Path**. When you direct the character to a certain position using the **Move** command, a link will not be created.

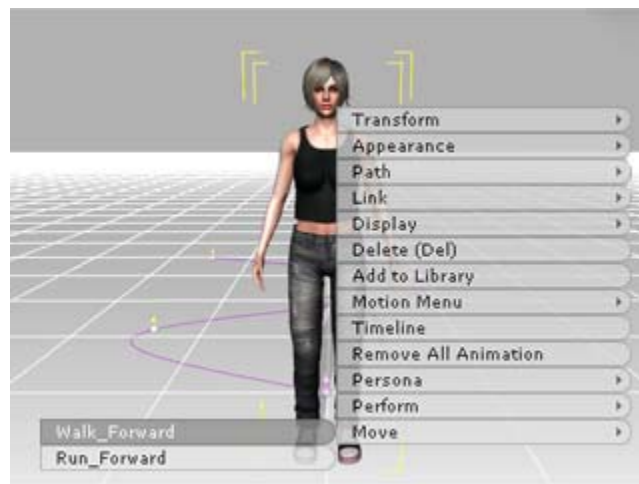
► Character Picking Path

Characters can either walk on a path by using **Pick Path** or by commanding them to walk directly on a target path.

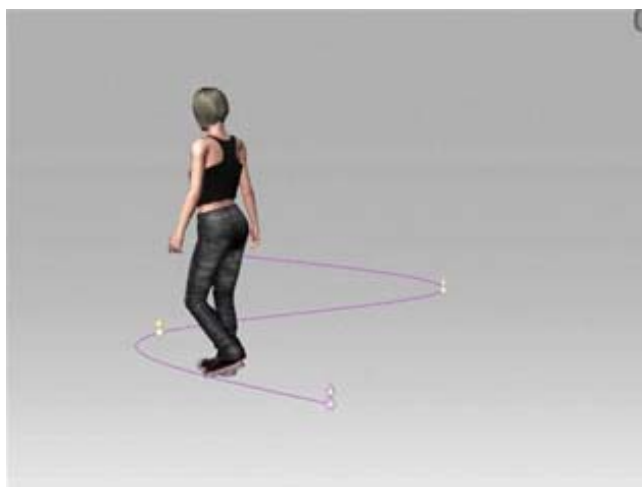
Character

There are two ways to enable your characters to walk on a path you have designed. You may simply direct them to walk on a target path using the behavior mode in right menu.

1. Create a path for your character to walk on.
2. Add a character into the scene.
3. Right-click on the character and select Move > Walk_Forward.



4. Pick the path you have just created. The character will walk to and then right along the path.



Note:

- o When using this command on a path you have frozen, the character will not follow and walk on the path.
- o A link relationship between paths and props and characters will only be established when you use **Pick Path**. When you direct the character to a certain position using the **Move** command, a link will not be created.
- o A character will always walk to the beginning or the end of a path when you pick a path for the character to walk on.

► Setting Position Keys on Path

Position keys allow you to set a prop's position at certain frames in the Timeline.

Position Value

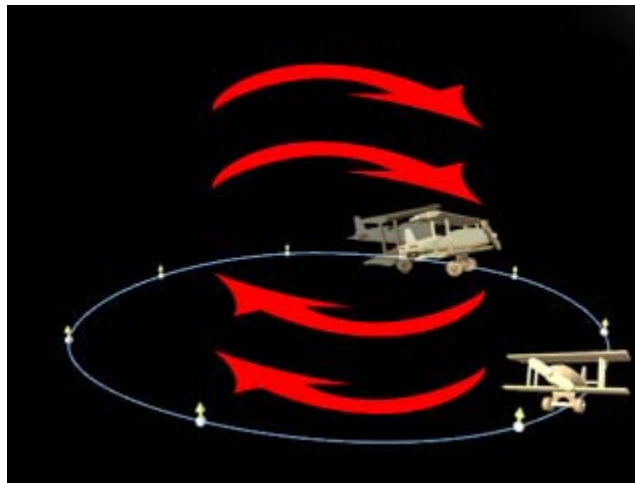
After you have created a path for the prop to follow, the value on the path is always from 1 to 100.



When moving from A to B, you will get a positive number, but when the prop is moving from B to A, the value reverses to a negative value.

Infinite Loop

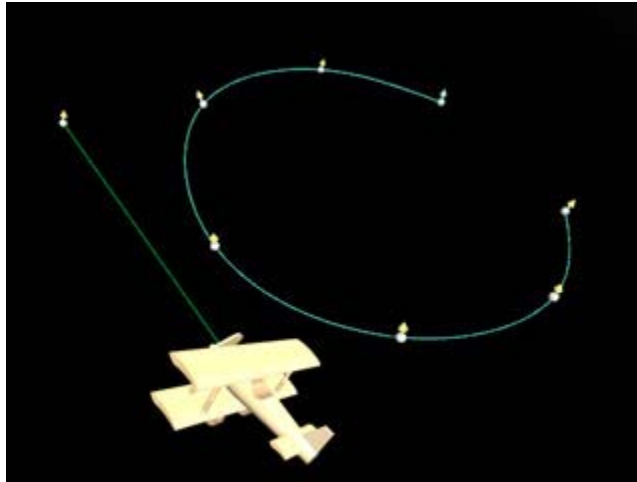
You can create a continuous loop by setting the value to 200 to make the prop follow the path twice, 300 for three times and so on.



Position Keys and Timeline

Assigning a different color to each path will help you identify the path that the prop is currently attached to in the timeline.

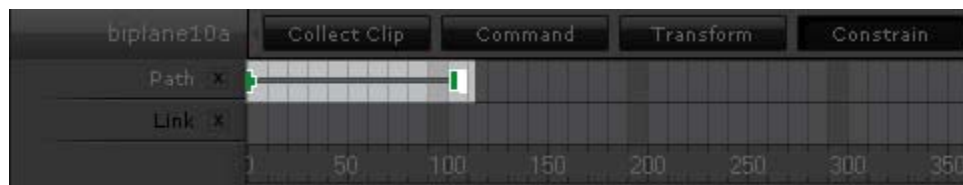
1. In this example, we have picked the **I** path for the prop to follow.



2. Drag the timeline slider to a new frame and enter a new value in the position field.

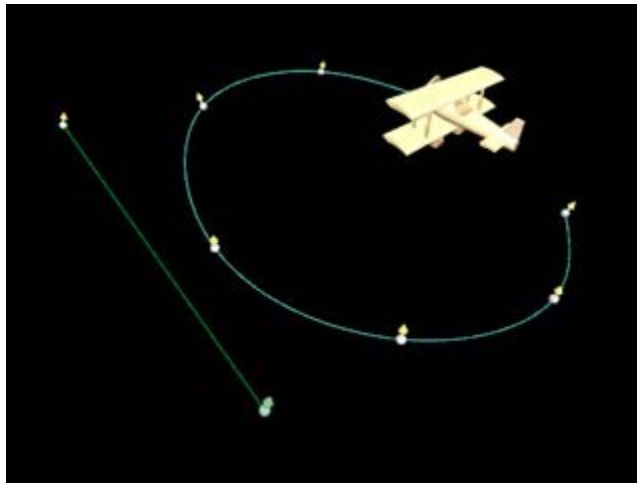


3. After setting position keys of the prop, open the **Path** track under **Constrain** in the **Timeline** panel.
4. Notice the green color keys in the path track, these **Position** keys are set for attaching on the **I** path.

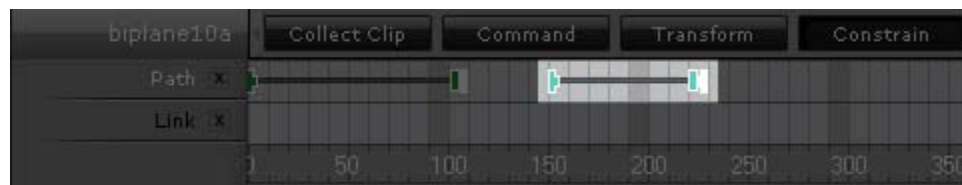


5. Drag to a new frame and click the **Pick Path** button in **Props** modify panel.

6. Select the **C** path and repeat step 2.



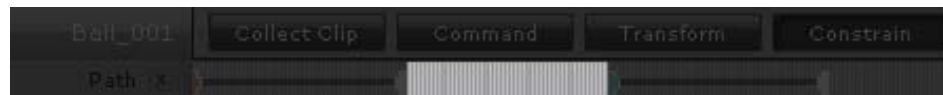
7. Another set of colored keys are added in the path track.



Release Constrain

Releasing constrain from path allows you to release the attached connection from the path to the prop or character.

1. Select the prop.
2. During the session of attaching to the path, you may drag to a frame and press the **Release**  **Release** button to detach.
3. When you have detached the prop from the path, the Path Track in the timeline changes instantly to reflect that the constrain relationship has disappeared.



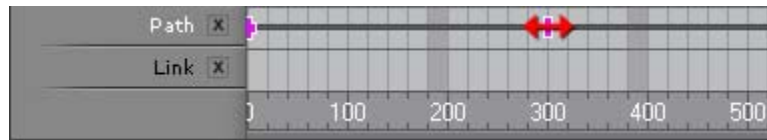
► Adjusting Speed Variation on Path

You can set position keys on different control points for the prop to approach. You can even set variations in speed for the prop while moving on a path. This can be used to simulate something moving very fast and then very slow or when something is very slow and then enters high speed. There are few examples, such as when a person is walking uphill or when a car suddenly goes downhill.

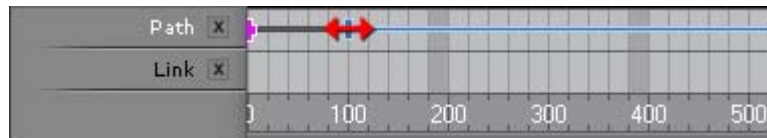
Drag/Pull Position Keys

When you have selected the position keys for picking path on a target control point, you can then see the keys under the target prop's **Constrain / Path** in timeline.

- Since there are several keys set for picking path, you can then drag and pull these keys to set the speed for it to get to the destination in the limit time of frames.



- Now adjust the key to frame 100. You may now see the bus runs even faster to get to the destination in these frames.

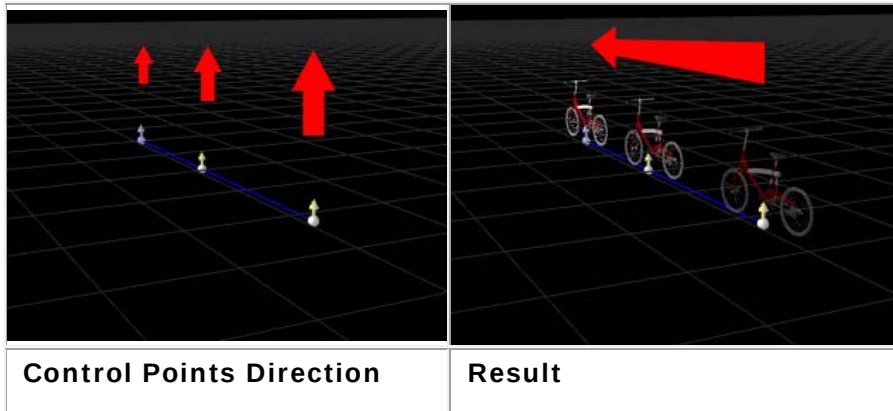


► Following Control Points

Every control point has its own arrow pointer. These points refer to the direction that the prop or the character will be facing when it reaches the control point.

Control Points Direction

If you have all the **Control Points** facing one direction, you may get the following result.



Turning Control Points

By modifying every control point you can make a prop turn on a selected path. You may enable the **Edit Path**  button to select the control points and turn its direction.

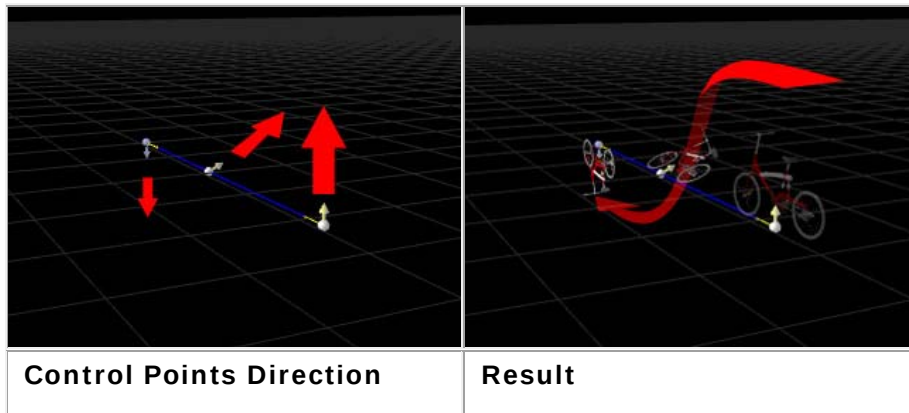
1. Create a path and have the path in selection.
2. Go to the path's modify panel and enable the **Edit Path**  button.
3. Select the pointer and press the right mouse button to turn its direction.
4. Add a prop into the scene and click the **Pick Path** button to select the path.



5. Enable **Follow Path** in Prop's modify panel.



6. The prop now follows the direction of the control points.

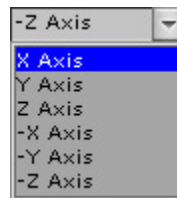


► Following Path and Terrain

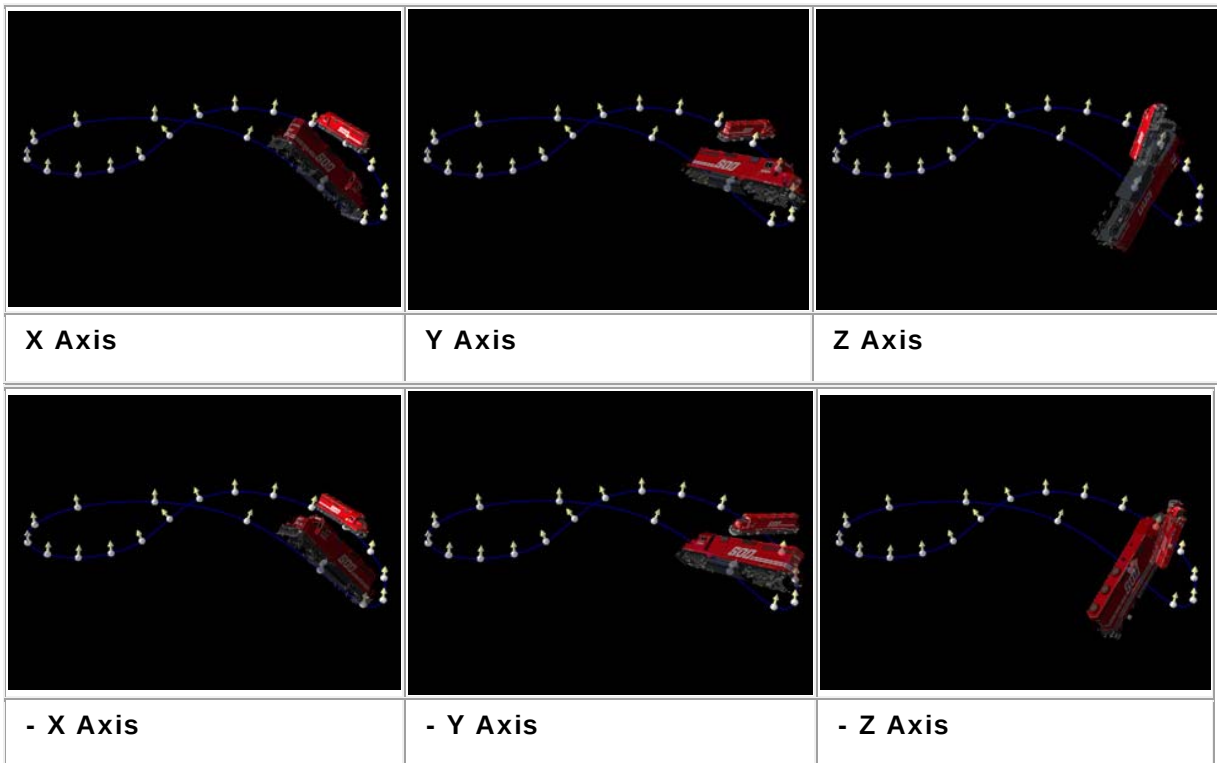
Follow Path

When selecting a character or a prop to pick a path, you may decide the character's or prop's facing direction when moving along the path.

1. In the Prop's Modify Panel enable **Follow Path** to have it follow an axis.
2. Select one of the facing directions from the drop-down list.

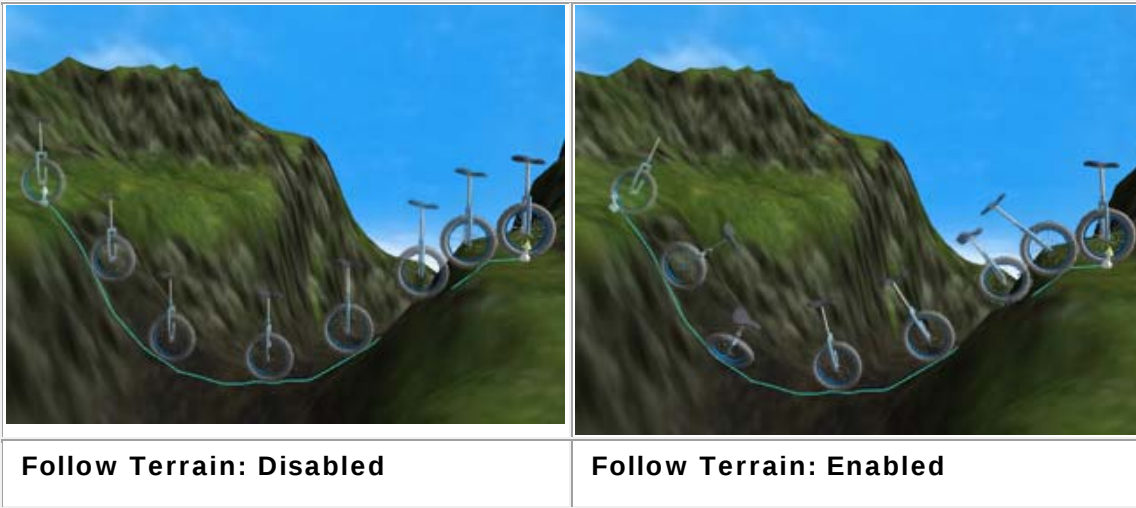


3. Now the prop orients itself by examining the X, Y, Z directions while following the path.



Follow Terrain

After you have projected to terrain, you can switch to the prop's modify panel and enable **Follow Terrain** to make the prop follow the orientation and transition of the terrain.



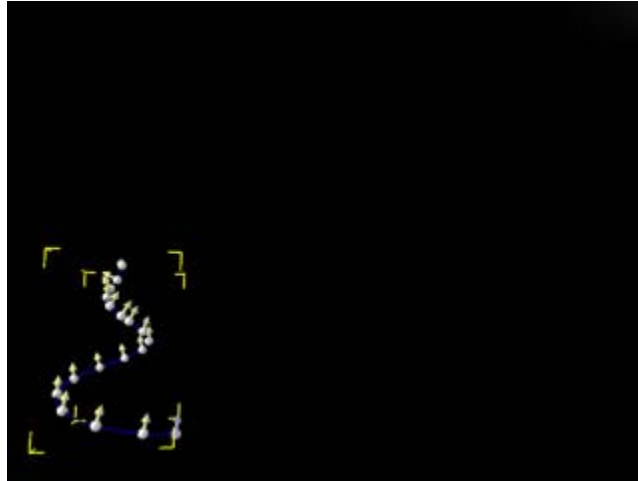
Note:

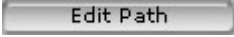
- o Since you cannot set keys to follow a path, you cannot have two different follow path directions set for a single prop.
- o When you have both **Follow Path** and **Follow Terrain** enabled, **Follow Terrain** would be the layer that the prop will be following.

► Jumping from Path to Path

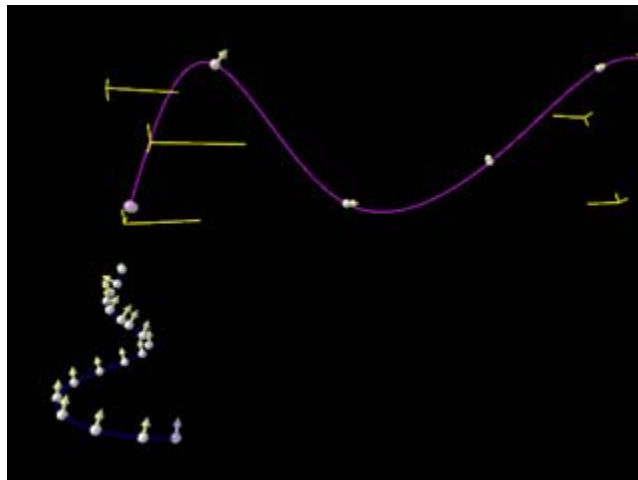
In iClone4, you can create multiple paths in a scene for the props or characters to jump to and from.

1. Create your first path.

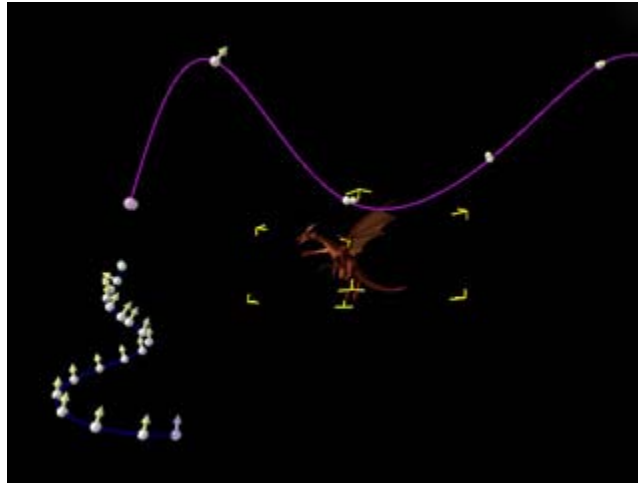


2. You may click the [Edit Path](#)  button to position the **Control Points**.

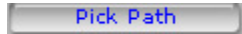
3. Now, create another path in the sky.



4. Add a prop into the scene.

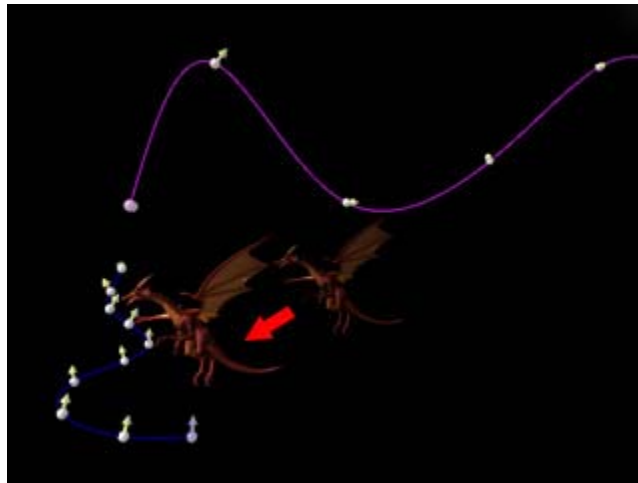


5. Go to the **Path** section in the Prop's modify panel and click **Pick Path**



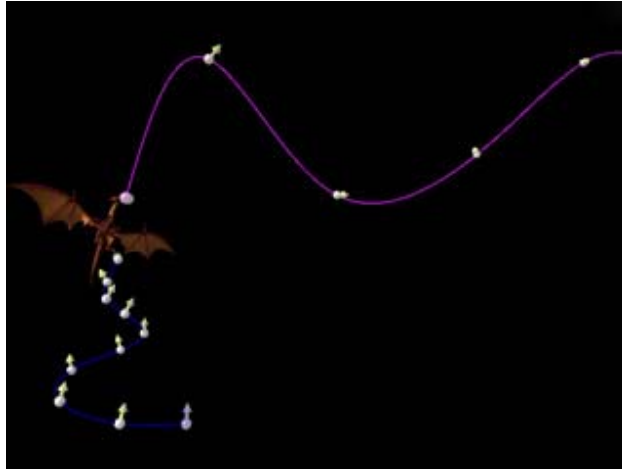
Keying Path to Path

1. Select the first path's starting point and the avatar snaps right onto the target pointer.

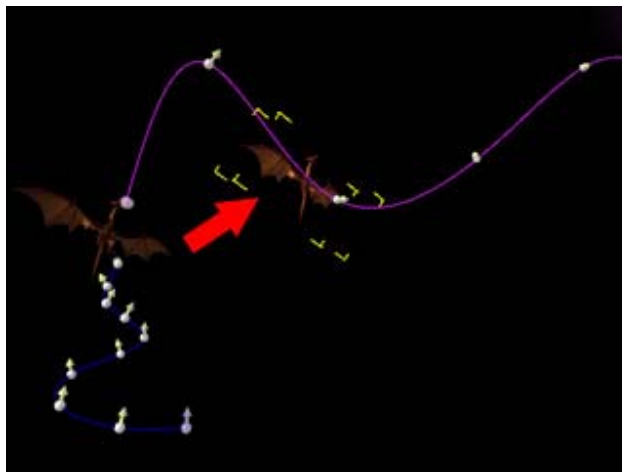


2. Drag the **Timeline Slider** to a preferred frame. Adjust the value in the **Position** field to set the avatar's position and add a position key on the selected frame.

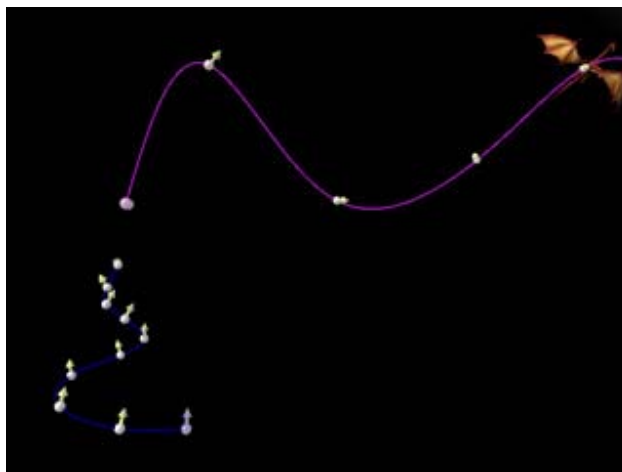




3. Drag to a new frame in the **Timeline** and click the **Pick Path** button and select a control point on the second path.



4. Drag the **Timeline Slider** to a new frame again. Adjust the value in the **Position** field and make the prop move to the last control point on the pink path.



5. The prop moves smoothly between path to path.

► Camera on Path and Look At Target

After viewing this tutorial you will be able to make more complex use of paths and their combination with other objects.

Camera on Path

Now, we will be creating a path for the camera to move on.

1. Please add a camera first from the **Stage / Camera** modify panel.
2. Select the camera and pick a path to attach the camera to the path.
3. Drag the timeline slider to a new frame and set position value to 100.
4. Now the camera runs smoothly from the start to the end.

Look At Target

Since we have set a path for the camera to move on, we can now direct the camera to look at a specific object.

1. Add and place an object in the scene.
2. Select the camera and click **Look At** in the modify panel.
3. Pick the object to look at.
4. Now the camera runs smoothly on the path while looking directly at the object.



Note:

- o You may also apply this to the character and the light system.

⦿ Human Centric Control

The **Human Centric Control** is designed to match the real world around us. When applying an iProp onto the character, the character sets an initial action to immediately interact with the iProp. After applying the iProp to the character, the character will take over all the actions of the iProp to allow the character to control the actions. In iClone there are a total of 10 default contents: beer, fruit, remote control, stein, sofa, bed, and plus the Zack_Armor, Zack_Wing, Wings, and boxing gloves in the iAccessories menu.

iProp to Character

When an iProp is dragged onto a character, the character inherits all the actions embedded in the boxing gloves.



The character can now perform all the performance of the boxing gloves as well.

Character to iProp

When a character is dragged onto an iProp, the character controls all the performances embedded in the iProp.



Note:

- o **Human Centric Control** only works for iProps and not for normal props without embedded DramaScripts.
- o Please visit [iCloneWiki](#) for more information about **DramaScript**.

► Human Centric Control - Editor Mode

Once you have applied any of the objects to the character or applied the character to the objects, the right-click menu changes instantly to reflect the performance embedded in the object. The right-click menu changes depending on what is attached to the character. Once you have applied an iProp to the character, you may see the difference in the character's right-click menu.

iProp to Character

1. Let's see what happens to the right-click menu before we drag anything to the character.



Notice in the perform section, the character only holds four motions.

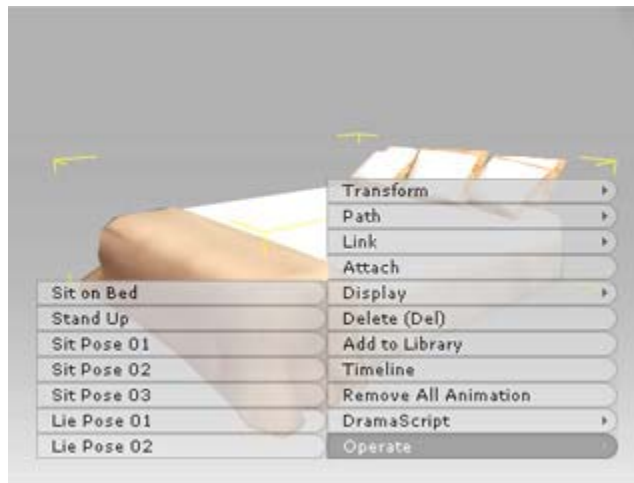
2. Drag the iProp to the character.
3. Right-click on the character again to see the difference.



The character's performance has increased by adding the actions embedded in the Boxing Gloves.

Character to iProp

1. Add a bed to the scene.



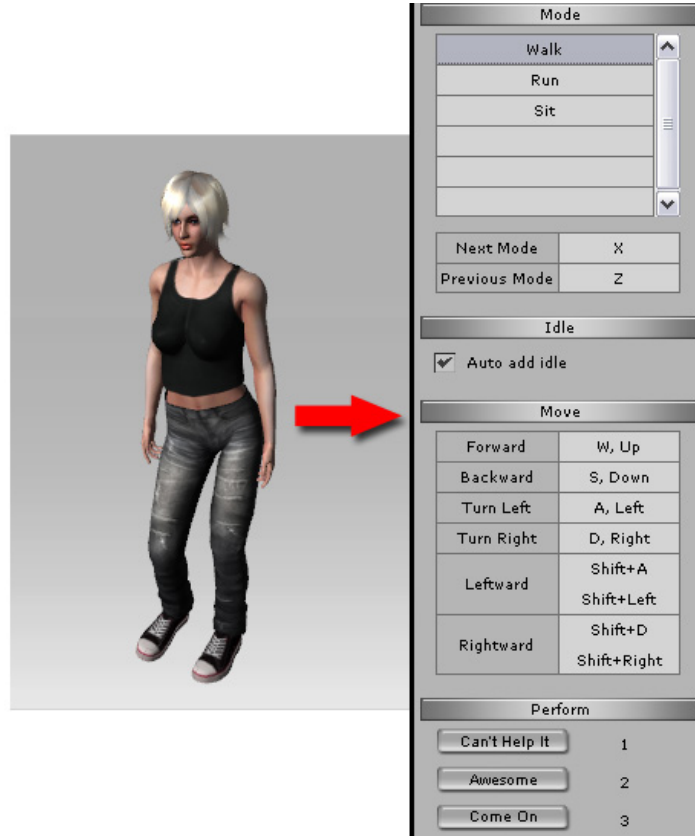
2. Drag an avatar onto the bed to apply.
3. Right-click on the character, the character now inherits all the interaction from the bed.



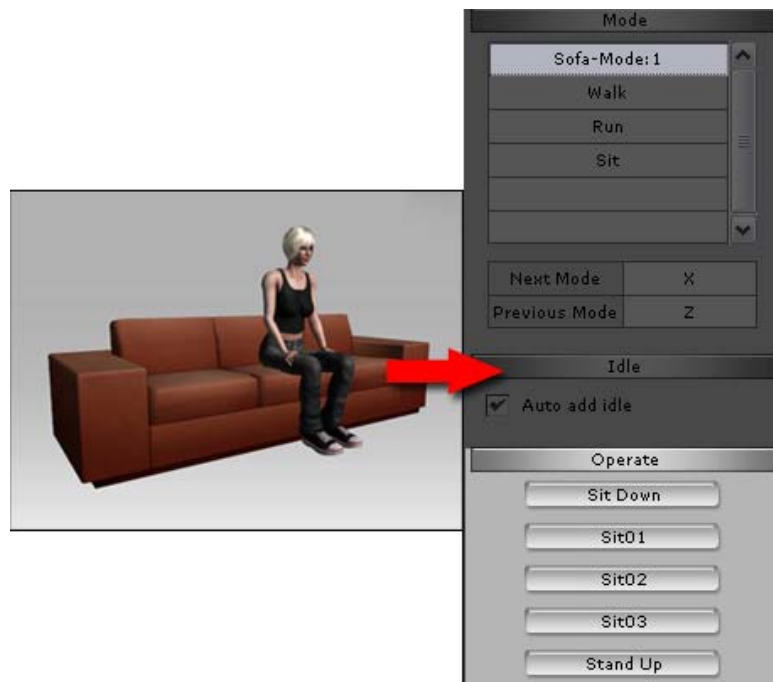
► Human Centric Control - Director Mode

When you enter into Director Mode you may see all the available commands in the Modify Panel for the current mode. This includes all the commands from the character itself and from all the inherited performances from all the objects attached.

1. When we have the character selected in Director Mode, you may see all the available commands for the character.



2. Additional commands appear when you have attached the character to iProps or when iProps have been attached to the character.



3. By defining the AML commands you may even set different modes for the character. This allows the character to walk or run using the same **DramaScript**.

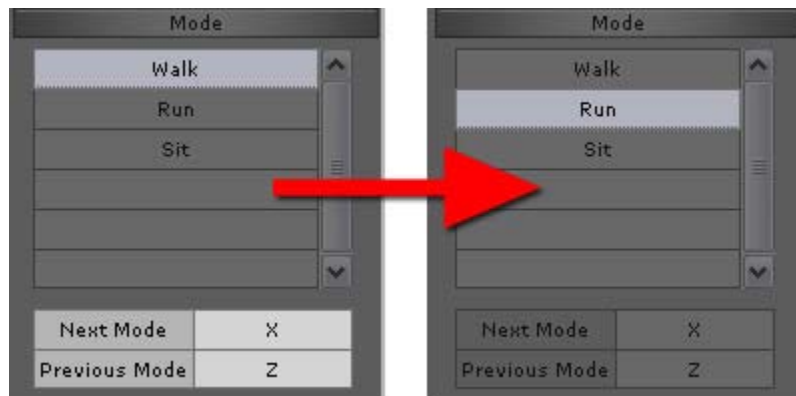
Switching Modes

Some of you may have noticed the modes on top of the director mode panel. You may simply switch the modes from walking to running.

1. The character is currently in the first mode, walk.



2. Press X or Z to switch the modes from walking to running.



3. The motion has now switched to the second mode, run.



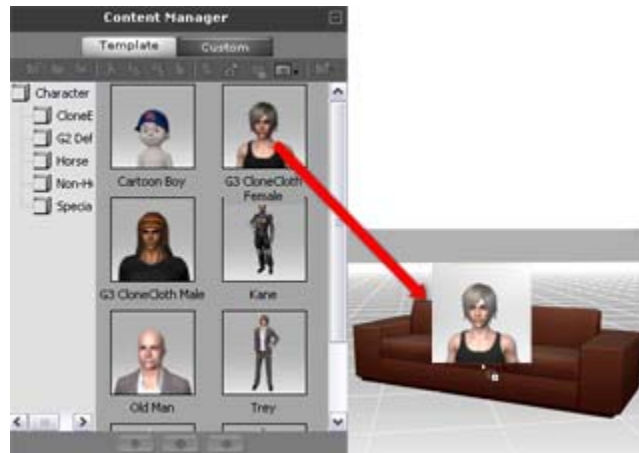
Note:

- o Since we have applied the character onto a target prop with initial pose, please have the character perform the end action to end its performance for the selected command. E.g. If you have a character in a sitting pose you must have him stand up to end its sitting pose.

► Character to iProp

You can have an immediate interaction between a prop and a character when a prop is an iProp.

1. Apply an **iProp** into the scene.
2. Drag a character onto the iProp, release your mouse when you see a plus sign on the screen.

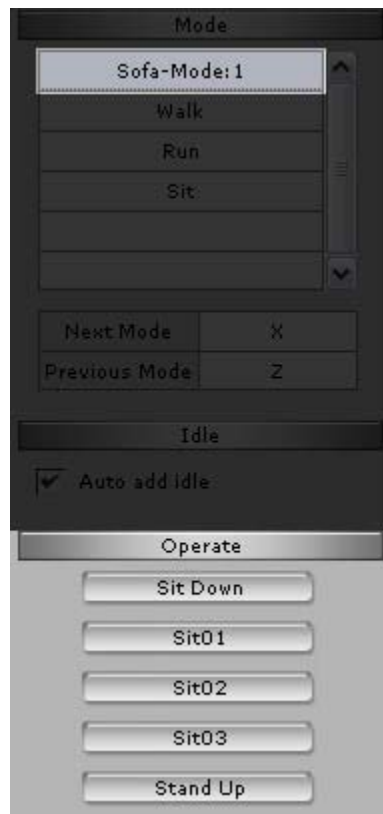


3. The character now sits on the iProp.



4. Right-click on the character, the character now inherits all the actions embedded within the iProp.
5. Switch to **Director Mode**.

6. An additional **Operate** section has added in the modify panel.



Once you command the character to **Stand Up** you unlink this inheritability.

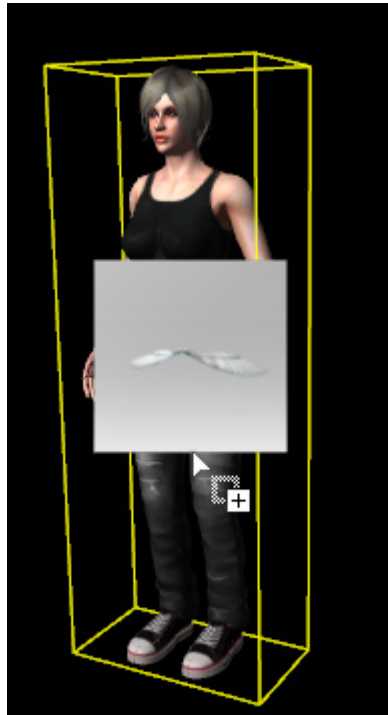
Note:

- o Due to the restriction on Non-Standard Characters, the Cartoon Boy cannot sit properly on neither the sofa nor bed.

► iProp to Character

iProp to Character allows you to drag an iProp onto the character and the character inherits all the actions embedded within the iProp.

1. Drag an iProp onto the character.



2. The initial pose command allows the wings to attach on the character's back.



3. Select the character and right-click to see the additional commands in the list.

4. Switch to the **Director Mode** and you will see all the available commands in the **Modify Panel**.



All the available controls for both the character and iProp show in the Director Mode modify panel.

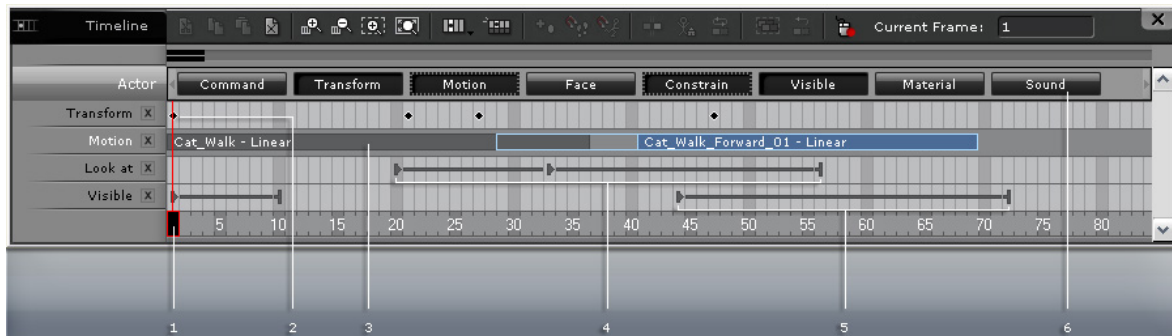
Timeline

⦿ Animation Timeline Editing

Before this section, please refer to the [Timeline Editor](#) for more information about the user interface and tools.

Data Types

There are **four types** of data in a track and **one special** track for **Timeline Editing** in iClone - **Key**, **Clip**, **Target-switching**, **On / Off** and **Collect Clip**.



1	Timeline Pointer	Drag the pointer on the Timeline frame meter for quick frame review.
2	Key	Animation Key stores RTS (Rotation, Transformation, Scale) data for all objects in the iClone 3D space, including camera, lighting, actors, props, accessories. Users can use keys on the timeline to control a prop's location, rotation and size change; as for actors, cameras and lighting, only location and rotation can be controlled. Parameter Key stores settings of specific objects such as Color, Range, Beam, Falloff of Lights and Lens, Focal Length of Cameras. The parameter values between keys are interpolated automatically.
3	Clip	Animation Clip stores the motion/animation clip segments of animation data corresponding to animated objects, such as moving/performing/operating of actors/iProps, LiveProps, merged props, and hand gestures. Animation Clips can handle more complicated motion behavior, such as skin-bone animation, morph animation. Please refer to the The Rules of Animation Tracks section for more information.

4	Target-switching	Target-switching data resembles the key concept. It stores the targeting relationship between one object and its target. The target can be changed or even dissolved at any time frame. Features such as Look at , Link to for actors, cameras, lights or props (Link to only) are under this category.
5	On/Off	The On / Off data on the Visible track stores only one status of the objects. You can let the object be visible (On) at one frame till it is set to be invisible (Off) at another. The On / Off data can also control the emitter of the particle effect to start/stop sending out the particles.
6	Collect Clip Track	This special track doesn't keep any data or clips. It helps you with selecting a range in the Timeline and then merges and saves the motion/animation-related data into the library for actors or embeds the data to props. Actors: Data in Move, Transform, Perform, Operate, Motion Layer and Hand tracks will be merged and saved. Props: Data in Move, Transform, Perform, Operate , tracks will be merged and saved.

Key/Clip Selections

- **Select single key** - Single click on the target key/clip, the selected key/clip is highlighted in blue.
- **Tab Key** - Press **Tab** to jump to the next key/clip, **Shift + Tab** to jump to the previous key/clip.
- **Select All keys** - Double-click on the target track name.
- **Multiple key selection**
 - o Drag the cursor in the specific track to highlight the keys/clips covered under.
 - o Use Ctrl + LBM (Left Mouse Button) to select multiple keys/clips.
 - o Use Shift + LBM to select the adjacent keys/clips.
- **Copy Keys or Clips** - Use Ctrl + drag keys or clips to duplicate them.

Please refer to the [Timeline Shortcuts](#) section for the information.

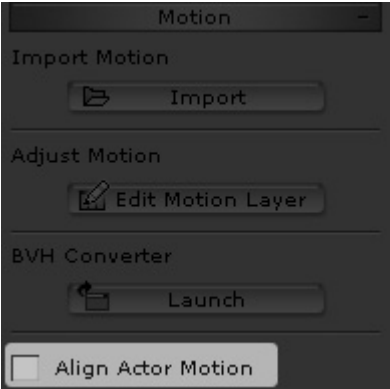
► The Rules of Animation Tracks

When **iClone** is playing a project it will follow a specific priority as it encounters multiple clips or keys in the same frame:

Rules	Description	Tracks or Groups of the case
Replacing Method	The clips or keys that replace all the effects from other clips or keys in the same frame.	Path and Motion tracks.
Layering Method	The clips or keys that append effects to all the other clips or keys in the same frame.	Link, Look At, Facial Layer, Expression, Motion Layer, L Hand, R Hand and Transform tracks.
Group Priority	The group with its tracks possesses higher priority than the ones to the left side of it.	Constrain > Face > Motion > Transform > Command.
Command Group	The clips from the tracks in the Command Group do not have any specific priority since their priority can be defined freely in the Persona or DramaScript .	Idle, Move, Perform, and Operate tracks.

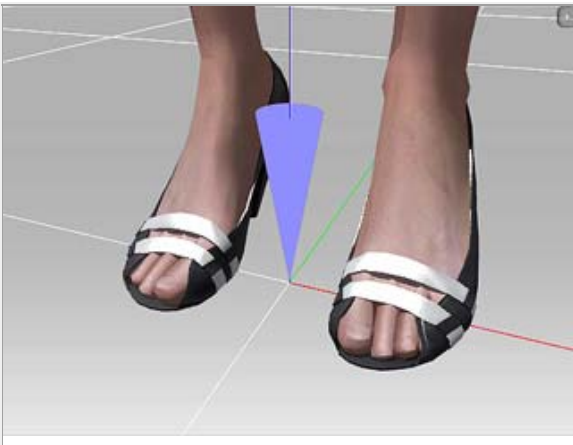
⦿ Align Actor Motion

As you are combining motions for the actor, you may find it hard to locate the actor to start a motion at the same location as the one at the end of the previous motion. **iClone** provides a feature, **Align Actor Motion** to auto align the actor pivot, and let the next motion start from the ending location of the previous motion.



Actor Root? Motion Root?

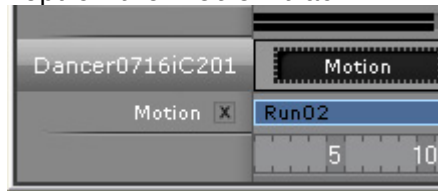
Before we start to describe the **Align Actor Motion** feature, we need to understand what **Actor Root** and **Motion Root** are.

			
  BoneRoot  LowerTorso	The Actor Root (BoneRoot, Pivot)	  BoneRoot  LowerTorso	The Motion Root (LowerTorso)
Actor Root: It is also known as the BoneRoot or the Pivot of the character, which determines the actor's actual location, i.e., the value of the transformation data (Move, Rotate). Actor Root changes only when transformation is being applied in the Editor Mode, WASD or right-click		Motion Root: It is also known as the LowerTorso node in the actor's bone hierarchy. All applied motion clips affect the transformation change of this node, thus you might see kick or dance motion. However the Actor Root remains in the original position. All applied motion clips, either from the	

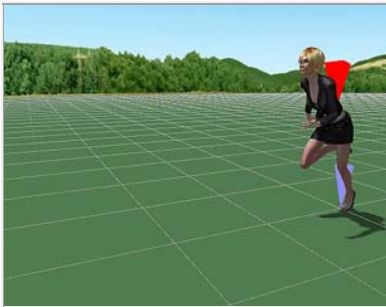
menu/**Move** command is used in the **Director Mode**. The data is kept on the **Transform** track.



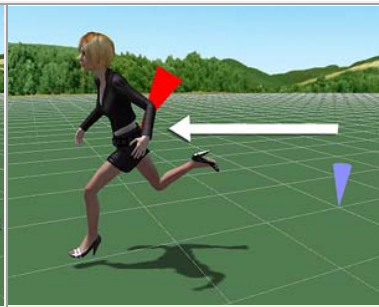
Editor Mode or from the perform command in the **Director Mode**, are kept on the **Motion** track.



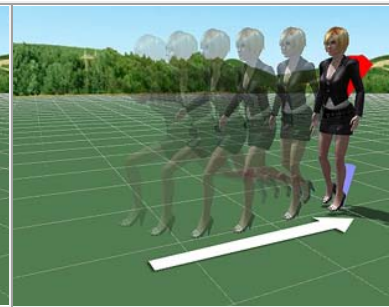
Problem: When you apply motions to an actor the **Motion Root** will sometimes be moved away from the **Actor Root**. Each time a motion finishes, the **Motion Root** aligns back where the **Actor Root** in order to blend with the **Idle Motion**. (The **Idle Motion** is designed to have the two roots aligned) Therefore, a motion composed of several motion clips will always have annoying back-to-the origin situation at the interval among clips.



A "Run" motion is applied to the **Motion Root**.



The motion clip brings the **Motion Root** away from the **Actor Root**.



If the **Auto Add Idle Motion** is on, you might find the motion being **dragged back to the Actor Root**, because the **Actor Root** is still there, and the idle motion always aligns with the **Actor Root**.

Purposes of Align Actor Motion

There are two purposes for the **Align Actor Motion**:

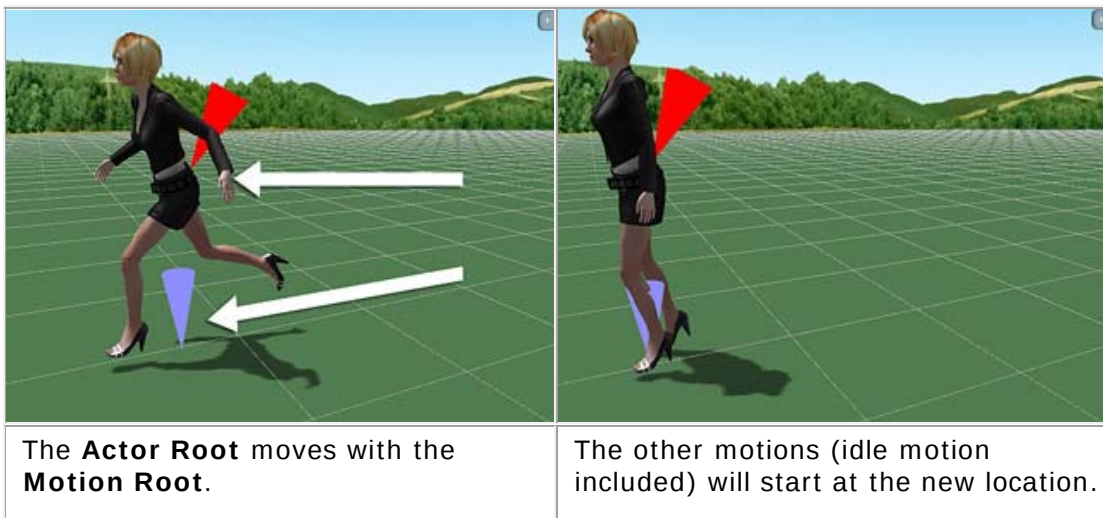
- o To always have the Actor Root align with the Motion Root to ensure the connectivity between motions.
Please refer to the [Connective Motions without Back to Origin](#) section for more information.
- o To have the motion act along the terrain.
Please refer to the [Motion along the Terrain](#) section for more information.

▶ Connective Motions without Back to Origin

Connective Motions without Back to Origin

1. Please select an actor and go to the **Animation/Motion**.
2. In the **Modify** page, check the **Align Actor Motion** box.
3. Apply a motion template from the **Content Manger**.

The actor will remain where it is after the motion finishes instead of going back to the origin to align with the idle motion. With the **Align Actor Motion** box checked, you may add as many motions without caring about the back-to-origin issue.



► Motion along the Terrain

Motion along the Terrain

The most powerful function of the **Align Actor Motion** feature is to have an actor snap to or follow the terrain as you apply a motion to it.

1. Select **Snap to Terrain**  tool in the [Control bar](#).
2. Select an actor, go to the **Animation/Motion/Modify** page.
3. **Uncheck** the **Align Actor Motion** box.
4. Go the start frame of the project, apply a "Run" motion to the actor.

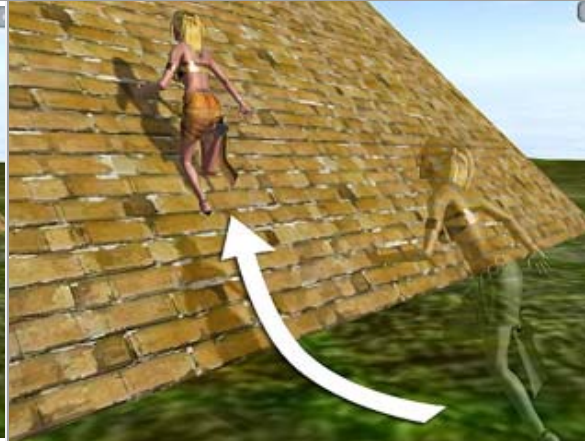


5. Select another actor, go to the **Animation/Motion/Modify** page.
6. **Check** the **Align Actor Motion** box.
7. Go to the start frame of the project, apply the same "Run" motion to the actor.

Because the **Actor Root** is affected by both the **Snap to Terrain** and the **Motion Root** at the same time, the latter actor will run along the terrain.



Snap to Terrain and **Align Actor Motion** are **ON**.



The actor root snaps along the terrain.

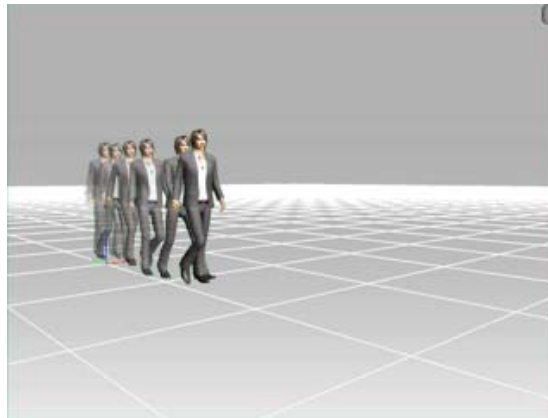
⦿ Reset Motion Root

If the motion does not happen at the origin when it is generated, you may encounter situations where your actor offsets when you apply those motions. This is often the case when you import a motion from other **BVH** sources in which the motion might not start from the 0,0,0 root location.

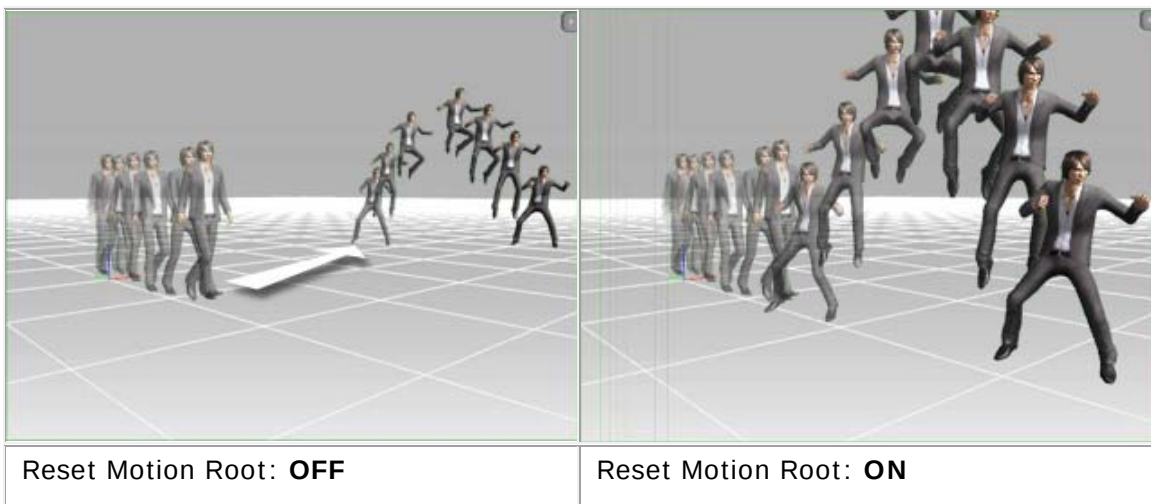
Reset Motion Root

Apply the motion just created to any actor with or without checking the **Reset Motion Root** box to view the difference.

1. Select an actor in the project.
2. Command the actor to move to another location.



3. Apply the created motion by clicking the **Import** button in the **Animation/Motion/Modify** page.

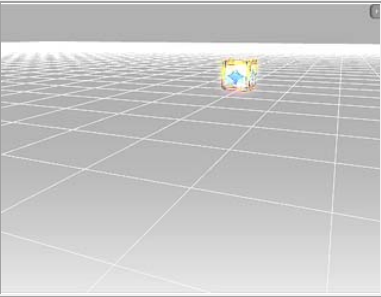
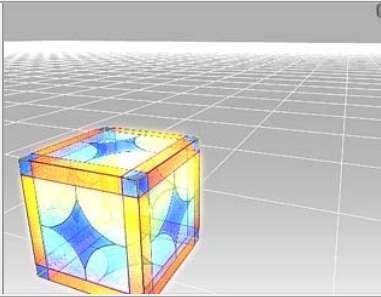
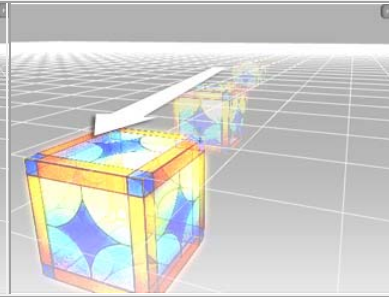


General Track

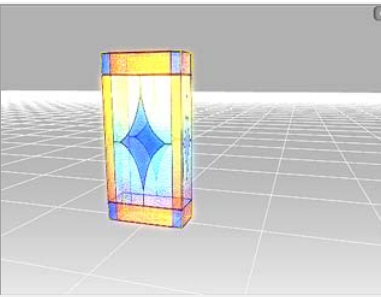
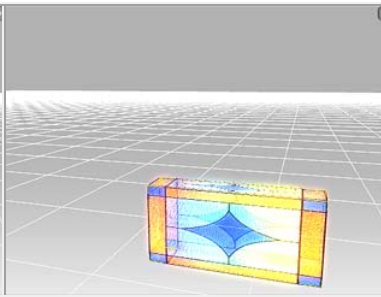
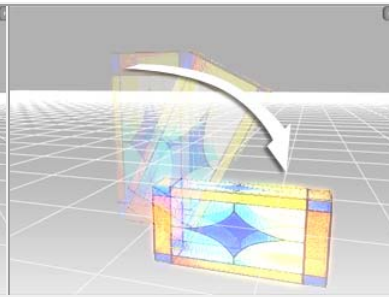
► Transform Track

You can find this track grouped in the sub-track set of **Actor**, **Props**, **Camera**, and **Light**. In the **Transform Track**, you may set keys in different frames; **iClone** will generate the transition animations automatically. Each key in the track stores the **Move**, **Rotate**, and **Scale** data of the target object in the current frame.

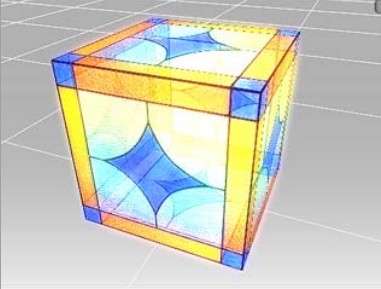
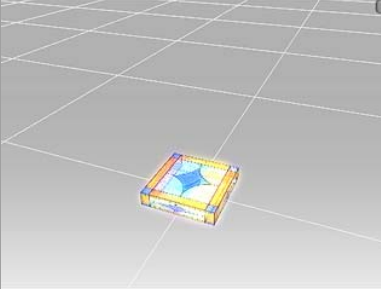
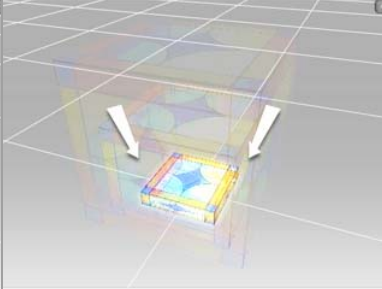
Move

		
Start Frame: 0 Move Key Added: (-100, 500, 0)	End Frame: 300 Move Key Added: (0, 0, 0)	Start play back and the box will move automatically from (-100, 500, 0) to (0, 0, 0) within the frame range.

Rotate

		
Start Frame: 0 Rotate Key Added: (0, 0, 0)	End Frame: 300 Rotate Key Added: (0, 90, 0)	Start play back and the box will rotate automatically from (0, 0, 0) to (0, 90, 0) within the frame range.

Scale

		
Start Frame: 0 Scale Key Added: (100, 100, 100)	End Frame: 300 Scale Key Added: (50, 50, 10)	Start play back and the box will scale automatically from (100, 100, 100) to (50, 50, 10) within the frame range.

► Visible Track

By setting keys in the **Visible** track, you may show/hide selected objects temporarily in specific frames. Basically, every object is **Visible** by default, that is, the key for each object in the start frame of the project is **On**.

1. Select the actor and go to the desired frame for hiding.



2. In the **Modify** page, scroll to the **Display** section.
3. Set the **Visible** parameter to **Off**. A key will then be added into the **Visible** track instantly.



4. Go to another frame and set the **Visible** parameter to **On**. The actor shows and a key is added into the **Visible** track automatically.



Actor Private Tracks

⦿ Idle Track

This unique track contains the idle motions of an actor. Since its priority is relatively low, the **Idle** motion will be ignored during playback if there is any **Move**, **Perform**, or **Operate** motion at the same frame. Please refer to [The Rules of Animation Tracks](#) section for more information.

Characteristics of idle motion

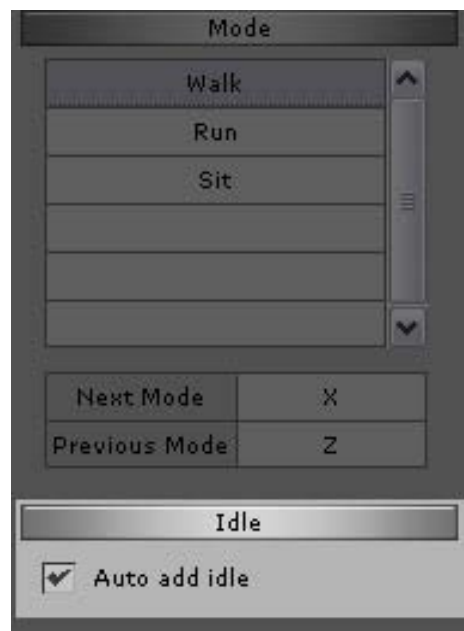
- Empty slots will always be filled up with the idle motions in the **Director Mode** when there are no **Move** or **Perform** motions.
- Idle motions are randomly chosen from a pre-defined set of idle motions to fill the **Idle** track.

Start/Stop Generating the Idle Motion

The **Auto Add Idle Motion** feature is on by default. However, idle motion can be generated in the **Director Mode** only, please follow the steps below:

1. Select the target actor for generating idle motions.
2. Click the button on the play bar to toggle the **Director** mode.
3. Check/Uncheck the **Auto Add Idle** box to decide whether the idle motions are added.

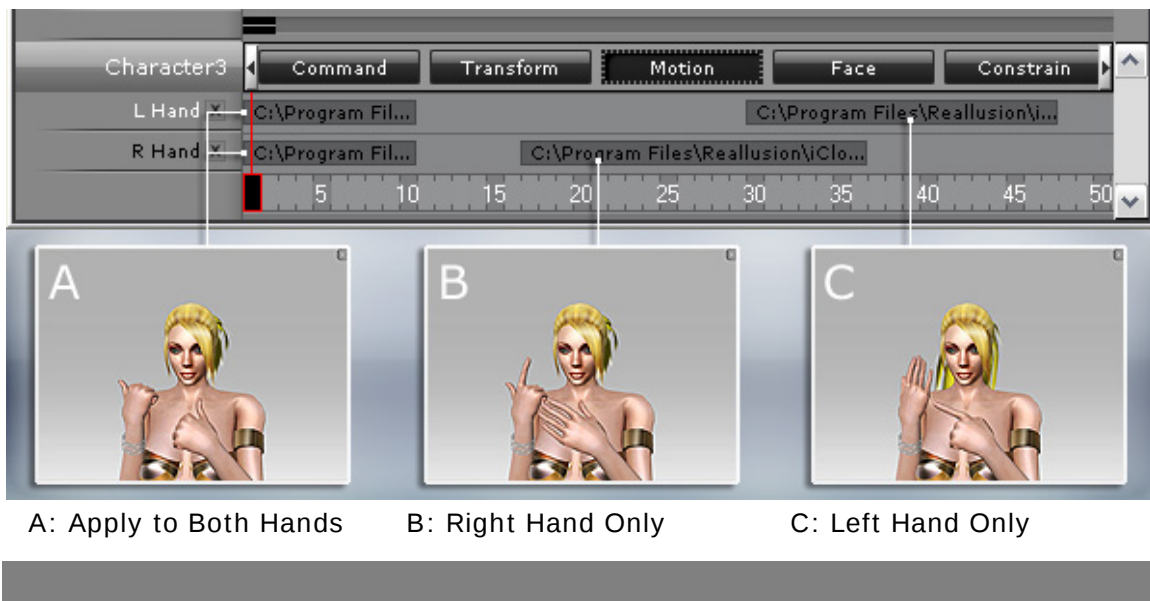
Start to record and the idle track will be filled up with new idle motions automatically.



⦿ Hands Track

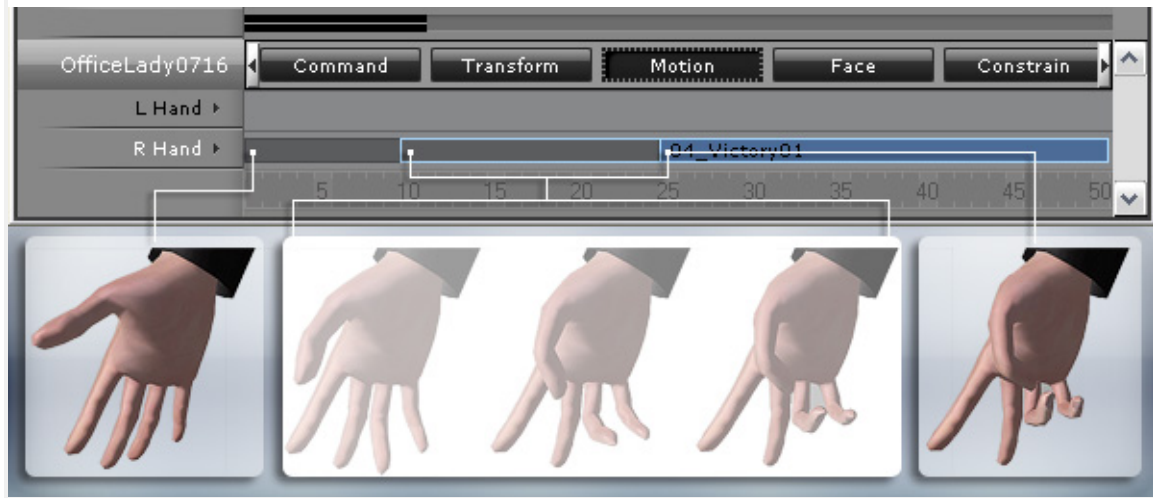
Toggling the **Hands** button on the timeline will show two tracks. One is for storing the motion of the **Left** hand and the other is for the **Right** hand.

1. Pick an actor and go to the desired frame for changing hand motions.
2. Go to the **Animation/Hands/Modify** page, scroll to the **Gesture Library** section.
3. Select one of the three radio buttons (Left, Right or Both) in accordance with the hand(s) you want to add motions to.
4. Click the drop-down list to select a template. The motion will be added instantly.



Note:

- The blending effect between two hand motion clips will be generated automatically.

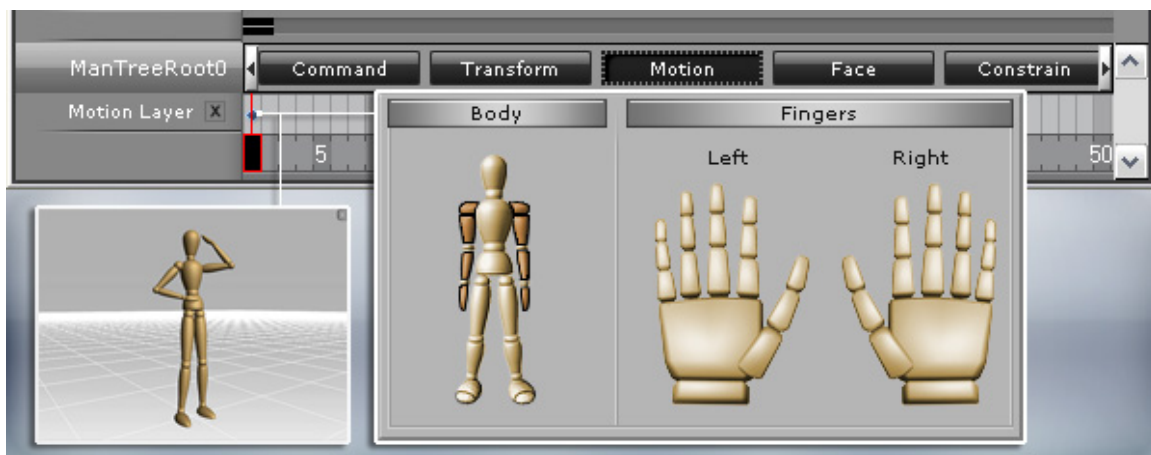


⦿ Motion Layer Track

The **Motion Layer** track is a very important track for fine-tuning an actor's motion. You may generate simple [Key Frame Animation](#) or add [Animation Layer](#) to an existing animation clip. Before explaining these two subjects, you will have to know the data that is stored in a key.

Key Data

Each key in this track contains two types of data: The **Body Pose** and the **Absolute Bone**. The **Body Pose** depicts the XYZ offsets for each joint of the body. The **Absolute Bone**, however, stores the relative/absolute status for each bone. For more information about **Absolute / Relative**, please see [Absolute and Relative Bone](#).



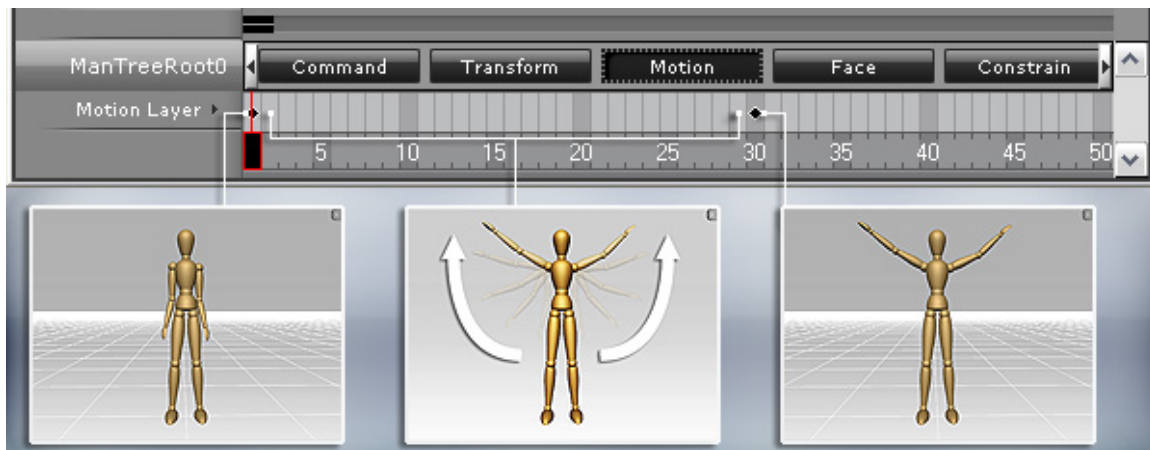
A single key stores the body pose and the absolute/relative status of each bone

Key Frame Animation

To fully understand **Key Frame Animation** we need to remove all the animation clips in the **Move**, **Perform** and **Operate** tracks. Please double click on the title of these three tracks on the timeline and press the **Delete** key. Follow the steps below to generate **Key Frame Animation**.

1. Go to the desired frame for creating the first motion layer key with [IK](#) / [FK](#) methods.
2. In the **Edit Motion Layer** window, switch to **Set Absolute Bone** mode. Pick the bone that you want to set as absolute (non-selected bones are set relative by default).
3. Go to another desired frame to add a key.
4. Play the project to see the result. The transition effect is generated automatically between these two keys.

You may then create your own motion for the actors key by key.



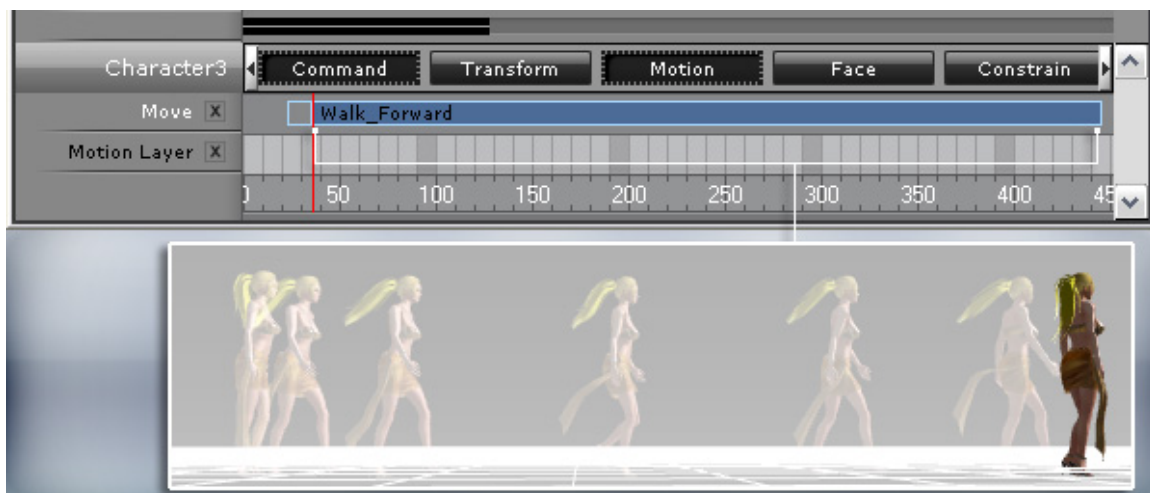
Note:

- Please note that the transition effect between two adjacent keys can be different for the relative/absolute status of them.
- Read [Absolute and Relative Bone](#) for more information about absolute/relative status.

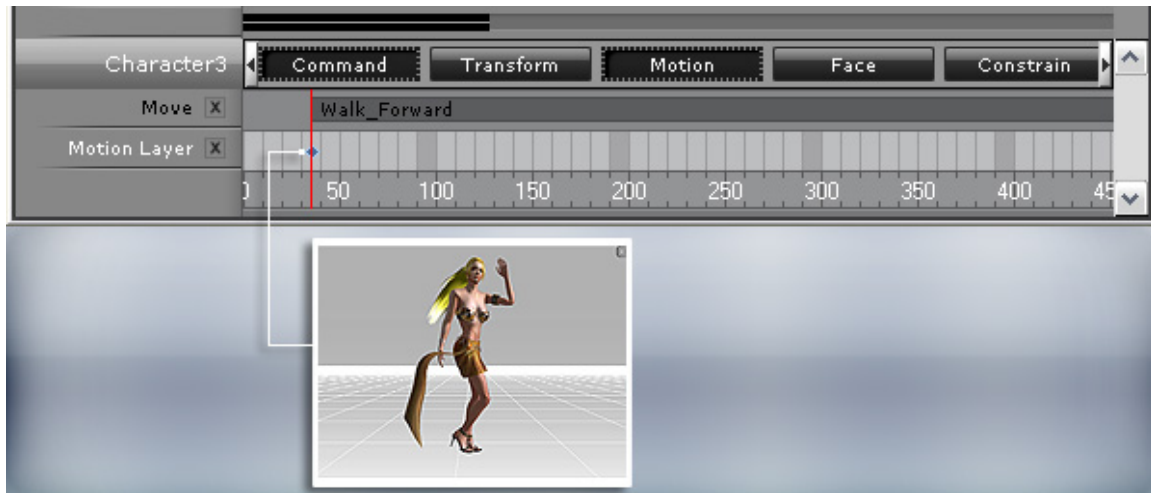
Animation Layer

The other powerful feature of the **Motion Layer** is to fine-tune the motion clips on the **Move**, **Perform**, or **Operate** tracks. The keys of the **Motion Layer** track have the highest priority for the bone offset.

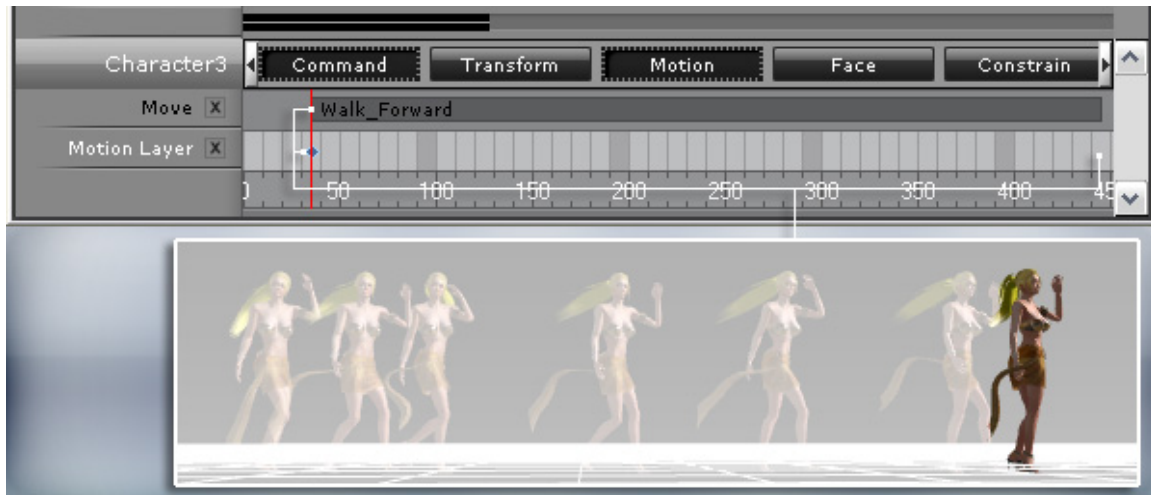
1. You may first record any motions in the **Director Mode** and then switch to the **Editor Mode**.



2. In the **Motion Layer** track, add a fine-tuning key in any desired frame (if you don't set any other key later on this key will affect all following motions).



The key rotates the actor's body and raises her left hand.

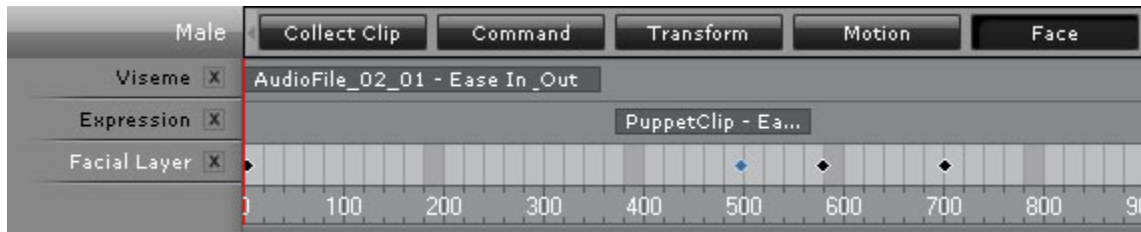


The key will affect the whole motion clip.

3. You may optionally add more keys in this track to further tune the motion.

⦿ Facial Expression Tracks

Toggle the **Face** button on the timeline and the face tracks of the actor will show.



Viseme Track

The Viseme Track stores the lip-sync data of the character that moves the mouth.

- Click the **Import .CTS** button to load the **Scripts** you created from **CrazyTalk**. (This fills both **Viseme** and **Expression** tracks)
- The **Record**, **Open** a .wav file and **Text-to-Speech** functions can also be used to create the lip-sync data for the character.

The Data will be converted into clips in the **Viseme Track** and can then have its position adjusted to have your avatars speak at different times.

Expression Track

Facial Clips will be produced in the Expression Track when:

- One of the **Expression Styles** is applied to the avatar.
- You click the **Import .CLP** button to import the Motion Clips created from **CrazyTalk**.
- You have recorded a facial movement in the [Puppeteering Panel](#).

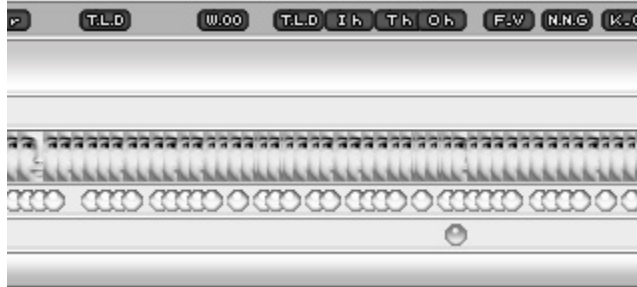
Once you have applied an **Expression Style** to the character you can set the **Expression Strength** of the character.

Facial Layer Track

The facial deformation keys generated from the [Face Key](#) panel are displayed in the Facial Layer Track. This track stores the unique G4 bone-based facial deformation data which gives rich facial details to iClone4 actors. Please note however that this data cannot be imported back to **CrazyTalk**.

Using CrazyTalk6 PRO for Advanced Facial Editing

CrazyTalk6 provides individual feature tracks and key-by-key editing capabilities to expression clips, which enables further controls over lip-sync and expression editing flexibilities.



You may click the **Launch** button to export the **Expression** and **Viseme** clips to **CrazyTalk** for further editing.

► Launching Facial Expressions in CrazyTalk

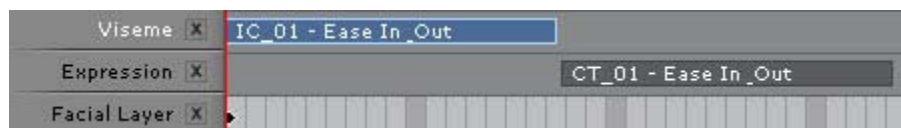
Export into CrazyTalk

1. Pick an actor and go to the desired frame to start speaking.
2. Go to the **Animation/Facial Animation/Modify** page, scroll to the **Facial Animation** section to import a **CrazyTalk** script or motion clip, scroll to the **Import Voice / Add Emotion** section to record your voice, to import a wave file or to utilize **TTS** to create the actor's voice.
3. Optionally, select any one of the **Expression Style** templates and then set the **Expression Strength** of the expression you have applied.
4. You may even choose one of the options, [Puppet or Face Key](#), to create or fine tune expressions.
5. If you want to import your facial expressions from **iClone** to **CrazyTalk** you can click the **Launch** button in the **CrazyTalk** section.
6. Feel free to edit the script in **CrazyTalk** and add it to the **Custom Template**.

Expressions to Export/Save

In the timeline you may have several clips in different tracks. You may decide whether to export an individual clip or to export the entire timeline.

1. Have some clips either in the viseme, expression or facial layer tracks.
2. You may select and highlight an individual clip in the timeline to export into **CrazyTalk**.



3. Or you may select nothing and export everything in the timeline into **CrazyTalk**. This will export everything in all three tracks, viseme, expression and facial layer.



4. By using the same methods, you can add the expressions to the Facial Animation's Custom Template.
5. Once you apply the saved Templates to the timeline, both the viseme and expression tracks are applied with the same clip.

Actor/iProp Private Tracks

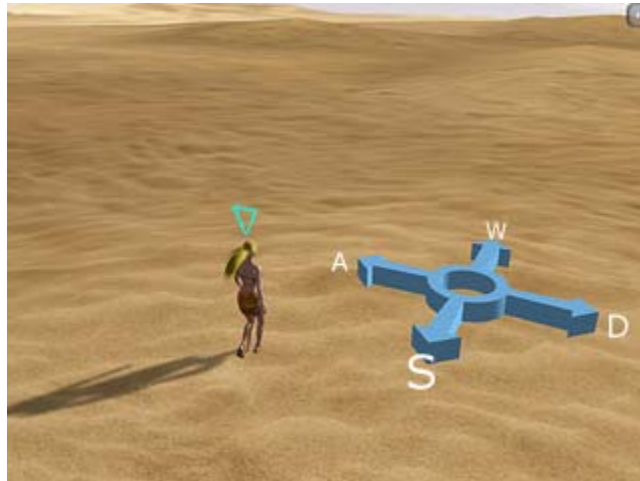
☉ Move Track

The **Move** track is only grouped in the sub-track set for **Actors** and **iProps**. It stores the motion clips as the actors or props are instructed to move. You may command these two objects in **Director Mode** or **Editor Mode**.

Director Mode

In the **Director Mode**, you may command your actors or props to **Move** via the **Right-click Menu** or **Hotkeys** during the recording process. Once the recording is done, the motion will be stored right onto the **Move** track.

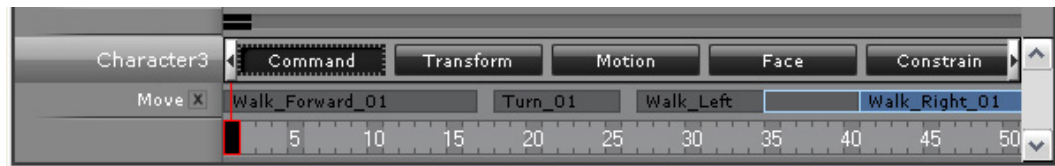
1. Toggle the **Director Mode** by clicking the  button if you are in the **Editor Mode**.
2. Make sure that you have selected the desired actor or iProp.
3. You may move your object in three methods as it is recording:
 - o Use the **WASD** hotkeys to move the selected object with motions/animations (if it is not recording, press the **Space Bar** to start recording). You may also press the **X** key to switch to another set of motions/animations for these four hotkeys.



- o Alternatively, you may right-click on the 3D viewer to pop up the **Right-click Menu**. Select any sub-command in the **Move** entry and click on the destination spot on the 3D viewer.



- o Use **Ctrl + Double-click** on the 3D viewer will also have the actor/prop move toward the destination with default motion/animation, which is the most convenient method to move the object.
4. The motion/animation clip will be stored into the **Move** track instantly as the move process finishes.



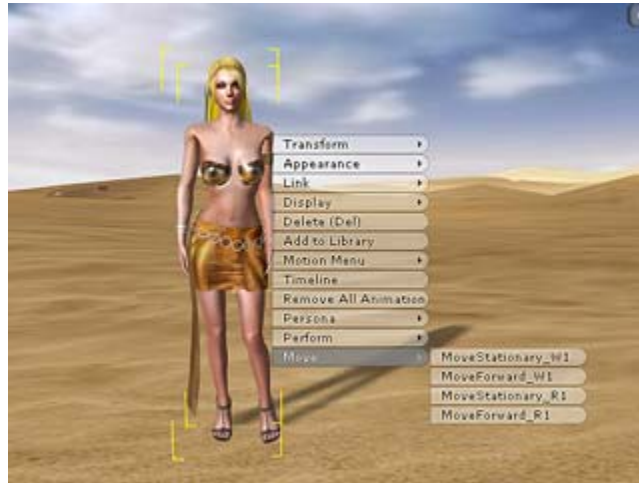
Note:

- In the **Director Mode**, by using **Shortcuts** or **Ctrl + Click**, each event may generate a new motion clip segment as shown in the illustration above.

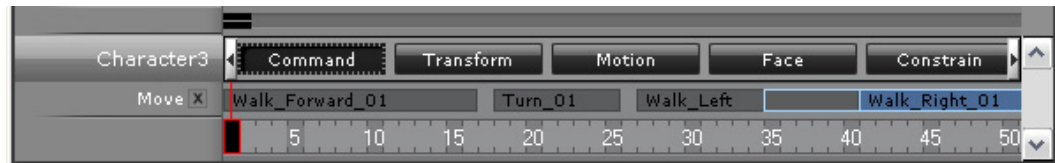
Editor Mode

In the **Editor Mode**, you may also add motion/animation clips onto the **Move** track. You can only achieve this goal by using the **Right-click Menu** however.

1. In the **Editor Mode**, right-click on the actor/iProp for moving.



2. Select any sub-command in the **Move** entry and click on the destination spot on the 3D viewer .
3. The motion/animation clip will be stored onto the **Move** track instantly as the object arrives at the destination.



Note:

Please note that whenever a **Move** clip ends at a frame when an **Operate** clip starts, the latter will be removed to prevent chaotic results.

⦿ Perform Track

The **Perform** track is only grouped in the sub-track set for **Actors** and **iProps**. It stores the motion/animation clips as the actors or props perform specific motions/animations. You may command these two objects in **Director Mode** or **Editor Mode**.

Director Mode

In the **Director Mode**, you may command your actors or props to **Perform** via the **Right-click Menu** or **Hotkeys** during the recording process. Once the recording is done, the motion will be stored right onto the **Perform** track.

1. Toggle the **Director Mode** by clicking the  button if you are in the **Editor Mode**.
2. Make sure that you have selected the desired actor or iProp.
3. You may have your object perform in two methods during recording:
 - o Use the **1234...** hotkeys to command the selected object to perform the predefined motions/animations (if it is not recording, press the **Space Bar** to start recording).
 - (The number of the hotkeys depends on how many sub-commands are listed under the **Perform** entry of an object's **Right-click Menu**)
 - o Alternatively, you may right-click on the 3D viewer to pop up the **Right-click Menu**. Select any sub-command in the **Perform** entry.



4. The motion/animation clip will be stored into the **Perform** track instantly as the perform process finishes.



Editor Mode

In the **Editor Mode**, you may also add motion/animation clips into the **Perform** track. However, you can only achieve this goal by using the **Right-click Menu**.

1. In the **Editor Mode**, right click on the actor/iProp perform actions.



2. Select any sub-command in the **Perform** entry.
3. The motion/animation clip will be stored into the **Perform** track instantly.



Note:

- **Motion** data applied from the **Content Manager** is recorded in the **Perform** track and can be connected together as used to from the **iClone 2.x Motion Editor**.
- Please refer to the [Align Actor Motion](#) section for more information.

⦿ Operate Track

The **Operate** track is a very unique track since it works only when an interaction between an **Actor** and an **iProp** occurs. After the interaction is finished, **iClone** stores the motion from the actor and the animation from the iProp into their individual **Operate** tracks.

Director Mode

In the **Director Mode**, you may command your actors and iProps to **Interact** via the **Right-click Menu** or **Hotkeys** during the recording process. Once the interacting process is done the motion and animation from both the actor and the iProp will be stored right onto their **Operate** tracks.

1. Toggle the **Director Mode** by click the  button if you are in the other mode.
2. Make sure that you have selected the desired actor to interact first.



3. You may have your actor interact with the iProp through two methods as it is recording:

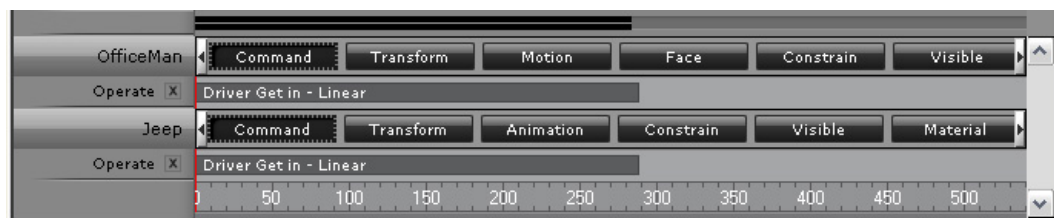
- o Press down and hold the **Ctrl** key, and then **Single-click** on the desired iProp that you want the actor to interact with.

This method triggers the default interaction for the two objects involved.

- o Alternatively, you may right-click on the iProp to pop up its **Right-click Menu**. Select any sub-command in the **Operate** entry.



4. The motion and animation clips will be stored into the **Operate** tracks individually as the interaction finishes. These two tracks store the motion of the actor and the animation of the iProp. (The play bar displays the actor-related tracks only.)



Editor Mode

In the **Editor Mode**, you may also add motion/animation clips into the **Operate** tracks. However, you can only achieve this goal by using the **Right-click Menu**.

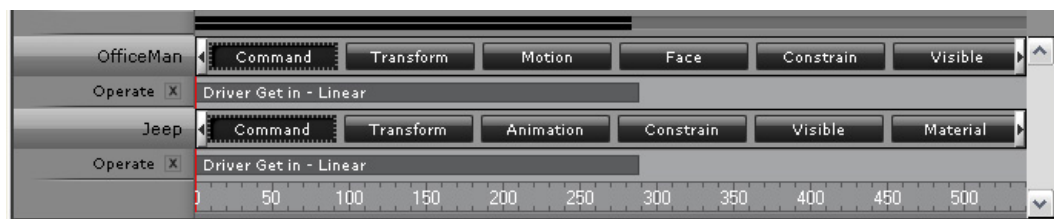
1. In the **Editor Mode**, click on the actor for interacting.



2. Right-click on the desired iProp.
3. Select any sub-command in the **Operate** entry.

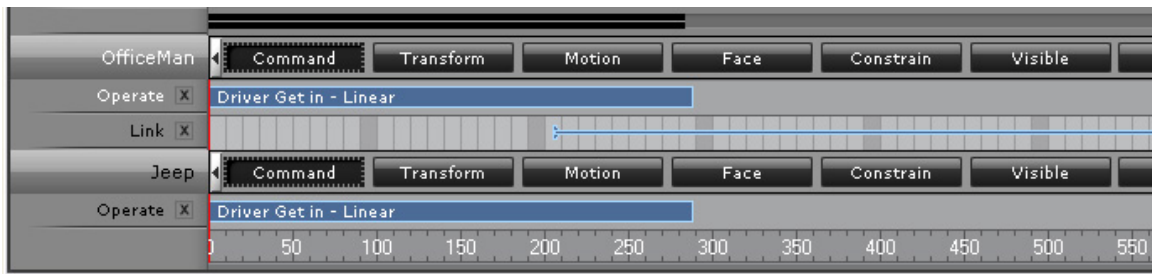


4. The motion and animation clips will be stored into the **Operate** tracks individually. (The play bar displays the actor-related tracks only.)

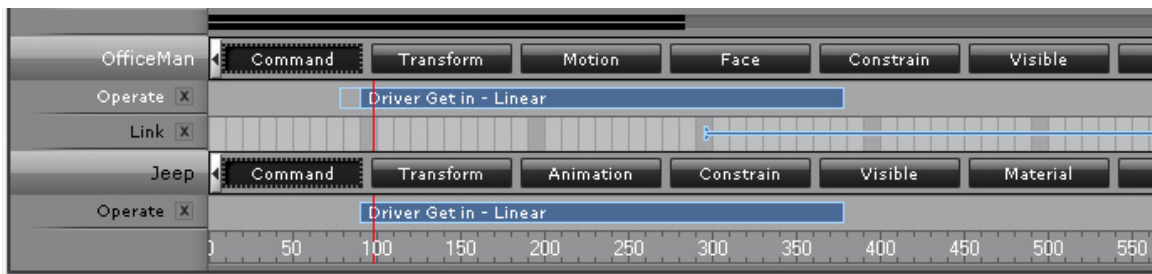


Synchronizing

When you click on the clips or keys generated by the **Operate** command, all the tracks of the related clips or keys (highlighted automatically) show up.



Drag a clip or key mentioned above and all other related clips or keys will be moved in synch to prevent chaotic results.



Actor/Camera/Spotlight Private Track

☉ Look At Track

Setting keys on the **Look At** track can make an **Actor**, **Camera** or **Spotlight** look at a target at one point in time and then look at another target or stop looking at the target at another point in time.

1. Pick the lady and go to the desired frame to look at the boy.
2. In the **Modify** page, scroll to the **Look At** section.
3. Click the **Pick Target** button and click on the boy.



4. Go to another frame, click the **Pick Target** button again, and then click on the broken vase on the floor.





Note:

For more information about the operation of **Look At** for **Actor**, **Camera** and **Light**, Please refer to these sections:

- [Actor - Look At](#)
- [Camera - Look At](#)
- [Spotlight - Look At](#)

Actor/Camera/Light/Prop Private Tracks

☉ Link Track

Setting keys on the **Link** track can make an **Actor**, **Prop**, **Camera** or **Spotlight/Point Light** link to a target at one point in time and then link to another target or unlink at another point in time. Thus the transition of an **Actor**, **Prop**, **Camera**, **Spotlight/Point Light** comes from the target's moving and rotating animation even though they may or may not be static. Please refer to the [Link](#) section for more information.

1. Pick the crate and go to the desired frame to link it to the forklift.
2. In the **Modify** page, scroll to the **Linkage** section.
3. Click the **Pick Target** button and click on the forklift. You may optionally align the crate to the forklift if its position is not adequate.



4. Go to another frame, click the **Pick Target** button again, and then click on the train as the new target.



5. The crate will be brought away by the train afterward.



A: Link the crate to the forklift

B: Link the crate to the train

Prop/Accessories Private Tracks

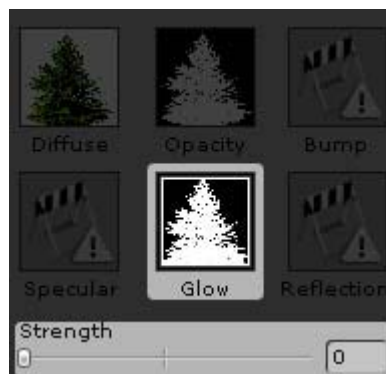
☉ Material Track

Once you change the parameter settings in any of the texture channels, you set **Material keys** within the timeline. If you set material keys in different frames, you can create material animation. Please refer to [Material Key and Material Key Frame Animation](#) and [Saving Keys to Material Template](#) sections for more information.

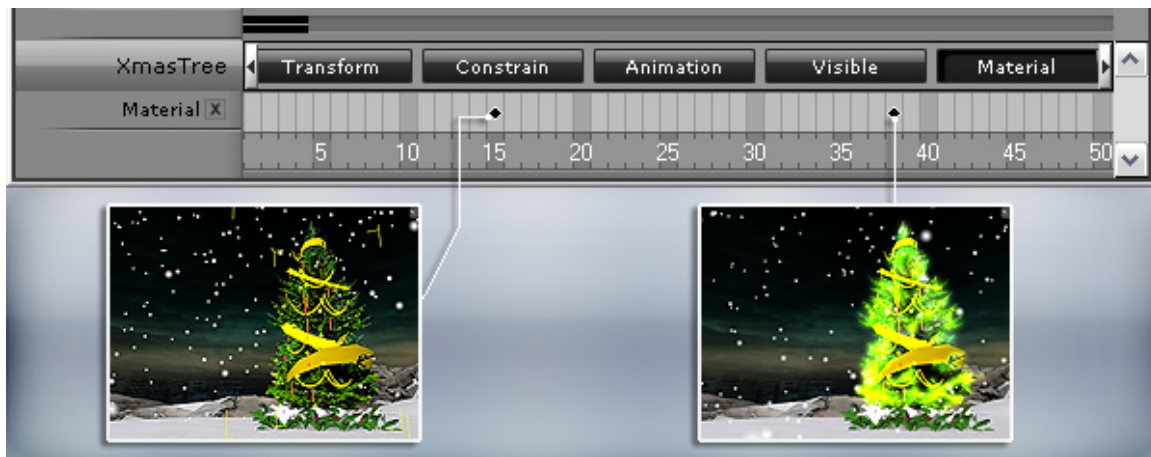
1. Select the prop and go to the desired frame, in this case we take frame 15.



2. In the **Modify** page, scroll to the **Material & Texture Settings** section. Use the  tool to pick the material for glowing.
3. Add one image to the **Glow** channel. Set the **Strength** to zero. A key will then be added into the **Material** track instantly.



4. Go to frame 38 and set the **Strength** of the **Glow** map to value 50. When you move the slider you can see the model glow, and a key is added into the **Material** track automatically.



Glow Strength = 0

Glow Strength = 50

Camera Private Tracks

☉ Lens Track

Please follow these steps to set keys on the **Lens** track. You may also refer to the [Lens of the Camera](#) section for more information.

1. Select a camera from the **Camera and Shader Floating Menu** drop-down list. Go to the desired frame you want to set the lens key.
2. In the **Modify** page, scroll to the **Camera** section.
3. Choose one of the template buttons for lens focal length or drag the slider to define custom focal length. A new key will then be added into the **Lens** track automatically.



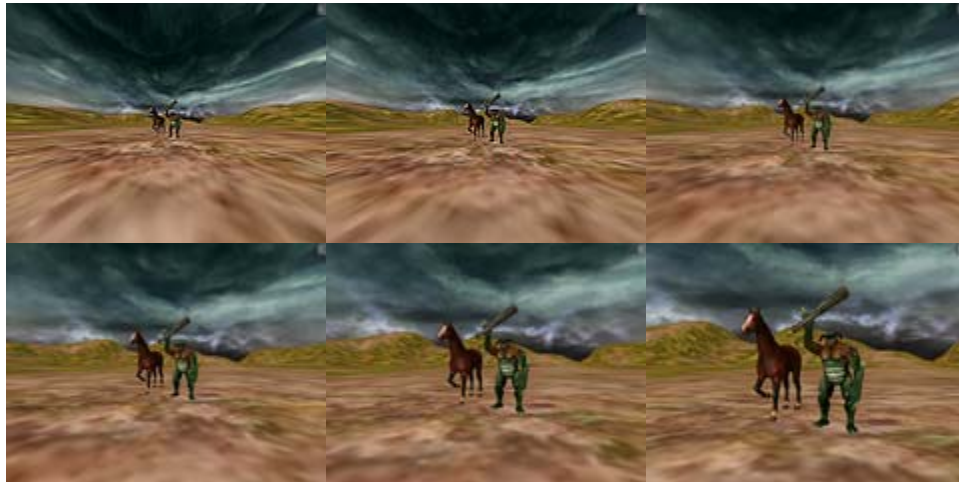
4. Go to another frame and change the lens value.



5. **iClone** generates the transition effect between the two keys.



The transition effect should look like the following illustrations. The camera looks like it is moving but it is actually the result of changing the lens focal length.



⦿ DOF Track

Follow the steps below to set keys on the **DOF** track to create DOF animation. Please read the [DOF \(Depth of Field\)](#) section for more information.

1. Select a camera from the **Camera and Shader Floating Menu** drop-down list. Go to the desired frame you want to set the DOF key.
2. On the **Modify** page, scroll to the **Camera** section.
3. Check the **Depth of Field** box to enable this feature. You may set the distance manually or use the **Pick Target** button to let **iClone** select the correct value.



4. Go to another frame and change the DOF value.



5. **iClone** generates the transition effect between the two keys.



The transition effect should look like the following illustrations.



Spotlight/Point Light Private Tracks

☉ Color Track

The **Color** track stores the color information of lights. These can be used to create animated light color in your project. You may even imitate light on/off effects by setting keys in this track. **Directional Light**, **Spotlight** and **Point Light** all possess the **Color** track for you to create complicated light effects.

1. Select a light from the **Scene Manager**. Go to the desired frame you want to set the color key.
2. In the **Modify** page, scroll to the **Light Setting** section.
3. Click the color picker to specify a color for the start frame of the light color animation.



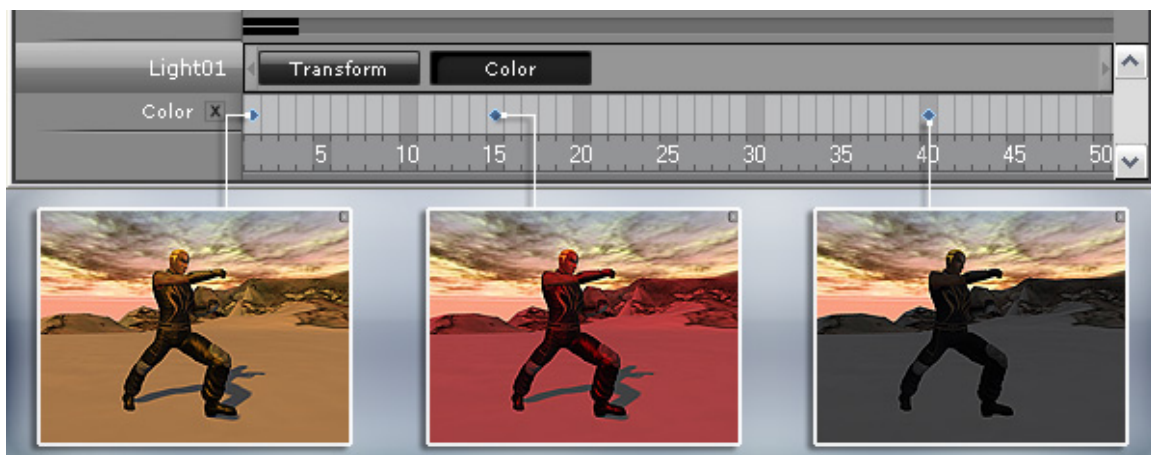
4. Go to another frame and set another color key for the light.



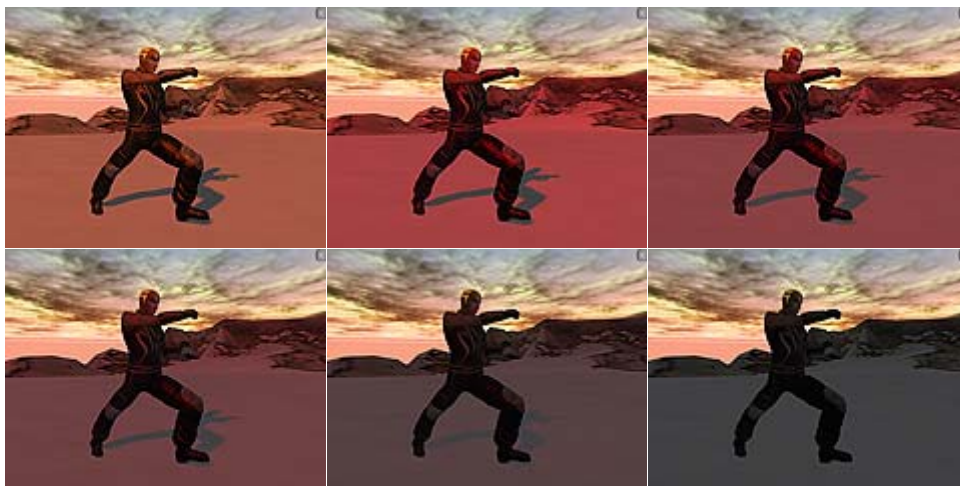
5. If you want to turn off the light, set the light color to **Black**.



6. The transition effect among these keys will be generated by **iClone**.



The transition effect looks like the following illustrations.



☉ Parameter Track

In addition to the **Color** track, the **Spotlight** and **Point Light** tracks contain a **Parameter Track** in which the **Range**, **Angle** and **Falloff** key data is stored. Please read the [Intensity, Beam and Falloff](#) and [Range of Point Light](#) sections for more information.

Turn On the light with Parameter Track

Since there is no On/Off key for lights we will use the **Range** parameter to simulate a **Turn On** effect for a **Spotlight** or **Point Light**.

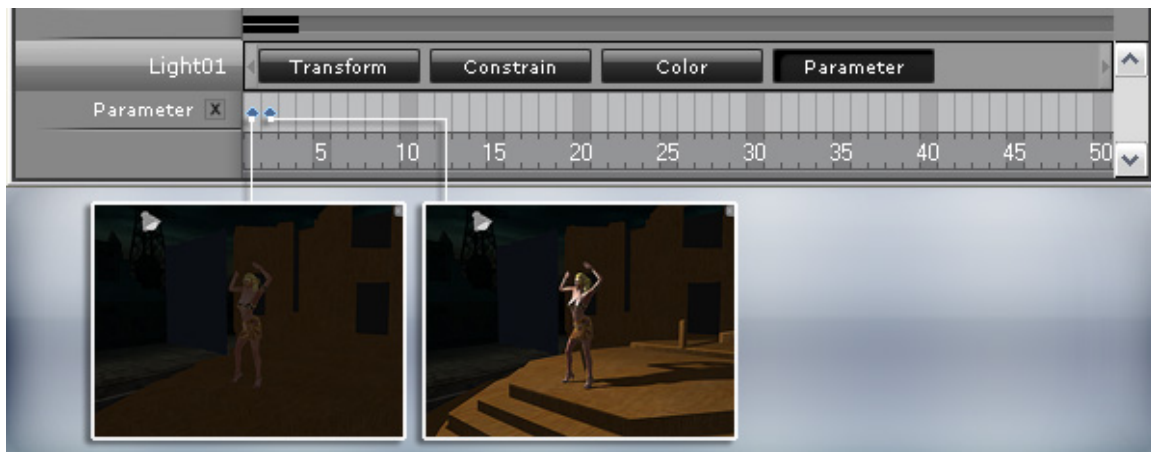
1. Go to the desired frame and set the **Range** value to 0.



2. Go to the next frame and increase the **Range** value.



The light is turned on by setting two keys in the **Parameter** track.



Stage

⦿ Atmosphere

In addition to compacting sky, light, fog and particle effects into one single template, the **Atmosphere** feature also provides **HDR** (High Dynamic Range) and **IBL** (Image Based Lighting) effects which enrich the visual effects and reduce the loading of your system.

► Utilizing HDR Effect

The **HDR (High Dynamic Range)** effect in **iClone** accurately represents the wide range of intensity levels found in real life high contrast scenes as result from direct sunlight and shadows.

Please visit [USC - Institute for Creative Technologies Graphic Labs](http://www.usc.edu/creative-technologies/graphics-labs/) web site for more HDR resources.



Global HDR Effect

The **HDR** effect in **iClone** globally processes the light and shade strengths using two simple parameters, **Threshold** and **Bloom Scale**.

- **Threshold**: Defines the areas to be rendered with **HDR** effect by brightness. This parameter takes effect only when the **Bloom Scale** is greater than 0.

- **Bloom Scale:** When this parameter is greater than 1, **HDR** is activated. It causes the bright areas to glare (become edge-blurred) to imitate the light spreading from the areas. The higher the value, the wider the spreading range.



Fine-tuning with Tone Map

The high dynamic range image is passed to a tone mapping operator that transforms the image into a low dynamic range image suitable for viewing on regular displays. The strong contrast reduction phenomenon is resolved while the image details and color appearance are preserved. After you turn on the **HDR** feature, you may also fine tune the result to increase the dramatic effect by specifying the **Gaussian Scale** and the **Exposure** in the **Tone Map** section.

- **Gaussian Scale:** Though this parameter usually defines the radiation smoothness for the **HDR** image, you may increase its value to see more details in the bright areas of the preview window.

- **Exposure:** This parameter defines the global exposure level of the preview window. Increase this value to see more details in the dark areas of the preview window.



- **Adaption Speed:** This parameter defines the adjustment speed of the pupils when the eyes encounter a severe change of the lighting strength.

Using Glare

You can use the **Glare** feature to apply various lens effects to the project.

1. Select a **Glare Type** from the drop-down list.
2. Adjust the **Scale** slider to define the span of the selected glare effect.

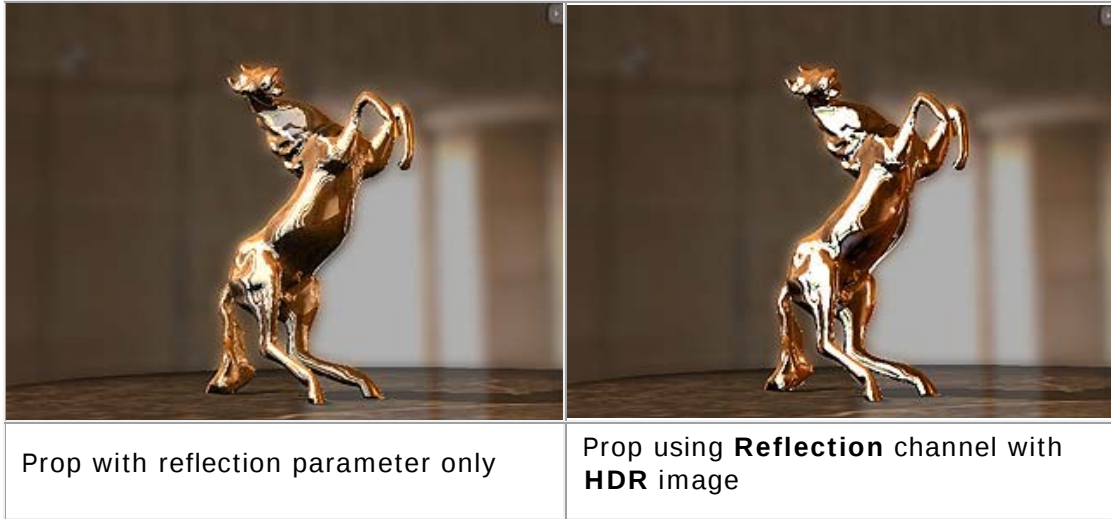


Note:

- o You may optionally adjust the values described above to prevent over-exposure of your scenes.
- o Please note that the parameters with blue names are key-able in different time frames.

HDR as Texture

If you have HDR images at hand, you may also load them into the texture channels (**Reflection**, especially) to create higher contrast and more impressive effects.



► Utilizing IBL Effect

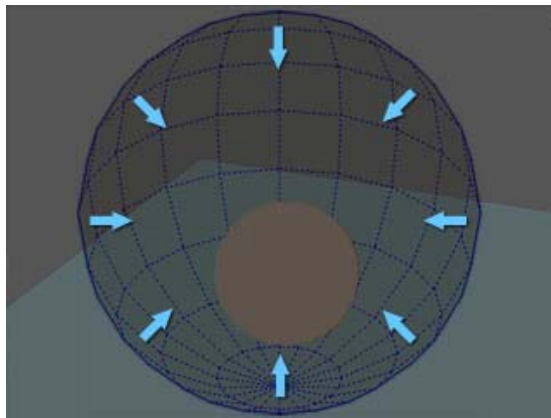
The **IBL (Image Based Lighting)** feature simply uses image map to simulate the [ambient light](#) source which gives higher realism but save lighting computing efforts, and also increases the flexibility to create base ambience.

Applying one of the templates from the atmosphere library to see the optimized result of **IBL** effect.



The Concept of IBL

The image applied for the **IBL** is mapped onto an invisible sphere and projected from the sphere's surface towards the center of the sphere.

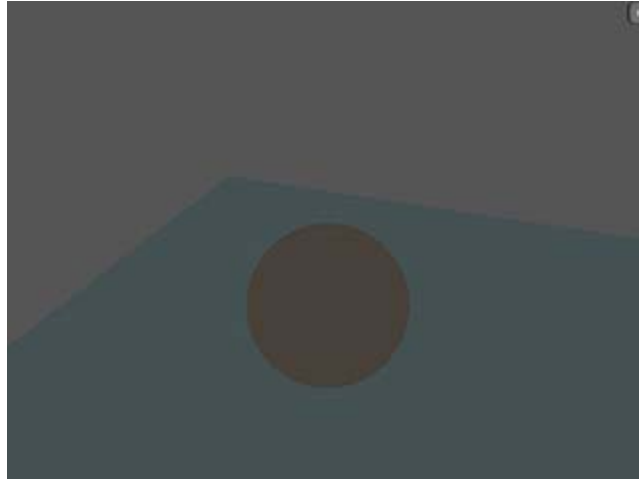


The benefits of **IBL** are:

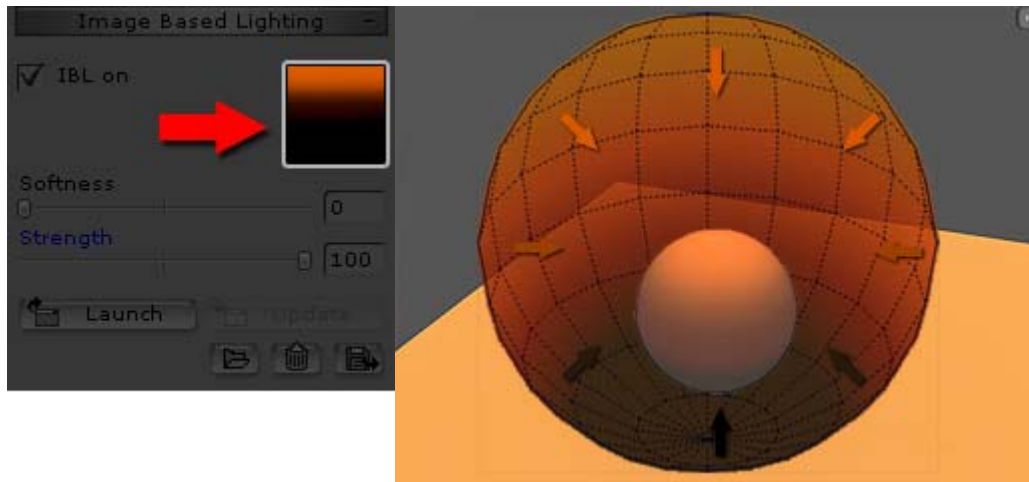
- The ambient color can have various details rather than just one.
- You can set keys to the **IBL** sphere, which compensates for the insufficiency of ambient lights.
- Multiple point light effects can be generated by merely adjusting the source image.
- If you use a video, the ambient light can be dynamic.

Generating Image Based Lighting

1. Turn off all the lights (directional, spotlight and point light) and darken the **Ambient Color**.



2. Go to the **Stage/Atmosphere/Image Based Lighting** section and activate the **IBL on** option.
3. Load a designed image or desired video to generate the light. In the illustrations, the gradient orange color starts from the top of the image, which implies the direction of the light.



Editing the Image for IBL

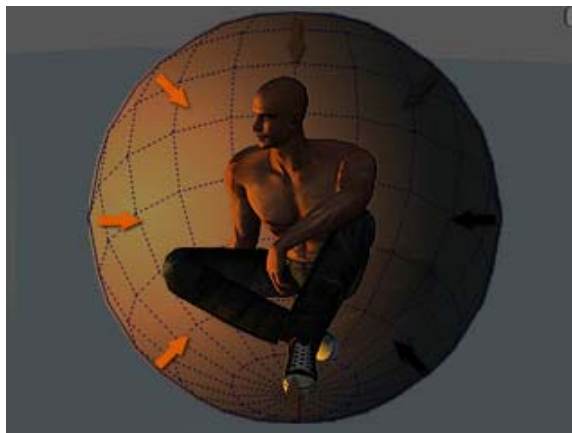
The illustration below is a scene in which all the lights are out.



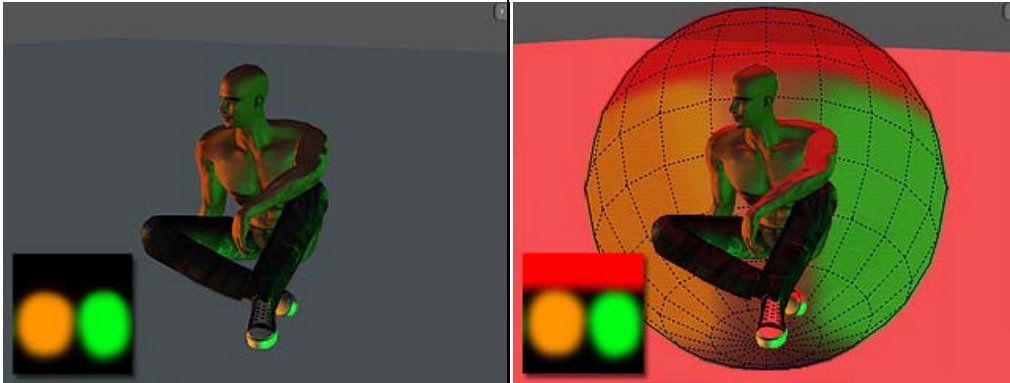
1. Select the channel and click the **Launch** button to invoke the external image editor.
2. Modify the image. If you are a beginner, it is recommended to set the image black first.



3. Save the image and click the **Update** button in **iClone**.



4. Repeat steps 2 and 3 until you are satisfied with the result.

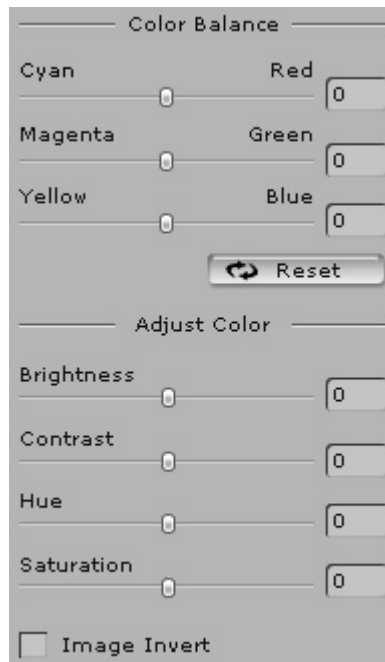


Note:

- Blur the source image to eliminate sharp edges for best results.
- **IBL** does not cause any shadows. Please turn on a light to create shadows.
- You may set **Transform** keys for the **IBL** sphere to adjust the location, angle and size of the light source.

Color Adjustment

Modifying the color of the IBL image may quickly change the tone of the scene.



1. Apply an IBL image. (you may use custom image or apply from the template library)



2. Adjust the parameters in the **Adjust Color** and **Color Balance** sections.



Softness of IBL

The image applied for **IBL** may be too sharp, especially when you are using an HDR image, which can cause the **IBL** look like it is projecting textures onto objects.

iClone provides a softness feature to help you blur the image to generate a proper **IBL** effect.

		
IBL = OFF No Other Lighting Source	IBL image (HDR image) applied Softness = 0	Soften the map a little to make it more natural Softness = 80

IBL and Sky

If you apply one image to the **IBL** and **SKY** at the same time, the IBL can imitate the correct lighting variant from the sky, which means that the lighting will be consistent with the environment.

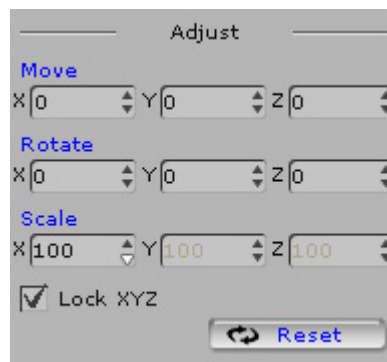
Dynamic IBL Effects

The IBL effect can be transformed for setting keys in different time to generate various atmospheres of your scene.

1. Apply an IBL image.



2. Go to the **Adjust** section and modify the transform settings.



3. Turn the spherical IBL upside down to instantly generate a totally different feeling.



🕒 Image Layer

To enhance the overall project, you may also create a simulation image to overlay on top of your viewport. By using the Image Layer, you can simulate as if you are driving a car, flying an aircraft or overlaying a message.

▶ Creating New Image Layer

An image layer allows you to overlay a text or image to the whole project.

1. Click **Stage / Image Layer**.
2. Choose the **0_New** Template from the **Content Manager**.
3. After you have selected **0_New** to add to your scene, a brand new image layer will be added to your project.
4. Go to the **Image Layer** modify panel.
5. Double-click on the **Diffuse** icon to open an image or video to apply.
6. Double-click on the **Opacity** icon to open an image or video to apply as an alpha source.
7. You can also select the **Glow** icon to apply a glowing source.

Note:

- o You can enter the **Image Layer Editing Mode** by selecting **Image Layers** from the **Scene Manager** or by Ctrl-clicking to select the image layers from the **Image Layer** menu tab.
- o The image layer can only be selected when you are in the Image Layer menu tab.
- o To disable **Image Layer Editing Mode**, simply double-click on anything outside of the image layer or press the **ESC** key to deselect it.

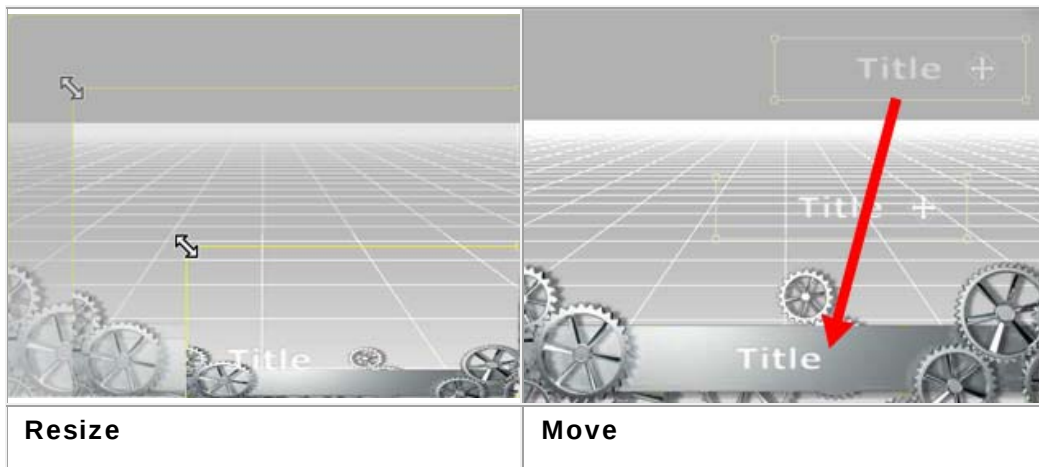
► Editing and Animating Image Layers

With **Image Layer** in iClone, you can now set keys for its position and scale. You can also arrange the layer order if you are using multiple layers.

Transform Image layer

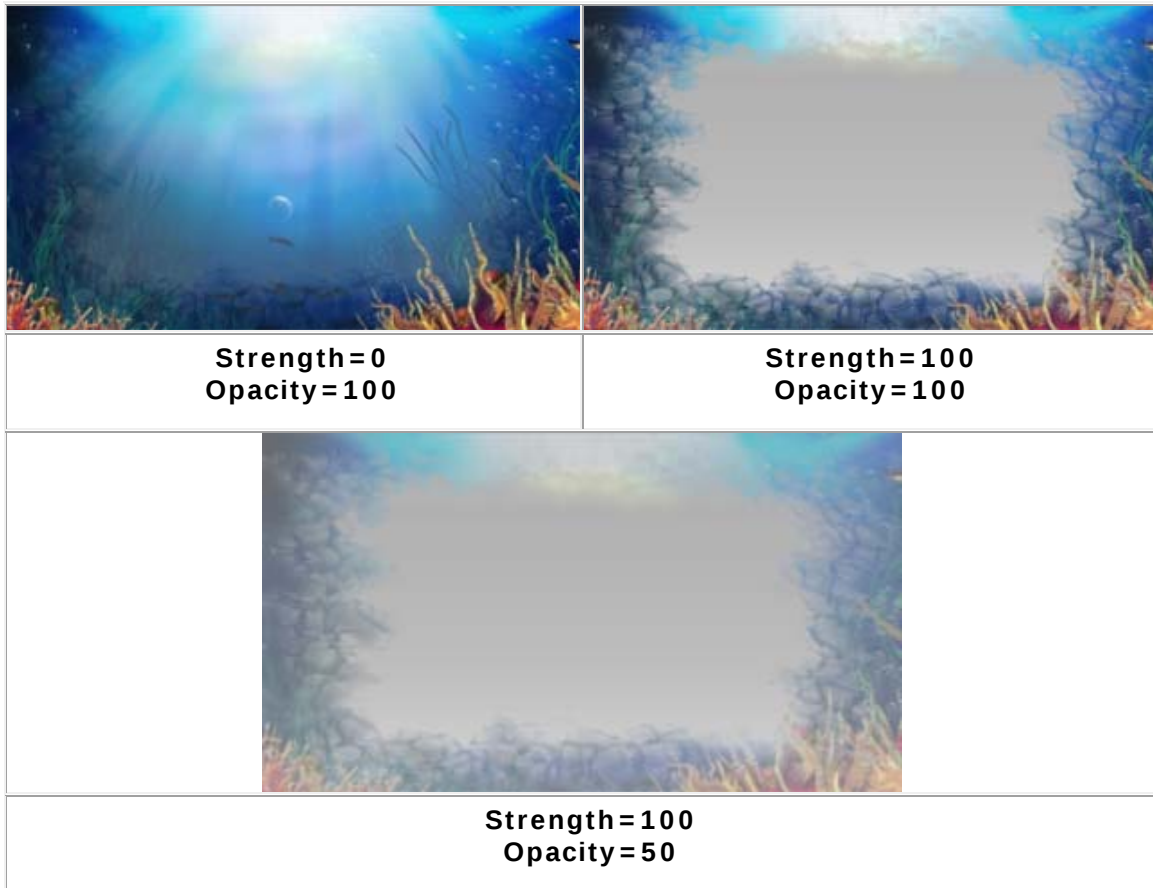
When you have added an image layer to the scene you can move and resize the image layer by following methods:

- Ctrl-click to select the image layer and hover the cursor over to the four corners to resize it. You can also hold the **Shift** key to constrain the ratio while resizing.
- Ctrl-click to select the image layer and hover the cursor over it to move it.



Strength vs. Opacity

Strength and **Opacity** are different concepts that may affect different parts of the Image Layer. **Strength** adjusts the whole image layer's channels effectiveness, whereas **Opacity** adjusts the whole image layer's visibility.



Please note that you can set keys for **Opacity** and **Glow**.

Animate Image Layer

Since you can control the strength and opacity of the selected channel, you can also adjust its transition and material channel to create image layer animation keys.

1. Select an image layer and create two position keys in different frames.
2. These keys will appear in the transform track under Image Layer.
3. Select the **Opacity** channel and adjust the **Strength** slider to 100.
4. Drag the timeline slider to a new frame.
5. Adjust the **Strength Slider** to 0.
6. Drag the timeline slider to a new frame and set the **Strength** to 100.
7. Three new keys are formed under the **Material Track** in **Timeline**.

► Layer Order for Image Layer Objects

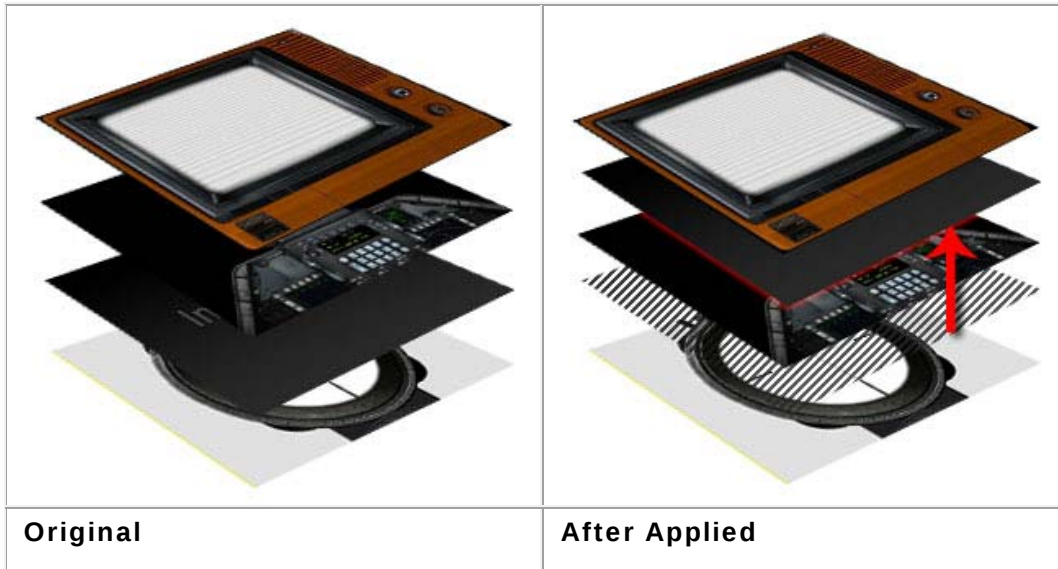
Arranging the order of the Image Layers lets you position the layer in your project easier than before.

Move Forward

When you have two **Image Layers**, you may use the **Move Forward**

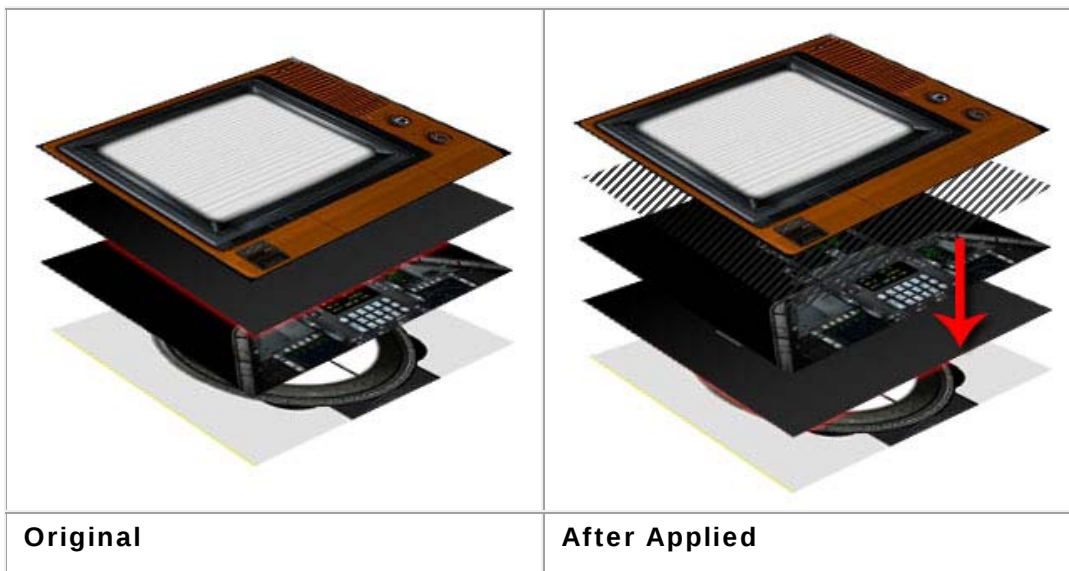


button to move a target layer up one level.



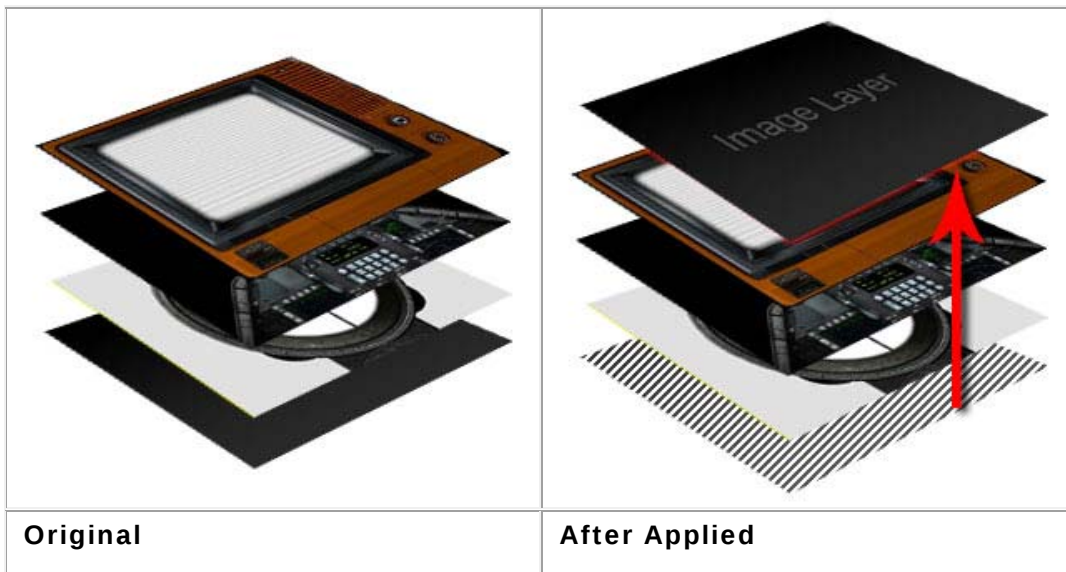
Move Backward

When you have two **Image Layers**, you may use the **Move Backward** button to move a target layer back one level.



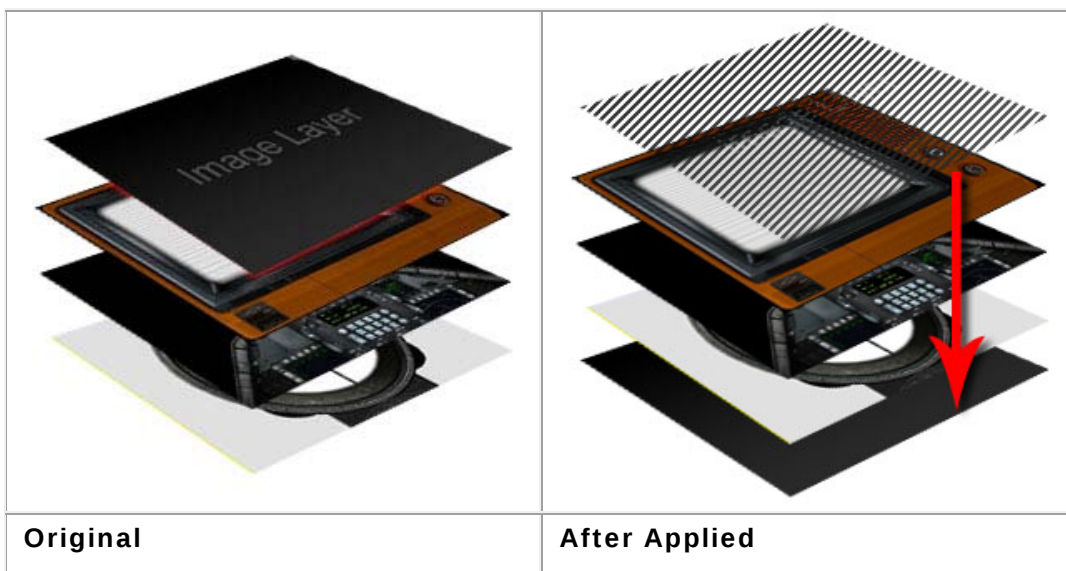
Move to Top

When you have multiple Image Layers you may select one of the layers to move it to the very top of all the layers.



Move to Bottom

When you have multiple Image Layers you may select one of the layers and move it to the very bottom of all the layers.



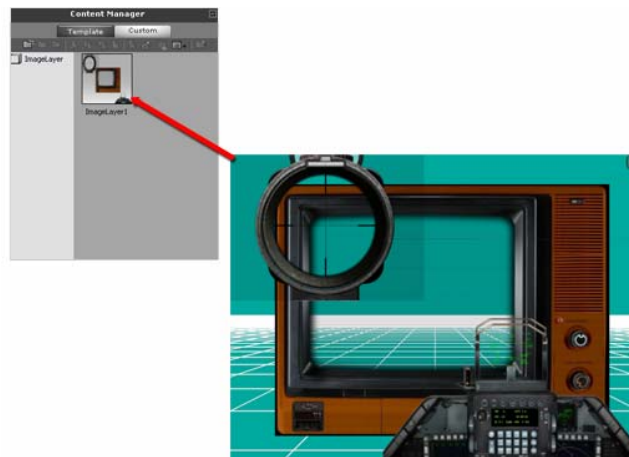
► Combining Image Layer Objects

When you have a huge number of Image Layers in one single project, you can add them to Image Layer Custom Template.

1. Select all the **Image Layers** in the **Scene Manager**.



2. Click the **Add** button in the **Content Manager**.
3. All the **Image Layers** are now saved in the **Custom Template**.



Note:

- o You may simply apply saved **Image Layers** from **Custom Template**.
- o If you have multiple image layers, you may use the **Ctrl** key to select them.

◎ Camera

► The Comparison of Cameras

The multiple camera system in **iClone** contains **Preview Camera**, **Follow Camera** and **Custom Camera**.

	Preview Camera	Follow Cameras	Custom Cameras
Purpose	• To provide basic operations in Editor Mode. • To observe scene and objects from different angle. • To easily transform and move objects. • Not adding camera keys to timeline	• To simulate Game Camera in the Director Mode, always keep your target in the center of the screen. • Use F7 to toggle Action Game mode (view from back) or Strategy Game mode (view from top right). • To follow the selected actor or iProp when you control them via WASD hotkeys. • To provide availability to custom offset for the cam angle.	• To set camera keys for playback. • To finely adjust in the Timeline. • To be switched among cameras in Timeline. • To be able to Link/Unlink or Look At/Set Free in different point of time.
Key Generating	• Not Available • You may access the Preview Camera and modify it's parameter, but no key is set. • Use Preview Camera for data preparation, object transform editing, tasks not involving in changing the final camera keys, or just for	• Not Available • You may access the Follow Cam and modify it's parameter, but no key is set.	• Editor Mode: A key in a particular frame can be changed or added as soon as the camera view is changed. • Director Mode: A key in a particular frame can be changed or added as soon as the camera view is changed. But it pauses the recording process.

	• previewing the project.		
Being Toggled by Camera Switcher to Shoot	• Available	• Not Available because the Follow Cam only appears when an actor or an iProp is picked. • You must link and adjust a custom camera to the target object to film if the result from the Follow Cam is preferred.	• Available.
Camera Selection	• You may select the Preview camera from the Camera and Shader Selector in the 3D viewer.	• It is the default camera when you enter the Director Mode. • You may select the Follow Cam from the Camera Selector in the 3D viewer. • Alternatively, press F7 to quickly switch between Follow Cam - Actor and Follow Cam - Bird. • The Follow Cam are eliminated as no actor or iProp is picked.	• You may select the Custom camera from the Camera Selector in the 3D viewer.
Walk / Fly Navigation (Press + or - to modify the navigation speed. <u>The speed can be saved in project</u>)	• Available • The navigation course can not be filmed.	• Available • The navigation course can not be filmed.	• Available • A key in a particular frame can be changed or added as soon as the camera view is changed by the navigation. • If you navigate the whole scene while recording (Director Mode), the navigation

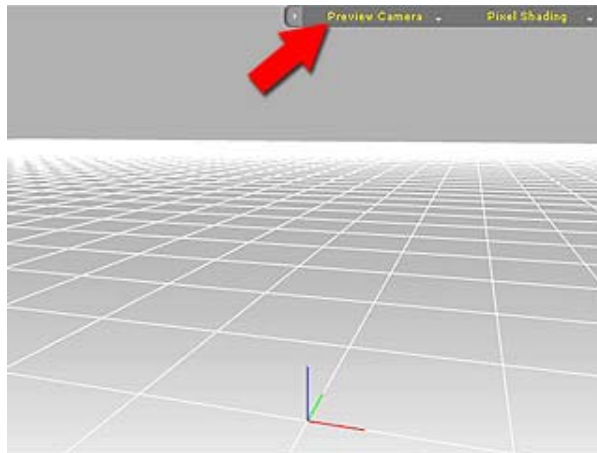
			course can be automatically filmed as a clip. • In the Editor Mode, Walk/Fly Navigation is a method to set the camera view. Only one camera transform key is added instead of recording the navigation course.
Look At	• Not Available	• Always keeps the relative position and angle to the actor/iProp. • You may adjust the relative camera position and angle if necessary, but no key added.	• Available • You must enable/disable the Look At feature manually, and it is added as Look At key in the Timeline.

► Creating and Manipulating Custom Camera

Every **Custom Camera** can be seen, selected and manipulated in the **Preview Window** in the same manner as with any other object. This allows you to easily locate or change the angle of a custom camera, set keys to it or even have it move along a path.

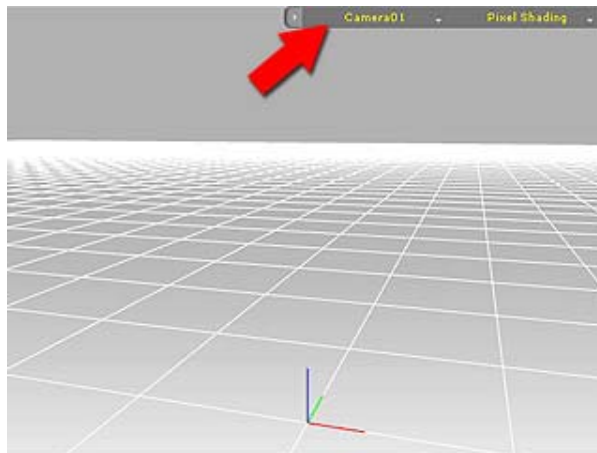
Creating a Custom Camera

1. In the **Preview Window**, pick a desired camera from the **Camera Selector**.



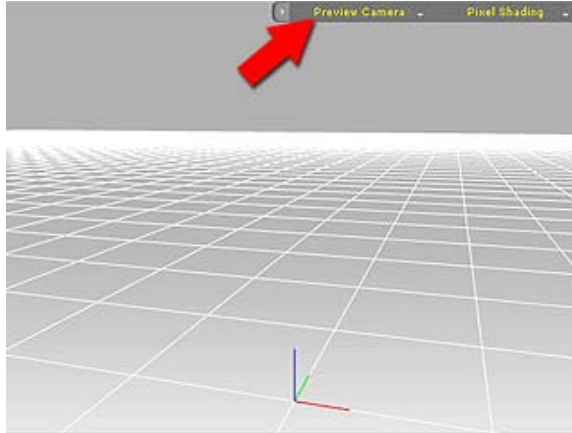
2. Click the **Add** button in the **Modify** page.
3. **iClone** duplicates the status of the camera selected in step 1 to generate a custom camera.

What you're viewing through the **Preview Window** now is exactly what the custom camera would see.

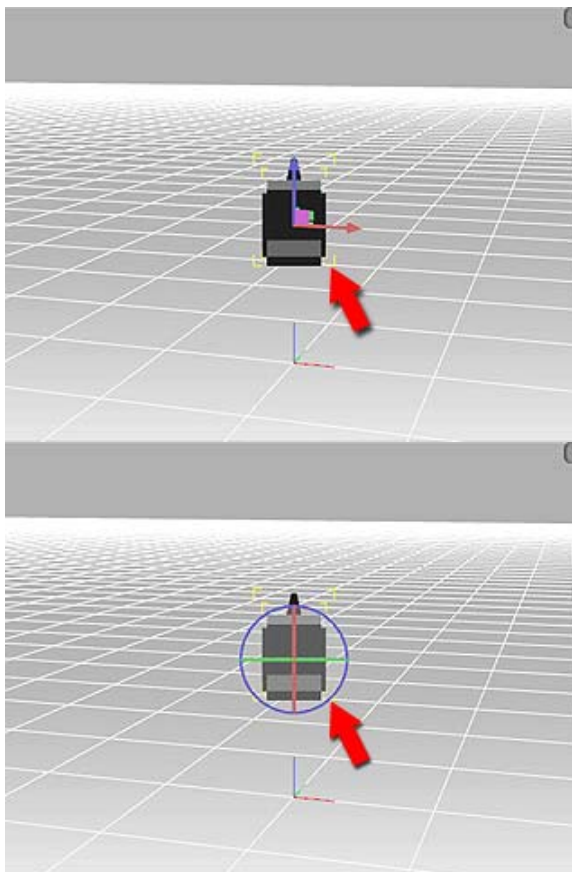


Viewing the Custom Camera in Preview Window

1. In the **Preview Window**, use the **Camera Selector** to pick any camera other than the custom one you just created.

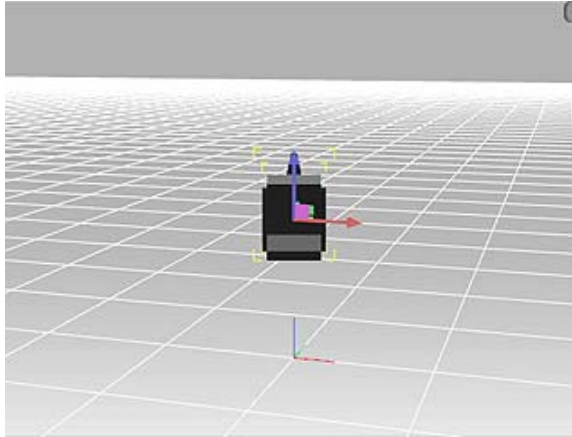


2. Zoom out the preview window and you may see the **Gizmo** of the custom camera.

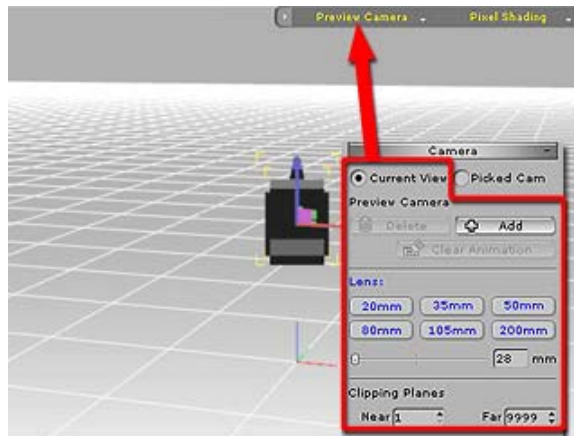


Modifying the Custom Camera

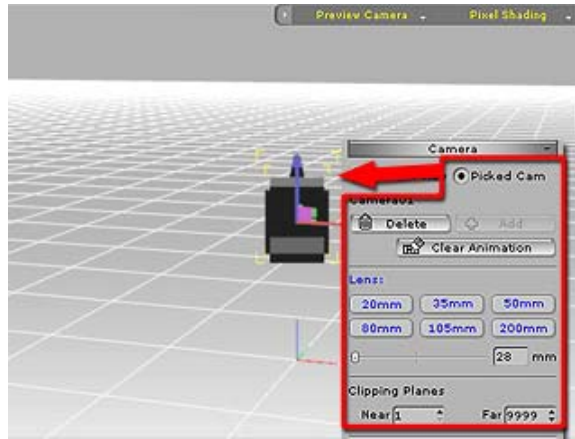
1. After you see the custom camera in the **Preview Window**, select it.



2. By default, the **Modify** page shows all the parameters of the current camera with the **Current Camera** option selected.



3. Select the **Picked Cam** radio button and the **Modify** page will display the parameters of the selected custom camera.



4. You may then modify the custom camera.

► Locking and Freezing Camera

Whenever the position or animation of a custom camera is satisfying, you can **Lock** or **Freeze** it so you will not select or move it accidentally (causing additional camera keys to be added) in the preview window. This allows you to see the camera for reference without the need to hide it via the **Scene Manager**.

It is recommended to use the **Preview Camera** when editing the project instead of using locked or frozen cameras.

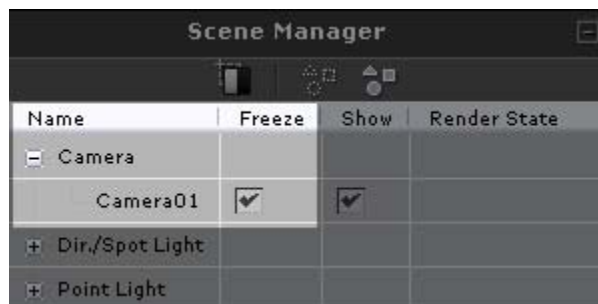
Lock Camera in Modify Page

1. Create a custom camera. In the preview window, change to the **Preview Camera**.
2. Manipulate the preview camera until you see the custom camera created in step 1.
3. Optionally animate the camera. Select it when done.
4. In the **Scene/Camera/Modify** page, select the **Selected Camera** radio button (all the parameters in the modify page will be enabled).
5. Activate the **Lock Camera View** option.



Freeze Camera in Scene Manager

1. Alternatively, repeat steps 1, 2 and 3 as described above.
2. In the **Scene Manager**, activate the **Freeze** option of the camera.



The camera cannot be picked from within the preview window to prevent accidental transformation.

Note:

- The **Lock** and **Freeze** features only work on **Custom Cameras**.
- These two features are identical.
- When you open a file in which the camera cannot be picked or transformed, please make sure it is not frozen or locked.

► Smooth Camera Movement

Since **iClone** interpolates between two keys (especially for the **Transform** keys) in a **LINEAR** algorithm so a camera's path may not be smooth enough. Using the **Smooth Camera Movement** feature will have **iClone** insert transform keys to make the camera move on a curve-like path.

Move Only

If you intend to pan the camera along a smooth trail **without rotating** its angle, it is highly recommended to utilize the **Path** feature.

1. Create a path.
2. Add a new camera and select it.
3. Jump to the start frame for panning the camera. Pick the path.
4. Jump to another time frame and pick another location of the path.

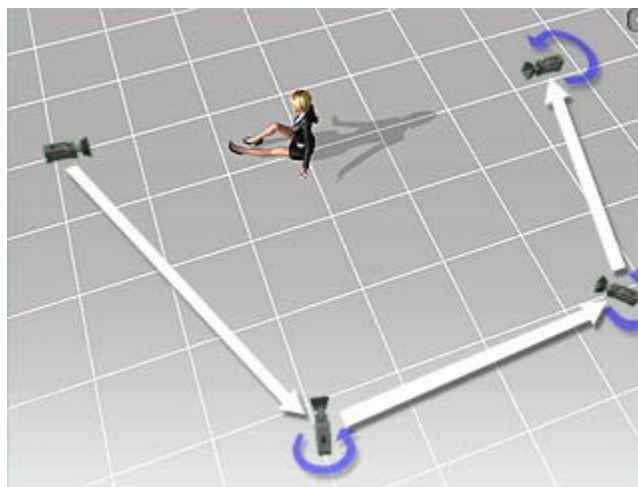
Note:

- o Please refer to the Path section for more information.

Move and Rotate

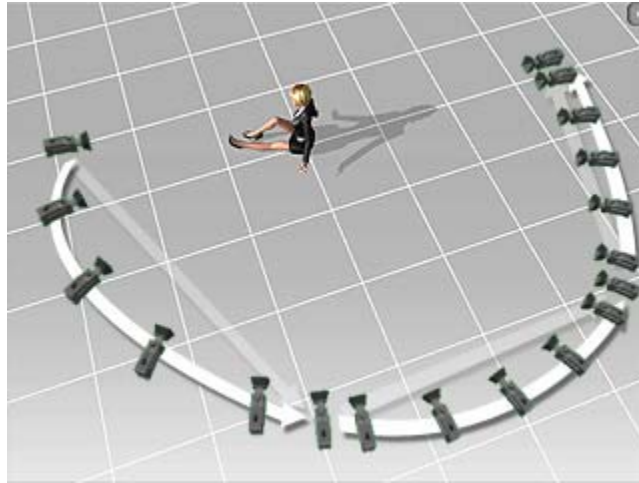
If you assign the selected camera with **Move** and **Rotate** keys, the viewing result can be abrupt and sudden for the intermediate keys. **iClone** provides a **Smooth Camera Movement** feature to have the camera pan smoothly.

1. Set **Transform** and **Rotate** keys in different time frames for the selected camera.



2. Make sure the **Picked Cam** is selected in the **Modify** page.

3. Check the **Smooth Camera Movement** box. **iClone** will calculate a proper path for the camera based on the position and the angle of the camera.



Note:

- o Perform steps 2 and 3 before step 1 will also have the same results.

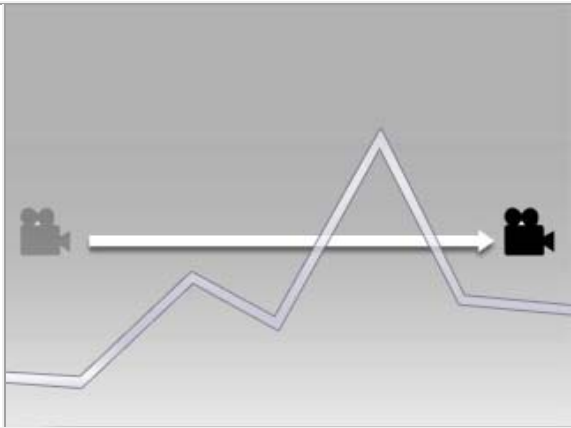
► The Walk and Fly Modes

iClone provides two modes to navigate the current project, **Walk** and **Fly**. You may then manipulate the camera view by the combination of hotkeys and mouse movements.

You may switch between these two modes by clicking the rightmost down arrow button in the control bar.

Difference

In **Walk** mode, the camera will follow the terrain as you move the camera. While in the **Fly** mode, the camera is free from the restrictions of the terrain.

	
•  Walk Mode •  shows in the center of the 3D viewer • The camera moves along the folds of the terrain	•  Fly Mode •  shows in the center of the 3D viewer • The camera moves and ignores the folds of the terrain

Manipulation

Both of the modes use the same method to control the camera to move:

Keyboard Shortcuts	Mouse Movements
• W key: Camera Moves Forward. • S key: Camera Moves Backward. • A key: Camera Moves Leftward. • D key: Camera Moves Rightward. • + key: Accelerate WASD. • - key: Decelerate WASD.	• Mouse Forward: Camera Looks Up • Mouse Backward: Camera Looks Down • Mouse Leftward: Camera Looks Left • Mouse Rightward: Camera Looks Right
• The moving speed of the camera specified by the + and - keys can be saved along with the project.	

Consequences

Director Mode: You may record the camera navigation course as a clip.

Editor Mode: Each time the camera view is changed, it will add a new key or adjust the existing key in the **Timeline**.

► Follow Cam

For the purpose of more **Game-Like** operation, **iClone** provides another sort of camera called **Follow Cam**. This sort of camera only exists as you select one actor or iProp.

The **Follow Cam** films the scene, with the actor locked to the center all the time, in a fixed angle of the camera. It keeps on the same perspective and follows the moving object throughout the project unless you adjust the perspective manually.

Follow Cam in the Director Mode

- You may switch back and forth the **Follow Cam - Actor** mode (view from the back) or **Follow Cam - Bird** mode (view from top right) by using the hotkeys **F7**. You can record the course as a clip and send the result back in the **Editor Mode**. If you are not satisfied with the angle of the follow camera view, you may adjust it manually.



The Follow Cam - Actor Mode

The Follow Cam - Bird Mode

- Once you enter the **Director Mode**, the follow cameras keep focusing on the last-selected actor or iProp before entering the **Director Mode**, even if you double click on another actor or iProp.
- If you want the follow camera to change its target, hold down the **Shift** key and click on the new target.

Follow Cam in the Editor Mode

- You may switch back and forth the **Follow Cam - Actor** mode (view from the back) or **Follow Cam - Bird** mode (view from top right) by using the hotkeys **F7**.
- In the **Editor Mode**, the follow cameras keep focusing on your current object.

► DOF

DOF, also known as **Depth of Field**, adds extremely dramatic effects to the results. You can pick an object at a specific distance to be rendered clearer while all the others are blurred. The **DOF** can be set as a key on the Timeline to generate an even more stunning animation.

Set the DOF

1. Go to **Stage/Camera/Modify** page.
2. In the **Camera** section, check the **Depth of Field** box.
3. Manually enter a value in the **Focus** field to define the distance for the camera to render most precisely. Alternatively, you may click the **Pick Target** button and click on the desired object to let **iClone** decide the value of **Focus**.

Note:

- o The **Pick Target** helps with setting the **Focus** to the position of the current picked object, but it does not keep tracking the object when the camera or the object move.



Before Setting the DOF



After Setting the DOF

4. Enter a value in the **Range** field to have all the objects within the range rendered clear.



Range Increased

Create a DOF animation

1. Go to a specific time frame, follow the steps described above to set a **DOF** key on the **Timeline**.
2. Go to another time frame and repeat the same procedure to add another **DOF** key. You may repeat as many times as you want to generate the **DOF** animation.



Another Object Picked

3. Play the project to view the result.

► Camera Lens Function

The **Lens** has a variable focal length so that **Camera Moves** can be made without actually moving the camera. You can modify the camera view using the lens function and the **Lens** can be set as a key on the **Timeline**. You may then create fisheye or vertigo effects with this feature.

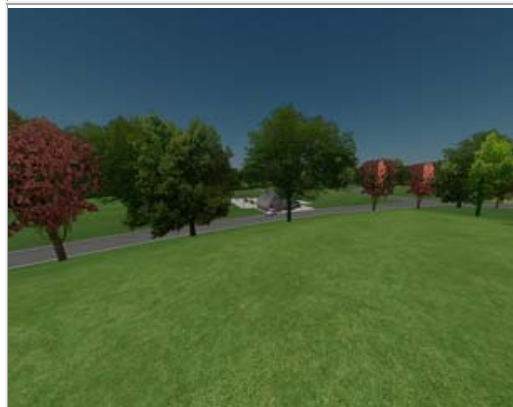
1. Go to **Stage/Camera/Modify** page.
2. In the **Camera** section, click on one of the template buttons.



Lens = 80 mm



Lens = 50 mm



Lens = 30 mm



Lens = 20 mm

Note:

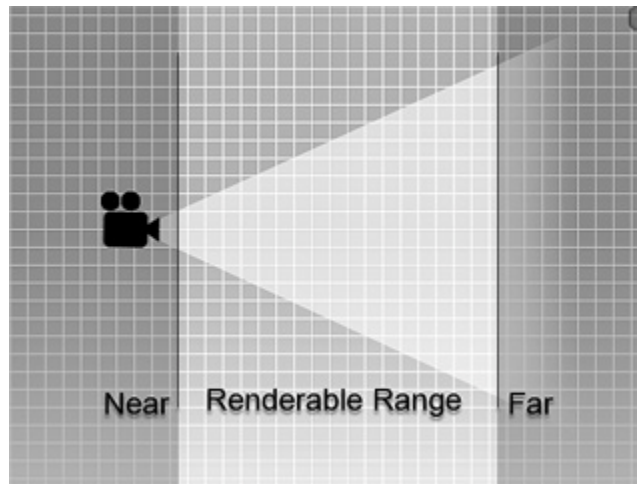
- o You may set different **Lens** keys in different time frames to create **Lens** animation. Please read the [Lens Track](#) section for more information.
- o Basically, the lower the value, the more of the scene can be seen. However it will be more distortion generated near the edge of the view.

► Clipping Planes of the Camera

If your actor moves in a building, you may want to ignore the walls or furniture between the actor and the camera, you may use the **Clipping Planes** feature. By defining the range consists of **Near** and **Far** parameters, you may see the actors behind the wall or relieve the load of your system. This feature can not be set as a key in the **Timeline**.

Rule of Clipping-planes

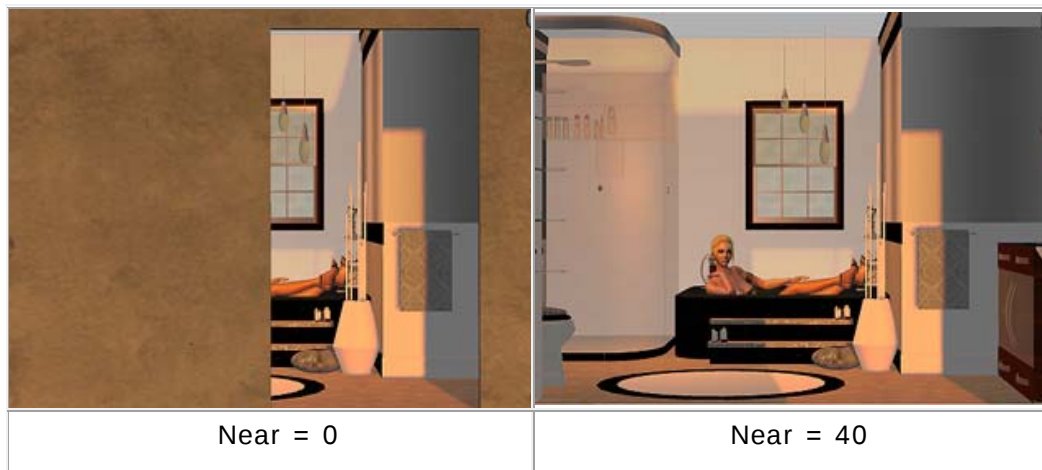
The **Clipping-Planes** provide two parameters, **Near** and **Far**, to define the render range of a camera.



Setting the Near Value

If your actor is indoor, the wall of the room will always hinder the view. You may use the **Clipping Planes - Near** to filter out the objects within this distance.

1. Go to **Stage/Camera/Modify** page.
2. In the **Camera** section, click the up arrow of the **Near**.



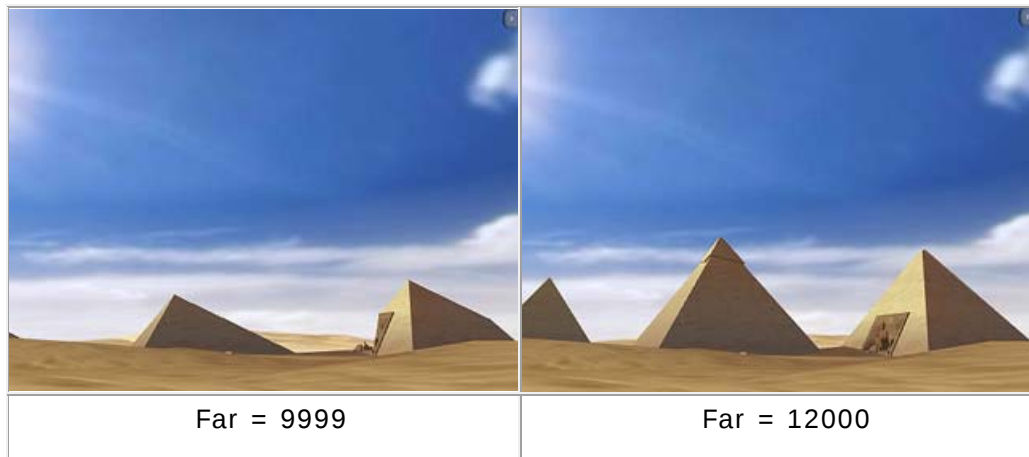
Note:

- o If you encounter Z-fighting situation (Two extremely close faces cause the flicking result), increase the **Near** value by 1 or 2 may solve this problem.
- o **Clipping Planes** affects only the rendering result instead of actually cutting any entity in the project.

Setting the Far Value

If your **Terrain** is so wide that it is beyond the camera's rendering range, you may adjust this value to solve this issue.

1. Go to **Scene/Camera/Modify** page.
2. In the **Camera** section, click the up arrow of the **Far**.



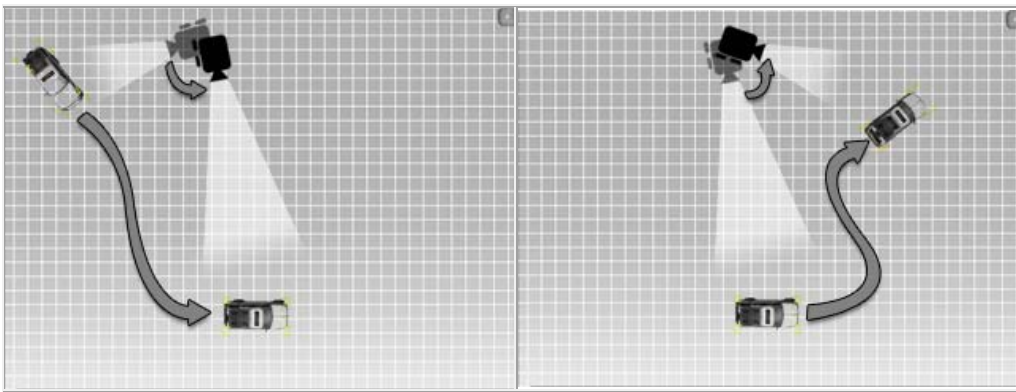
Note:

- o The **Sky** will always be shown without considering the value of the **Clipping Planes - Far**.
- o It is highly recommended to decrease this value if your scene is not so wide since increasing the **Far** value can also increase the load of the system.

► Camera - Look At

It is hard to keep the camera stable while aiming at an object in a scene. Thus, **iClone** introduces the **Look At** feature for the camera to achieve this goal in several simple steps.

1. Select the desired camera.
2. Go to the **Stage/Camera/Modify** page, in the **Look At** section, click the **Pick Target** button.
3. In the 3D viewer, click on a target.
4. Move the target object away to see the result.



The camera is driven to rotate and follow the moving car.

Example: A lady walks down the street with the camera following her.



Note:

- You may have the camera **Look At** the target object over a fixed period of time and use **Set Free** outside the time range to stop looking at the object.

☉ Lighting

iClone provides you with four kinds of lights (**Ambient**, **Point**, **Directional** and **Spot**) for different purposes. Since having more lights in a scene lowers the performance of your computer, **iClone** only allows nine lights per project, one ambient light, four point lights and four switchable lights. A switchable light can be a **Directional Light** or **Spotlight**.

► The Comparison of Lights

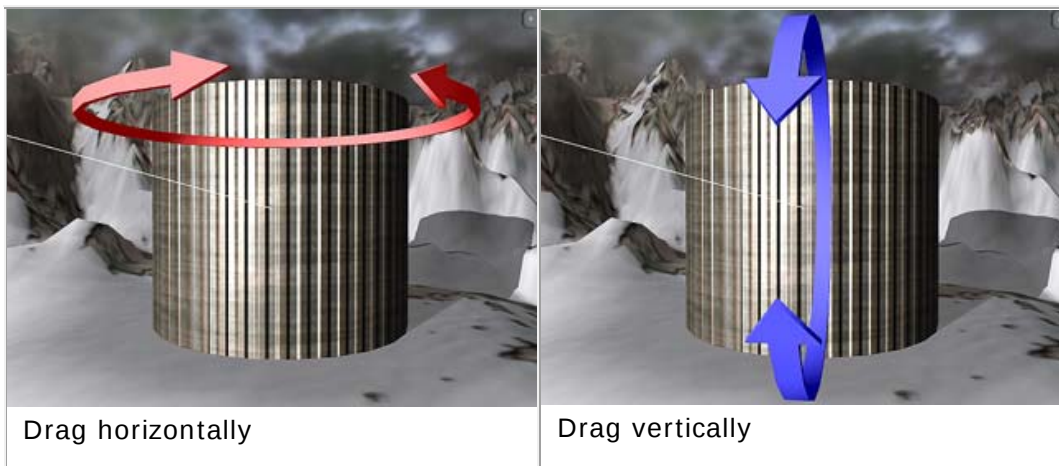
	Ambient Light	Point Light	Directional Light	Spotlight
On / Off	Always On	Adjustable	Adjustable	Adjustable
Type Switching	Not Available	Not Available	Available to Switch to Spotlight	Available to Switch to Directional Light
Shadow	No Shadow	No Shadow	Shadows Available: • None • Drop Shadow • Self-Cast Shadow • Wall Shadow	Shadows Available: • None • Drop Shadow • Self-Cast Shadow • Wall Shadow
Shadow Range	No Shadow	No Shadow	Available	Not Available
Setting Keys	Not Available	Available	Available	Available
Picking	• Not Available • Color Changing Only	• In Scene Manager: Available • In 3D Viewer: Available	• In Scene Manager: Available • In 3D Viewer: Not Available	• In Scene Manager: Available • In 3D Viewer: Available
Intensity	Not Available	Available	Not Available	Available
Beam and Falloff	Not Available	Not Available	Not Available	Available

Look at Another Object	Not Available	Not Available	Not Available	Available
Link to Another Object	Not Available	Available	Not Available	Available

► Manipulating the Directional Light

Change the Angle of Directional Lights

1. Select one of the directional lights you want to modify from the **Scene Manager**.
2. Select the **Rotate Object** tool from the **Manipulation Tools** group on the [control bar](#).
3. Drag the left (or right) mouse button along the horizontal/vertical line to adjust the longitudinal/latitudinal degree of the directional light.



► Ambient Light

The **Ambient Light** is the light for giving an overall tone to the whole scene in **iClone**. Changing the color of the ambient light allows you to create atmosphere.

iClone provides only one ambient light with changeable color settings. You cannot set keys to it, you can only set the light color to affect the whole project.



Default Color of Ambient Light

1. Go to the **Stage/Light/Modify** page.
2. In the **Light Setting** section, click the color box for the **Ambient Light**. Pick the desired color from the palette panel.



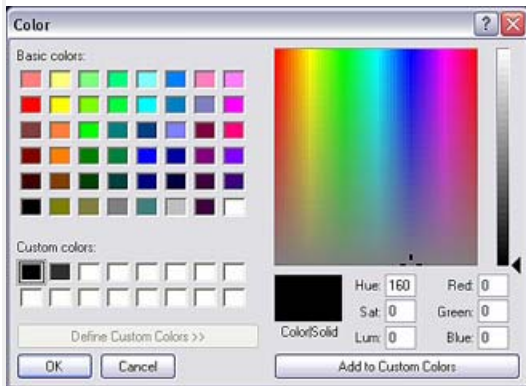
Black Ambient Light



Red Ambient Light

Note:

- o If you want to turn the scene dark then pick **Black** or **Dark Gray** as the ambient light color.



- o The **Ambient Strength** option from iClone 2.x is no longer available. You may create the same result by picking various colors.
- o The **Ambient Light** is not selectable neither in the **Scene Manger** nor the **3D Viewer**.
- o Please refer to [the Comparison of Lights](#) for more information about the **Ambient Light** characteristics.

☉ Lighting - Spotlight

The **Spotlight** allows you to choose specific objects to light in your project. You may adjust the parameters of it, link it to a target or even have it to look at another entity.

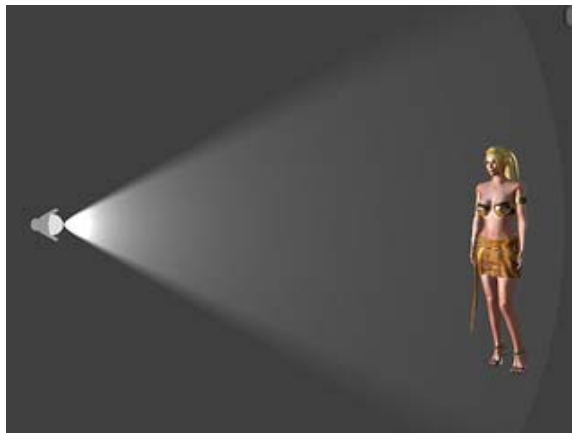
► Intensity, Beam and Falloff

iClone provides you with adjustable parameters for the **Spotlight** to generate different types of spotlights. By changing these values, you may create various effects and styles. You may even change the settings on the timeline to set keys (**Shadow** and **Decay** boxes are excluded) and produce light animation effects.

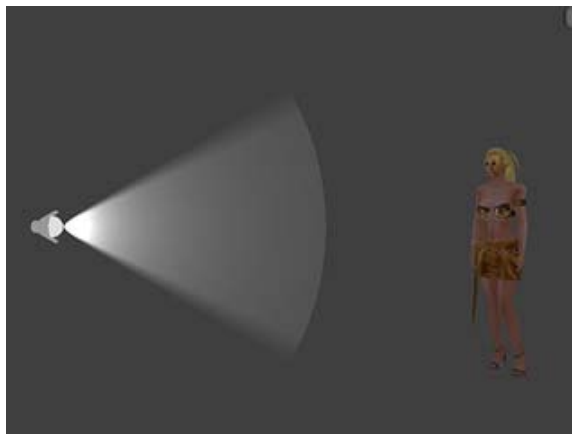
Intensity

In the **Intensity** section, you may define the end of the light by adjusting the **Range** slider. Thus, objects out of the range may not be affected by the spotlight. This may not be true in the real world but it is very useful in the 3D world.

1. Drag the slider to 470 to extend the distance of the light effect.



2. Drag the slider to 250 to limit the range of the light.



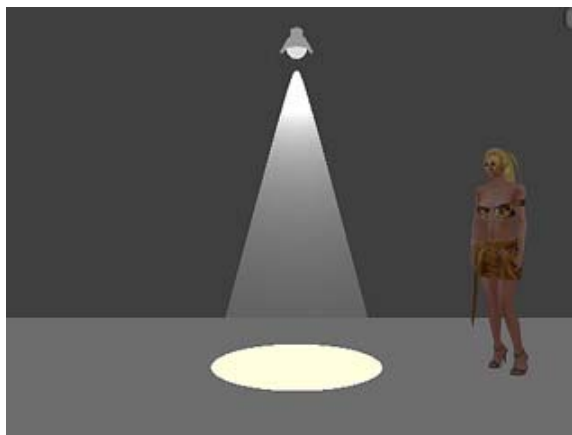
Usually, you will turn on **Decay** to have the spotlight strength decrease gradually from the light source at the end of the **Range**. This prevents a sharp ending edge as shown in the illustrations.



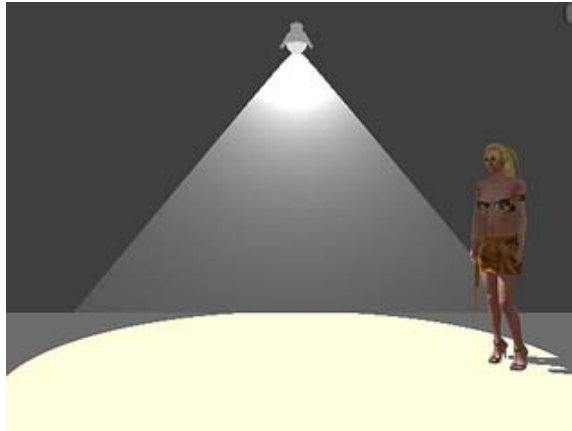
Beam

The style of the spotlight **Beam** can be customized by changing the **Angle** and **Falloff** values of the spotlight. The beam generated from the light is in the form of a cone, like you would get from a flashlight. The bottom circle size of the cone is decided by the Angle slider.

1. Drag the **Angle** slider to 30.

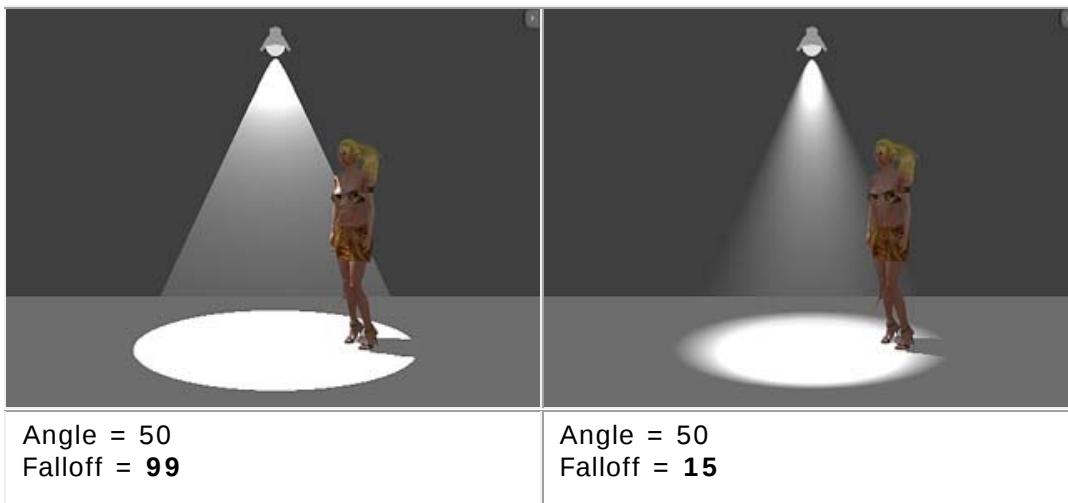


2. Drag the **Angle** slider to 80.



Falloff

If you feel the beam is too sharp, you may blur the edge of the light beam by adjusting the **Falloff** slider.



► Link for a Spotlight

If you want to create a light, such as a flashlight, that is being held by an actor, you do not have to adjust the transform data key after key as the actor moves away. All you need to do is link the spotlight to the flashlight in the actor's hand.

1. Go to the **Scene Manger**, click on one idle light under **Dir./Spotlight**.
2. In the **Stage/Light/Modify** page, go to the **Light Setting** section.
3. Select **Spotlight**.
4. Go to the **Linkage** section and click the **Pick Parent** button.
5. Click on the target object you want the spotlight to link to.



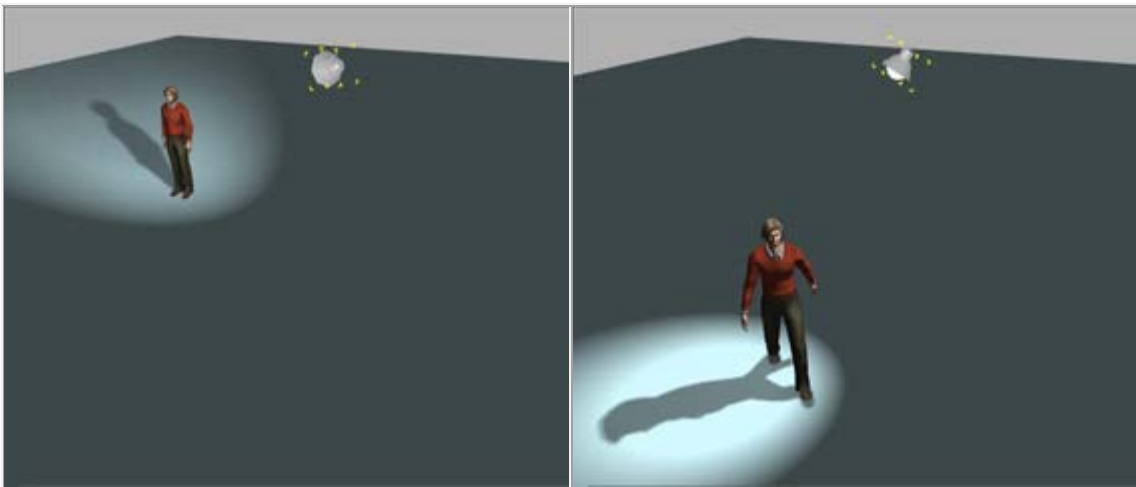
6. Move the parent of the **Spotlight** to view the result.



► Spotlight - Look At

When you want to shine a spot light on a target object, you may use the **Look At** feature.

1. Select an unused directional light in the **Scene Manager**.
2. Go to the **Stage/Light/Modify** page and select **Spotlight** in the **Light Setting** section.
3. In the **Look At** section, click the **Pick Target** button.
4. In the 3D viewer, click on a target.
5. Move the target object to see the result.



The spotlight rotates and follows the moving actor.

Note:

- You may also have the spotlight **Look At** the target object over a certain period of time, and have it be **Set Free** outside the time range.

☉ Lighting - Point Light

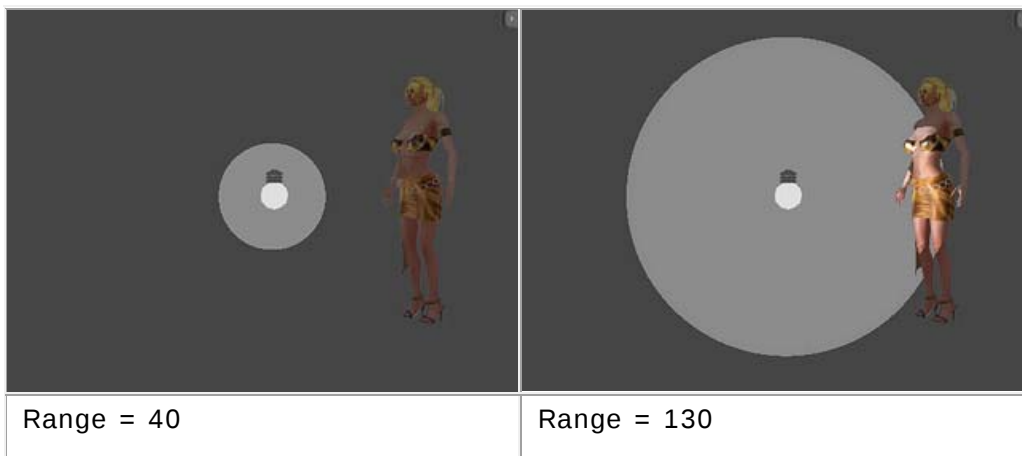
The **Point Light** is used to light up a partial scene. The light of it goes to all directions from a single centre. With this type of light you can simulate torches, candles or light bulbs. Note that in **iClone**, point lights do not produce any shadow effects on any objects.

▶ Range of Point Light

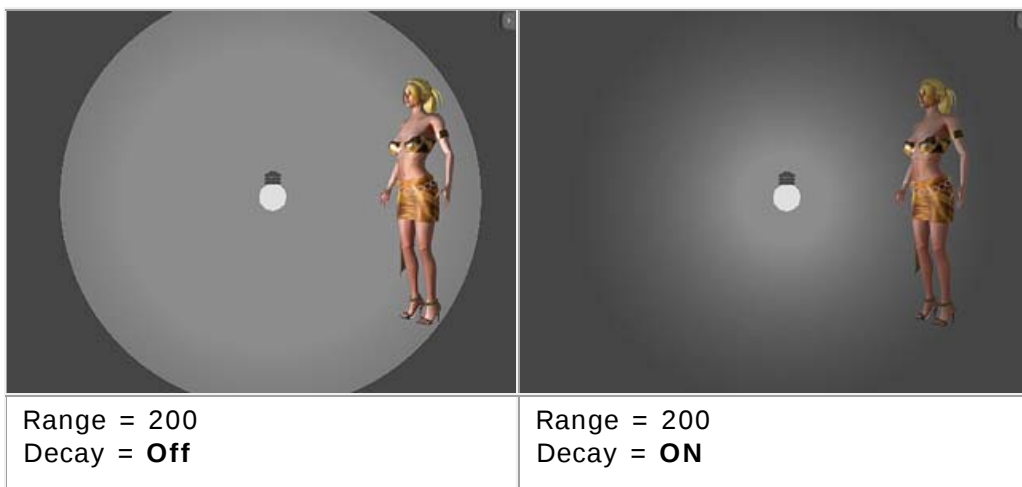
Range and Decay of Point Lights

The effect of a point light is relatively simple since you only need to adjust the **Range** and **Decay** parameters.

Range: The radius of the point light. Since the point light sends light in all directions, all objects in this range can receive light.



Decay: Check the **Decay** box to have the light strength decrease gradually from the light source to the end of the Range.



► Utilizing Point Light

In the following example, the candle flame is actually a prop mapped with a glow texture, it does not give off real light at all. We will locate a **Point Light** at the same place as the prop to imitate the candlelight.



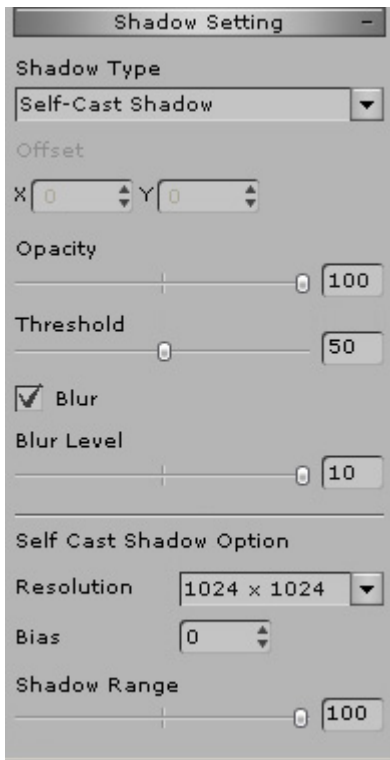
The original appearance of the project

1. Go to the **Scene Manger**, click on one idle light under **Point Light**.
2. Move the **Point Light** in the 3D viewer to the correct position.
3. In the **Stage/Light/Modify** page, go to the **Light Setting** section.
4. Change the color of the light.
5. Adjust the [Range](#) and/or [Decay](#) to specify the effect of the point light.



☉ Lighting - Shadow

In **iClone** all except the **Point Light** are capable of generating shadow.



Shadow Type

From the **Shadow Type** drop-down list, you may decide to set the shadow effect to **None**/**Self-Cast Shadow**/**Drop Shadow**/**Wall Shadow**:



Self-Cast Shadow (Directional Light)



The **Shadow** is turned on with directional light.

Self-Cast Shadow (Spotlight)



A realistic way to calculate the physical projection of shadows from the light source via the shadow map technology. Cast and receive shadows both from characters and props/scene. Shadows can be cast on the source's own surface as well.

Drop Shadow	Wall Shadow
	
A quick way for objects to drop shadow Only on the virtual floor (X-Y plane) or 2D background but not on any other 3D objects.	Wall Shadow will create a 2D shadow effect by offsetting a shadow directly behind objects. If you select this option, the Offset X, Y will be enabled for you to define the position of the shadow. Please note that the Wall Shadow is cast merely on the 2D Background and Sky and not on the Terrain.

More about Self-cast Shadow

- A higher resolution shadow map is required if you wish for all scene elements to cast shadows.
- Self-cast shadows can only be projected on 3D objects but not on the virtual floor (X-Y plane) or 2D space.
- If a self-cast shadow is cast on an object with alpha transparency effects, it might cause some artifacts.
- Please refer to [Self Cast Shadow Option](#) for more information.

Shadow Opacity

Adjust the **Opacity** value to define the transparency of the shadow. In general, stronger light (especially directional lights) will cast higher opacity shadows.



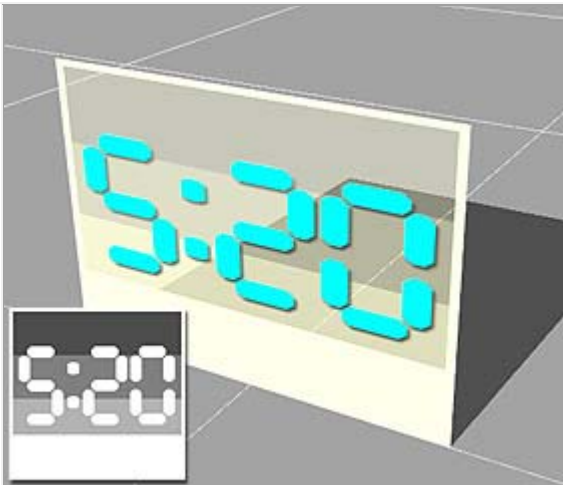
Opacity = 60



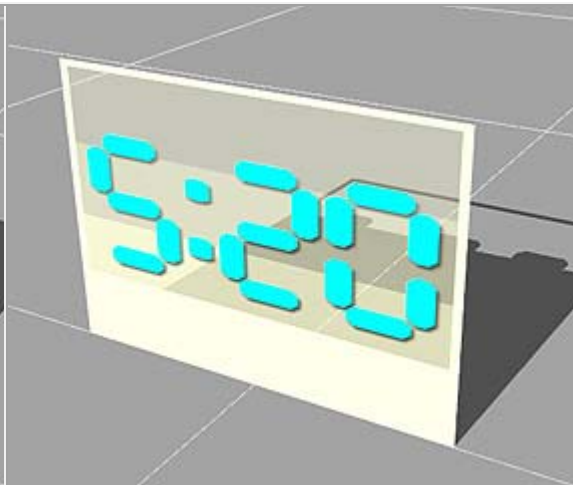
Opacity = 100

Threshold

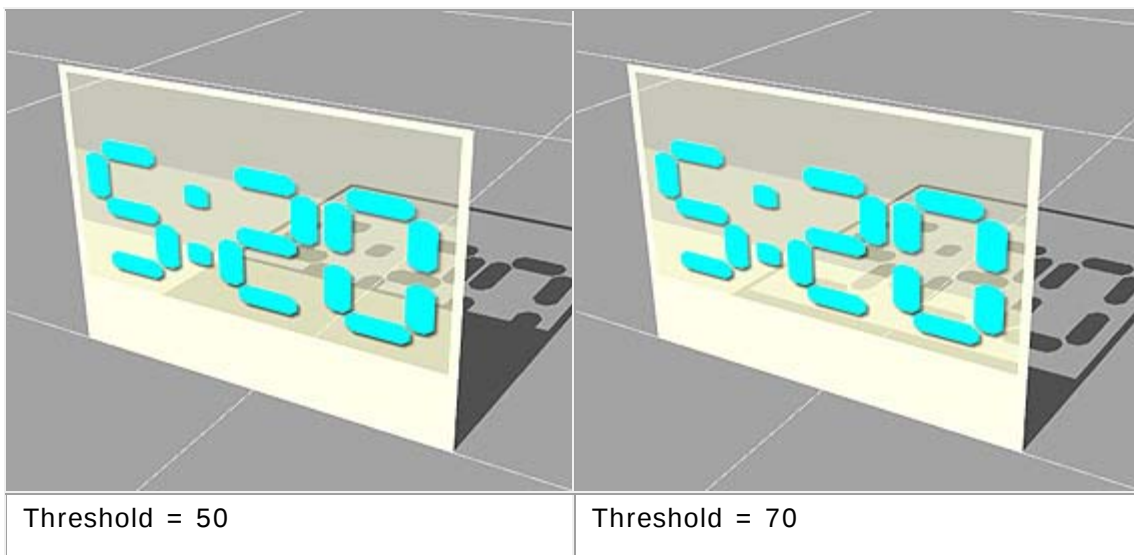
The **Threshold** sets decides the level of transparency that is required to cast shadows.



Object and its **Opacity** texture



Threshold = 30



Blur

Check the **Blur** box to enable this feature. Adjust the **Blur Level** to define the edge softness of shadows.



* The iClone Self-cast Shadow function is only supported on NVIDIA series graphics cards.

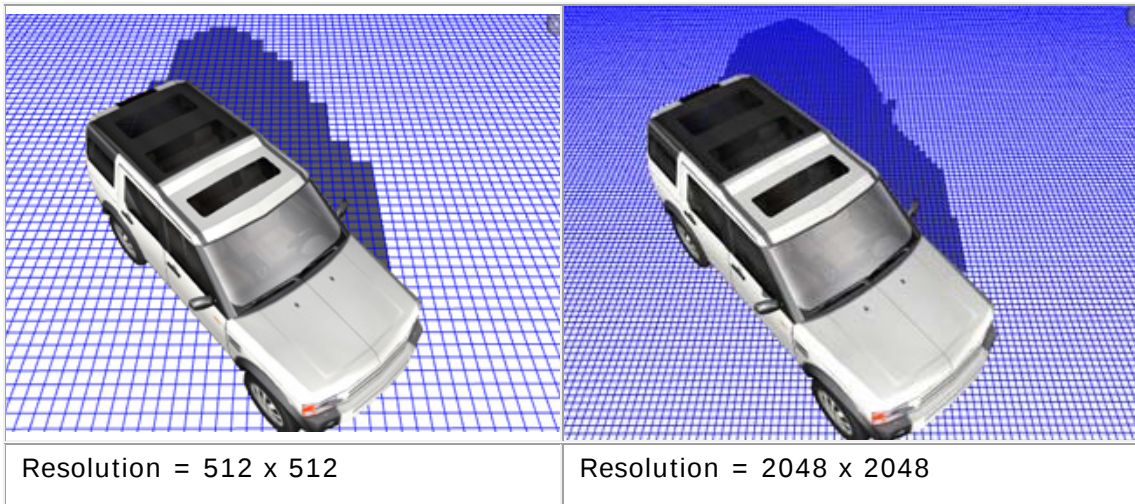
► Self Cast Shadow Option

When you use the **Self Cast Shadow** mode, you are using a so-called shadow map, which covers all viewable parts of the scene, to globally calculate the shadow area for all objects that are able to cast a shadow.

Please note that the following parameters are global, you cannot assign different values for different lights in the project.

Resolution

The values from the drop-down list decide the resolution of the shadow map (indicated by blue lines). The higher the value, the more detailed the shadows will be calculated and presented.



Shadow Bias Adjustment

This function helps to correct some shadow displacement errors caused by extreme shadow angles.



Shadow Range

To reduce the system strain, we might use the minimum resolution of 512 x 512 for the shadow map. This however can cause the edges of the shadows to appear jaggy. You may use the **Shadow Range** feature to scale down the shadow map to increase the shadow detail at lower resolutions.

This feature is especially useful when you are using a broad scene but only a small area will be shot with the camera. Decrease the shadow range so any objects beyond the set range will not cast any shadows while increasing the shadow effect for nearby objects.



Resolution = 512 x 512

Shadow Range = 100



Resolution = 512 x 512

Shadow Range = 10



Resolution = 512 x 512

Shadow Range = 2

No shadow effects outside the specified range.

By combining high resolution shadow maps, appropriate shadow range, and shadow blur values, highly-realistic self-cast shadow results can be achieved.

Note:

- o Map resolution has no effect on Spotlights.
- o * The iClone Self-cast Shadow function is only supported on NVIDIA series graphics cards.

Set

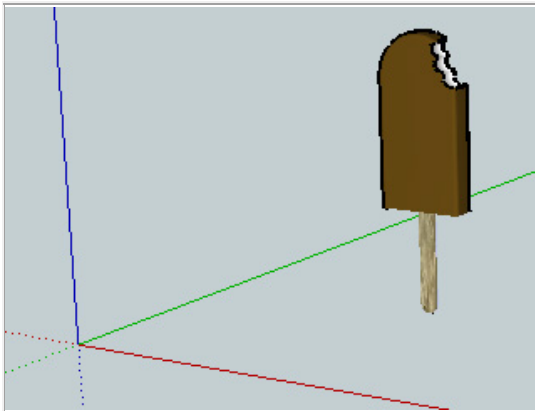
⊙ Prop

► Pivot of Prop

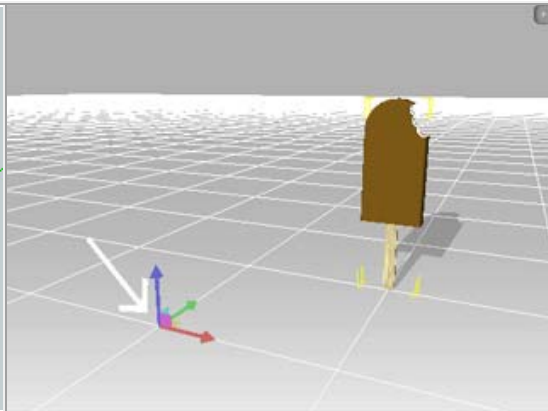
In **iClone**, each object has its own **Pivot**, which is the base for the **Transform** data. If you intend to attach or link a prop to another, the pivots are also the bases for both objects. It can also be taken as the **Center** of the object. Switch to the **Gizmo** mode so you may see the position of the pivot for selected object since the **Gizmo** locates at the same place as the pivot.

How do the pivot generate

After you create an object via your favorite 3D softwares (such as SketchUp), the pivot is generated automatically. In general, the pivot is set to be located at the origin. Therefore, if you create your object away from the origin, the pivot of it will be eccentric. **iClone** also loads objects with their pivots align to the world axis if you double-click to apply them.



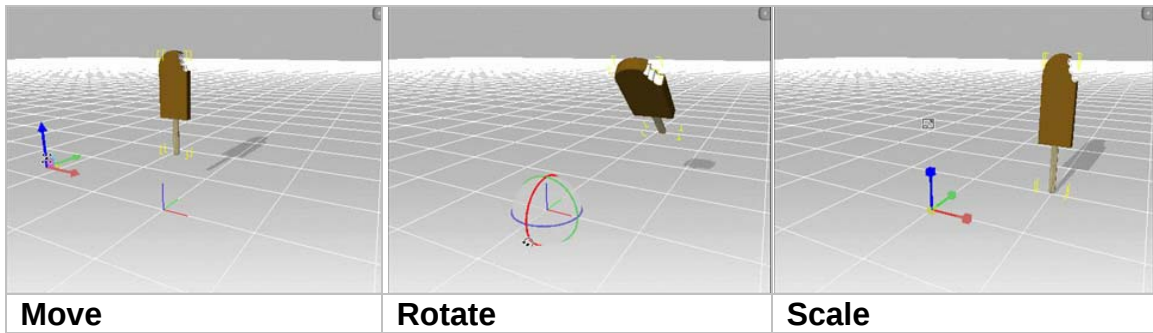
- Create Model in SketchUp.
- The pivot of the model is set at the origin.



- Double-click to load the model.
- The pivot aligns to the world axis.

How does the pivot affect Transform Data

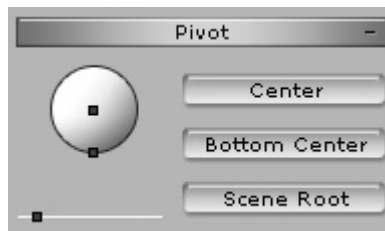
Since the pivot is the base for the transform data to refer to, the **Move**, **Rotate** and **Scale** work according to the pivots of objects. If a pivot is outside of the model entity, the unexpected result happens, especially **Rotate** and **Scale**, when you adjust the transform data of the object.



Set the pivot location

You might come across models that have eccentric pivots. In **iClone**, you may freely change the pivot of the selected object without the use of any external software.

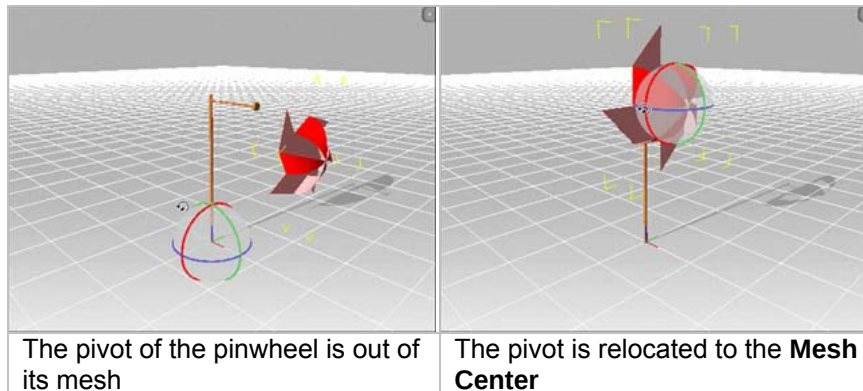
Please select the target prop and toggle the **Gizmo** mode (Ctrl + Q) to view the position of the pivot.



Set Pivot to Mesh Center

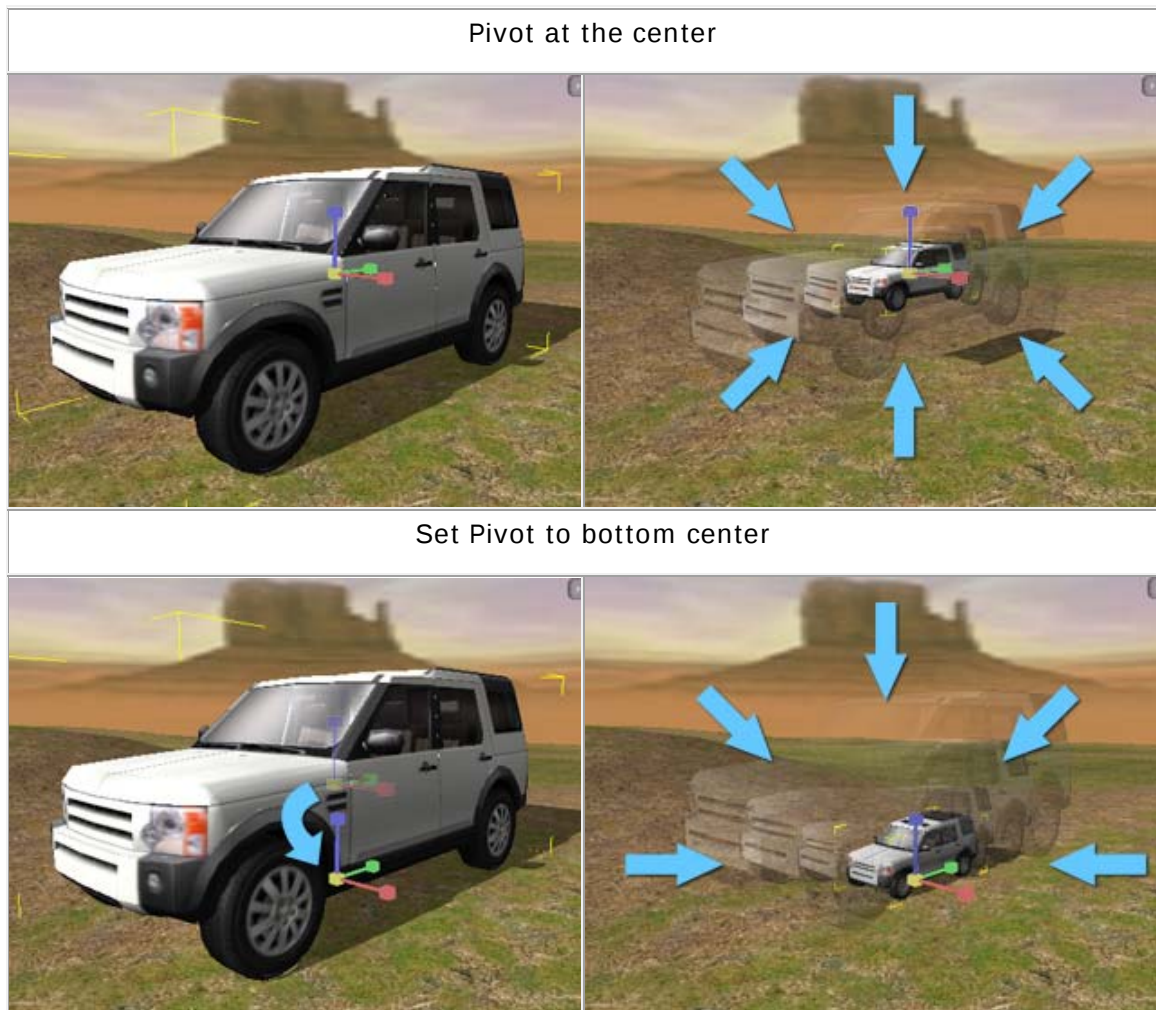
- This method is suitable for props that revolve on their own axis or scale from their own center. (e.g. tire)

- If you want to set the pivot to the mesh center of the selected prop while the prop is set to a designated position already, you may use this method.



Set Pivot to Bottom Center

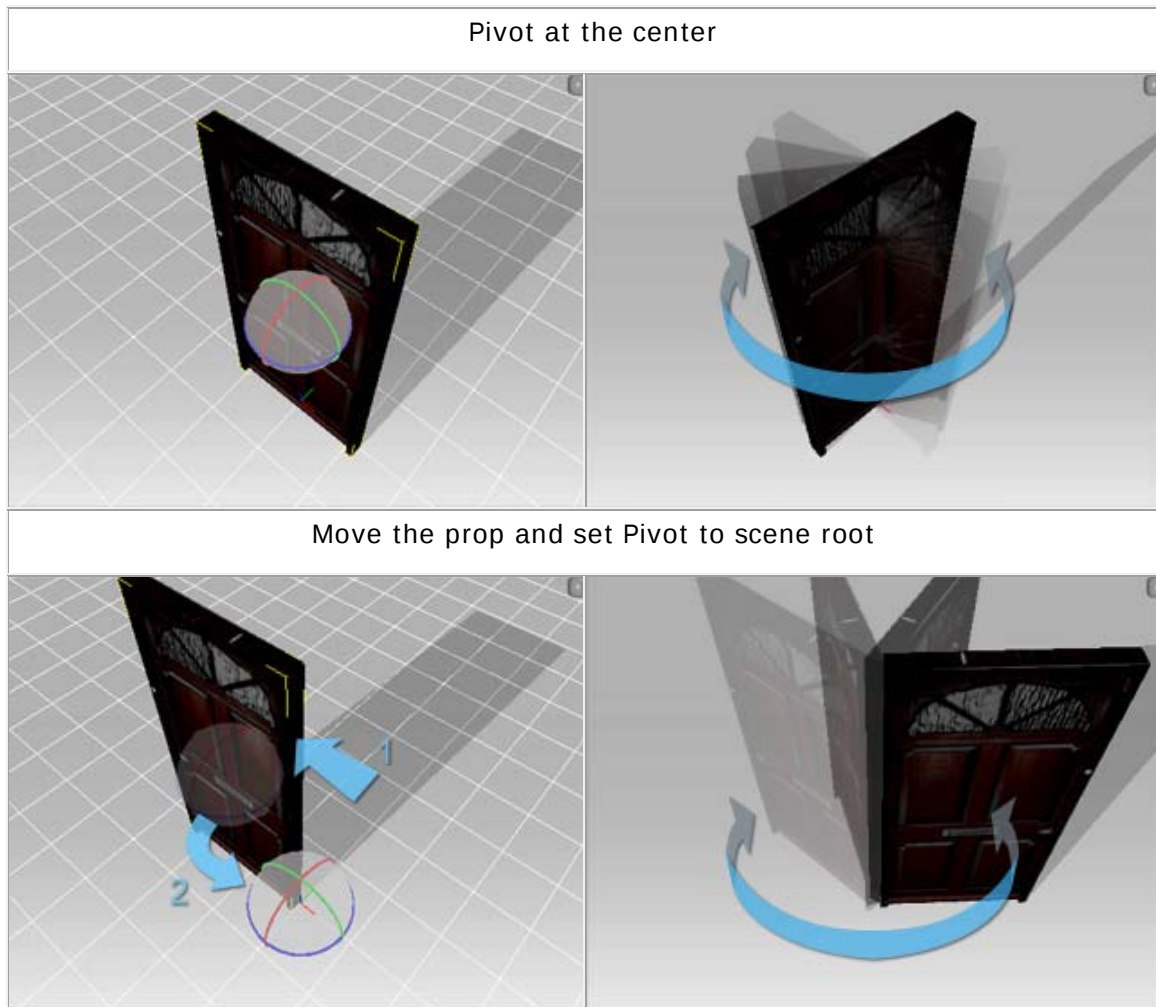
Basically, the pivot of a general prop shall be set to the bottom center so that it can follow the terrain. If the pivot is set to the bottom center, once it is scaled, the mesh can be resized without offsetting it from the terrain.



Set Pivot to Scene Root

- If you want to create a prop that has revolutionary orbit around another target, this method is the appropriate approach. (e.g. planet or door)
- You may use this method to set the pivot of a prop elsewhere:
 1. Select a prop for relocating its pivot.
 2. Move the prop away from the origin.
 3. Click the **Scene Root** button.

The pivot of the prop is re-located to align to the scene root.

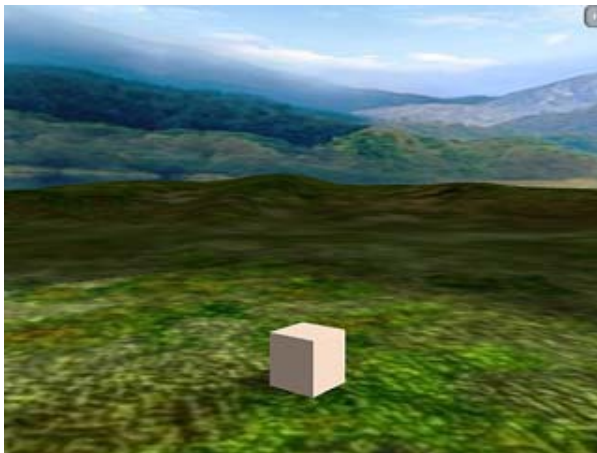


► Prop Animation With Helper

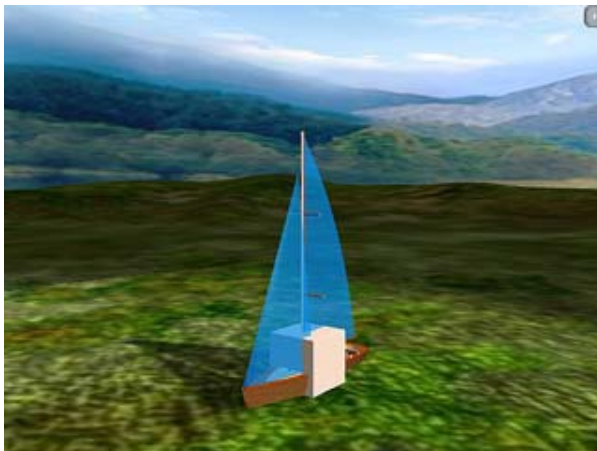
An **Animation Helper** helps you to pre-define some specific animations and embed the animations in the helper itself. The helper then can be re-used unlimited times and add the same animations to a different prop.

Attach Single Model to One Helper

1. Apply the helper from the template library. In this example, this helper contains rotating and raising animations embedded.



2. Apply a desired model into the project. Overlapping the pivots of them.



3. Pick the model and go to the **Modify** page. In the **Attach** section, click on the **Pick Parent** button and click the helper.

Prop Box_001 SailingBoat Normal Normal Normal 12 15,67	Prop Box_001 SailingBoat Normal Normal Normal 15,68 15,67
The hierarchy before attaching	The hierarchy after attaching

4. Select the helper again and set its **Opacity** value to 0.



5. Click the **Merge** button in the **Attach** section.

6. Please follow the same steps to create more parts to be combined later:



7. You may open the **Perform** track, right click on it and select the desired animation from the **Animation List**. Alternatively, you may also right-click on the merged object and apply the animation clip from the **Perform** list.

Examine the perform clip for each part:



The "Taking Off" is applied to the sailing ship. The "Flapping Wings" is applied to the wing.

Assembling Parts

Once you have merged several models and helpers as parts, you may then start to assemble them as one composite object.

1. Decide a part to be the **Parent Node**.



The sailing boat is assigned to be the parent.

2. Pick other parts and then click **Pick Parent** in the **Attach** section.



Attach the two pieces of parts to the parent.

3. Repeat last step till all the parts are attached to the parent node.



The model now can take off with flapping wings.

1. You may then control the composite object and command each helper individually to act its animation at different times via the **Perform** track..

▶ Setting Prop as Dummy

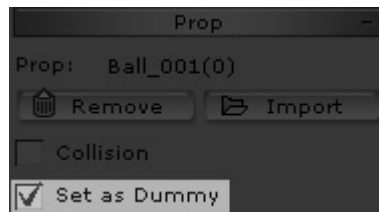
Setting a prop as a dummy allows you to attach a group of props to the dummy which in turn allows you to use the dummy as a transform controller.

Transform Controller on Path

Since you cannot set its own position keys when picking path to an object, attaching a prop to a dummy object which is in turn attached to the path can get around this issue. Using the dummy as the parent of the prop you can set offset keys while the dummy follows the path.

Set Prop as Dummy

1. Add a prop to the scene and select it to **Set as Dummy**.

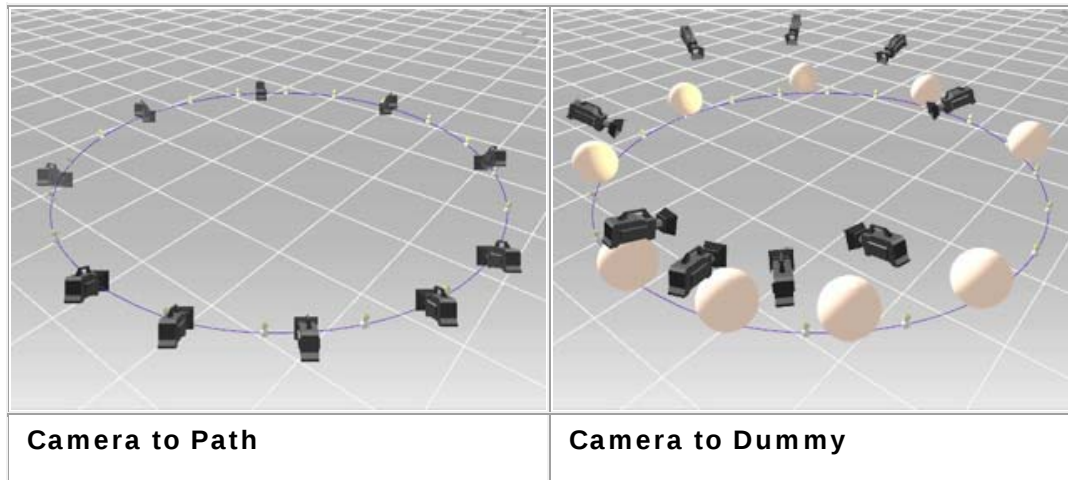


2. Now, add a camera to the scene.
3. Position the camera to the dummy object.
4. Select the camera and make sure you are in **Selected Cam** mode.
5. Scroll down to the **Linkage** section of the camera panel.
6. Click the **Pick Parent** button and link it to the dummy object.

Dummy to Path

1. Create a path for the camera to move on.
2. Select the dummy and **Pick Path** to the path.
3. Since we have set the dummy as the parent of the camera, the dummy will move along the path with the camera.

4. You can now set the position keys for the **Dummy** on the path while also adjusting the **Camera**'s rotation and position.



Dummy as the Parent

Attaching a group of props to a dummy parent and moving them as a group can save you a lot of time since you won't have to adjust each props' opacity.

1. Set a prop as the dummy.
2. Add a few props (in our example the skirt part) to the scene and position them to the dummy.
3. Select the prop and attach each piece to the dummy.
4. After making a group of items you may select the dummy and link it to the character.
5. Now the dummy with the attached objects will move with the character.



Note:

- o When you set a prop to be a dummy object, the dummy will not be rendered.

☉ Plants

iClone provides live plant system which allows users to plant trees or grass on top of the terrain. These plants can sway along to a given wind value, presenting a life-like dynamic feeling.

▶ The Tree

iClone provides you with a system to adjust the parameters of planted trees. You may plant trees on the terrain or even link or attach them to some other target object. The trees can cast and receive shadows or sway with the wind during playback. You may then create a forest or potted plants in your project.

To Plant a Tree

It is relatively easy to plant a tree:

1. Apply your desired terrain and sky. Go to **Set/Tree**.



2. In the **Content Manger**, drag and drop your desired tree into the 3D viewer.

You may even move the trees with the **Move**, **Rotate** and **Scale** tools to manipulate the trees in the same way as props.



Wind

If you increase the **Strength** value, the trees you plant sways harder when you play the project and vice versa.

Link

Because a tree is similar to a prop, you may link your tree to a target such as a flowerpot.



Before linking.

- Link to the flowerpot.
- **Align to Parent** box checked.
- **Transform** data modified.

Note:

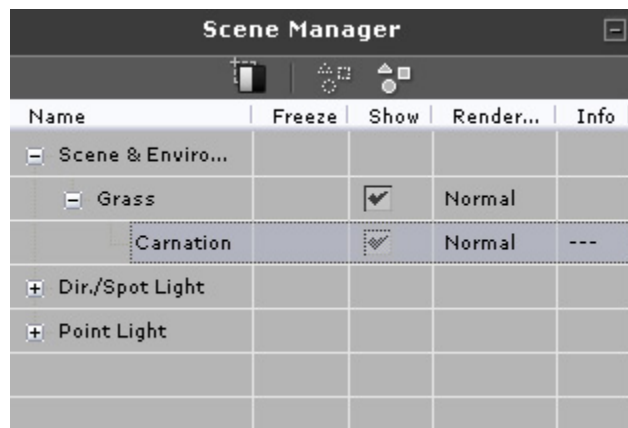
- Please note that since trees do not possess any tracks in the timeline, you must be careful when you set **Link** or **Unlink** keys to the trees.

► The Grass

iClone gives you a realistic grass system in which you plant various types of grass and plants in your scene.

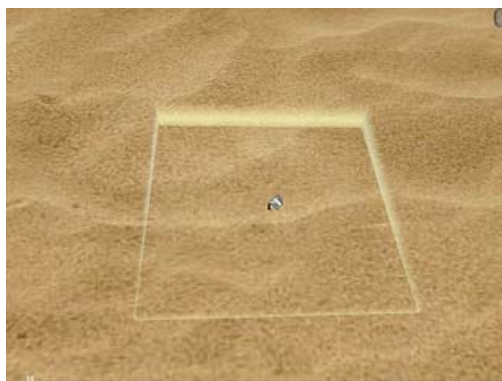
The Concept of Grass Instance

Once you apply one of the grass templates from the **Content Manager**, you choose the **Seed** of the Grass you wish to plant. Each click of your mouse button will place another instance of that seed so you can build up patches of grass throughout your scene. However, you will only see one name of the chosen seed in the **Scene Manager**.



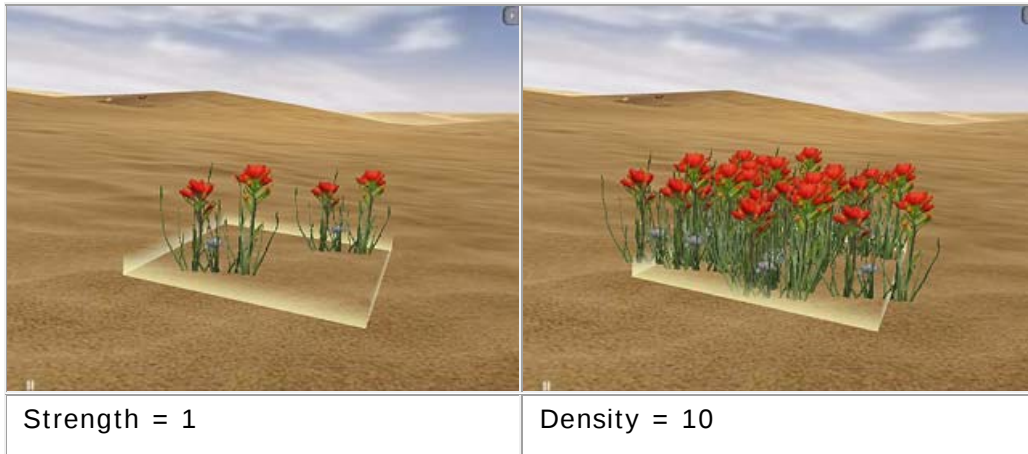
To Plant the Grass

1. Go to **Set/Grass/Content Manager**.
2. In the **Template** tab, double click on your desired grass template (or drag it into the preview window).
3. Toggle to either tool in the  panel.
4. You will see a paint bucket to indicate the location for planting the grass.



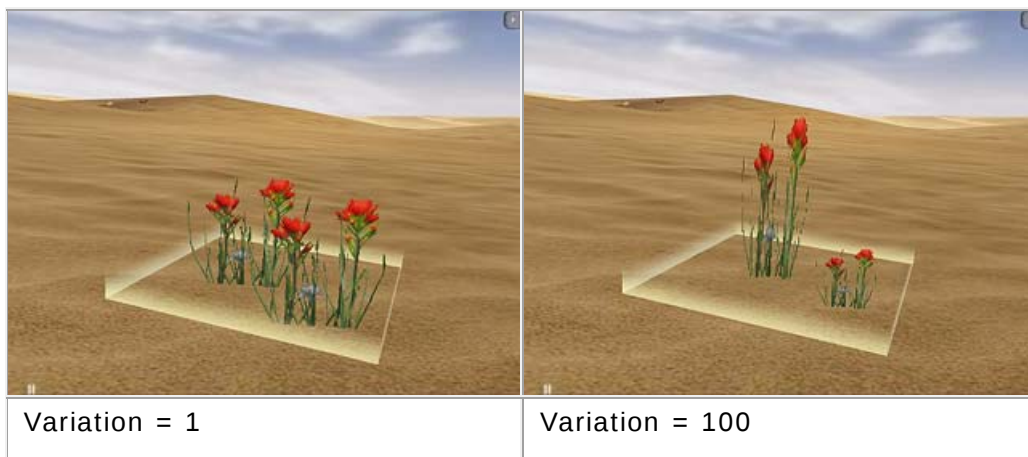
The Grass Gizmo.

5. Drag the **Size** slider (or scroll the mouse wheel) to define the size of the **Gizmo**.
6. Drag the **Density** slider to define the number of grass instances growing in 100 square units.
7. Click on the target position to plant.



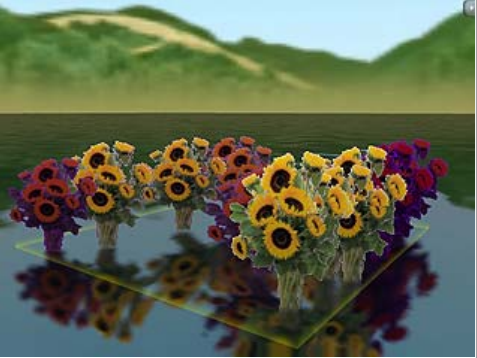
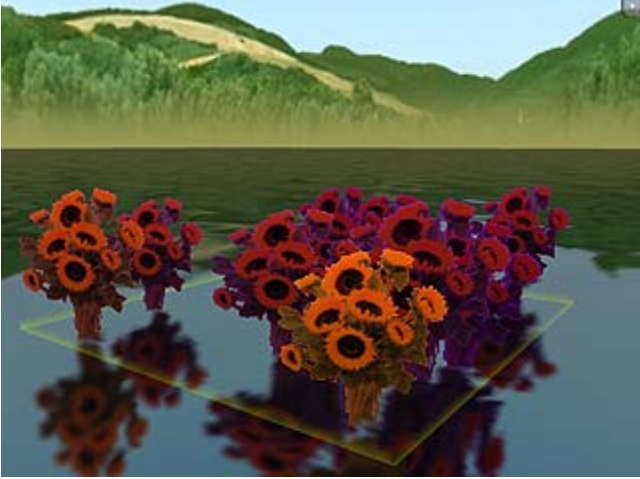
Changing the Look of Grasses - Dimension

1. Set the **Width** and **Height** values to change the size for each piece of grass.
2. If you want the height of the grass to be different, increase the value of **Variation**.



Changing the Look of Grasses - Color

Using the **Start Color** and **End Color** to define the gradient color dyes for each grass instance with every click on the ground. You may then create bunches of flowers with different colors with only single seeds.

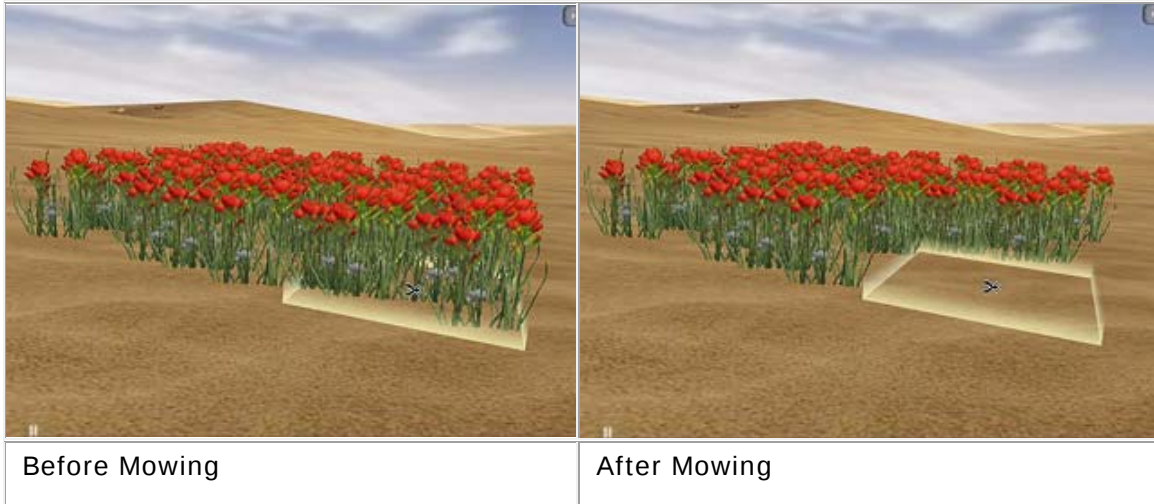
	
Start Color: <input type="color" value="#FFFFFF"/> End Color: <input type="color" value="#FFFFFF"/>	Start Color: <input type="color" value="#FFFFFF"/> End Color: <input type="color" value="#800080"/>
	
Start Color: <input type="color" value="#FF8C00"/> End Color: <input type="color" value="#800080"/>	

To Mow, Clear or Remove?

Mow: To cut off the unnecessary grass instances of current seed.

Clear: To mow all the grass instances of current seed.

Remove: To mow all the grass instances and also delete the seed from the scene.



Note:

- o You can also drag the thumbnail image to the target location for planting.
- o **Right-click to toggle between planting and mowing mode.**
- o Use the left mouse button to plant or mow.

Save Your Grass

You may click the **Add** button to store custom grass in the **Content Manager/Custom** library. The settings saved are:

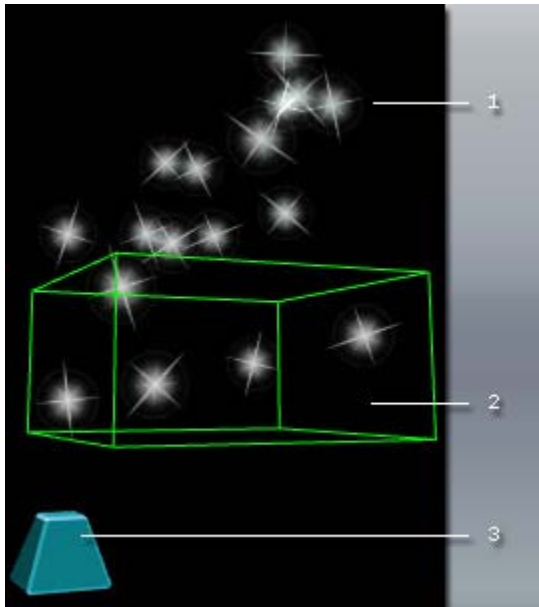
- Diffuse and Opacity
- Wind Strength

☉ Particle

iClone explodes with new immersive features including Particle effects making it possible to create elemental effects like smoke, fire and blizzard. Expand your imagination and create magic-casting effects for avatars and scenes. Particles are completely customizable and savable to a custom library.

iClone produces the particle effect as a layer and merges this layer onto the scene to create an image containing moving particles.

► Structure of Particle System



1.	Particle	The image objects ejected from the emitter. By means of adjusting the attributes of the particles, such as the image sizes, the blend methods, and so on, you can create sandstorm, fire, smoke and lots more in your scene.
2.	Volume of Emitters	An invisible cube consisting of emitters. You may change the volume by adjusting the size of the container or offset it from the pivot.
3.	Gizmo	The gizmo is the real location of the particle set. You can pick, move or rotate it at different times to generate moving particle effects. You can use the gizmo to link or attach the particle set to another object, or have it move along a specific path.

Note:

- o The default showing of the particle is off. For you to adjust each element please enable show in the scene manager to see both the gizmo and invisible cube of the particle.

► Generating Particles

iClone provides several categories of particles for you. You may apply them and then modify the parameters to change the result:

1. Please click the **Set** tab in the navigation pane.
2. Press down the **Particle** button.
3. Switch to the template tab. Simply double click on any one template in these categories and your project generates particles accordingly.
4. Play back the project to see the result.

► Adjusting Particles

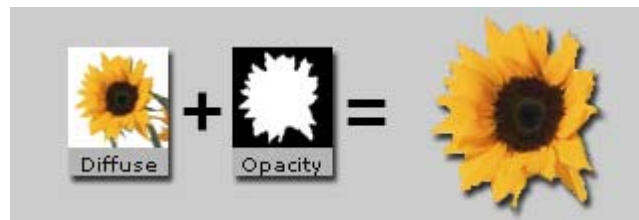
We will explain the usage of all the parameters for the particles in this section. Please switch to the **Modify** tab in **Particle** mode. Keep your focus on the section with the **Particle Setting** tab on it.

Please click each sub-title at the left side of the table to view the illustrations on the web.

Particle Setting

[Texture](#)

- **Diffuse** - You can change the color or image for each particle.
- **Opacity** - This parameter decides the shape and the transparency of your particles.
- Please refer to [Multiple Channel Texture Mapping](#) for more details.



[Blend Mode](#)

The three radio buttons in this group define how the particles are to be blended with the background.

- [Alpha](#) - You may see the original color of the image for each particle.
- [Addition](#) - The RGB color of the image for each particle will be added onto the color of the background. This parameter is useful especially when you want to create glowing particles in your projects.
- [Subtraction](#) - The RGB color of the image for each particle will be subtracted from the color of the background.



Alpha

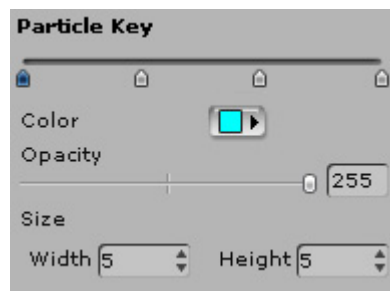
Addition



Subtraction

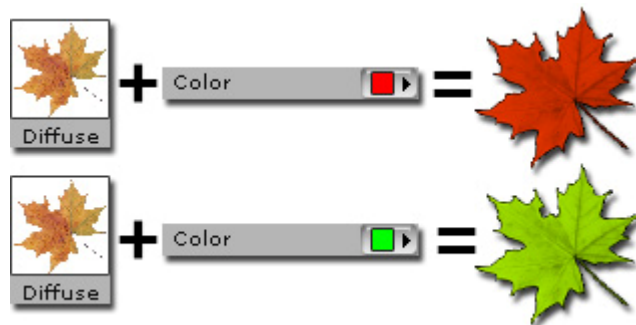
iClone provides each particle with four keys for the duration of its life. Every particle key stores the **Color**, **Opacity** and **Size** data, which will allow you to create **Fade In/Fade Out** effect for individual particles.

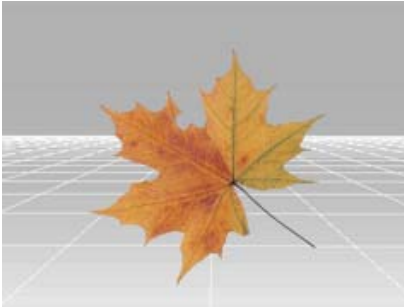
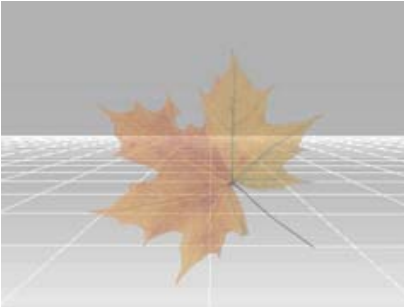
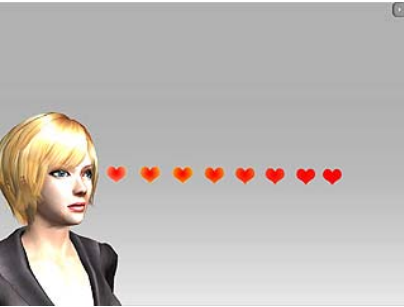
- Click one of the four keys to change the **Color**, **Opacity**, and **Size** data in of the key.
- You may drag the middle two keys to re-define the timings of these two keys during the particle's life.



Particle Key

- [Color](#) - Define a color to be blended with the image you load for the particles when they are generated/eliminated.



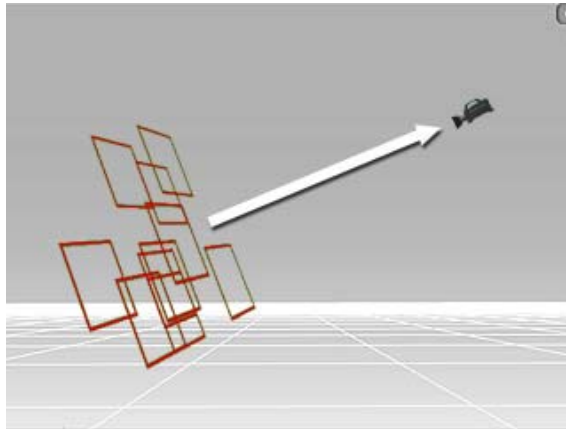
	• Opacity - Set the level for each particles to be transparent as it is generated/eliminated. Set 0 to make it totally transparent and 255 for opaque.   Opacity = 100 Opacity = 50 • Size The size of each particle can be modified via the settings in this group so it transforms gradually and linearly within its life span.   (10x10) → (10x10) → (10x10) → (10x10) (10x10) → (50x50) → (20x20) → (80x80)
	The particles rotate as long as you modify the settings in this group. • Initial Angle - By setting the value in this box, each particle tilts clockwise in the angle of this value as being generated. The range is from 0 to 359 degrees. • Angular Velocity - These settings keep each particle rotating individually in different velocity. You may set the range from 359 degrees to 359 degrees. A positive/negative number constrains the particles to rotate clockwise/counterclockwise. The larger the number is, the faster the particles rotate. The relationship of the Min and the Max follows the formula: Min <= Max.
Rotate	
Softness Strength	Drag the slider to decrease the seams as the particles intersect with other objects in the scene, which improves the realism of the particles.



Softness Strength = 0

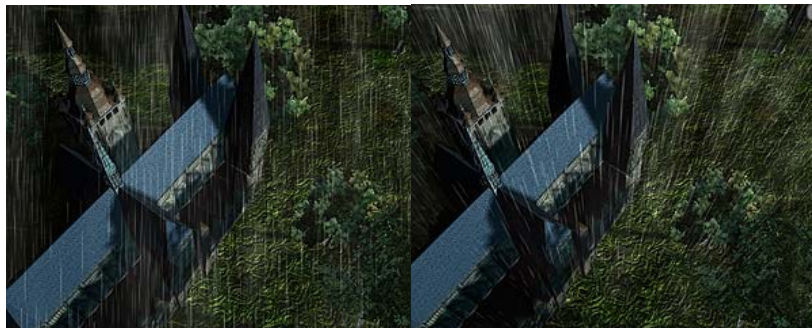
Softness Strength = 100
(Seamless)

Basically, each particle is a matted billboard that will be facing the current camera all the time. However, if you want the camera to view above or beneath the particle, you will need the **Face to** feature to get desired result.



Face to

- **Face Cam**: This option is suitable for non-directional particles such as fire, fog or storm.
- **Vertical**: This option aligns the particles to the Y axis, which is suitable for vertically directional particles such as raindrops.



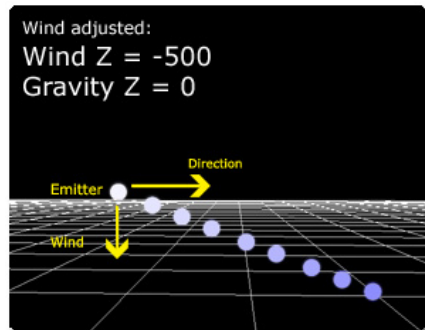
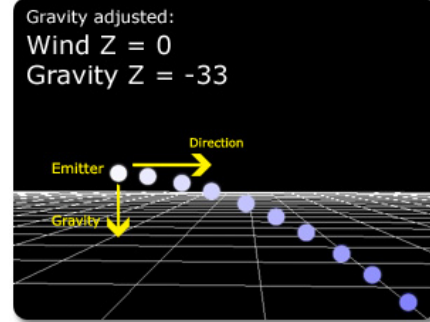
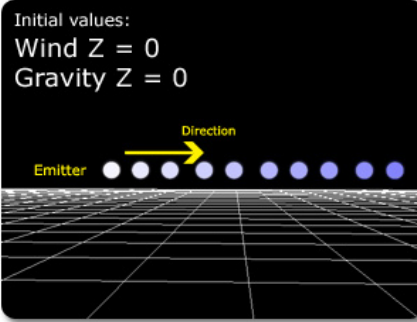
Face Cam

Vertical

- **Horizontal**: This option aligns the particles to the floor, which is suitable for horizontally directional particles such as ripples.

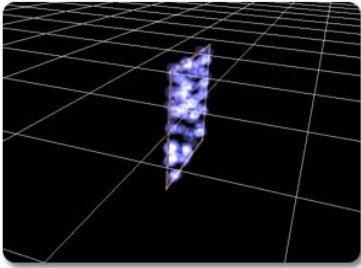
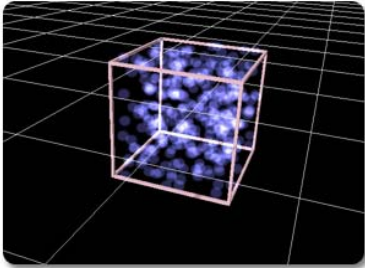
	 Face Cam Horizontal
<u>Life (frame)</u>	The parameters define how long each particle lives. You can make your particles disappear at random ages from Min to Max frames. • Min - The least number of frames for each particle to live. The value can be set from 0 to Max. • Max - The highest number of frames for each particle to live. The value can be set from Min to 99999.

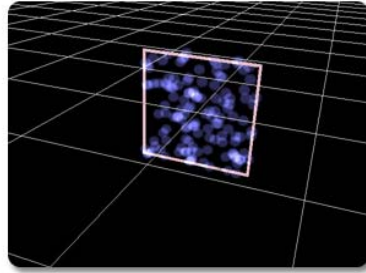
Force	
<u>Gravity</u>	• It creates a force field to pull particles in a fixed direction specified by three parameters. The strength of the field increases as the values move up. The speed of the particles are accelerating per unit of time. • X - Particles are pulled along the X-axis. The range is from -99999 to 99999. • Y - Particles are pulled along the Y-axis. The range is from -99999 to 99999. • Z - Particles are pulled along the Z-axis. The range is from -99999 to 99999.
<u>Wind</u>	• It simulates the effect of wind on the particles. The particles increase their velocity along the direction you set. However, the speed is constant instead of accelerating per unit of time. • X - Particles are blown along the X-axis. The range is from -99999 to 99999. • Y - Particles are blown along the Y-axis. The range is from -99999 to 99999. • Z - Particles are blown along the Z-axis. The range is from -99999 to 99999.



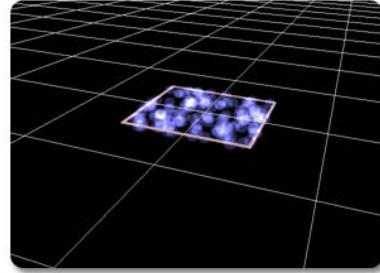
► Adjusting Emitters

If you totally understand how the emitter links to its parent, please read the following section for further adjustments to the emitter itself.

Emitter Setting	
Emit On / Off	You may define when the emitter starts to emit and when to stop by clicking the On/Off buttons in the Emitter Setting section. Once you click any one of the two buttons, you set an Emit key on the timeline. Therefore, one emitter is able to send particles intermittently.
Quota & Emit Rate	• Quota - This defines how many particles are provided when the project plays back. Once the amount of the particle alive hits the number of Quota, the emitter pauses to send off particles. • Emit Rate - This enforces the emitter to eject specified number of particles per second.
Emit Volume & Position	Please keep in mind first that there is an invisible cube container in which emitters distribute averagely. • Emit Volume - There are three parameters which modify the dimension of the container. Since the emitters spread averagely within this container, they can create an illusion that the volume of the particles is increased. • Position - These X-Y-Z parameters move the cube of emitters to a specific position in your project.  (100, 100, 100) (0, 100, 100)



(100, 0, 100)

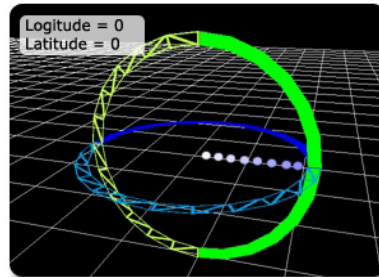


(100, 100, 0)

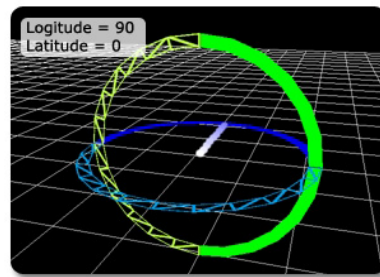
With the idea of longitude and latitude system, the emitter obtains the direction for sending off the particles. Please notice that the effect can be observed when the [Velocity](#) parameter increases.

- **Longitude** - This value decides the degree of the angle on the floor. 0 degree sets the direction along the positive X-axis. The range is from -180 to 180 degrees.
- **Latitude** - This value lifts up/push down the direction to the north/south pole. The range is from -90 to 90 degrees in which 90 degrees set the direction to up.

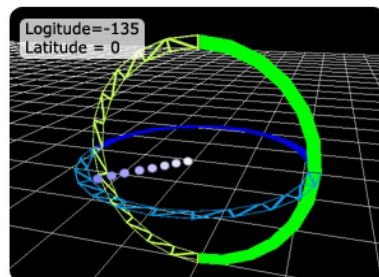
Direction



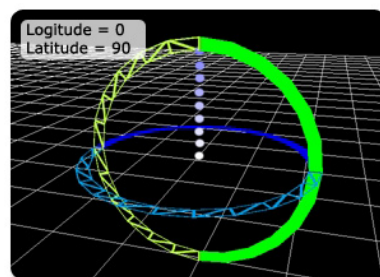
(0, 0)



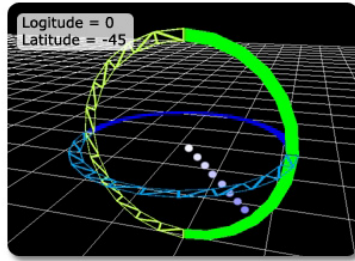
(90, 0)



(-135, 0)



(0, 90)

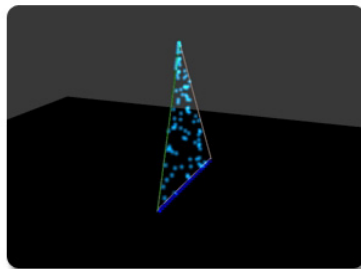


(0, -45)

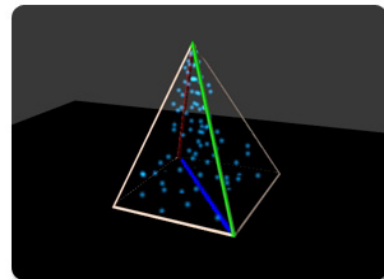
To understand these two parameters, you must think of a pyramid in your mind first. The top of the pyramid is the position for the emitter and it ejects particles straight to the bottom of the pyramid.

- **Spread** - This value decides the angle of the two opposite sides (the red and green lines in the illustration as **Diagonal** equals to 0) of the pyramid. The range is from 0 to 180.
- **Diagonal** - This value specifies the rotation angle of the diagonal line (the blue line in the illustration) of the pyramid bottom. The range is also from 0 to 180. Please notice that the area will be maximized when the **Diagonal** is set to 45 and 135 degrees.

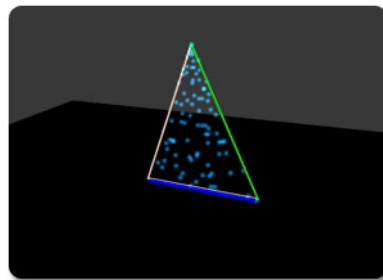
Spread & Diagonal



Diagonal = 0 degree



Diagonal = 45 degrees

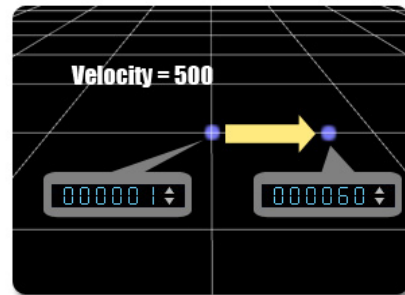
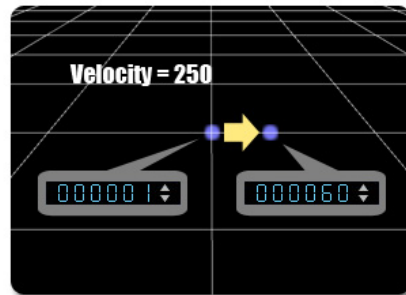


Diagonal = 90 degrees

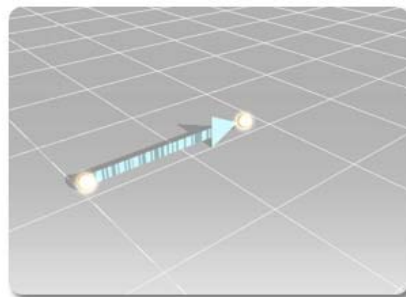
"Diagonal value changes from 0 to 90 degrees"

[Velocity](#)
&
[Direction](#)
[Randomness](#)

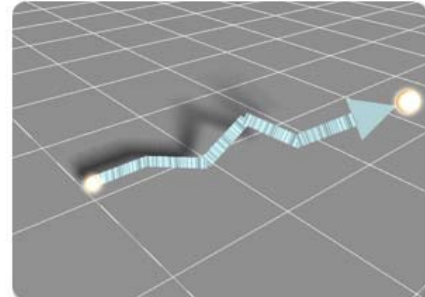
- **Velocity** - This value assigns the speed to each particle for moving. The range is from 0 to 99999.



- **Direction Randomness** - Initially, each particle moves along a path of a fixed straight line. This attribute distorts this line so the particles move individually along different distorted lines. The range is from 0 to 359. Each particle slightly changes its direction randomly in accordance with the angle from x, y and z axis. It is useful when you want the particles to imitate the motion of the snow or falling leaves.



Direction Randomness = 0



Direction Randomness = 30

► Moving, Rotating Emitters

There are methods to transform a particle set:

Using Transform Data

1. Go to the start frame when the particle set begins move or rotate. Select the pivot of the particle set.
2. In the **Modify** page, change the **Move/Rotate** values in the **Transform** section. A new key is added to store the transform status of the set.

You may also drag the gizmo by using the  tool or transform [Gizmo](#) to set a key for particle set.

3. Go to another frame when the set stops transforming. Change the **Transform** values again.

Moving along a Path

1. Go to the start frame when the set of particle begins move along a path. Select the pivot of the particle set.
2. Click the **Pick Path** button in the **Path** section and click on the desired position of the target path.
3. Go to another frame where the particle set stops moving along with the path.
4. Click the **Pick Path** button again.

* Please refer to [Path](#) for more information.

⦿ Terrain

▶ The Concept of Terrain System

The **Terrain** serves as solid ground that **Actors** and **iProps** can stand on or move along but not pass through. With the use of **Terrain**, users have several benefits:



Benefits

- **Director Mode:**
 - o You may control your actors', animals' or vehicles' movement along the (terrain) surface as if you were playing a 3D game. Please refer to the [Snap To or Follow Terrain](#) section for more information.
- **Editor Mode:**
 - o You may directly place objects right on the terrain and edit the movement and positioning along the terrain without the need to worry about making height adjustments.
 - o You are allowed to grow grass or trees on the terrain surface.
 - o The terrain cannot be selected with the mouse. This prevents you from accidentally selecting the terrain or making unwanted changes.

Limitations

- There can be only one terrain per project.
- The moving object can not move up a 90-degree angle. It will instead jump to the higher surface abruptly.
- Any link or attach relationships will be removed once a prop is converted to become part of the terrain.

► Snap To or Follow Terrain

iClone allows you to drag and move actors or props along the terrain in three modes: **Off**, **Snap to Terrain** and **Follow Terrain**.



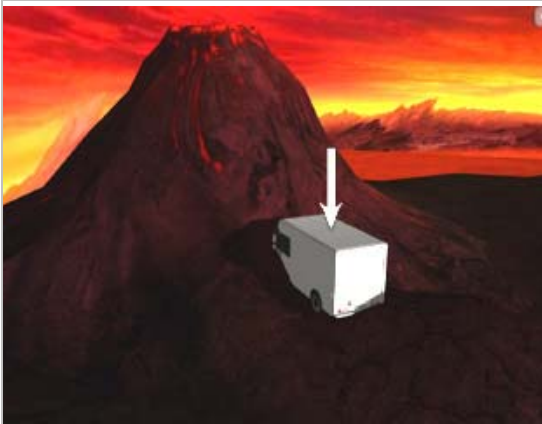
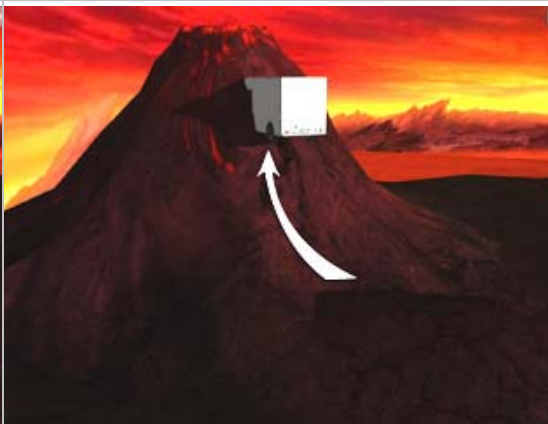
Drag and Drop a Prop to the Scene

Off

Off is the method to move objects without regarding the contours of the terrain. You can always move in any direction and the object will pass through the terrain as if it is not a solid object.

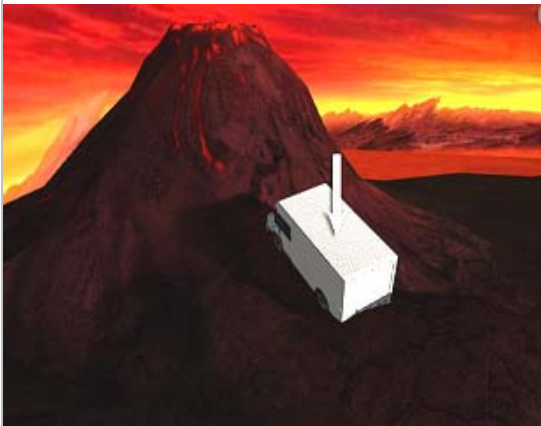
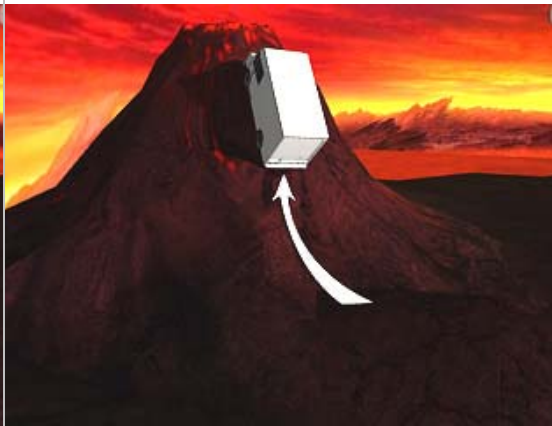
Snap to Terrain

When you drag an object to move along the terrain, the **Move - Z** data of the object will adjust automatically. This way the object's pivot will always move up and down along the contours of the terrain. This method is unrealistic for vehicles such as cars or bikes.

	
Snaps instantly when dragging and moving	Z value changes to snap to the terrain

Follow Terrain

When you move an object along the terrain, not only will the **Move - Z** data of the object be adjusted automatically, but the **Rotate - X, Y, Z** as well because **iClone** tries to match the angle of the object's Z-axis to the **Normal Directions** of each face of the Terrain. This is the ideal method to use for all kinds of vehicles.

	
Snap instantly when dragging and moving Rotate - X, Y, Z changes to fit the normal	Z value changes to snap to the terrain Rotate - X, Y, Z changes to fit the normal

► Create Your Own Terrain

Other than loading **iClone** terrain from the supplied templates, you can also load a large-sized 3D surface (or prop) and turn it into terrain. In addition to that, you can also add any static 3D props and make them part of the terrain. For **iClone 2.X** users, you may apply a 3D Scene and then convert it to **Terrain** since the 3D Scenes are considered as props in **iClone3**. Please note that if there is no terrain defined in the project, **iClone** takes the floor (Z axis = 0) as the default terrain.

Convert large-size 3D Surface or Props to Terrain

1. Go to **Set/Props** or **Stage/3D Scene**.
2. In the **Content Manager**, apply the desired large-size surface or prop to the project.
3. Right-click on this object and select **Add to Terrain**.

The surface or prop then will be converted to the **Terrain** of the project.

How to Add a Terrain

1. Go to **Set/Terrain**, in the **Content Manager/Template** tab, apply the desired terrain template into the 3D viewer as the base terrain.



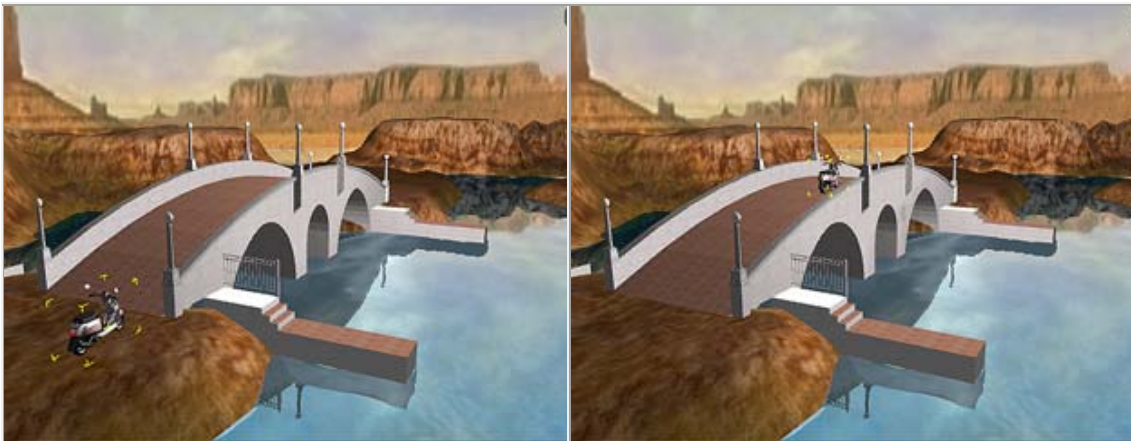
Note:

You can also use the following steps to create your own detailed terrain.

2. Apply props that you intend to become part of the terrain from the **Template** or **Custom** library.



3. Right Click on the props individually and select **Add to Terrain** from the right-click menu.
4. Press down the  button and use the move tool to move your actor or iProp over the terrain. Watch as it follows the contours of the terrain, including the bridge in the example below.



Select the prop for moving

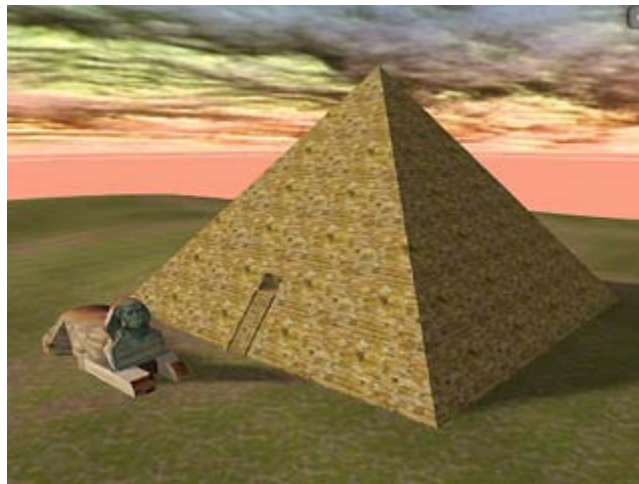
Use the move tool to move it and it will follow and snap to the terrain

► Turn Bounding Mesh On or Off

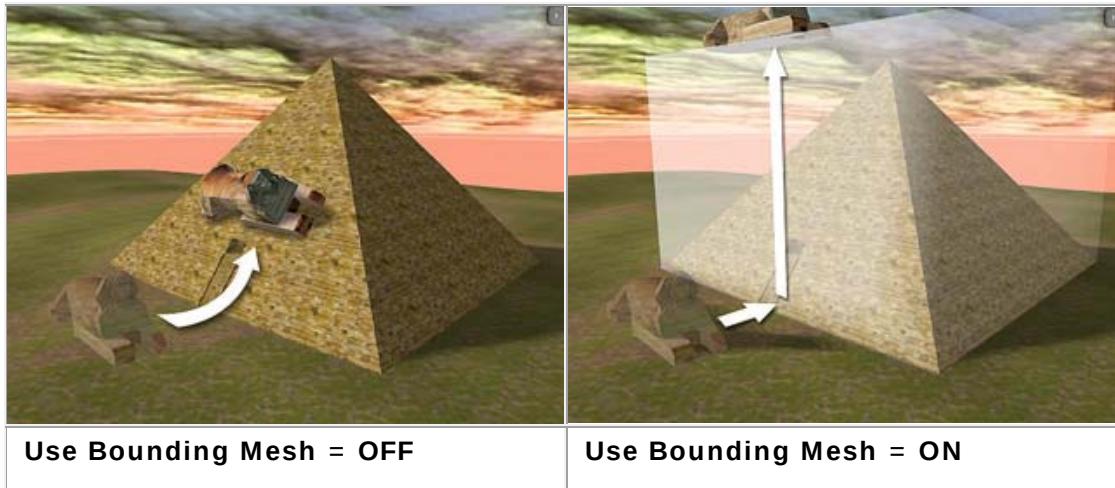
In the 3D world, each object has its own bounding mesh, which is basically a box that identifies the XYZ ranges of the object. You may decide to turn it on or off after you convert the object to become part of the terrain. Then you may move objects or plant vegetation over the mesh itself or the bounding mesh that surrounds it.

The Difference between On and Off

1. In the 3D Viewer [Control bar](#), switch the mode to [Snap to Terrain](#) or [Follow Terrain](#).
2. Apply a prop (Pyramid) to the project. Right-click on it and select **Add to Terrain**.



3. In the **Scene Manager**, pick the prop under the **Terrain** entry.
4. Go to the **Terrain Component** section of the **Modify** page. Uncheck the **Use Bounding Mesh** box.
5. Apply another prop (Sphinx) and drag it across the terrain to see the result.
6. Check the **Use Bounding Mesh** box. Drag the prop across it again and see the different result.

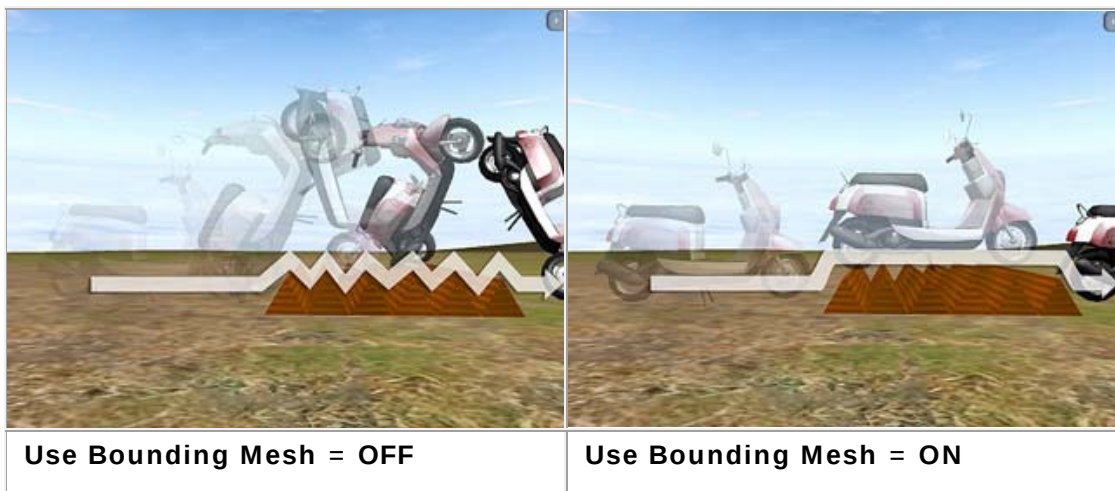


Note:

- To examine the bounding mesh of a prop before adding it to the **Terrain**, go to the **Scene Manager** and change the setting from Normal to Bounding Mesh. You can also **Right-Click** on the prop, choose **Display** then set the **Render State** to **Bounding Mesh**.

Why Turn Bounding Mesh On?

This feature is useful if you want to utilize the **Follow Terrain** or **Snap to Terrain** function in iClone . It can prevent your objects from twitching as they are crossing a complicated but small folds of terrain components.

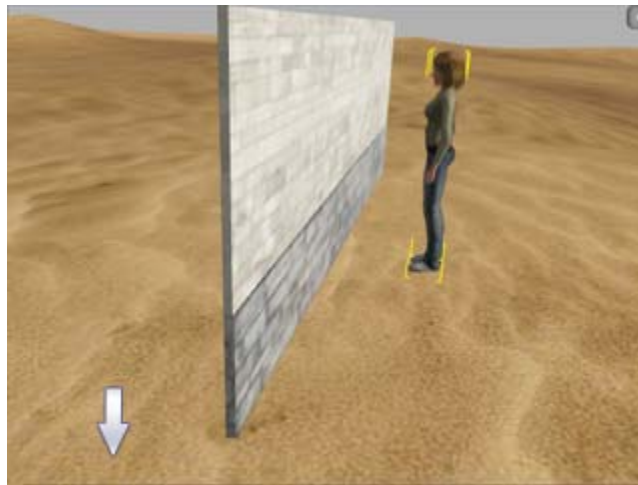


► Customize a Terrain with Collision Detection

If props are added, they can be made part of the terrain. If the prop is high enough, the actor will not be able to pass through it if the **Collision** setting is activated.

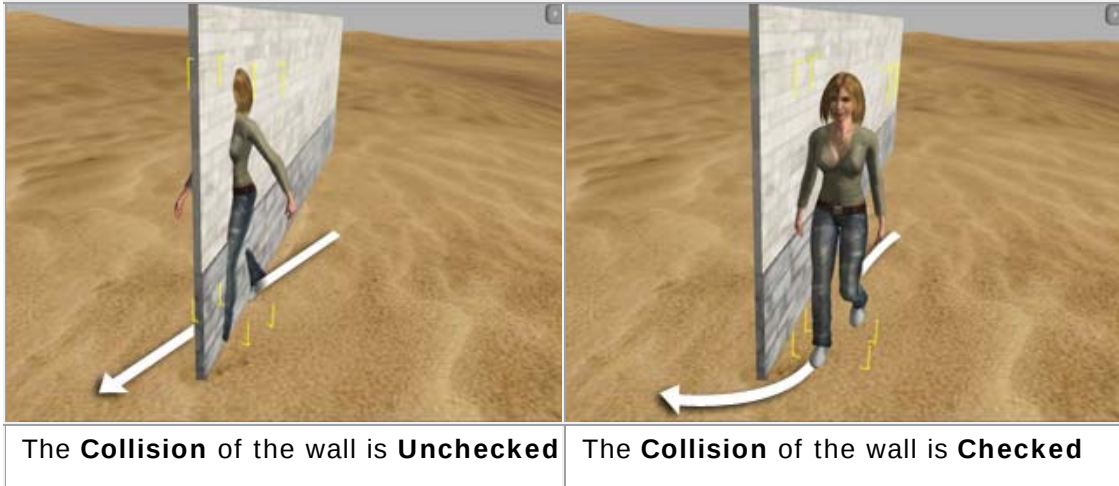
Customize a Terrain with Collision Detection

1. Follow the step 1 and 2 above.
2. Select the prop, such as a wall, you want to be a block to hinder the moving object.
3. Go to the **Set/Props/Modify** page. In the **Prop** section, check the **Collision** box.
4. Right-click on the prop and select **Add to Terrain** from the right-click menu.
5. In the **Director Mode**, direct the moving object to try to move through the terrain wall.



Click on the spot the arrow is indicating to set the destination the actor should walk to.

The actor will try to bypass the wall as it detects the collision.



Note:

- It is like adding a sensor in front of the **Actors** or **iProps**. **iClone** probes the distance that is blocked ahead of these two types of objects and determines whether to stop or bypass the object that is blocking it.
- The probe distance starts at the object's pivot.

Technique to Set Blockage

If you convert a prop to become part of the terrain but still want the actor or iProp to be able to pass through the holes or gates of the prop, you will not be able to achieve this when you turn on the **Collision Detection**. In this section, we will show you how to achieve this goal by using hidden 3D blocks to set the Collision Detection.

1. Please apply the Arc de Triomphe prop into project.
2. Turn on the **Collision** of it and **Add to Terrain**.



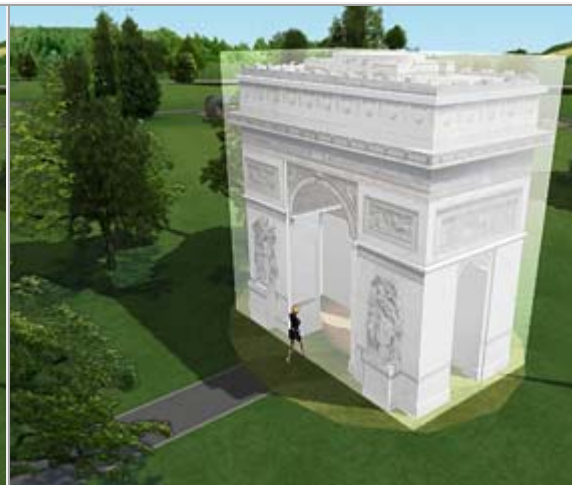
3. Command the actor to move through the gate to the place marked by the blue circle.



The actor will stop in front of the gate instead of passing through it. This is because we turned on the **Collision** detection and the prop generates blockage equaling its entire bounding mesh.



The actor stops in front of the prop.

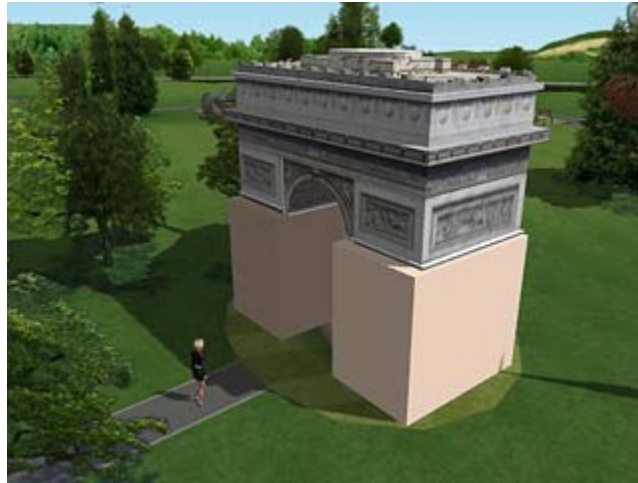


The blockage of the prop.

To solve this problem, please follow the steps below.

1. Apply the Arc de Triomphe into project.
2. **Do Not Turn On** the **Collision** and **Add to Terrain**. This will allow the actors or iProps to pass through it.

3. Apply two **3D Blocks** to the project. Adjust the size and position of the blocks.



4. Set their **Opacity** to 0.

5. Turn their **Collision** on and then **Add to Terrain**.



The blockage of the two 3D block props.



The actor can now pass through the gate.

🕒 Interactive Dummy Helper

The interactive dummy helper is an AML scripted iProp which defines the interactive behaviors between a prop and an actor or between actors. By linking the interactive dummy helper with any prop or actor, you can easily add interactive behaviors to selected targets. Please access the Interactive Dummy Helpers from **Set - Props - AML Templates** in the content manager.

Operate Dummy

This type of dummy helps you with grabbing another prop or sitting on a specified prop:

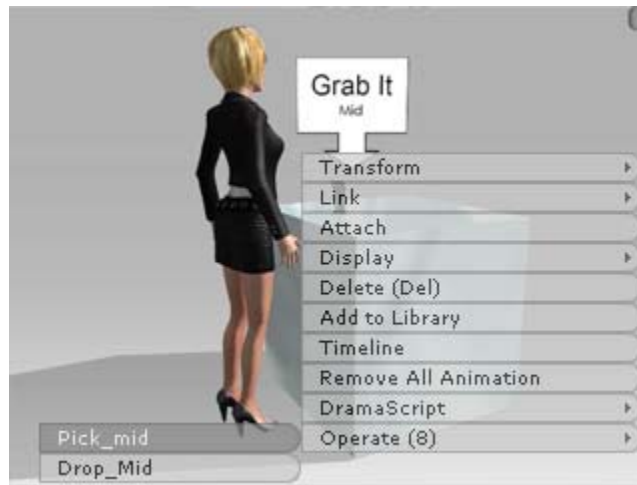
Grab

First take the **Grab_It_Mid_Dummy** as an example.

1. Please drag and drop **Grab_It_Mid_Dummy** to an adequate height (Z = 104 is the best choice).



2. Right click on the dummy and select **Operate/Pick_mid**.

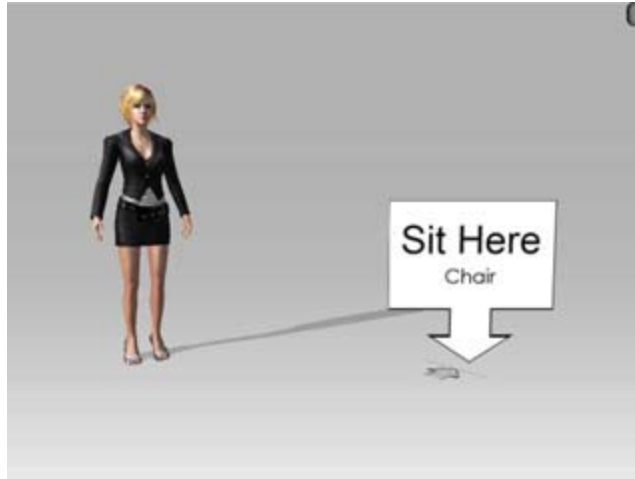


The actor walks up to the dummy and picks it up.

Sit Here

In this section, we will take **Sit_Here_Chair_Dummy** as example.

1. Please drag and drop **Sit_Here_Chair_Dummy** to desired location, please be aware that the small arrow indicates where the actor will move to.



2. Right click on the dummy and select **Operate/Sit_Down**.



The actor walks to the pivot of the dummy and sits down.

Note:

- You may link any prop to the **Grab** dummy to have the actor to pick it up along with the dummy.
- In the **Director Mode**, pick the **Active Actor** first and then [Ctrl + click](http://reallusionchannel.com/VID/Tutorial/amtemplate.html) on the dummy to have the actor proceed the default motion built into the dummy.
- Please refer to the video for more information:
<http://reallusionchannel.com/VID/Tutorial/amtemplate.html>

Character Interaction Dummy

This type of dummy triggers the current actor to do the animations embedded in the dummy. Or we can use character interaction dummies to trigger two actors to animate at the same time.

Single Actor

Here we use the **Hello** dummy as an example.

1. Drag and drop the **Hello** from the **Prop/AML Template/Character_Interaction** library.
2. Pick the actor as the **Active Actor** and then right click on the dummy.

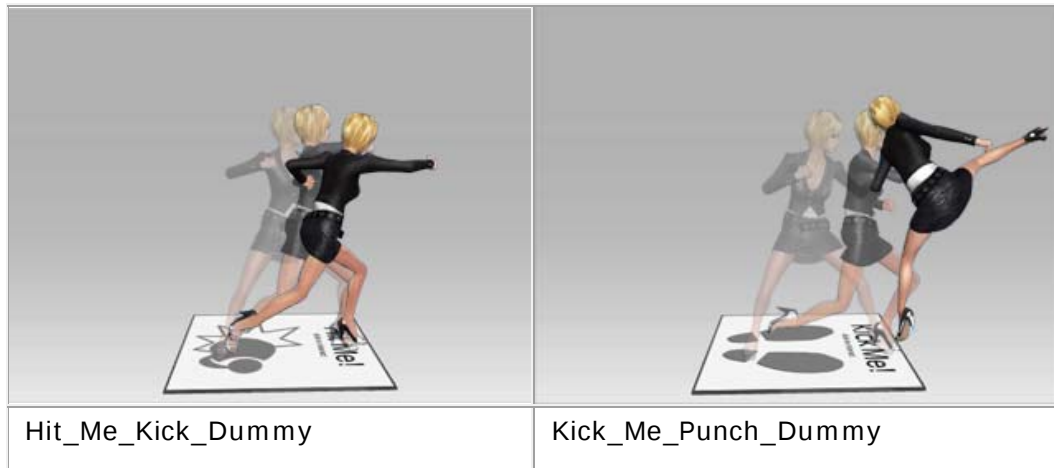


3. Select **Operate/Hello** in the right-click menu. The actor will start to wave his/her hand.



The motion clip will then be inserted into the **Operate** track of the actor. You may also utilize the **Hit_Me_Kick_Dummy** or

Kick_Me_Punch_Dummy to have the actor do kicking and punching motions.



Double Actors

If you want to have two actors interact with the dummy, a few more steps are necessary to achieve the goal. We will still use the **Hello** dummy in our example:

1. Drag and drop the **Hello** dummy from the **Prop/AML Template/Character_Interaction** library.
2. Select the dummy and **Link** it to the **Reacting Actor**.



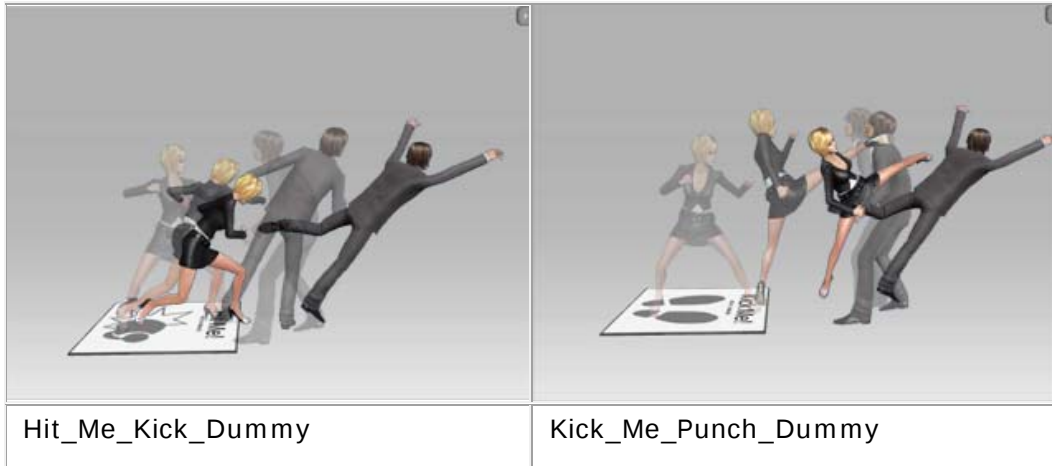
3. Pick another actor as the **Active Actor**.



4. Right click on the dummy and select **Operate/Hello** in the right-click menu.
The active actor starts to wave his/her hand and later the reacting actor will wave back.



The motion clips will then be inserted into the **Operate** tracks of both actors. You may also utilize the **Hit_Me_Kick_Dummy** or **Kick_Me_Punch_Dummy** to have the two actors do kicking and punching motions.



Note:

- To set the right path for character interaction, please keep the text side of the interactive dummy to the **Reacting Actor** and the graphics icon side to the **Active Actor** as shown in the pictures above.
- When you are satisfied with the result, you may remove the dummy, or set its [Opacity](#) to 0 to hide it from being rendered.
- The adequate distance between the interactive dummy and the **Reacting Actor** is 100 units for the punch dummy and 200 units for the kick dummy.
- In the **Director Mode**, pick the **Active Actor** first and then **Ctrl + click** on the dummy to have the actors proceed the default motions built into the dummy.
- Please refer to the video for more information:
<http://reallusionchannel.com/VID/Tutorial/amltemplate.html>

☉ Flexible Props

iClone provides you with flexible props, **Flex Props**, to simulate soft objects such as skirts, ponytails or curtains. This type of prop sways and vibrates along with the wind or any moving objects if it is attached to them.

After you apply a **Flex** prop, you may adjust settings to change its behavior:

- 1. Select the flex prop.
- 2. Go to the **Set/Props/Modify** page. Scroll to the **Flex** section and click the **Flex Setting** button.

The **Flex Setting** panel opens to allow adjustment to the settings.

Note:

- You may play and modify the settings simultaneously to see how the settings influence the **Flex** props in real-time, just like with **Particle** effects.
- Please refer to the [Flex/Spring FPS Sync](#) section for more information about the synchronizing solution for exporting a project with **Flex** objects.
- You may click the **Save Settings** button to save all settings into a file and then apply them to another **Flex** prop by clicking the **Load Settings** button.
- If you find it hard to get optimal results, please refer to the settings of the flex props in our template library which are all optimized.

Flex Property - Stiffness and lift

The **Stiffness** defines the resistance of the **Flex Props** to deflection or deformation by an applied force. The higher the value, the more stiff the prop is and vice versa.



The **Lift** is aerodynamic force that is perpendicular to the surface of the **Flex** props. Increasing the value may have the surface raise higher. If one side of the flexible surface is fixed, the **Lift** may influence the angle for it to fly.

Flex Force - Gravity, Wind and Centripetal Force

The **Gravity** is the agency that gives objects weight. In **iClone**, this value may be manually set to go along the three axis. This value causes **Flex** props to accelerate along the specific direction.



Gravity Z = -200



Gravity Z = 200

The **Wind**, however, influences **Flex** props to move along the specific direction with a fixed speed.

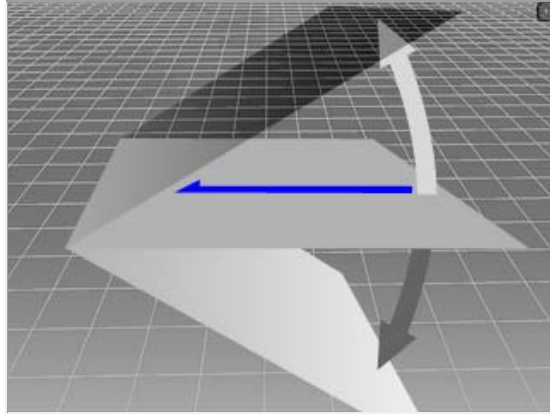


Wind X = -200



Wind X = 200

The **Centripetal Force** is the external force required to make a body follow a curved path. Hence centripetal force is a kinematics force requirement, not a particular kind of force. For a **Flex** prop, **Centripetal Force** is the force toward the fixed ends.



The blue arrow represents the direction of the **Centripetal Force** when the surface rotates.

Turbulence - Frequency and Strength

The **Turbulence** is a fluid regime characterized by chaotic, stochastic property changes. You may modify the **Frequency** to adjust the number of occurrences of the turbulence in one time unit. The **Strength** value, however, defines how hard of a turbulence force the **Flex** props can withstand.

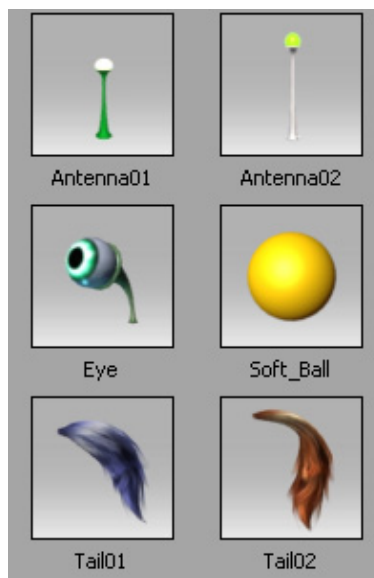
⦿ Spring Props

iClone provides **Spring Props** to simulate the dynamic behavior of bouncing objects. This type of flexible prop can spring back and forth by its own momentum, or be affected by the movement of the parent object it is attached to.

Click the thumbnails below to view demo videos. You may also refer to the [Bouncing Body Parts](#) section for more information about the spring effects on human body parts.



Please go to the **Set/Props/Template/Props/Spring** folder to choose any of the spring prop templates.



Parameters:

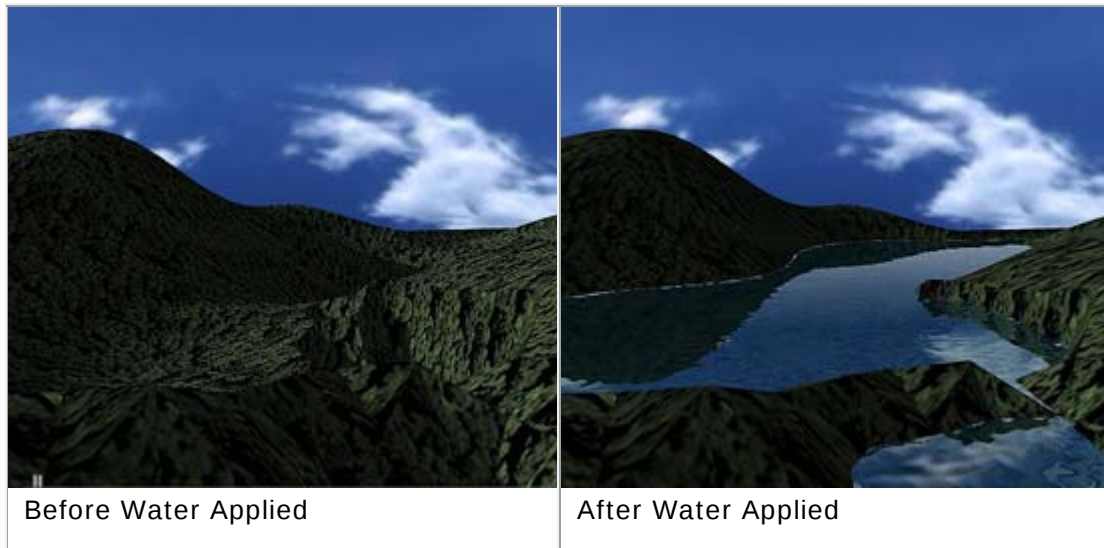
You can do customize the setting of spring dynamics by altering the following parameters:

- **Mass:** This defines the object's weight which will influences the prop's bouncing angle. The higher the **Mass** value, the larger the bouncing angle. A higher value makes the prop bounce heavier.
- **Strength:** This defines the softness of the prop. The higher the value, the stiffer the prop will be. It also can be seen as the duration until the prop finishes bouncing as a reaction.
- **Bounciness:** This defines the remaining bounce time after the master movement stops.

⦿ Water

iClone introduces the **Water Prop**. It is not a static prop but actually a floating one. With reflection and refraction characteristics, it presents realistic moving water in your scenes.

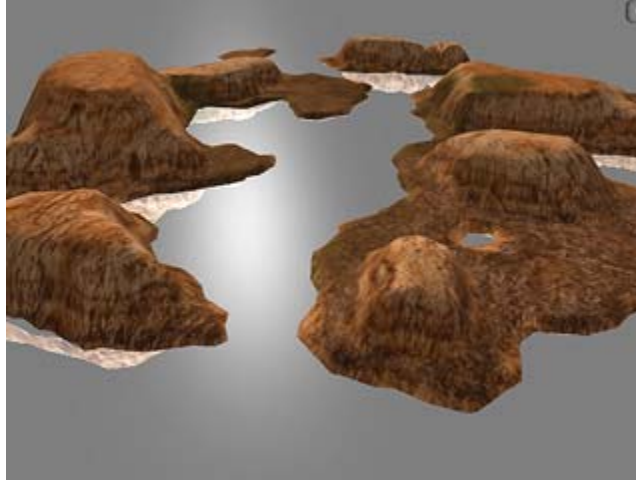
1. Go to **Set/Water**.
2. In the **Content Manager**, apply any template to the current project.
3. In the **Basic Water Parameters** section, adjust the value to see the changes.
4. Press Play to see the result.



You may use **Ctrl + F7** to turn water effects on/off or go to **Modify** page to uncheck the effects of **Reflection** and **Refraction** to decrease the strain on your system resources.

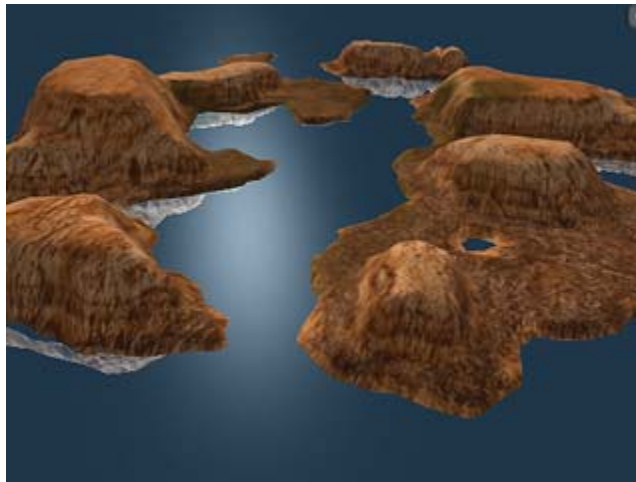
► Basic Water Parameters - Color

Change the Color



The Initial Look of the Water.

1. Go to the **Set/Water/Modify** page.
2. In the **Basic Water Parameters** section, click the color box to select the desired color.



In this example the Color changes to blue.

Note:

- Because the water reflects the color of the **2D Background**, if you want to see the real color of the water, please change the **2D Background** to pure black.
- The lower the **Saturation** and **Luminosity** of the color, the more realistic the water will look.



The blue water with an unrealistic high saturation and luminosity.

► Basic Water Parameters - Wave

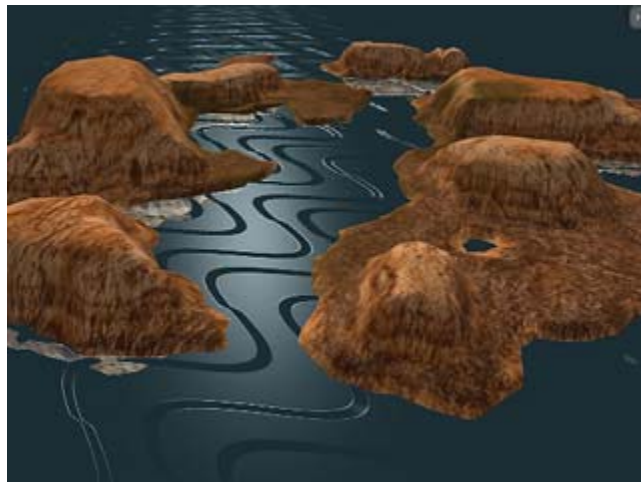
The wave of the water utilizes the **Normal** mapping technique so that the face count of the water remains minimum while the waves can still be extremely realistic.

Change the Wave

1. Please click the **Launch** button to start your favorite image editor to paint on the image. Remember to save the image after editing.

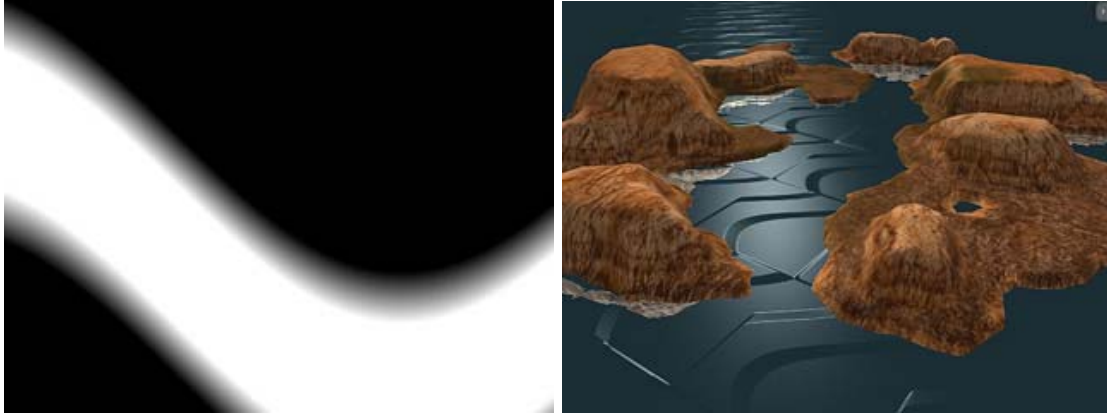


2. Click the **Update** button in **iClone** to see the result.



Note:

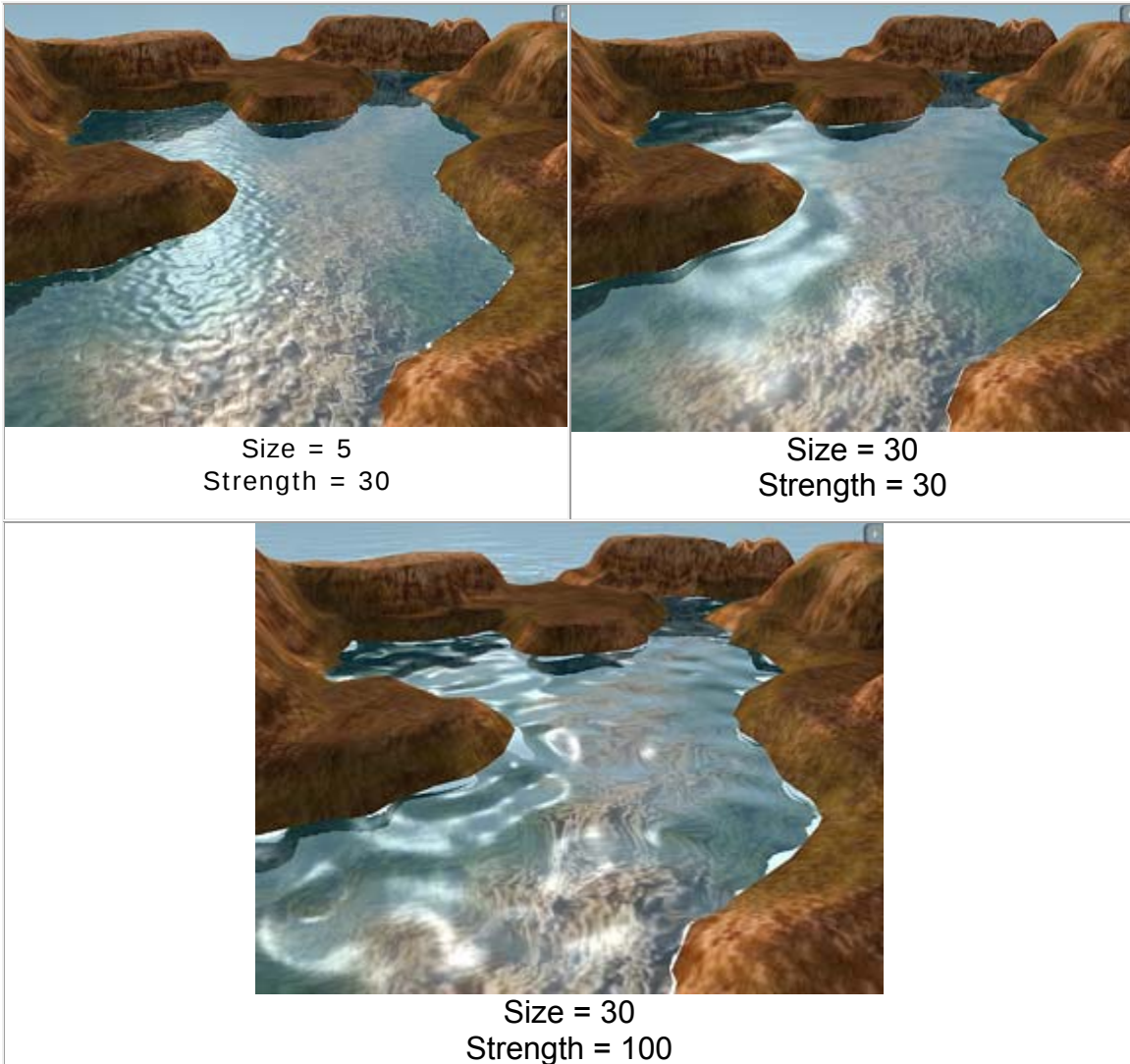
- You do not have to worry if you paint a color or a grayscale image because **iClone** automatically renders the image as a grayscale one.
- You may alternatively click  button to load an image to form the waves. Click the  button to remove the wave style and click the  button to save the style as an image file.
- It is highly recommended to wrap around the edges of the image to prevent sharp edge lines and provide a seamless flow.



Non-wrapping images will cause the water to look unrealistic.

Size and Strength

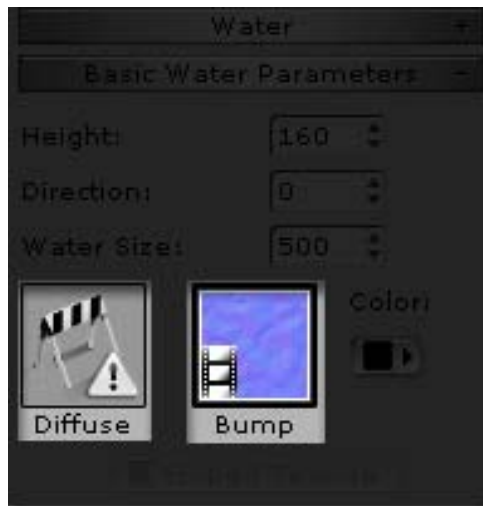
You may specify the density of the wave image in the water prop by setting the **Size** value. If you want to change the amplitude of the wave, adjust **Strength**.



► 3 Types of Water

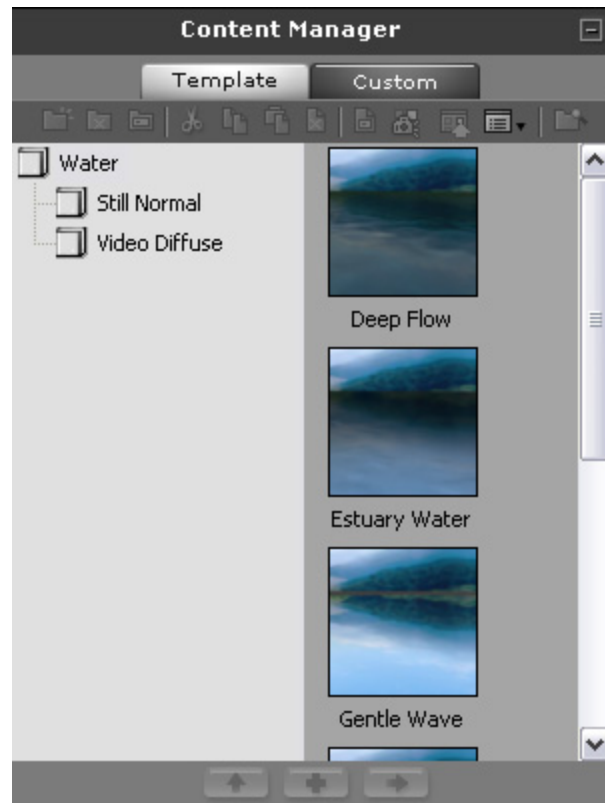
iClone4 enhances the water with video texture, you may access to the video based water library from the root gallery which shows the unparalleled visual quality.

1. Apply a water template from **Set / Water**.
2. There are two material channels included in the water modify panel.
3. You may change video diffuse and video normal to enhance the look of the water ripples.



iClone categorizes water into three types:

- **Water (Video Normal):** These default water templates consist of video normal in the bump channel to create most stunning water effects.
- **Still Normal (Image Normal):** The water templates with image normal in the bump channel where the UV moves itself to create the movement.
- **Video Diffuse (Video Diffuse and Video Normal):** Templates with video diffuse in the Diffuse channel and the video normal in the Bump channel. Video diffuse templates consist of Video Diffuse and Video Normal.



Video Diffuse and Video Normal

The following video shows you the result when both channels' video sources are combined to enhance the quality and complexity of the water.

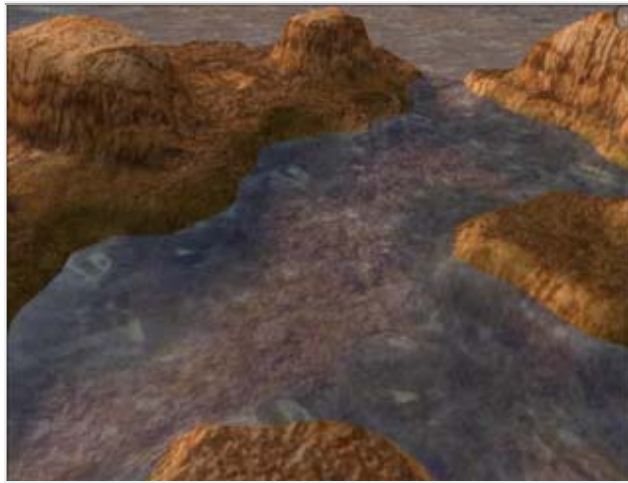


Video Diffuse with Video Normal

Video Diffuse - Quick Shader

Video diffuse allows you to view water in the Quick Shader mode. This can be of benefit when using a low performance computer system or just to lower the strain on your computer.

1. Double-click on the **Diffuse Map** icon to open a file.
2. Choose a video to import.



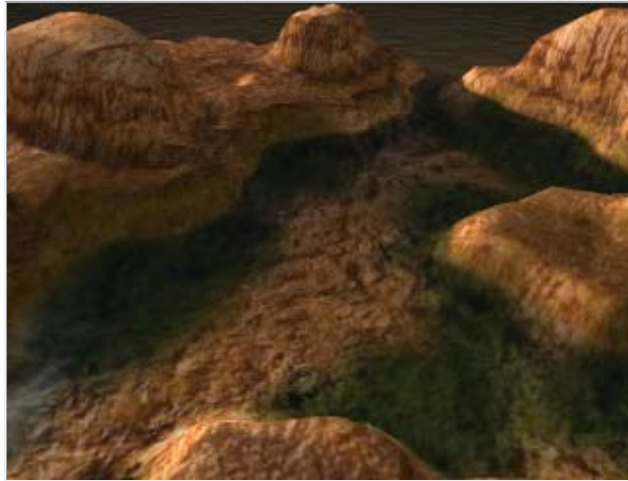
Video Diffuse

3. Applying the video diffuse to the diffuse channel immediately enhances the realism of the water.

Video Normal - Pixel Shader

Video normal allows you to view the water in **Pixel Shader** mode while editing in iClone.

1. Double-click on the **Bump Map** icon to open apply a video normal.
2. Applying the video normal increases the water ripples' realism.



Video Normal

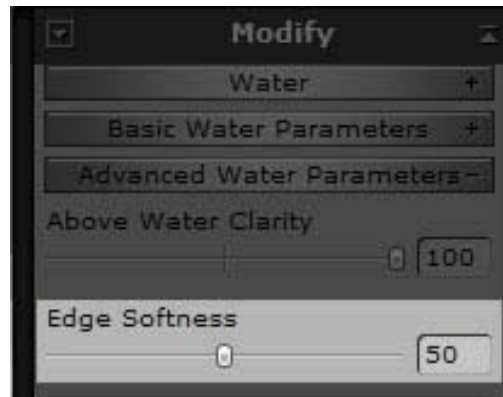
Note:

- o You may need to adjust the color of the water to a brighter degree in order to see the diffuse channel of the image/video.
- o If you change the water bump map channel to a video, the reflection of the prop offsets itself when adjusting **water strength**. We highly suggest you to use the **WaterNormal** videos in C:\Program Files\Reallusion\Shared\Shared Templates\Video\Water to get the best result.

► Water Edge Softness

Water Edge Softness allows you to reduce the sharpness of the edge to contact surfaces.

1. Select a water from the **Scene Manager**.
2. Under the water modify panel, go to the **Advanced Water Parameters** section.



3. Adjust the **Edge Softness** of the water. By adjusting this parameter you can turn sharp edges into soft edges.



► Advanced Water Parameters - Underwater Fog

If you want to create a mysterious or eerie atmosphere for underwater scenes, you can turn on the **Underwater Fog** feature. Please see [Basic Water Parameters - Color](#) and [Basic Water Parameters - Wave](#) before this section.



Underwater Fog OFF

1. Go to the **Set/Water/Modify** page and then scroll to the **Advanced Water Parameters** section.
2. Check the **Underwater Fog** box.
3. Click the color picker and select the desired fog color.
4. Enter a value for **Start** to specify where the **Fog** starts.
5. Specify the value for **End** to specify where the **Fog** ends.



Start = 0
End = 3500



Start = 1500
End = 3500

► Advanced Water Parameters - Reflection

You may want to change the way water reflects more of the surrounding environment to create a different look.

Reflection above the Water Surface

1. Go to the **Set/Water/Modify** page.
2. In the **Display** section, check the **Reflection** box.
3. Scroll up to the **Reflection** parameters.
4. If you intend to modify the reflection strength above the water surface, drag the **Above Surface Strength** slider.
The higher the value, the stronger the reflection shows on the water.
5. Increase the **Blur** value so the reflection becomes unclear.



Reflection = 10

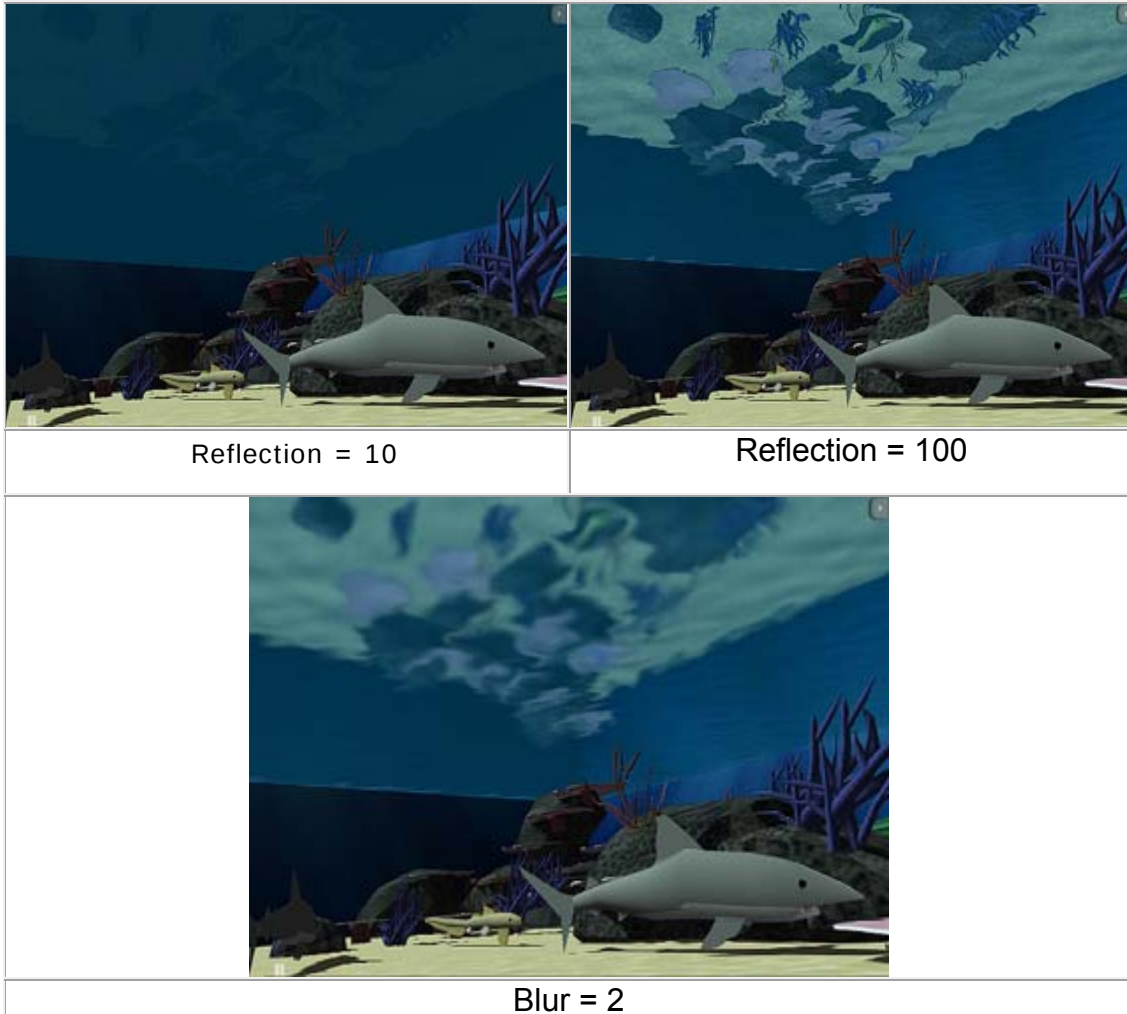
Reflection = 100



Blur = 2

Reflection under the Water Surface

You may follow the same steps as above to adjust the reflection under the water surface. This time use the **Under Water Strength** slider.



Note:

- If you cannot see the result, try to adjust the **Above Water Clarity** slider since it can change the **Transparency** of the water, which weakens the effect of reflection.

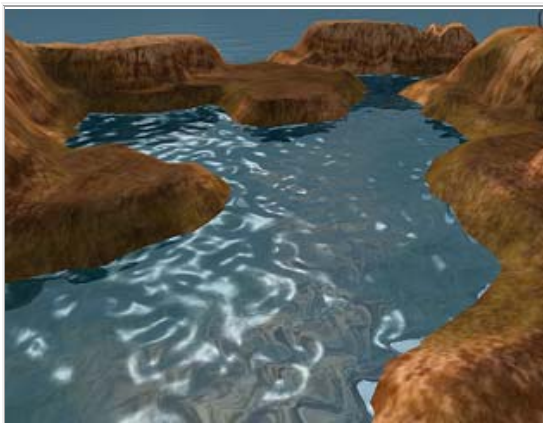
► Advanced Water Parameters - Refraction

In optics, refraction occurs when light waves travel from the water with a given refractive index into the air with another. **iClone** simulates this phenomena on the water surface.

Before we start this section, it is important to adjust the **Above Water Clarity** which specifies the purity of the water.

The Above Water Clarity

1. Go to the **Set/Water/Modify** page. Scroll to the **Advanced Water Parameters** section.
2. Drag the **Above Water Clarity** slider. The higher the value is, the clearer the refraction becomes.



Above Water Clarity = 30



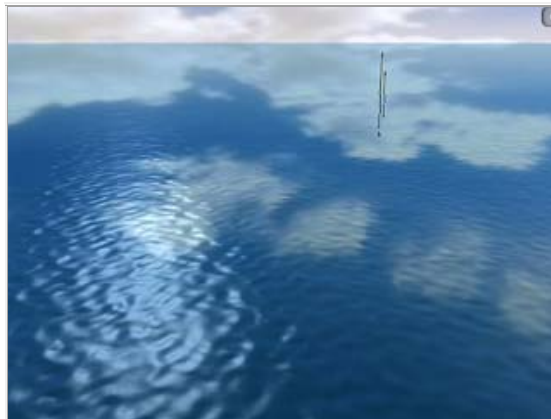
Above Water Clarity = 100

Refraction above the Water Surface

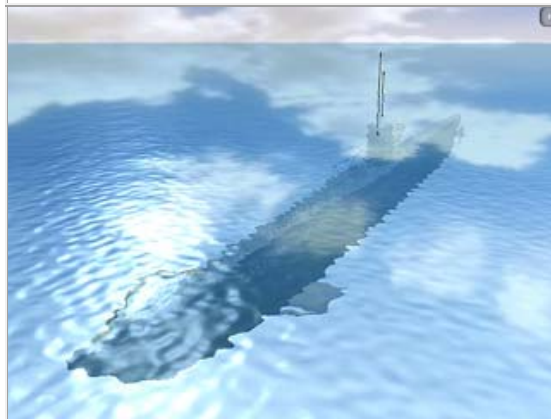
This parameter specifies how intense the refraction effect will be rendered when the camera is above water.

1. Go to the **Set/Water/Modify** page.
2. In the **Display** section, check the **Refraction** box.
3. Scroll up to the **Refraction** parameters.
4. If you intend to modify the refraction strength above the water surface, drag the **Above Surface Strength** slider.
The higher the value is, the stronger the refraction shows when the camera is above the water.

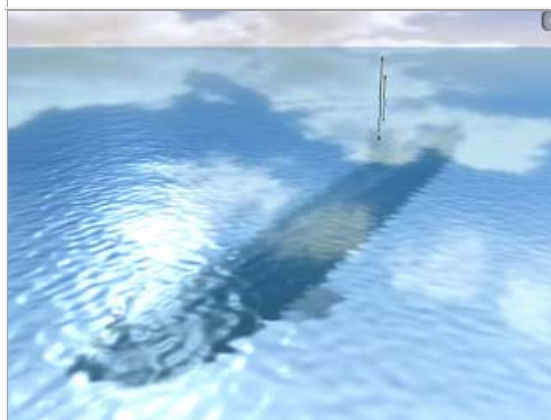
5. Increase the **Blur** value so the refraction turns to be more vague.



Refraction = 0



Refraction = 100



Blur = 1

Refraction under the Water Surface

You may follow the same steps as above to adjust the refraction under the water surface. This time use the **Under Water Strength** slider.

⦿ Video

iClone allows you to insert videos as textures for specific objects, which may enrich the textures with dynamic appearance instead of static looks.

▶ Applying Videos into Texture Channels

In **iClone**, you may insert videos into texture channels in the same manners as inserting images.

Formats

The supported video formats are:

- AVI, WMV, MPEG.
- FLV, iWidget, popVideo.
- Any video that can be played with corresponding video codec on your computer.

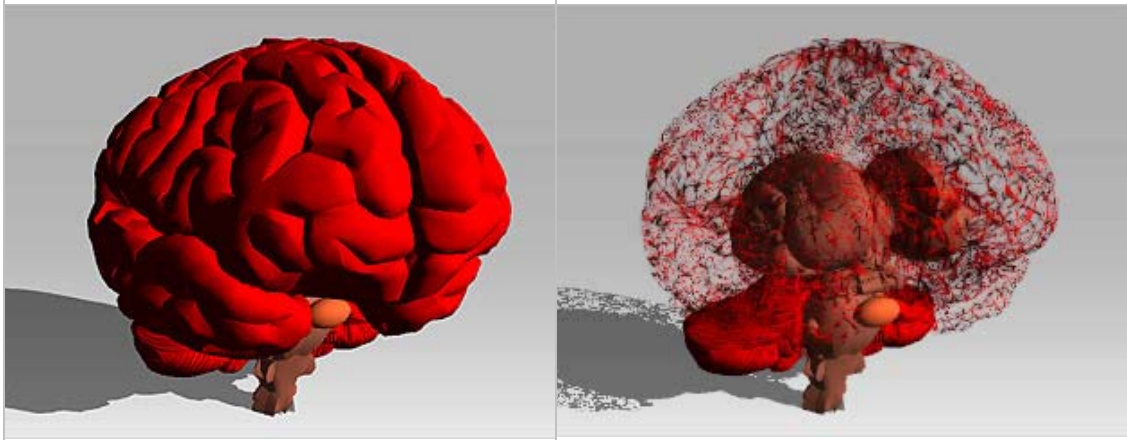
Applying Methods

The methods to apply videos are:

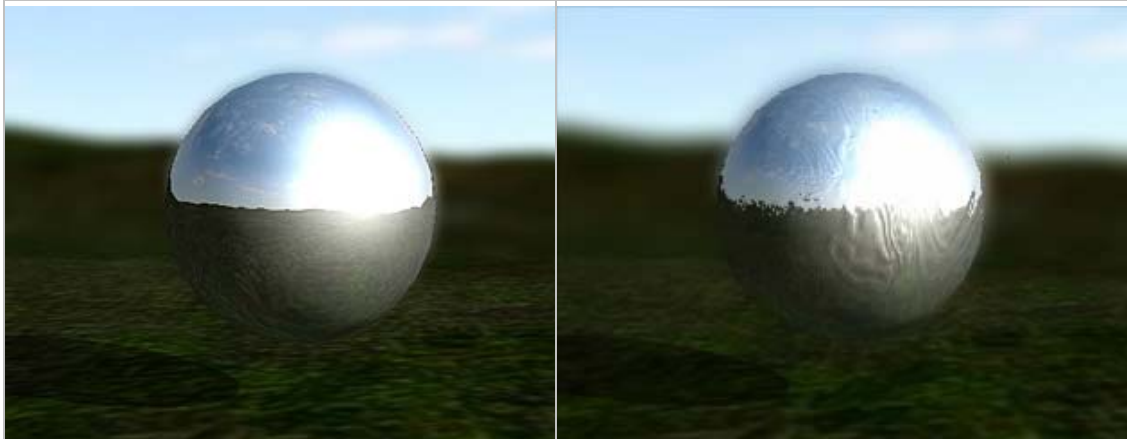
- **Drag-and-drop**: You may drag a video onto target face of one object (terrain and image layer excluded) in the preview window to replace its image of **Diffuse** channel.
- **Loading from Channels**: If you want to apply videos into either channel, you may **double-click** on the channel and locate the desired video. Please note that for the **Image Layer** object, you can only use this method to replace its diffuse texture.



Video applied to the **Diffuse** channel.

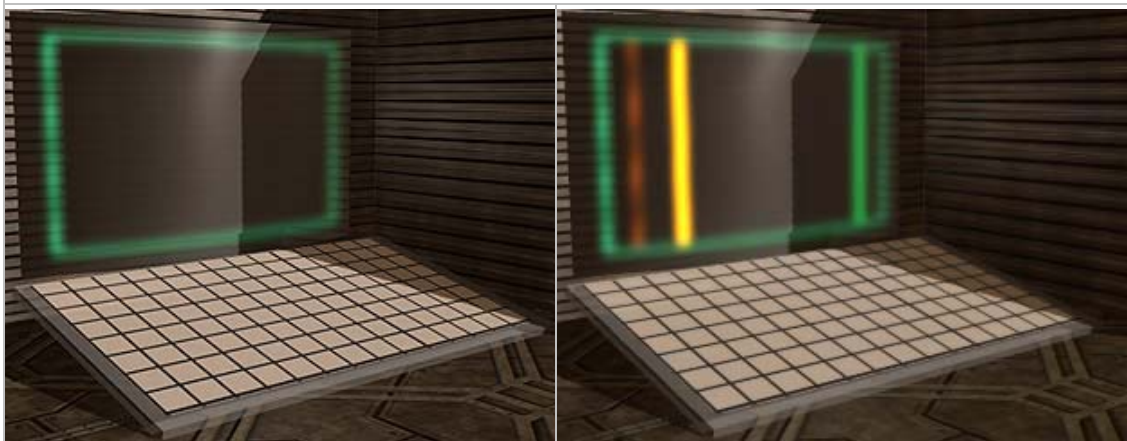


Video applied to the **Opacity** channel.



Video applied to the **Bump** channel.

Please note that **Normal Bump Videos** present correct bump result if you want to have a dynamic bump effect with video.



Video applied to the **Glow** channel.



Video applied to the **Blend** channel.

Note:

- The videos loaded here are always taken as external files in order to reduce the size of the project. Therefore, if you move the project elsewhere, please also move the videos along in the same path relationship when the project is saved.
- Please note that you must have **K-Lite** codec pack or similar installed on your system before FLV videos can be played.
- You **CANNOT** apply videos to **Tree** and **Grass**.
- Please also refer to [Setting Video Keys](#).

► Utilizing popVideo

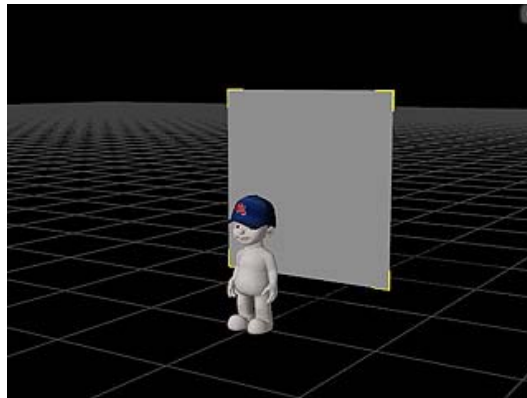
popVideo is a video with alpha-channel data. You can import it into **iClone** as a board with mask so objects behind it can be seen.

Although you can achieve the same result by manually applying a video to the **Diffuse** channel and masked video to **Opacity** channel, utilizing popVideo file ensures you have a 100% synchronized video the popVideo already contains the data for both channels.

Please refer to the [popVideo Converter Online Help](#) for more information about creating custom popVideos.

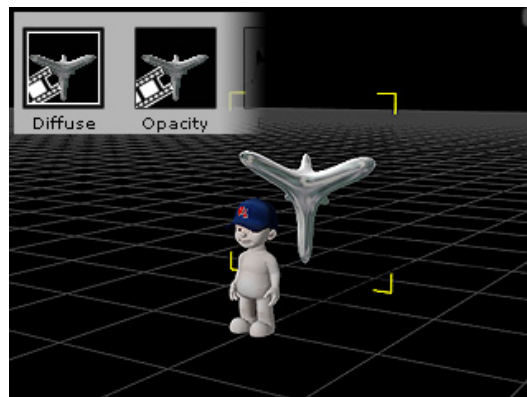
Apply popVideo

- Select any object that contains a **Diffuse** channel. Double-click on the channel and select a **popVideo** file.

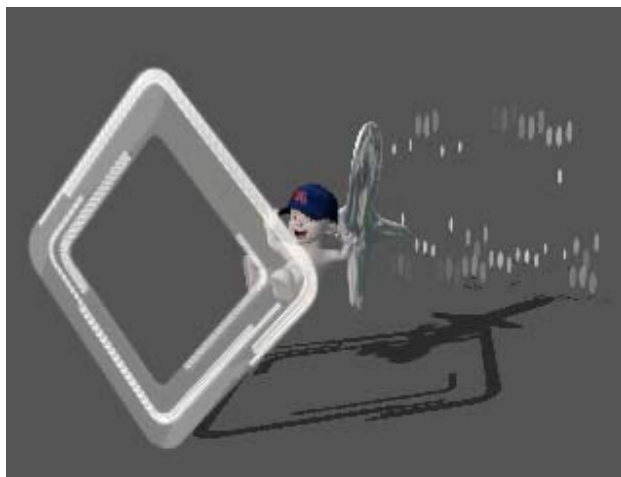
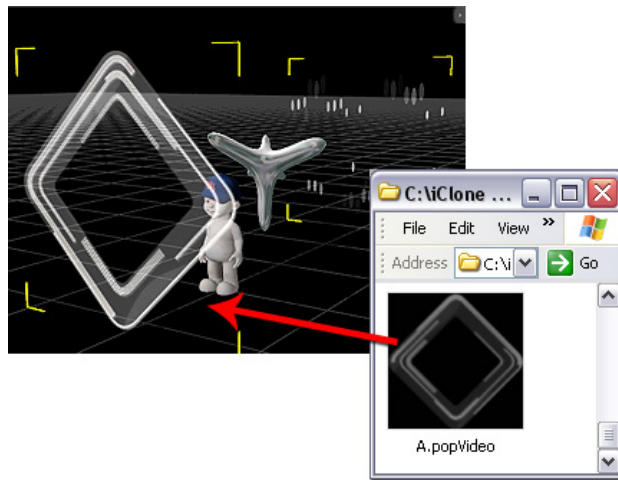


Alternatively, you can drag the **popVideo** file from the explorer onto the surface of a target object.

The **popVideo** will be loaded into the **Diffuse** channel as well as the **Opacity** channel.



- In the explorer, with the **Ctrl** key pressed and held, drag a **popVideo** file onto the preview window of **iClone** to generate a board with the **popVideo** automatically loaded (with mask).

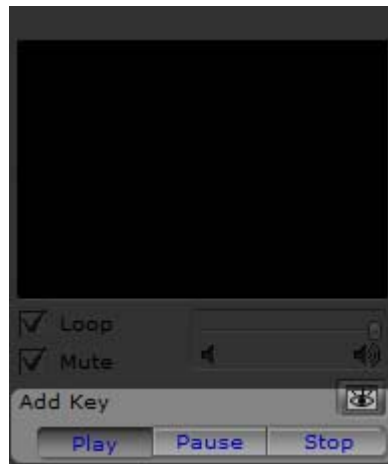


► Setting Video Keys

After adding a video, you can decide when the video starts, pauses or stops by setting keys to it.

Setting Video Keys

1. Since you cannot select a video once it is loaded into the preview window, please select it with the **Scene Manager**.
2. Jump to a target time frame and press the **Play**, **Pause** or **Stop** button to set keys.



3. Jump to another time frame and repeat step 2.

Note:

- Check the **Still in Preview** box so the video will only display the first frame when you play the project. This setting will not affect the exported result.

Multiple Channel Texture Mapping

☉ The Maps for Objects

iClone provides several texture mapping effects, however, certain objects only possess some, but not all, texture mapping types.

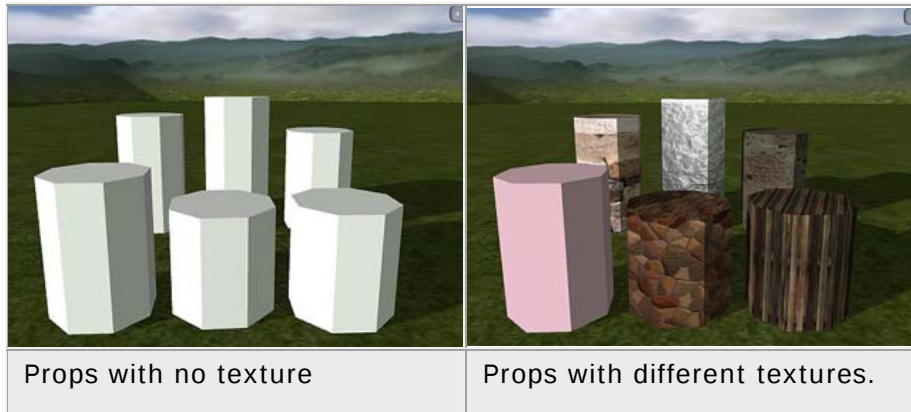
	Diffuse Map	Opacity Map	Glow Map	Specular Map
Image Layer	Available	Available	Available	Not Available
Props	Available	Available	Available	Available
Grass	Available	Available	Not Available	Not Available
Particle	Available	Available	Not Available	Not Available
Water	Not Available	Not Available	Not Available	Not Available
Sky	Available	Available	Available	Available
Hair Upper Body Lower Body Gloves Shoes Accessories Skin	Available	Available	Available	Available
Head - Texture Eyes Oral	Available	Available	Available	Available

	Bump Map	Reflection Map	Blend Map
Image Layer	Not Available	Not Available	Not Available
Props	Available	Available	Available
Grass	Not Available	Not Available	Not Available
Particle	Not Available	Not Available	Not Available
Water	Available	Not Available	Not Available
Sky	Available	Available	Not Available
Hair Upper Body Lower Body Gloves Shoes Accessories Skin	Available	Available	Available
Head - Texture Eyes Oral	Available	Available	Not Available

⦿ Types of Maps

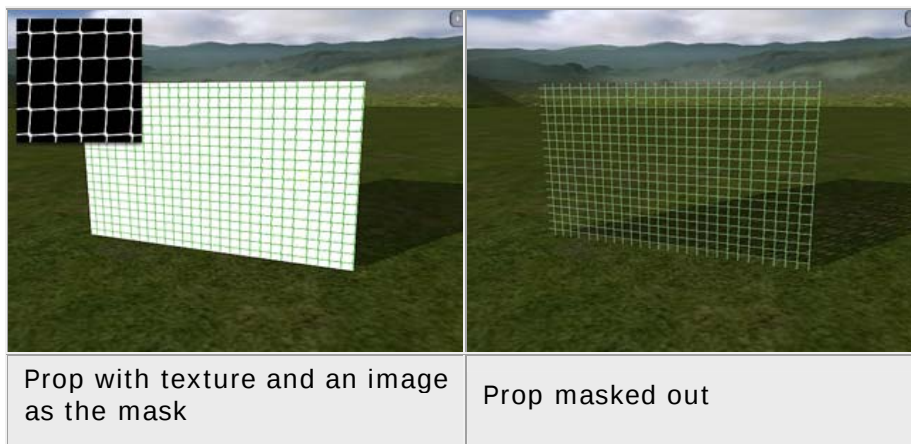
Diffuse map

- The most frequently used texture mapping method. It wraps the bitmap image onto the 3D geometry surface while displaying its original pixel color.
- Any bitmap image, such as scanned images or images captured by digital camera, can be used as diffuse map to represent photo realistic quality.
- Users can also use image software to make pre-rendered texture effects such as shadow, bevel, bump, lighting or weathering effects. This approach can effectively simulate real-world 3D effects while greatly saving system resources and rendering time.



Opacity map

- Make transparency and cut-out effects from grayscale images. The black part will get cut out; the white part will be fully displayed; the gray values determine the transparency (alpha) level of the object.
- Use bright gray RGB(253,253,253) on the Opacity map to make 2-sided 3D Surface from Plane mesh.

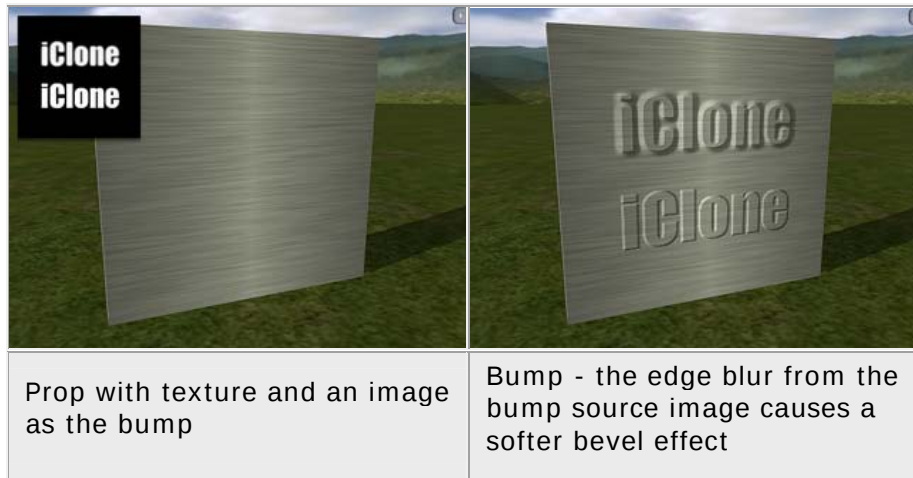


Bump map

(Pixel Shader only)

Bump mapping uses the grayscale values of an image map to create variations in the shading of the surface to which the map is applied. It adds details to 3D models without increasing the number of polygons. In **iClone**, white areas of a bump map are shown as high and black areas are shown as low.

By moving around the light source we can see how the angular light projection changes the bump look. If the light is facing the surface from a straight 90 degrees angle it the bump effects are the least noticeable.



Normal map

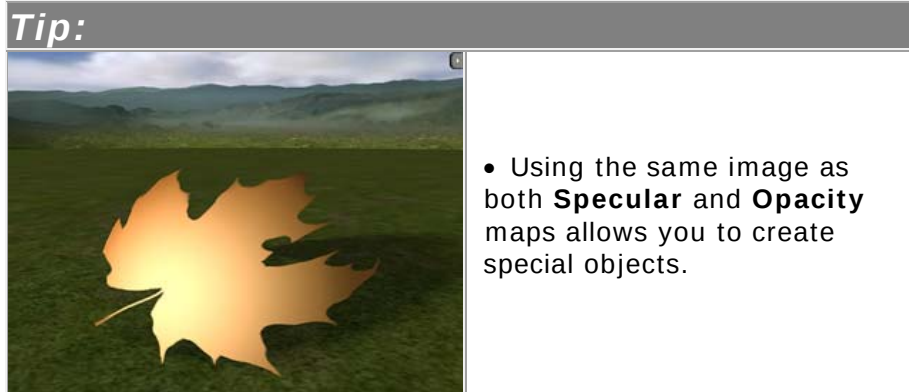
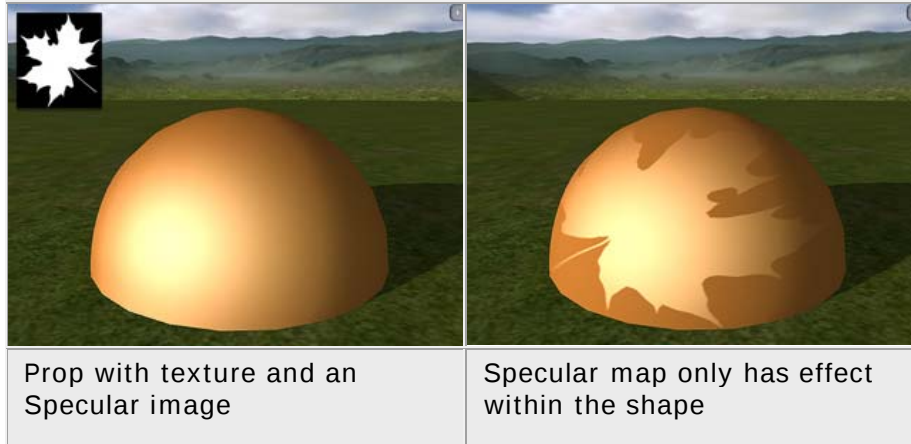
(Pixel Shader only)

- When you click the **Import Bump** button you will find ☐ Import as normal map. Check this box if the map you are loading is a **normal map**.
- A **Normal map** (Pixel shader only) is made from a high polygon model. Its color representation will affect surfaces like a regular bump map while providing higher degrees of detail.
- **iClone** can import normal maps created in ZBrush or 3D Studio Max. By using **Normal Maps** you can make simple low-poly models appear as highly detailed 3D objects.
- If the image you are loading is not a specially designed **normal map** the result will not be as good.

Specular Map

(Pixel Shader only)

This texture mapping method allows parts of an object to have a **Specular** effect.

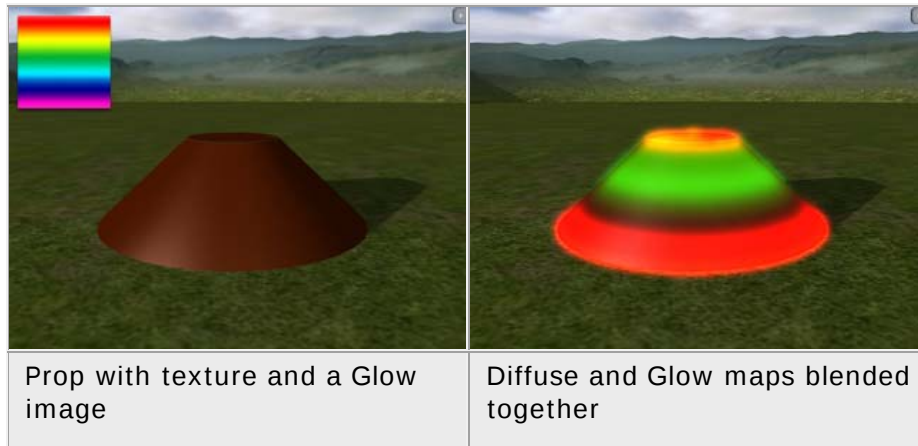


Glow map

(Pixel Shader only)

This texture mapping technique allows users to control the glow shape, color and strength.

- Glow maps will blend with your original diffuse maps, so the lighter the diffuse color (or glow color), the stronger the glow effect.
- A bright diffuse map in combination with a bright glow map might cause overexposure.



Note:

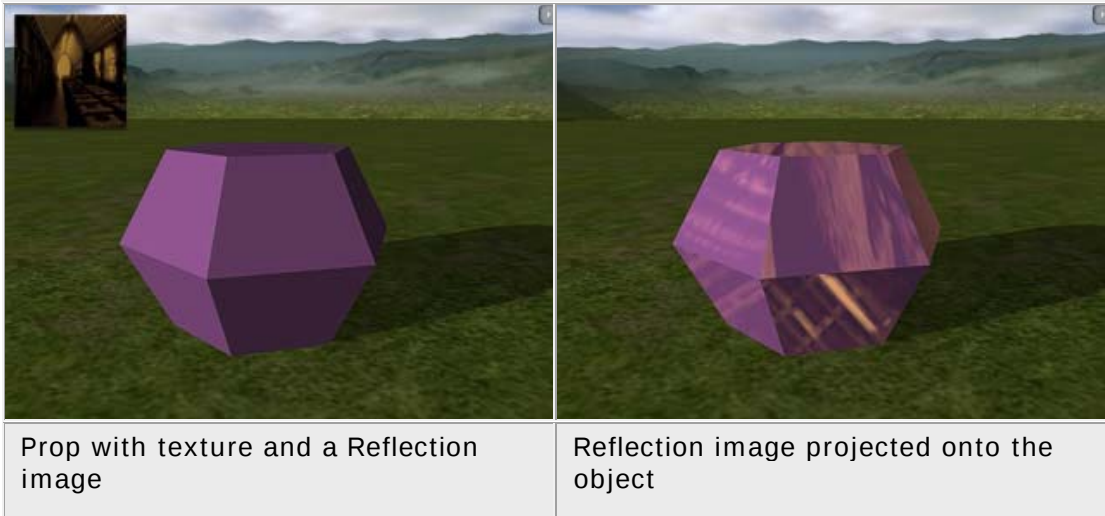
Tips to create a subtle and effective glow effect:

- Choose a diffuse image which could ideally glow in the real world.
- Prepare the glow map, pattern and color design
- Start by testing from a darker glow map, then increase the brightness step by step to see the best brightness setting
- Decrease the overall ambient light

Reflection Map

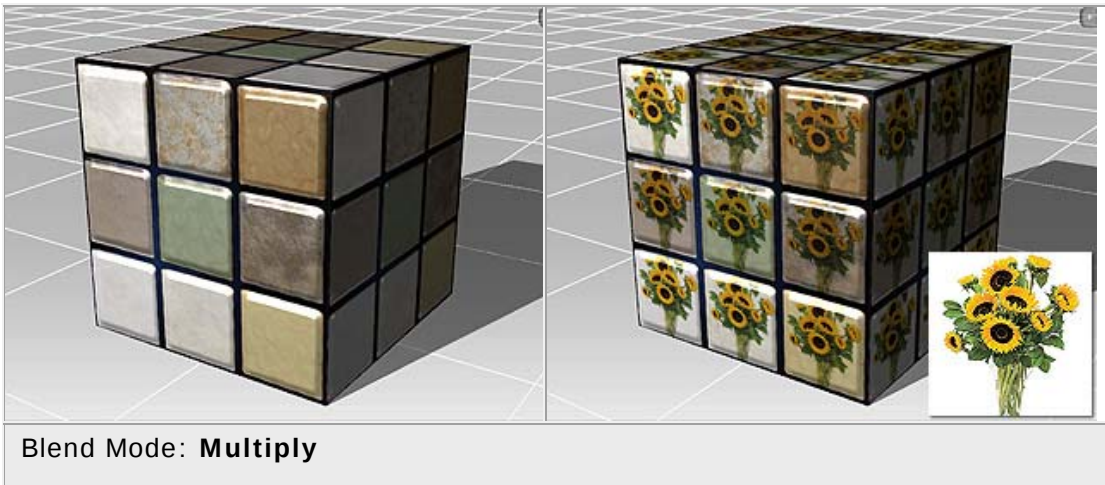
(Pixel Shader only)

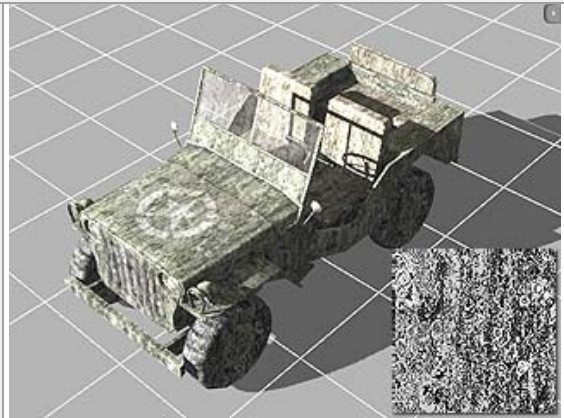
Reflection map is also referred to as environment map. The image map is projected onto a 3D surface to represent a reflection of the environment.



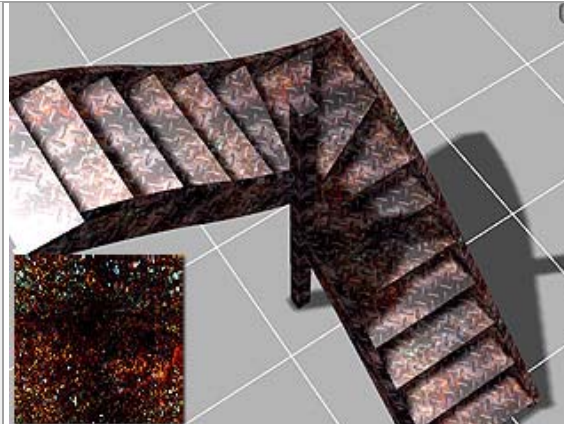
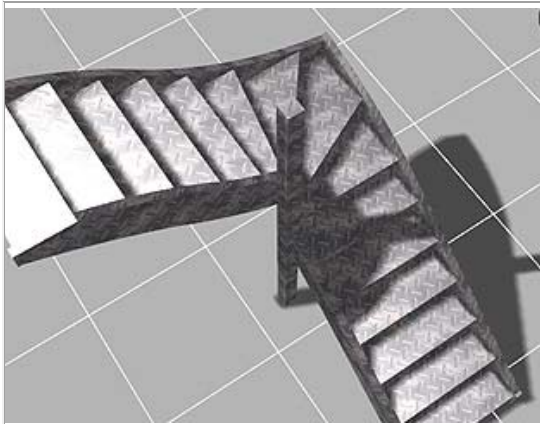
Blend Map

You may add any kind of images as the **Blend** map to blend with the **Diffuse** map, which increases the details and subtleties of the object. **iClone** also provides three methods, **Multiply**, **Addition** and **Overlay**, for blending.





Blend Mode: **Addition**



Blend Mode: **Overlay**

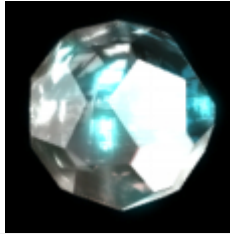
Tips:

To create good Reflective effects you should start by using an object that has high specular highlight and gloss values. Then apply black or darker images as the Diffuse map to help making the surface work like a mirror which can fully reflect the reflective map content. If the diffuse map itself is too bright the front light plus reflective setting could cause the result to be overexposed.

- Most 3D Blocks items are preset with a non-glossy material setting. To achieve high gloss and specular objects, check the \Props\Gloss folder
- Adjust the camera and light direction to see the natural changes to the reflective surface.

If you place a reflective object on a simple 2D background you can use high contrast scenery images to mimic the reflective look by importing them as reflection map.

Sample: Combining Several Texture Effects - Semi-transparent and reflective surface

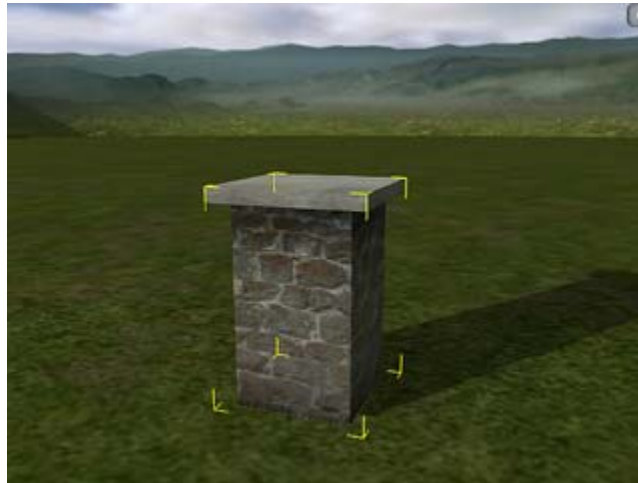


☉ Modifying Texture Settings - Basic

We will take a **Prop** as example to describe the method of modifying texture settings of the six channels.

Basic Settings

1. Pick the prop in the project.



2. Generally, **iClone** goes to the **Set/Props/Modify** page automatically. In the **Material & Texture Settings** section, select one of the texture channels and click the **Launch** button to open the texture image with your predefined image editor.



- You may set your favorite image editing software as the default texture editor in the **Preference** panel.
- The **Strength** slider defines the display weight of the channel as it is mapped to the object.

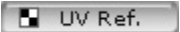
3. Modify the image in the texture editor. Remember to **Save** the image after you finish adjusting the image.



4. Go back to **iClone**, click the **Update** button. The prop will update its texture automatically.



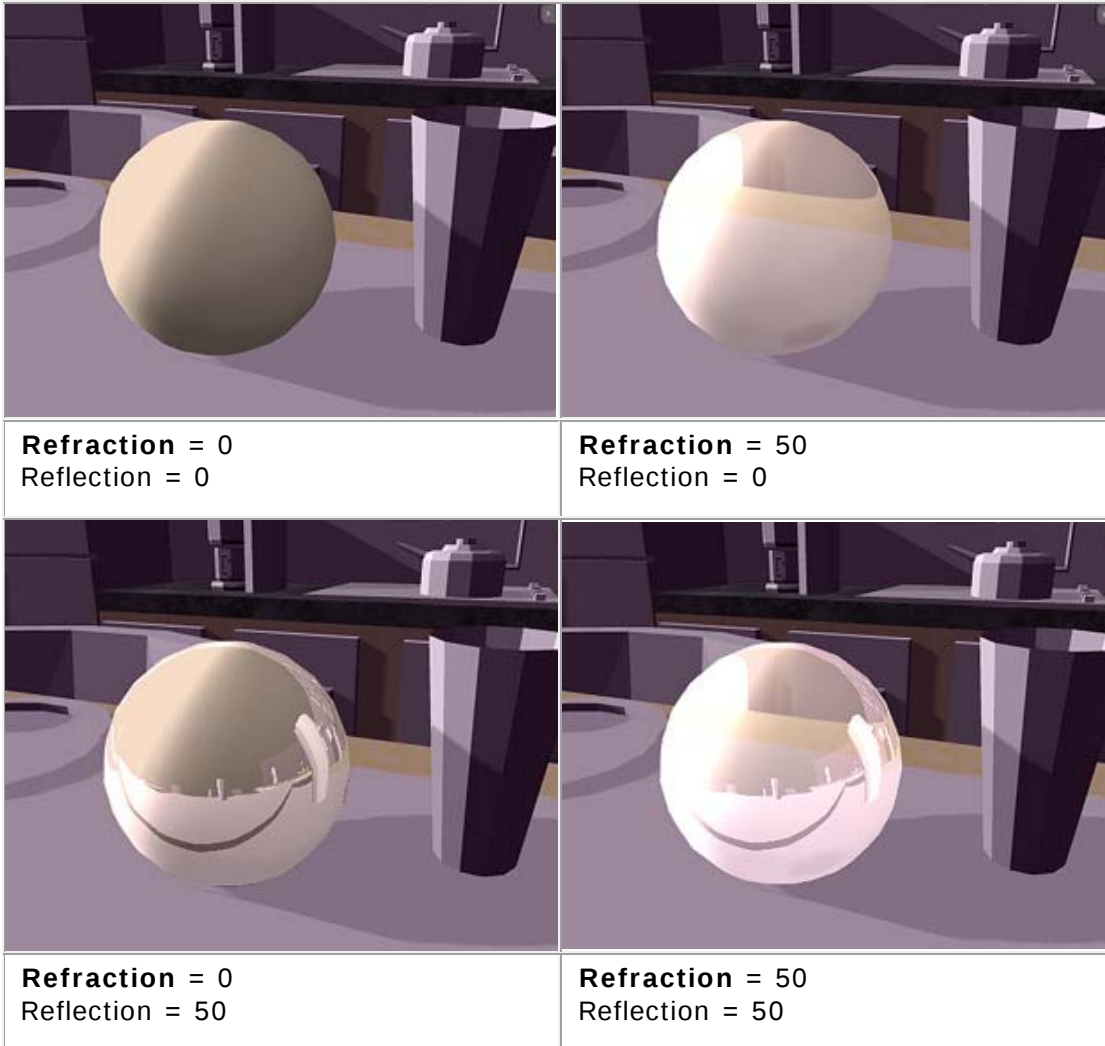
Note:

- Every time you change the texture in another image editor, you need to save the texture with its original temp file name and click the **Update** button to apply the result when you switch back to **iClone**.
- : You can select an image file directly to replace the texture by clicking the **Import Map** button.
- : If you save the texture as another image file, you have to use the **Import Map** button to load the image.
- : If you want to remove the texture, click the **Remove Map** button.
- : Press the **UV Reference** button to launch the image editing software opening the UV image of the selected object; you can paint the texture based on the UV position.
- : If you want to keep the texture for further use on another object, click the **Export** button for each channel of the textures.

⦿ Modifying Texture Settings - Advanced

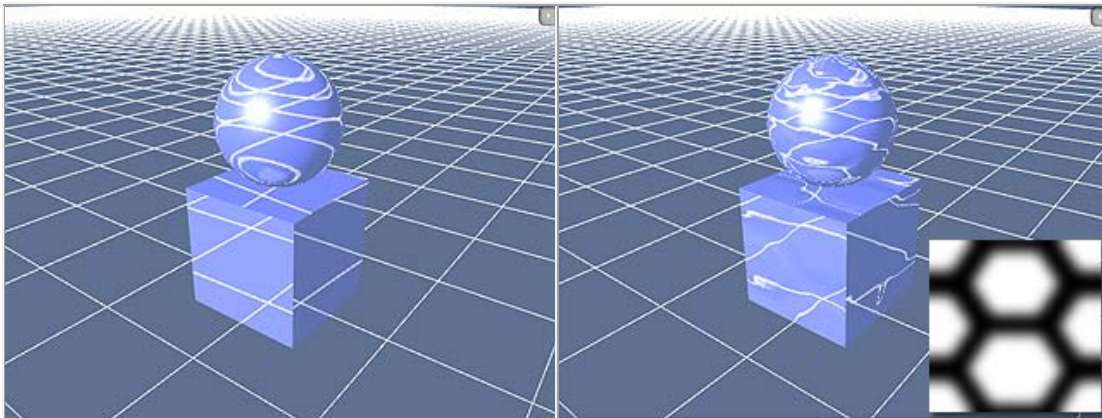
Refraction and Reflection

These two settings allow users to have the environment reflected by the objects. Please be advised that darker base colors provide clearer **Reflection** and **Refraction** effects.



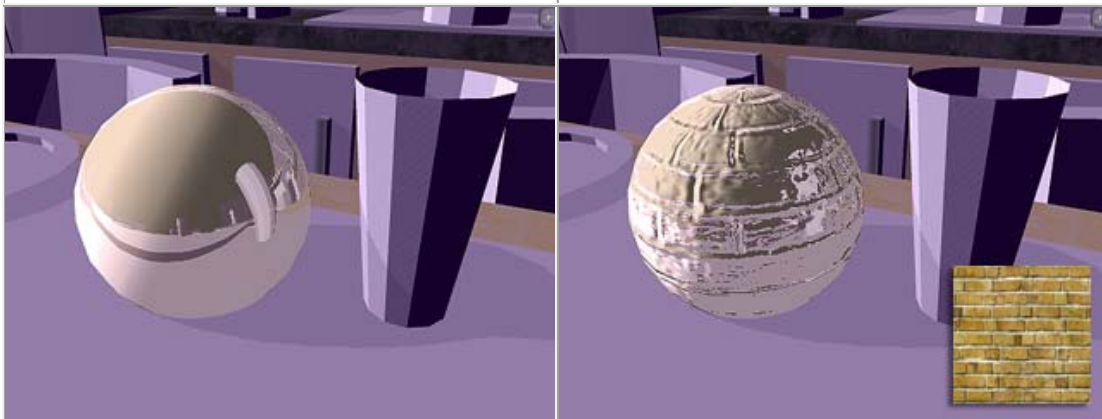
Effect of Bump to Refraction / Reflection

Combining **Bump** maps with **Refraction** brings high levels of realism.



Refraction without Bump

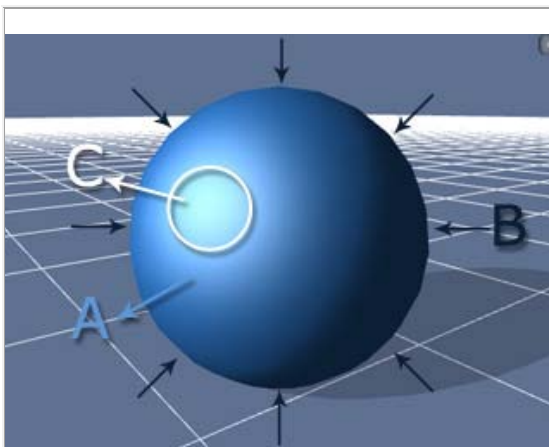
Refraction with Bump



Reflection without Bump

Reflection with Bump

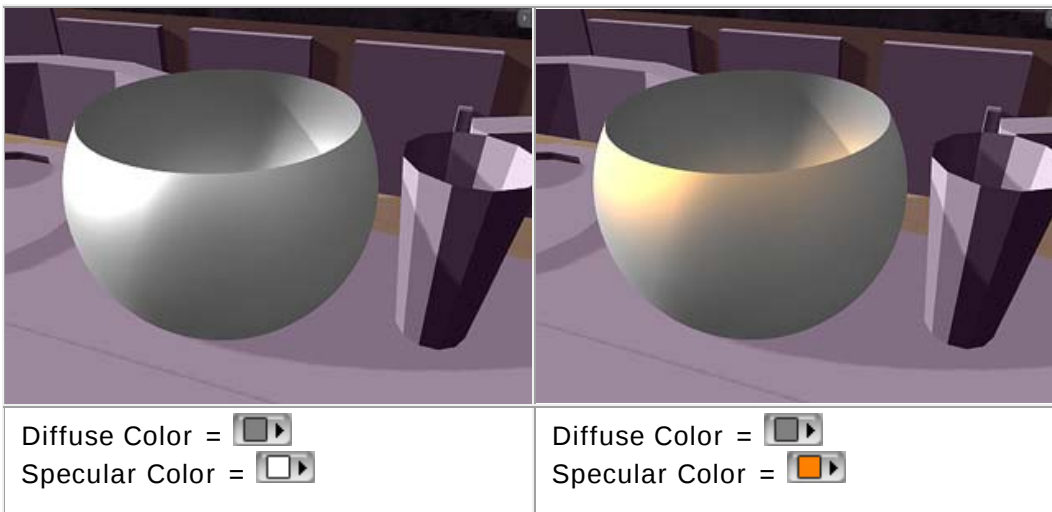
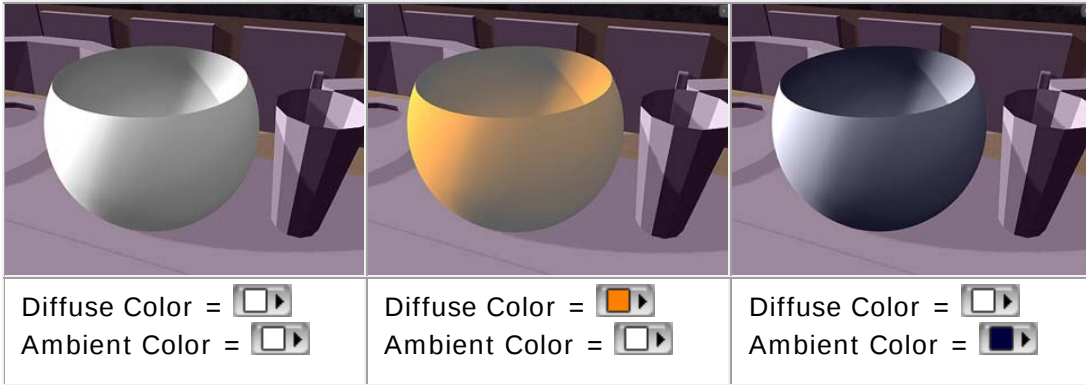
Diffuse, Ambient and Specular Colors



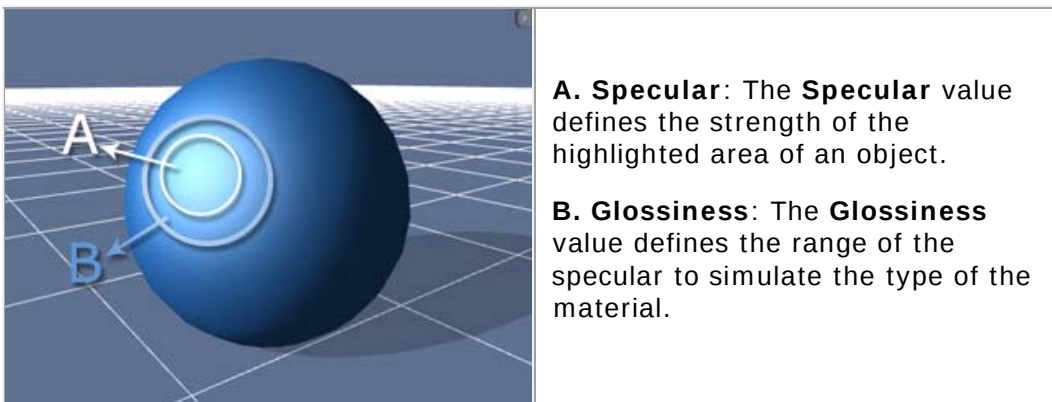
A. Diffuse Color: The **Diffuse** color defines the overall color that is reflected from an object when the light hits it.

B. Ambient Color: The **Ambient** color refers to the illumination surrounding a subject or scene.

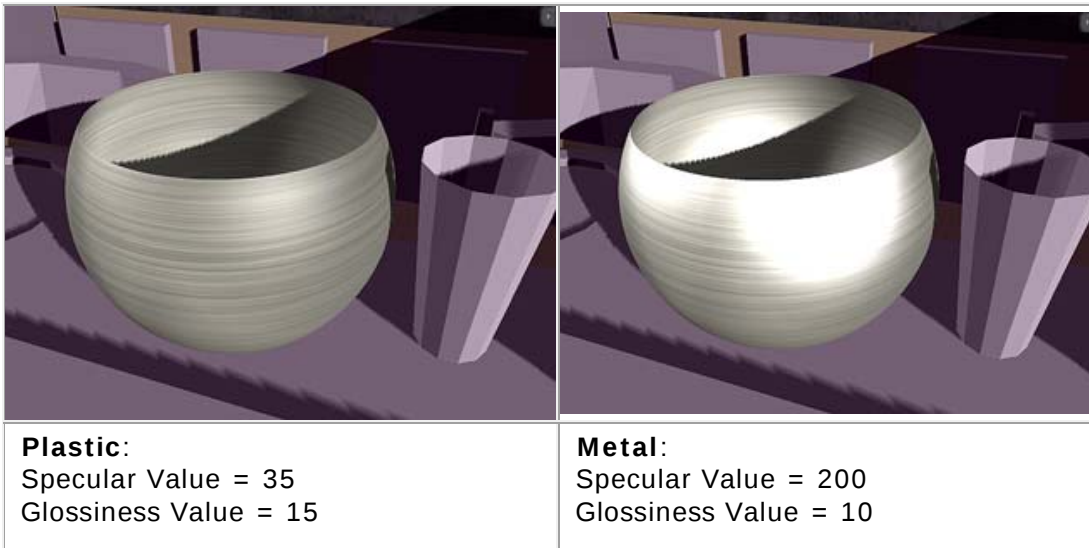
C. Specular Color: The **Specular** color only defines the color of the highlighted area of an object. Therefore, you must decrease the **Diffuse** color to see the effect.



Specular and Glossiness



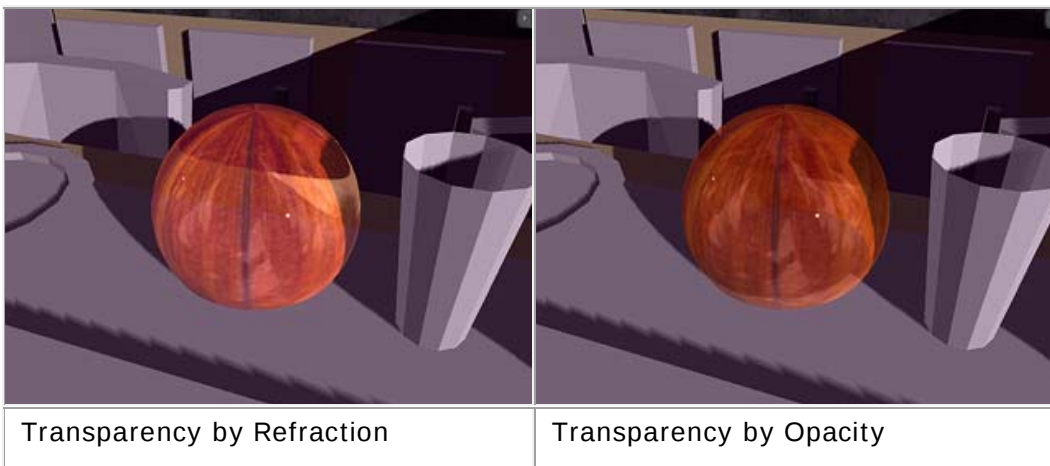
You may find two sliders, **Specular** and **Glossiness**, near the bottom of this section in the **Modify** page. You may utilize them to create metallic or plastic objects.



Opacity

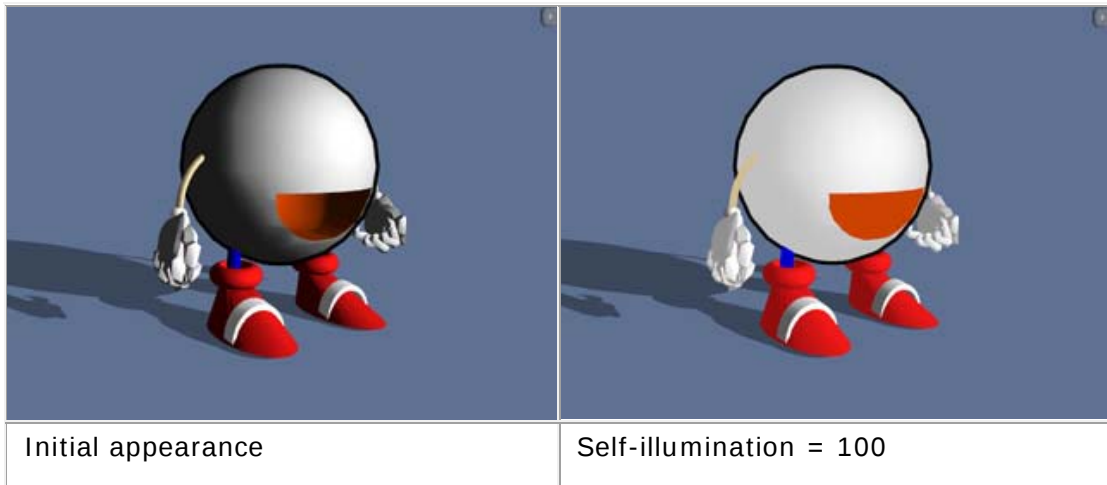
Both **Opacity** and **Refraction** can turn an object transparent, however there is still something different between them.

The scene behind the transparent object distorts when **Refraction** is on, but no such real life distortion appears when using **Opacity**.



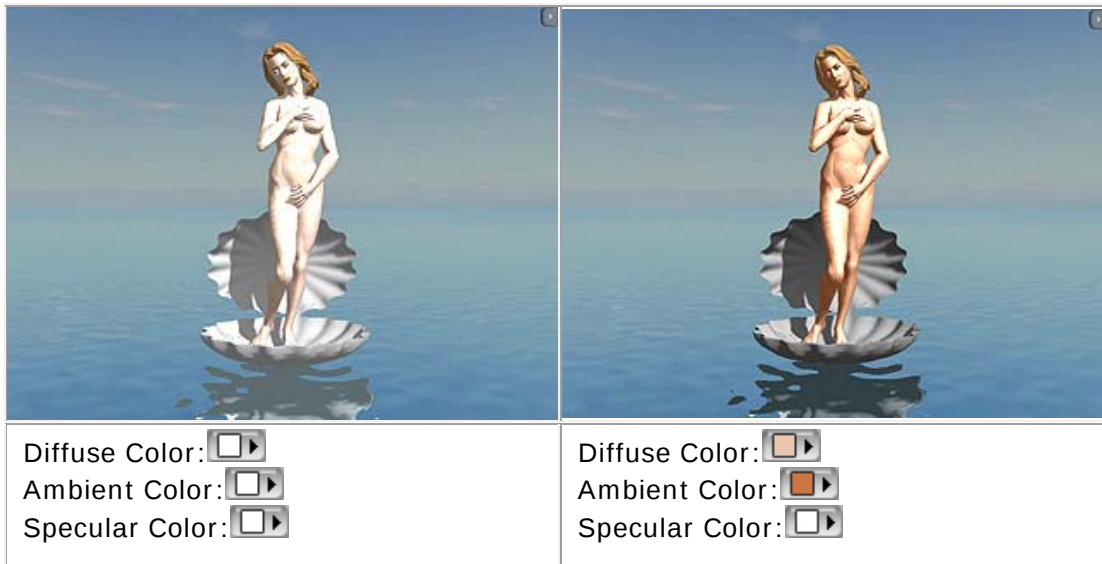
Self-illumination

Increasing the **Self-illumination** value of an object will decrease the ambient lighting or ambient color effects. The shadow on an object will decrease as well. You may use this feature to create a sky dome or cartoon-like 3D models.



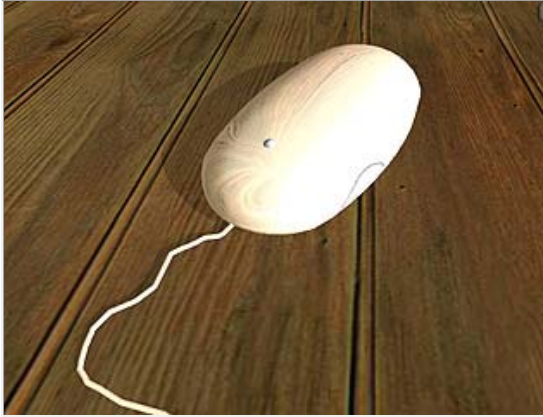
Optimization for Diffuse Color, Ambient Color and Specular Color

If you intend to have your models be more impressive and solid, please set the **Diffuse Color**, **Ambient Color** and **Specular Color** to **Pale**, **Dark** and **White**:



Tip for the Opacity Keys

When you use the **Opacity** setting to fade out an object, you may find that the specularity or reflection remains even when the opacity value is 0. To solve this problem, remember to decrease the **Specular** channel (or value) and the **Reflection** channel (or value) along with the **Opacity** value (unless you intend to have a crystal effect by keeping the **Specular** and **Reflection** values.)



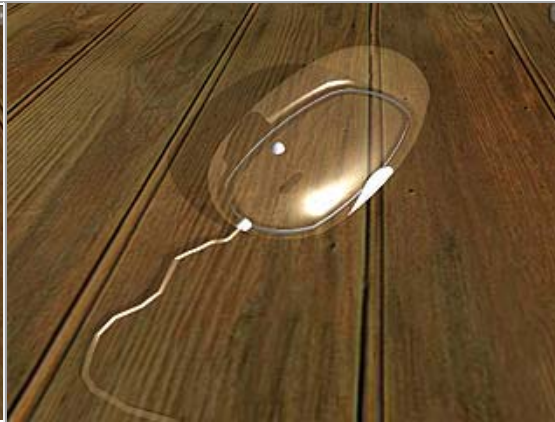
The original look of the model.



Opacity decreased.
(The reflection and specularity remain high)



Reflection decreased.

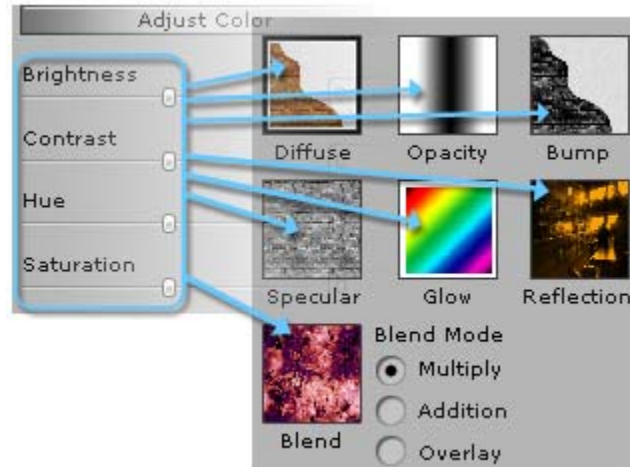


Specular and **Glossiness** adjusted.

⦿ Adjusting Colors on Seven Texture Channels

Adjust Color

With **iClone**, you can now adjust the color of any selected channel. This powerful feature allows you to change the texture color or opacity/bump patterns without the need to open external image editing software.



By adjusting **Brightness**, **Contrast**, **Hue** and **Saturation**, you can create countless texture effects of your 3D models. In this table you can see how the adjustments affect each texture channel.

	Diffuse	Opacity	Bump	Specular	Glow	Reflection	Blend
Brightness	Effective	Effective	Effective	Effective	Effective	Effective	Effective
Contrast	Effective	Effective	Effective	Effective	Effective	Effective	Effective
Hue	Effective	Less Effective	Less Effective	Less Effective	Effective	Effective	Effective
Saturation	Effective	Less Effective	Less Effective	Less Effective	Effective	Effective	Effective

- An item listed as **Less Effective** means that there will be no visible effect at all or that the effect is not obvious.

Diffuse

By adjusting the **Diffuse** image, the 3D model can take on a variety of appearances.



Brightness = 100 (Over Exposure)
Contrast = 80



Brightness = 0 (Original Texture)
Contrast = 0



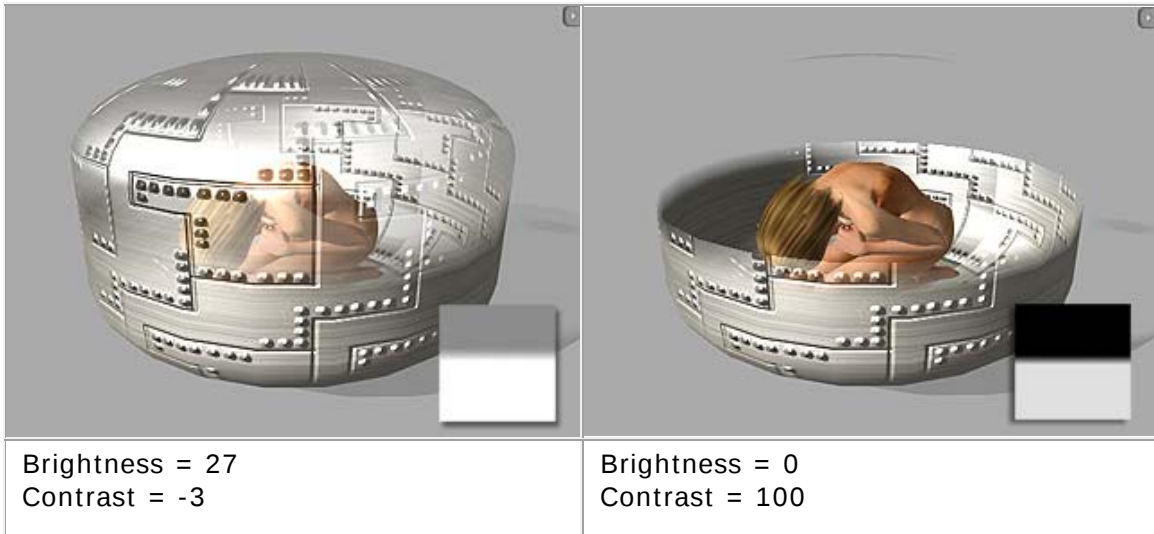
Hue = 17
Saturation = 0



Hue = 17
Saturation = -20

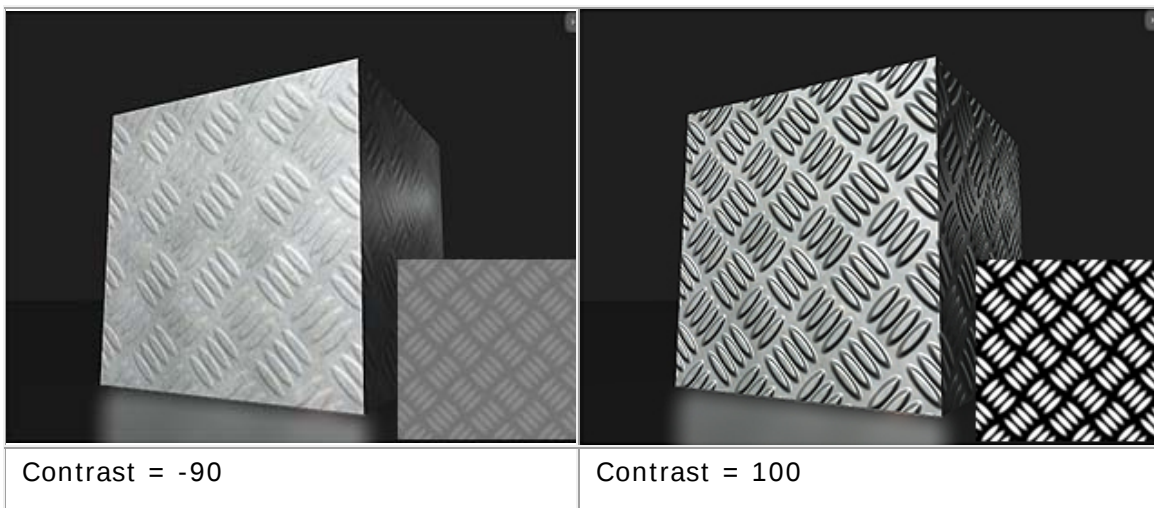
Opacity

By adjusting the **Contrast** of the opacity texture, you can define the level of the face to be masked out. In the following example, the model is mapped with a gradient image shown in this illustration.



Bump

When you adjust the **Contrast** setting of the **Bump** channel, you are defining the smoothness or bumpiness of the face.

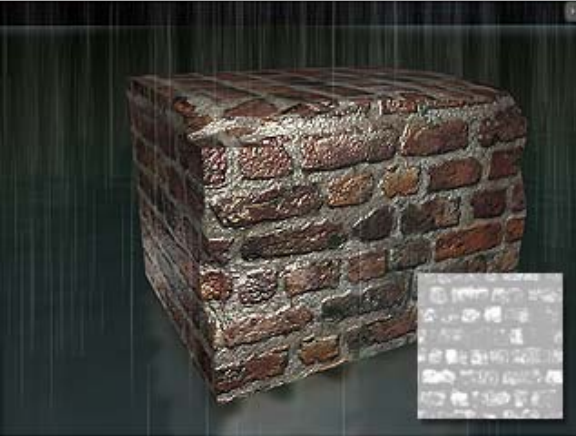


Specular

The **Specular** setting is very useful when you want to create a damp or oily effect on your object.



Brightness = 0



Brightness = 100

Glow

Adjust the **Glow** map to change the intensity of the glowing effect of your objects.



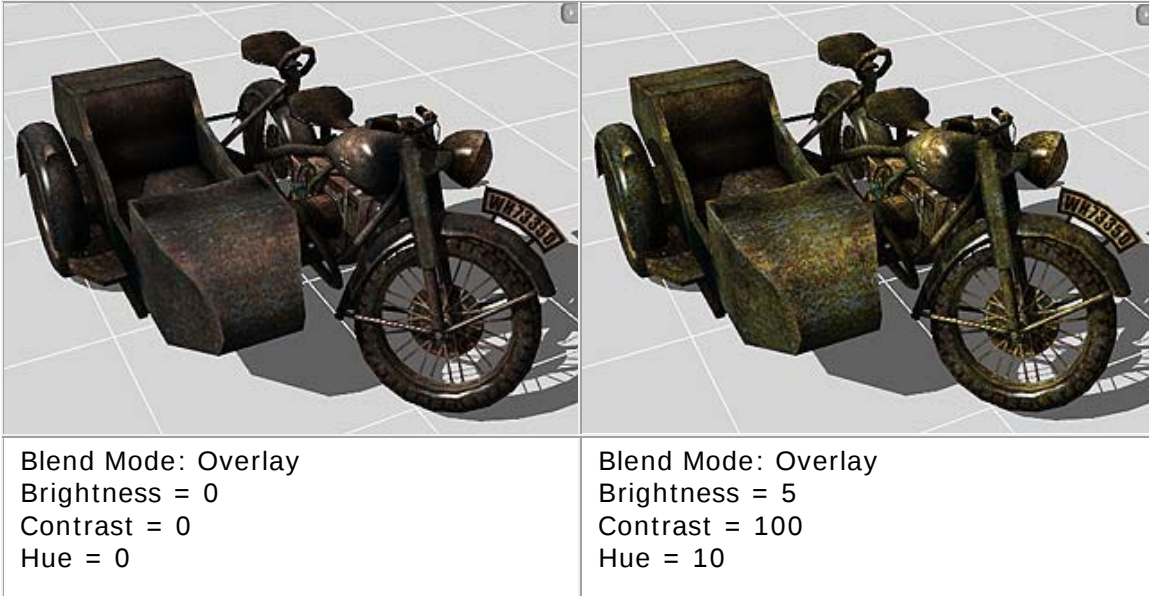
Saturation = 0



Saturation = 100
(The glow texture is modified.)

Blend

To adjust details or subtleties blending to the **Diffuse** map, modify the **Blend** map instead of launching an external image editor to edit the diffuse texture.



Note:

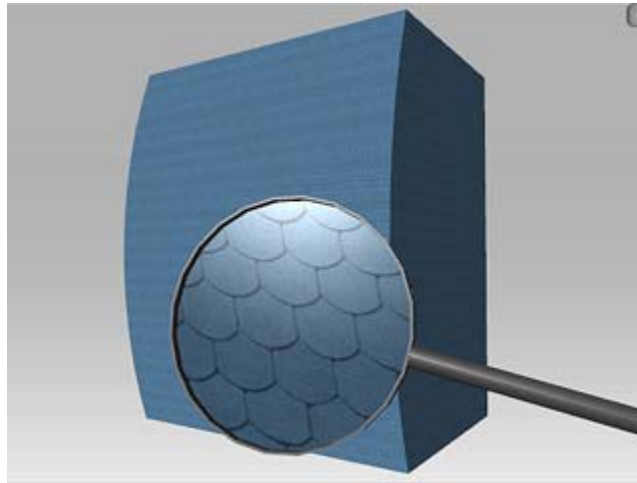
- These features in the **Adjust Color** section will not set animation keys on the timeline.
- Please refer to [Types of maps](#) for more information.
- Please also refer to [Material Key and Material Key Frame Animation](#) for more information about texture animation.
- Please refer to [Synchronizing UV Changes to Channels](#) for more information.

☉ Texture Channel UV Offset and Tiling

Mapping Issues from Google SketchUp and 3D Warehouse

We can easily download SketchUp (SKP) 3D models and convert them into **iClone**. In iClone, we can further alter the material settings, even apply multiple texturing effects to make the model look more realistic.

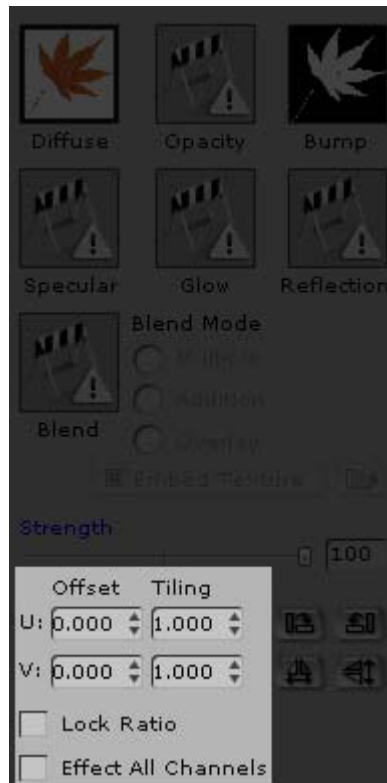
However, if the original model from **Google SketchUp** has no prior texture assignment (purely with default color material), when you apply texture in **iClone**, the result may not be what you expected.



In the sample above, the solid blue color is made by massive grainy texture tile on this model (with the default 1x1 UV tiling settings in iClone). If the model in Google SketchUp has no prior texture assigned to it, the default UV tiling value is way too small for further texturing works.

Custom UV Offset and Tiling

iClone provides **Texture Channel UV Offset** and **Tiling** feature to solve this problem. You may then customize the offset and tiling values to each texture channel without changing the original **Global UV Setting**. You may use this feature to best align a texture map to the target faces as well.

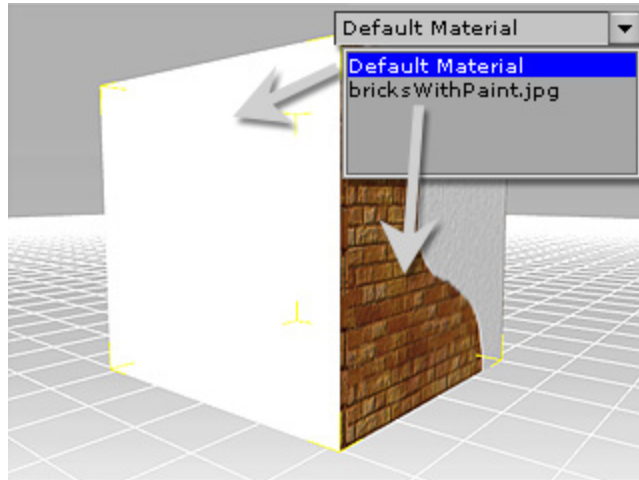


Note:

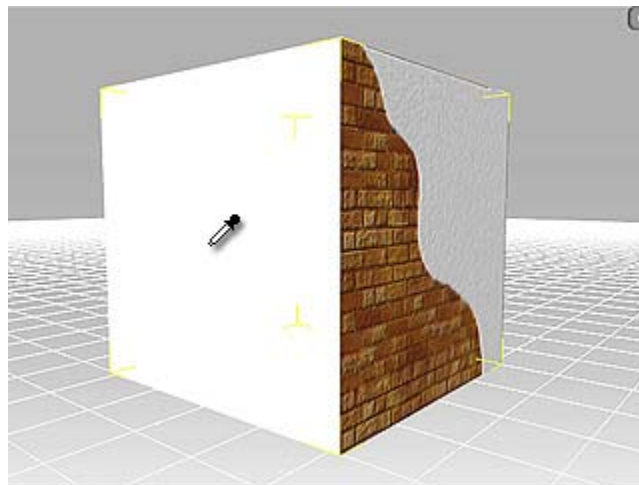
- The **Texture Channel UV Offset** and **Tiling** settings can only be seen under **Pixel Shading** mode.
- Hold the up/down controls of the **UV Offset**, **Tiling** values to see the texture changes in the 3D viewer immediately.
- Please refer to [Synchronizing UV Changes to Channels](#) for more information.

How to fix the grainy texture tiling issue

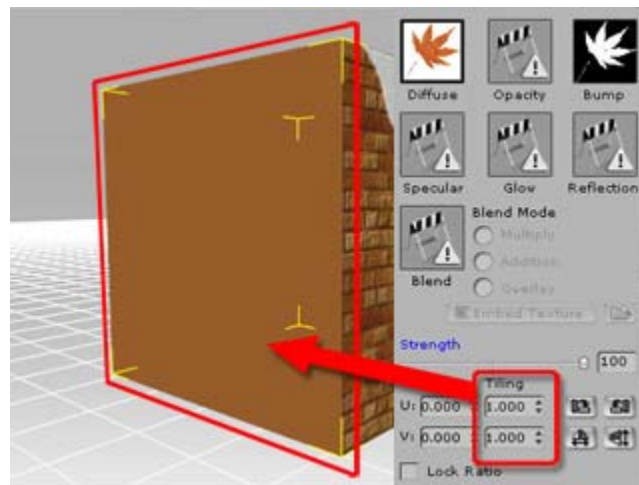
1. Select a prop (in this case, some faces contain no texture) converted by **3DXchange** from **SketchUp**.



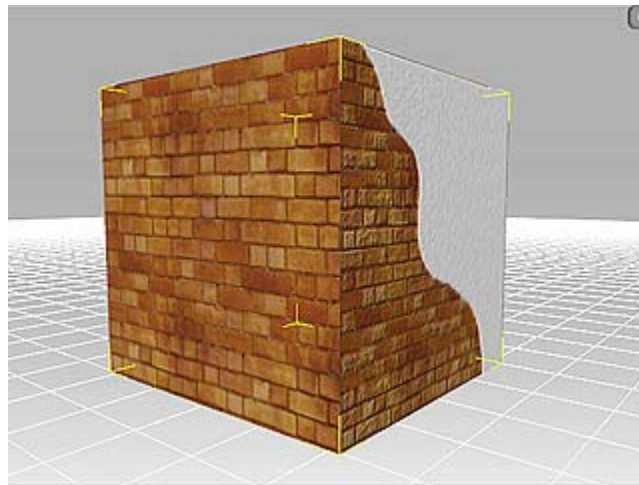
2. Press the **Material Picker**  and click on the face without any texture to retrieve its material and texture settings.



3. Select the **Diffuse** channel and click the  buttons to load an image as the diffuse texture. The massive grainy texture tile makes it look like a solid color in the illustration below.

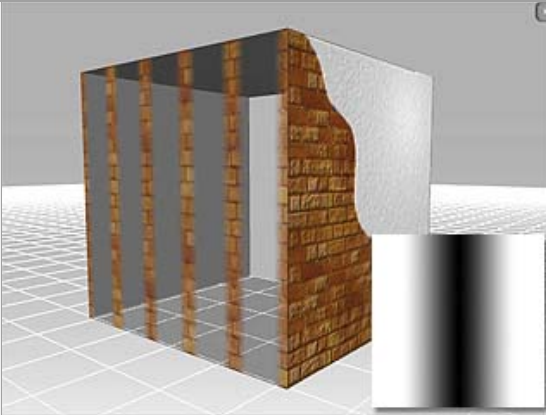
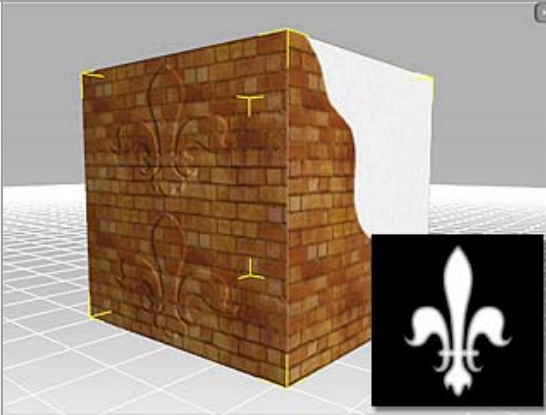
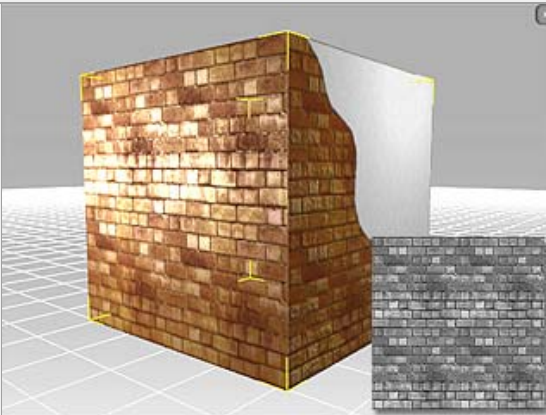
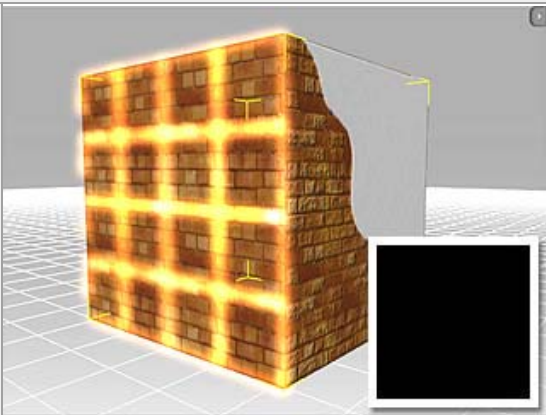


4. Adjust the **Tiling** value to make the texture show an appropriate mapping result. In most **SketchUp** cases, it is a small value such as:
Tiling U = 0.010
Tiling V = 0.010



Adjusting Individual Texture Channels

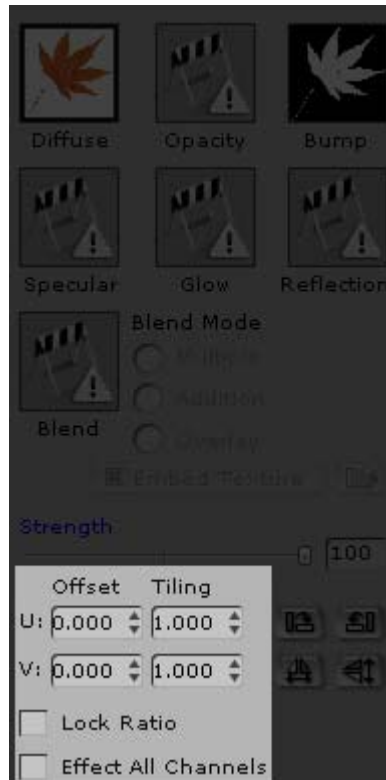
By means of altering the values of **Offset** and **Tiling** to different texture channels, we can create all possible multi-texturing effects on **SketchUp** models.

Opacity	Bump
	
Tiling U: 0.050 Tiling V: 0.010	Tiling U: 0.010 Tiling V: 0.020
Specular	Glow
	
Tiling U: 0.010 Tiling V: 0.010	Tiling U: 0.040 Tiling V: 0.040

⦿ Synchronizing Texture UV Changes to All Channels

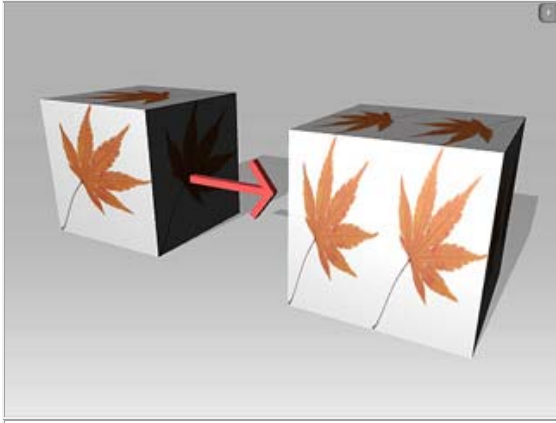
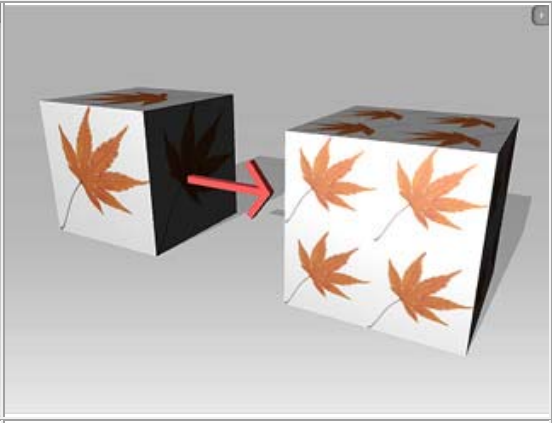
A material with multiple textures present a higher realism of texturing results, however as the UV offset or tiling values are adjusted, all related channels must have the identical UV values to maintain the correct mapping result.

iClone provides two features to reduce the efforts to synchronize the UV values between multiple texture channels.



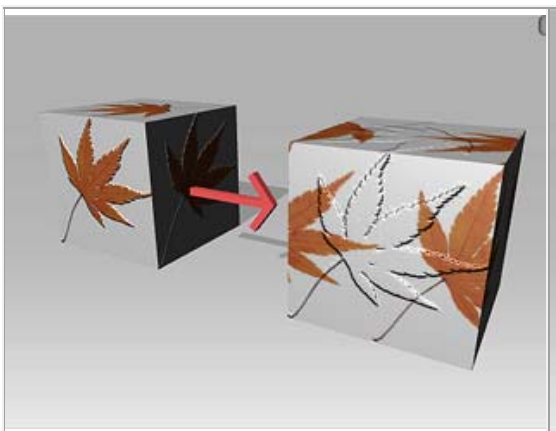
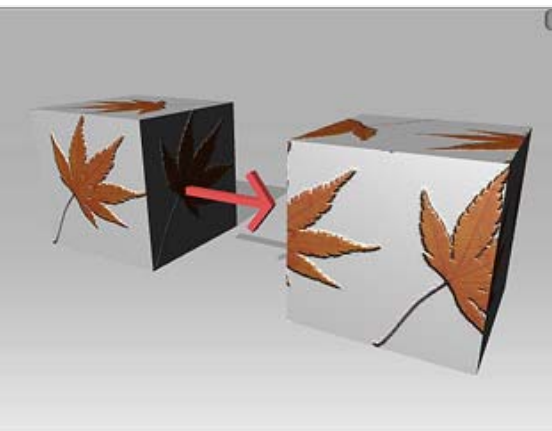
Lock Ratio

Check the **Lock Ratio** box to simultaneously adjust the U and V values in the latest UV tiling ratio.

	
Lock Ratio: unchecked. Adjust Tiling U from 1 to 2. (Tiling V remains 1)	Lock Ratio: checked. Adjust Tiling U from 1 to 2. (Tiling V changes to 2 simultaneously)

Effect All Channels

When this option is checked, any change of the UV offset or tiling value will also be applied to the other texture channels - **Diffuse**, **Bump**, **Opacity**, **Specular**, **Glow**, while only the reflection map remains unchanged. We will take **Diffuse** and **Bump** maps as example.

	
Current Channel: Diffuse. Effect All Channels: unchecked. Adjust Offset U from 0 to 0.5. Only the Diffuse map moves.	Current Channel: Diffuse. Effect All Channels: checked. Adjust Tiling U from 0 to 0.5. Bump map moves simultaneously.

☉ UV Reference

Relationship between UV Reference Map and Diffuse Map

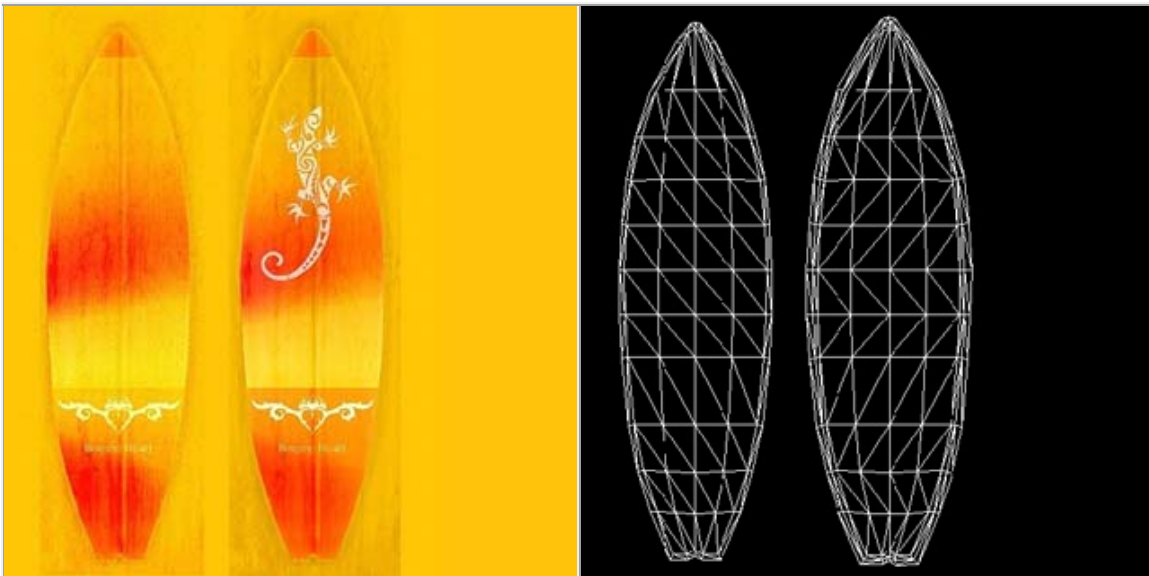
When you apply a texture to any existing iClone object, iClone uses the predefined mapping coordinates to precisely map the image onto the 3D surface. To find the relationship between diffuse map and UV Reference, press the corresponding launch buttons to open both image files in your image editor.

We will use a surfboard as an example to describe the UV reference.

1. Select the prop in the current project.



2. Select the **Diffuse** channel and click the  Launch and  UV Ref. buttons to open the diffuse and UV Reference images at the same time.



You will notice that the texture orientation (left illustration) is based on the texture coordinate definition of the UV map (right illustration)

Resolution of UV-reference based Texture Map

The default size of a UV reference images is 512 x 512 pixels. If you use the same resolution for your diffuse maps, the allocated pixel for each 3D surface is relatively small because they share the same image dimensions. Although this will save texture memory resources, objects will appear less detailed when they are zoomed-in on.

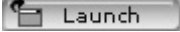
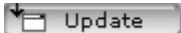
If you intend on using high-detail objects you need to increase the texture resolution proportionally (e.g. 1024x1024, 2048x2048, or 4096x4096) and keep the layout as indicated by the UV map. To increase the diffuse map size while keeping the same ratio, multiply the size of the UV texture first and then paint it according to the layout of the UV reference map.

☉ Replacing and Regenerating Model UV

Objects in **iClone** may or may not include UV reference. However, we can always replace the original UV ref. or create a new UV ref. for an object.

Generating UV Reference

The easiest way to generate UV reference for an object is to:

1. Pick any **Channel**.
2. Click the  **Launch** button. Edit the image corresponding to the channel.
3. Save the image and click the  **Update** button in **iClone**.

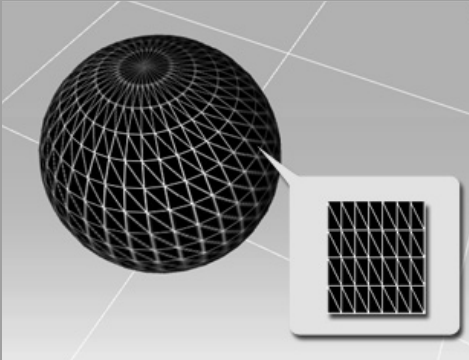
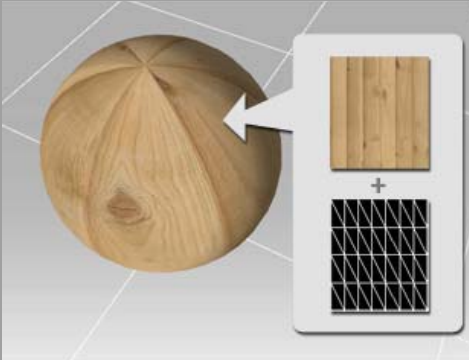
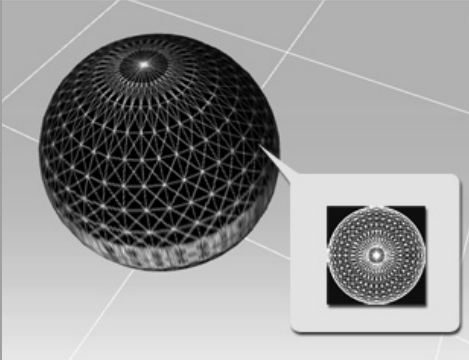
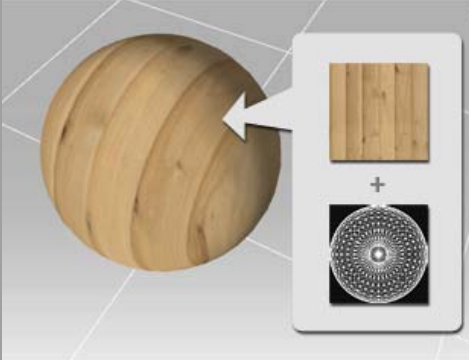
iClone assigns a UV reference map for the object automatically.

Replacing/Regenerating UV Reference

With the mapping method, you can define the UV reference for objects which have no UV reference data attached so you can enable the entire map setting controls of the object for further editing. Even objects that already contain UV reference data can be assigned with new ones.

1. Go to the **UV Settings** section in the **Modify** page.
2. Select a desired **UV Type** radio button.
3. Select a desired **Align** radio button.
4. Optionally adjust the **Offset**, **Tiling** or **Rotate** value.
5. Click the  **Apply** button.

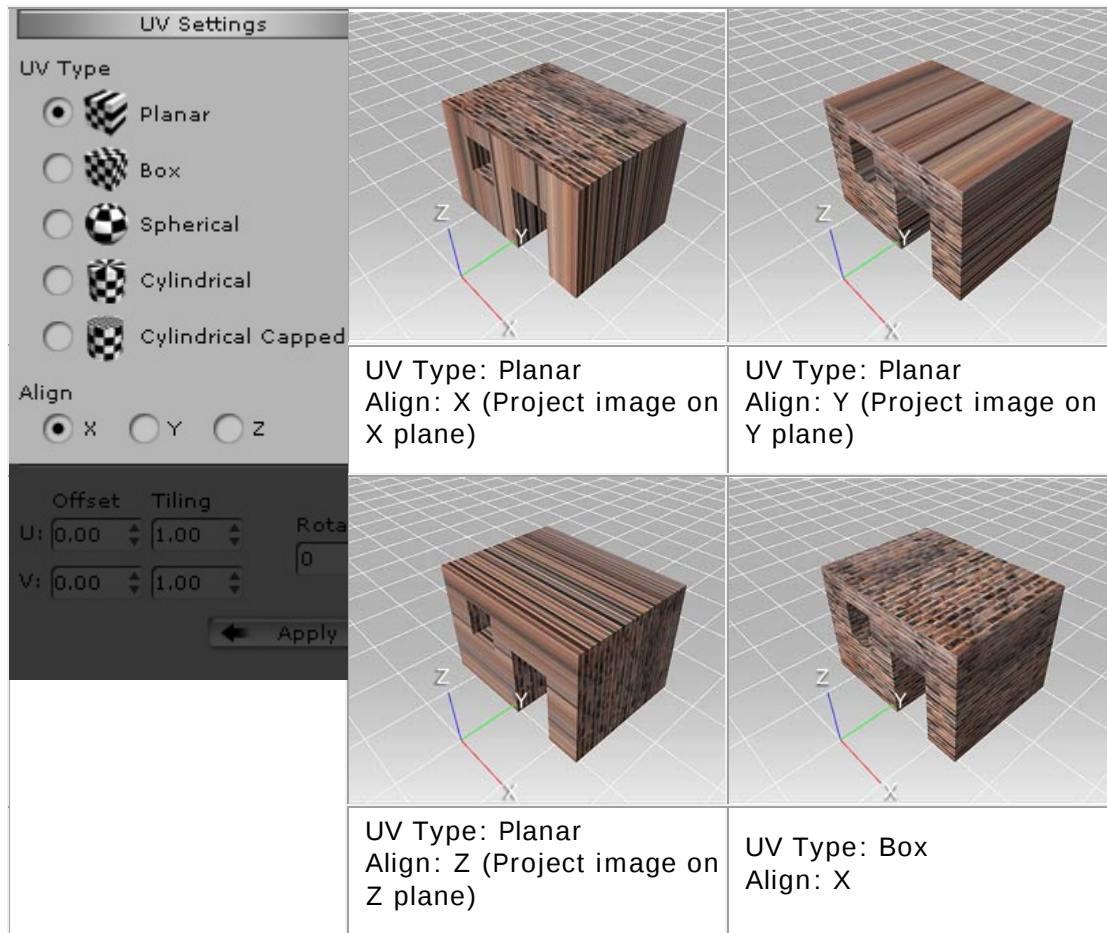
iClone will then assign a new UV reference to the selected object in accordance with your settings. The original UV reference will be replaced.

Original		
	Initial UV reference of the ball (UV reference map expanded)	Image mapping result (Based on the UV reference map)
Defined by iClone UV Type: Planar Align: X (Projecting image on the X plan)		
	New polygonal UV reference map assigned to the ball by iClone (UV reference map expanded)	Image mapping result (Based on the new UV reference map)

⦿ Model Mapping Method

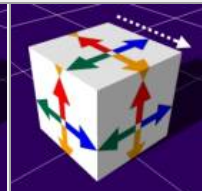
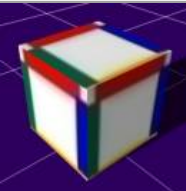
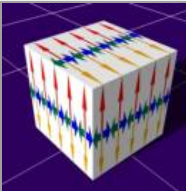
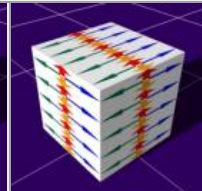
Types of Texture Mapping - ways to wrap bitmap images around a 3D surface

You can use the following UV Types to wrap a bitmap image around a 3D surface regardless of its original UV coordinates. Simply choose the UV type that fits the topology of your target 3D model the best. Please refer to the [Mapping Method for Multi-Material Object](#) section for more information.



Offset, Tiling and Rotate

- **Tile number** - adjust the repeat number of the tile in x or y direction or fine tune the texture size. If the number is < 1, it will enlarge the size of the texture. iClone allows the tile number value to be changed in steps of 0.1
- **UV Offset** - offset the texture location on the 3D object to fine tune the size and alignment (can be changed in steps of 0.01)
- **Rotation** - rotate the texturing angle

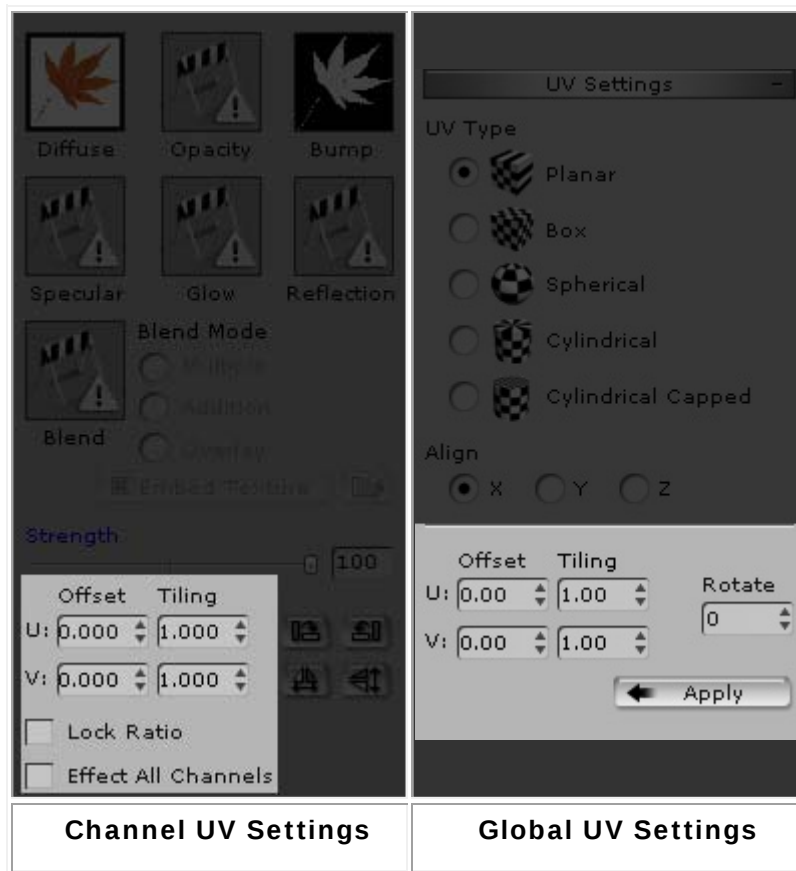
UV Settings UV Type ☒ Planar ☐ Box ☐ Spherical ☐ Cylindrical ☐ Cylindrical Ca Align ☒ X ☐ Y ☐ Z Offset U: 0.00 V: 0.00 Tiling U: 1.00 V: 1.00 ← →	Offset				
		Initial Appearance	Offset U: 0.1	Offset V: 0.1	
	Tiling				
		Tiling U: 0.1 Tiling V: 0.1	Tiling U: 5 Tiling V: 1	Tiling U: 1 Tiling V: 5	Tiling U: 5 Tiling V: 5
	Rotate				
		Initial Appearance	Rotate: 30		

☉ Texture Channel UV vs. Model UV Setting

When you modify the **Offset** or **Tiling** settings in the **Material & Texture Settings** section, you are merely modifying the specific texture to affect only the faces which are covered under the same material ID. The UV of the face and the model are not re-built.

However, once you click the **Apply** button in the **UV Settings** section, **iClone** generates a new UV for the whole model based on the selected UV type and all your previous UV settings are replaced.

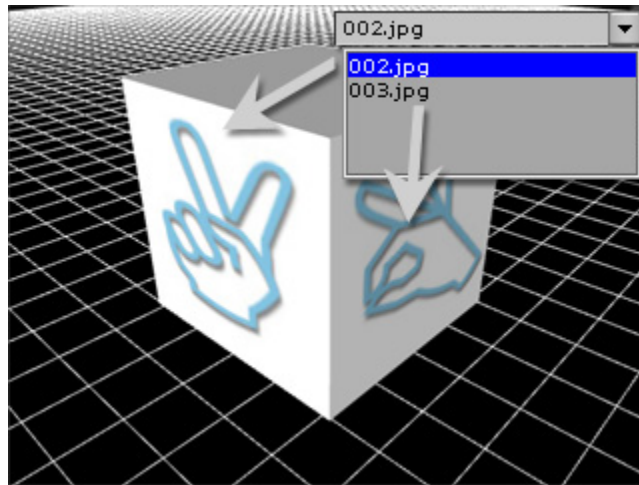
The result of the texture is to multiply the number from both them.



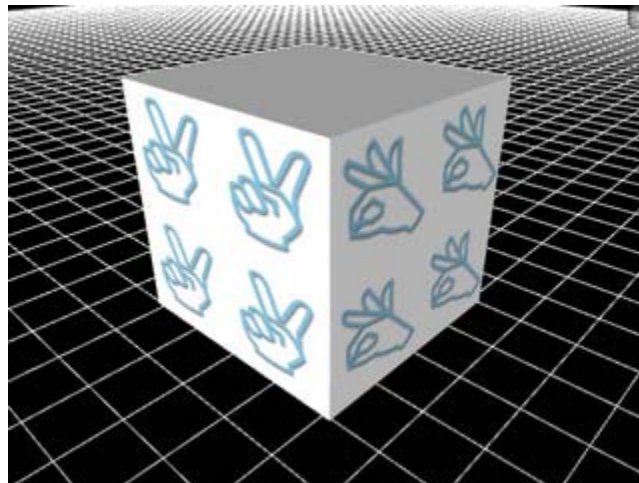
Here we illustrate the difference between the **Global UV Setting** and the texture **Channel UV Setting**.

Global UV Setting

1. Given a box with two faces mapped with two different materials.

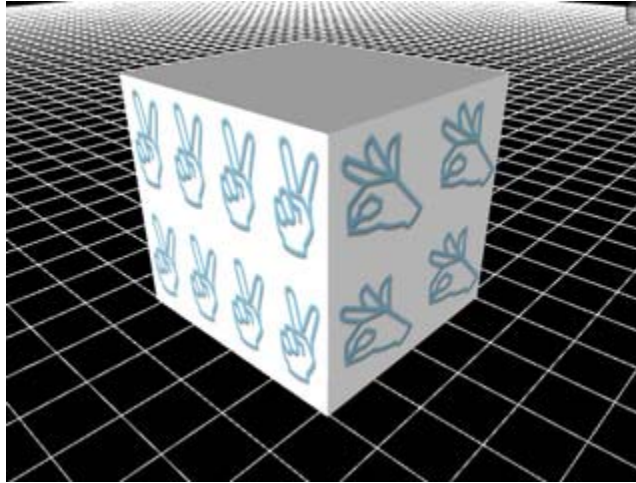


2. Go to the **Modify/UV Settings** section for global adjustment.
3. Select the **Box/Z** radio buttons and then set both the **Tiling U** and **Tiling V** to 2. Click the **Apply** button. Two material are affected simultaneously.



Channel UV Setting

1. Go to the **Material & Texture Settings** section. Use the **Material Picker**  tool to retrieve the material of the left face.
2. Set the **Tiling U** to 2. Press the Enter key.



Only the material on the left face is affected.

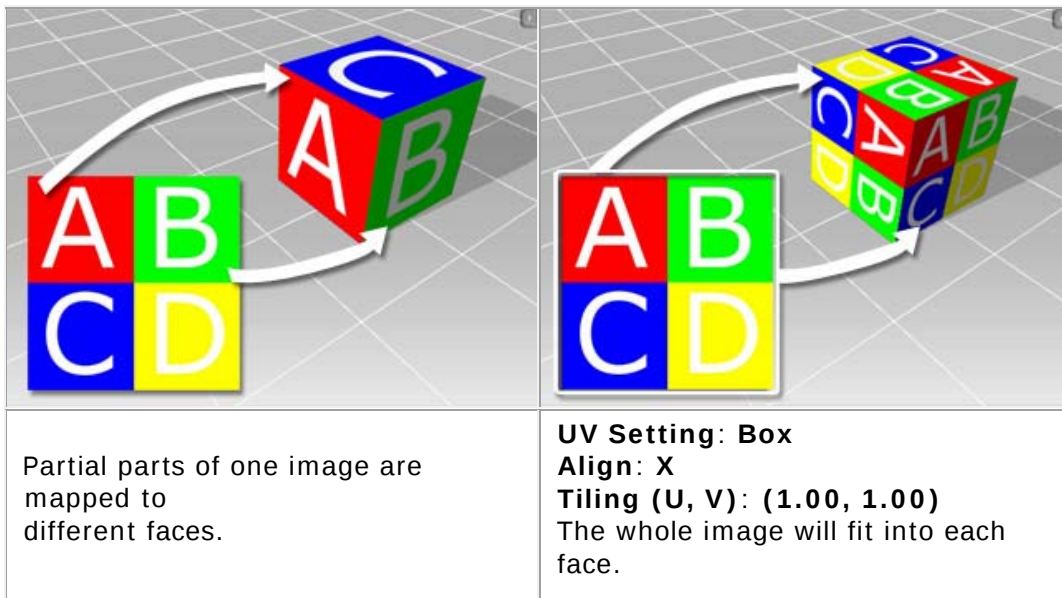
☉ Mapping Method for Multi-Material Object

If you have a compounded model where each component model has its own material or texture, re-generating UV will be done by the following rules. We will take **Box UV Setting/X/Tiling (U, V) = (1.00, 1.00)** as the mapping method as example.

(When you do material assignment or texture mapping to individual faces in **SketchUp**, it generates a compound model with several material settings.)

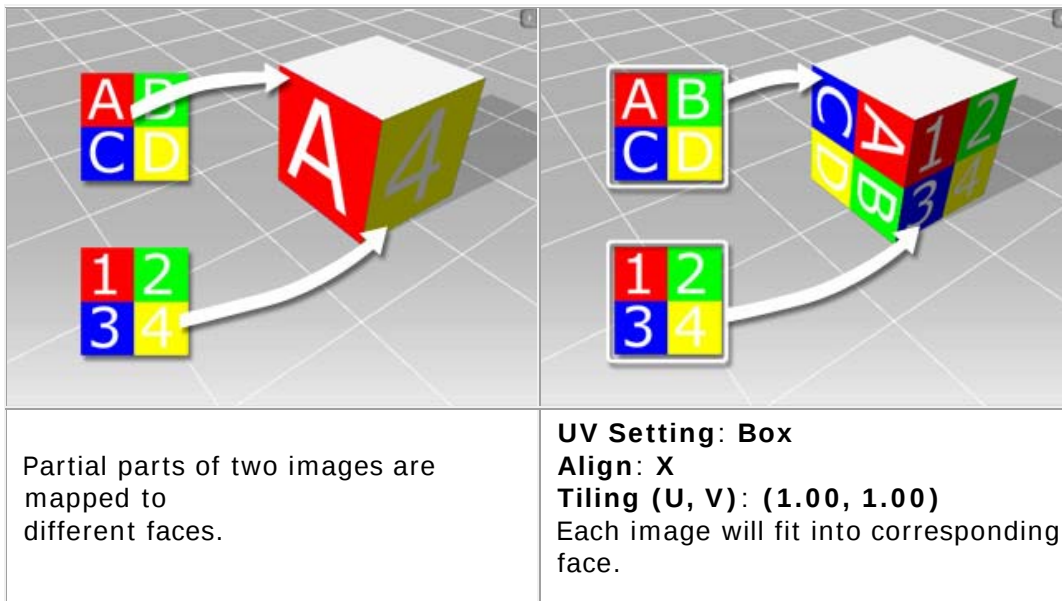
Single Model, Single Image as Texture

When you have a single model with its faces mapped by one single image and you apply the UV settings as described above, the result will be like the illustrations below.



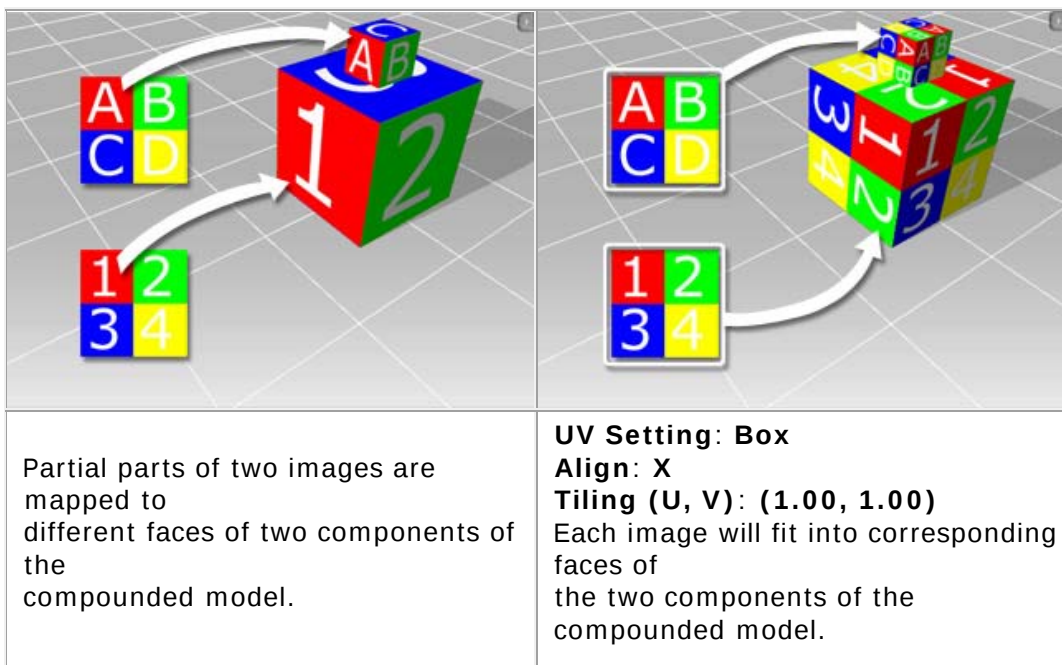
Single Model, Multi Images as Textures

When you have a single model with its faces mapped by several individual images and you apply the UV settings as described above, the result will be like the illustrations below.



Compounded Model, Multi Images as Textures

With the concept above, if you have a compounded model with multiple textures, once you apply the UV settings, they will affect all individual components, which differs from the traditional mapping method.



⦿ Load and Save Materials

The material library in iClone provides multiple texture channels and seamless tiling capability with which it can easily turn low polygon 3D models into highly detailed 3D props.



Load Material

Step 1. Select the target 3D object for material change.

- **3D Objects without unique UV layout settings.**

One simple 3D object usually has a single material ID, you may change the whole material look by directly applying one of the material templates.

Please refer to [UV Reference](#) for more information.

- **Objects with UV layout settings.**

The **3D Blocks** embedded in **iClone** contain a predefined UV layout, which is easier for custom texture design. You may need to re-generate texture UV for the whole object to have the complete texture cover the whole 3D object. In this case, use box wrapping method for box shaped objects, and sphere wrapping for spheres or balls.

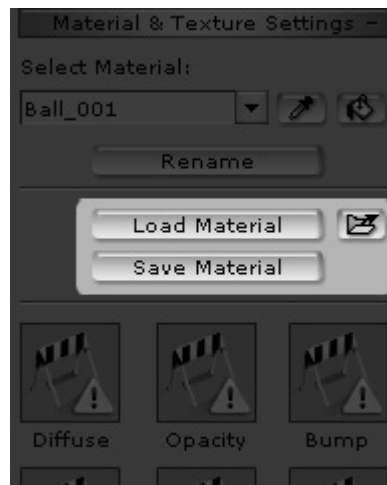
Please refer to [Replacing and Regenerating Model UV](#) and [Model Mapping Method](#) for more information.

- **Compound Objects with several Material IDs.**

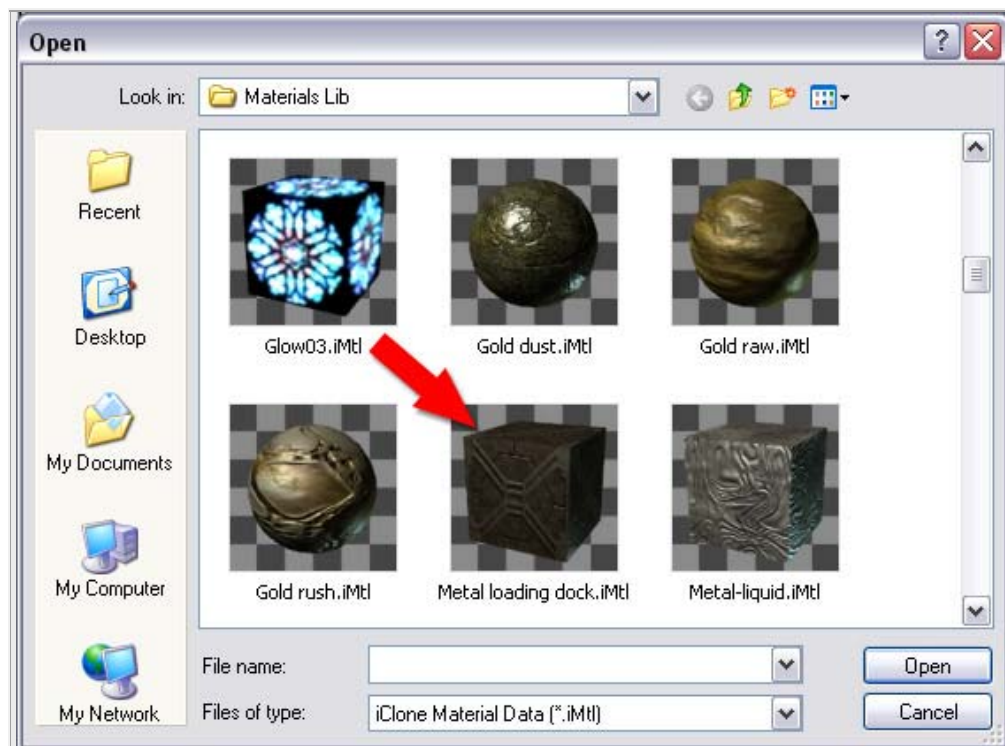
A compound 3D object always contains several material IDs. For example, a house can have its unique material setting for roof, walls and floors. You may use the material picker to pick the desired material ID.

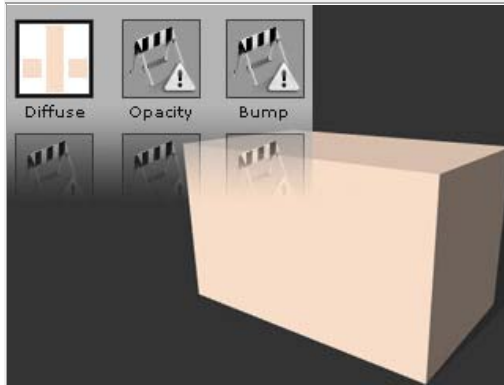
Please refer to [Retrieving Material Settings](#) and [Mapping Method for Multi-Material Object](#) for more information.

Step 2. Click the Load Material button and browse the material from the Windows Explorer.

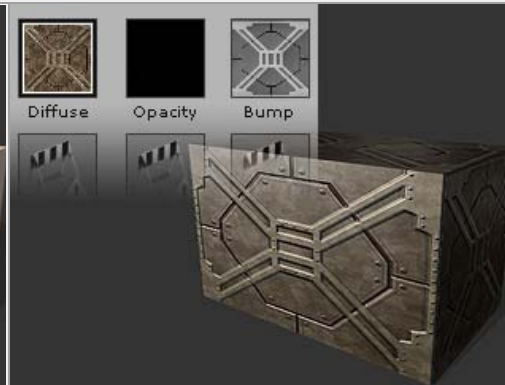


- **iClone** provides a material library in which templates with texture settings are optimized and ready for use. The extension of material templates is .imtl. (You may find them in C:\Program Files\Reallusion\iClone 3\Template\iClone Template\Materials Lib)
- Click the **Explore**  button to open the folder in which your current materials are located.
- Switch the display mode to view thumbnail images for material templates. Click **Open** to apply the selected material template

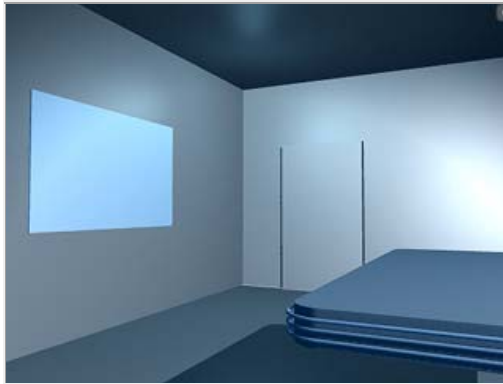




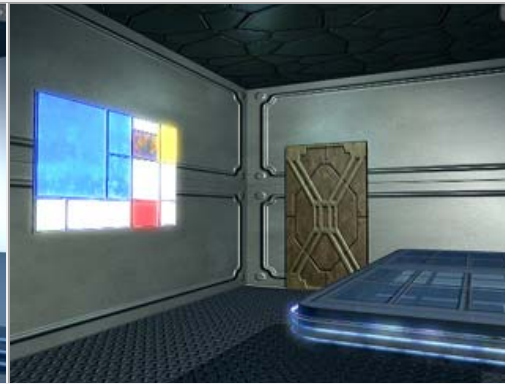
Simple model with single material ID.



Material template applied.



Compound model with multiple material IDs.



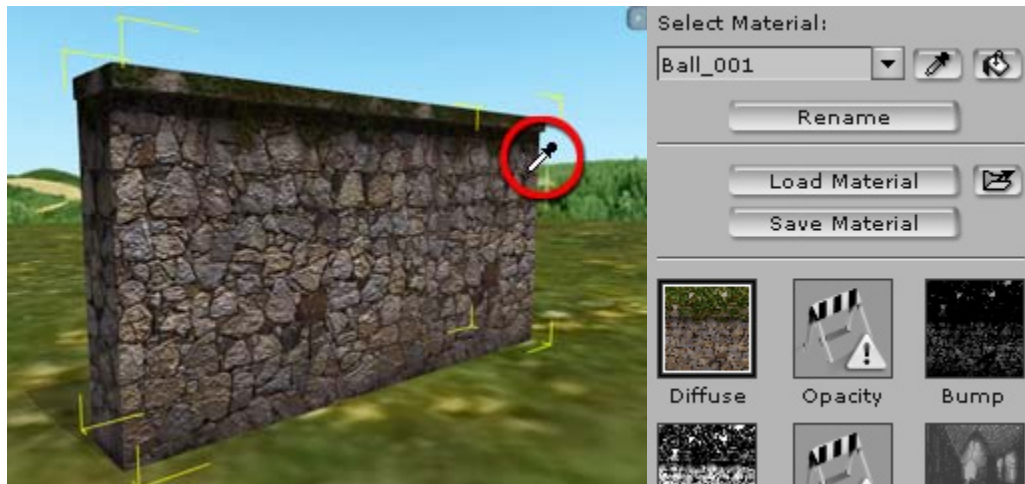
Various material templates applied to individual material IDs.

Save Material

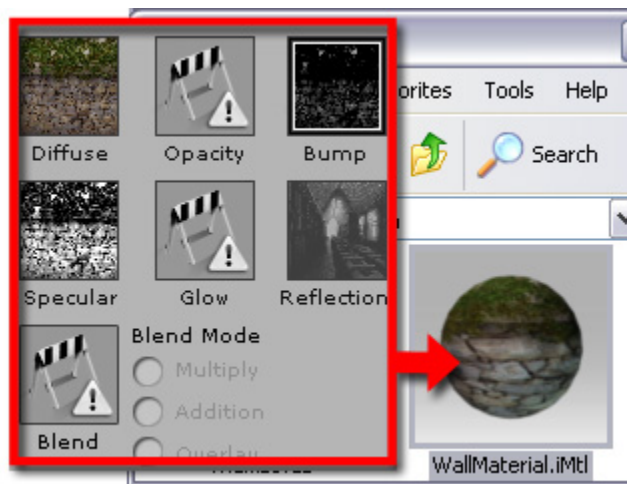
Once you save modified material settings as a new material template, they can be used repetitively afterwards.

Save as Material Template

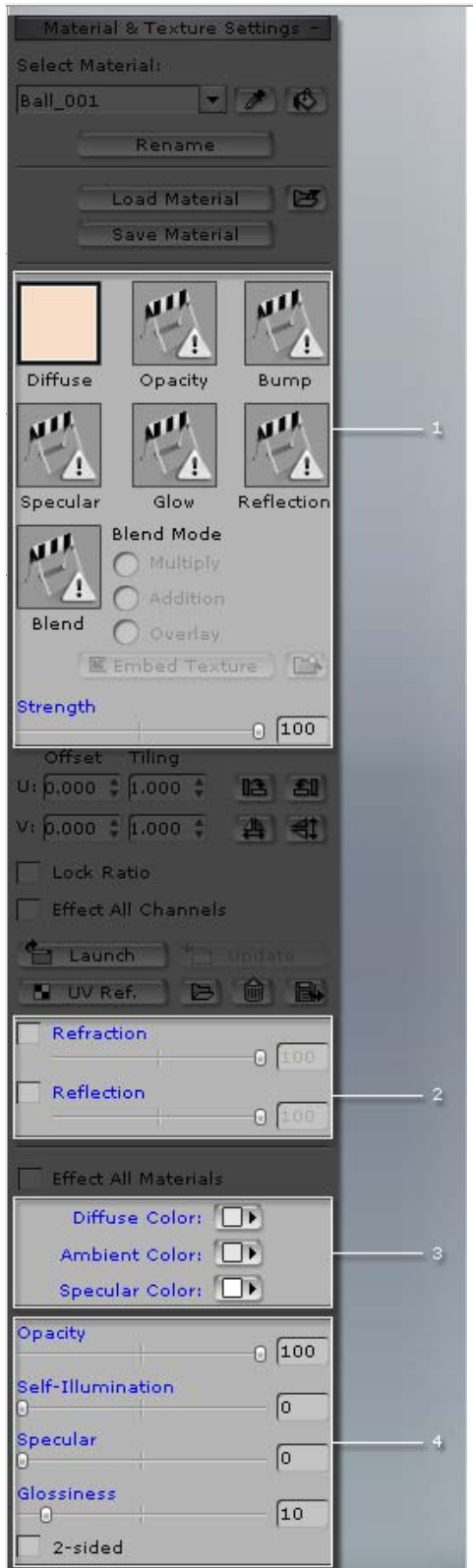
1. Select the object and then use the **Pick** tool to pick the material from which you want to save the texture settings as material template.



2. Click **Save Material** button.
3. Browse to the destination folder to store the template. If you select an existing material file, it will be replaced by the new one.



What is included in a Material Template?

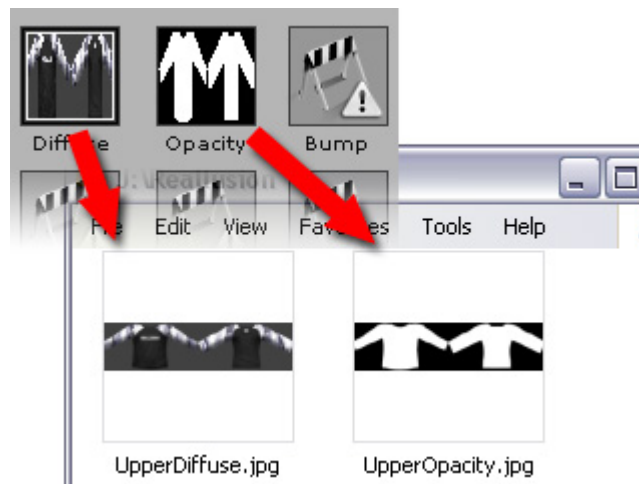
	- The texture maps for the seven channels. Please refer to the Adjusting Colors on Seven Texture Channels and Texture Channel UV Offset and Tiling sections for more information. - The Strength value of each channel. - The values of Reflection and Refraction are saved. Please refer to the Modifying Texture Settings - Advanced section for more information. - The Diffuse, Ambient, Specular colors are saved. Please refer to the Modifying Texture Settings - Advanced section for more information. - The Opacity, Self-Illumination, Specular and the Glossiness values of individual material are saved. Please refer to the Modifying Texture Settings - Advanced section for more information. - The 2-sided status is also be saved.
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Tips:

To simplify **CloneCloth** loading efforts, you may save the **Diffuse** and **Opacity** map settings as a single material template.



You may click the  button to extract texture images from material templates and save them in jpg or bmp file format.



Click the  Launch button when certain image thumbs are selected to modify the target texture images with your [image editing software](#).

Effect All Materials

When an object contains multiple material IDs, it may be a hard task for you to adjust their texture settings individually. **iClone** provides a feature for you to change them all at the same time.

1. In the **Select Material** drop-down list, pick any material to modify.
2. Modify the parameters: **Diffuse Color**, **Ambient Color**, **Specular Color**, **Opacity**, **Self-illumination**, **Specular** and **Glossiness**.
(Please refer to the [Modifying Texture Settings - Advanced](#) section for more information about the effects of these settings.)
3. Check the **Effect All Materials** to apply these settings to all the materials on the list.

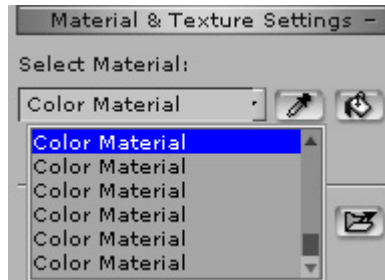
		
The initial appearance of the model.	One of the materials is modified. Diffuse Color: Blue Ambient Color: Dark Blue Specular: 155 Glossiness: 20 Effect All Materials: Unchecked	Effect All Materials: checked.

Note:

- To create your custom material library:
 1. First, create your target material library folder, or select the target folder.
 2. Click the  button and save the material into the target folder.
- Please refer to [Texture Channel UV Offset and Tiling](#) and [Synchronizing Texture UV Changes to All Channels](#) for more information.
- Please visit our [online content store](#) for the full collection of **Total Materials** - photorealistic, seamless tiling, top quality iClone materials.

⊙ Retrieving Material Settings

For compound models or models with multiple textures or material settings, it is tedious to search for the target material through the **Material** drop-down list. Though you can use the up/down arrow keys to browse through all materials if you wish. Applying multiple textures to the target mesh can make a simple model look ultra-realistic.



(As the illustration above shows, **SketchUp** names all materials that only have a color assignment as **Color Material**, so their names look the same in the **Select Material** drop-down list. It is easier to identify textured materials by their jpeg file names.)

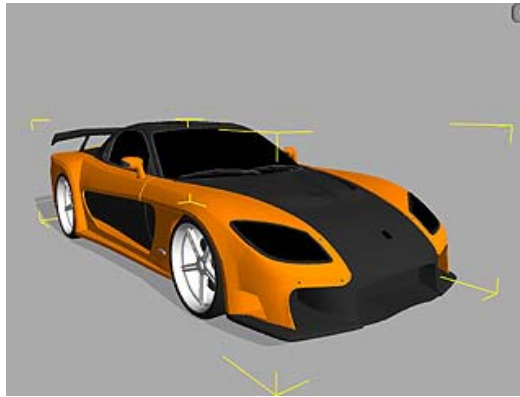
Parameters Stored in a Material Template

In addition to retrieving the images of the six channels, the parameters of the channels are also retrieved.

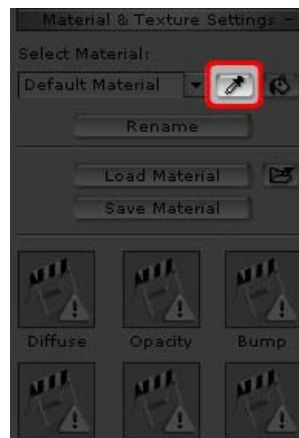
- The **Strength** of the textures.
- The **Refraction** and **Reflection** settings.
- The **Diffuse**, **Ambient** and **Specular** colors.
- The **Opacity**, **Self-Illumination**, **Specular** and **Glossiness** strength.
- The **2-sided** status.

Retrieving and Modifying Materials with Material Picker.

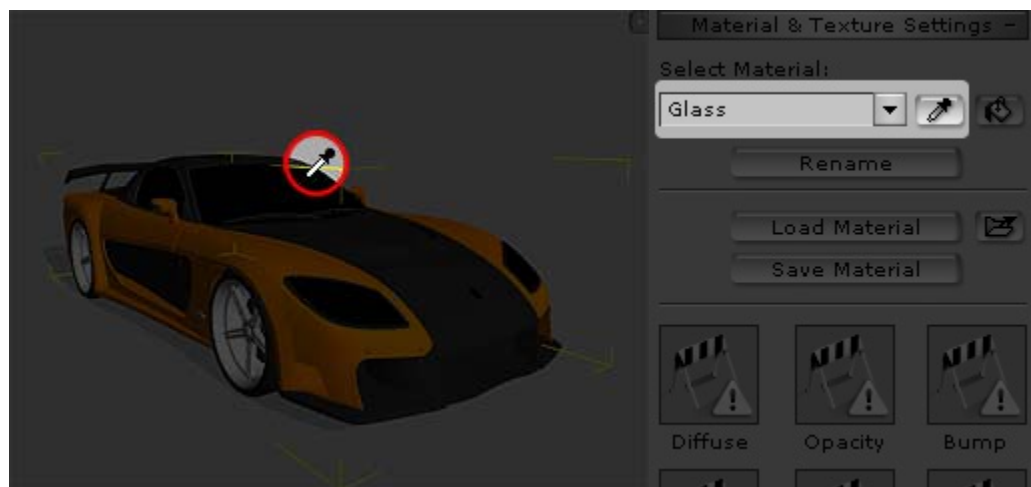
1. Select the model with the texture you wish to modify.



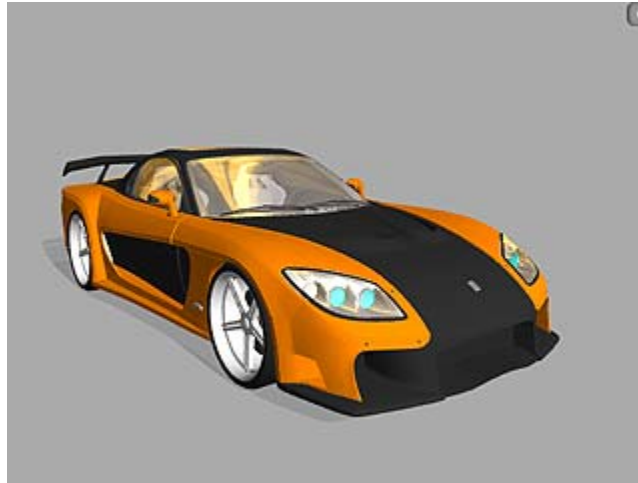
2. Press the **Picker** tool beside the **Material** drop-down list.



3. Click on the face with the desired material in the 3D viewer.



4. The material of the face is retrieved. You may then modify the settings to change the texture.



5. Repeat the steps until all materials of the model are adjusted.



Shortcut to Modify Actors' Skin Texture

With the material picker, you can also quickly modify any actor's skin texture, including the facial texture, instead of evoking the dialog box.

1. Pick the actor for modifying. Switch to **Actor/Skin**.



2. Utilize the **Pick** tool to click on the body parts to retrieve its material.



3. You can then modify the images of the seven channels to change the look of the actor's skin.



4. With the **Material Picker**, you may easily select the textures of the upper/lower body as well.

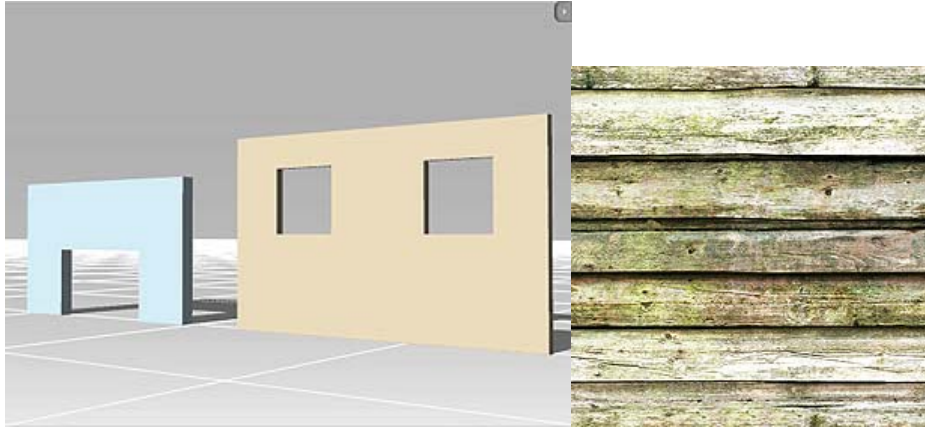


⦿ External Texture and Material Sharing

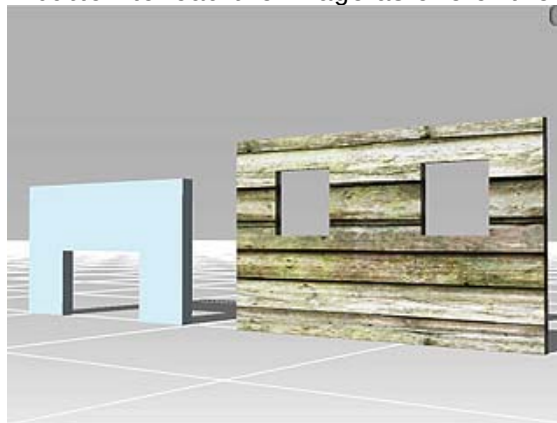
In **iClone**, there are several ways to have multiple object share one same texture or material (consists of various textures), which may decrease the size of the project if the textures need to be reused repetitively.

External Texture

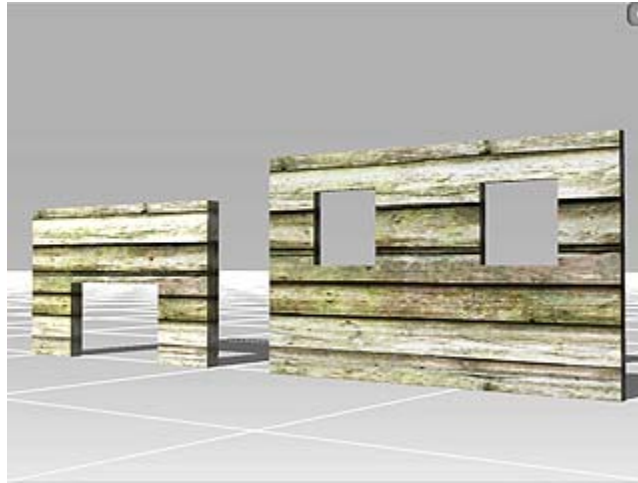
1. Prepare two objects in **iClone**, and one image as the texture image for the objects.



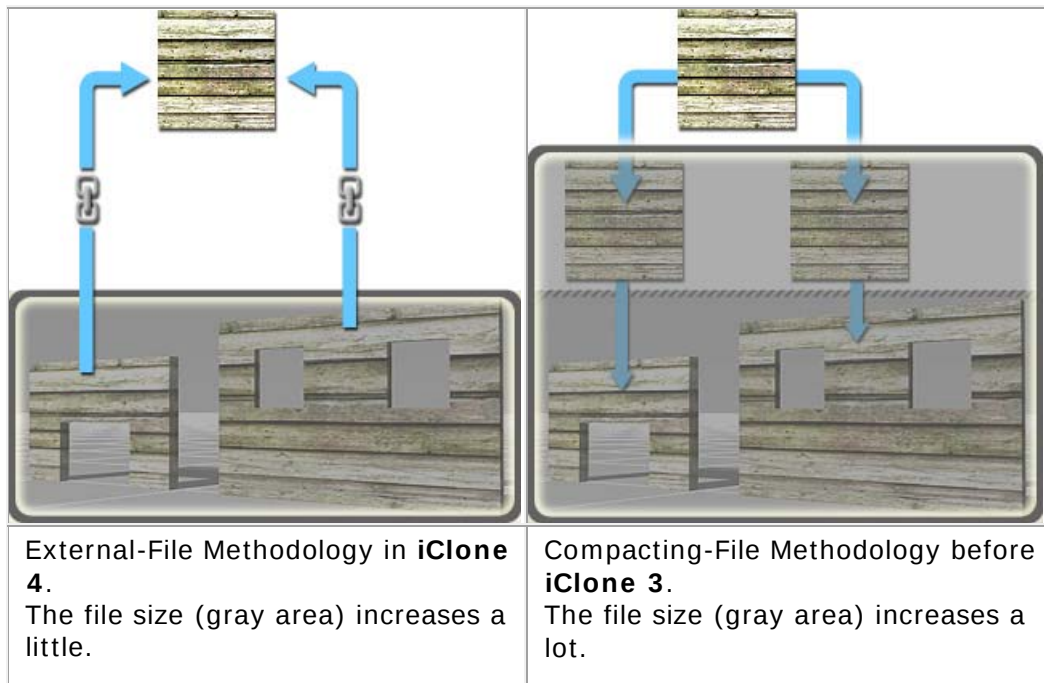
2. Double click on any one of the channels for one object.
3. In the explorer, check the ☐ External Texture box and select the image. Click the **Open** button to load the image as one of the textures.



4. Repeat step 2 and 3 for the other object.



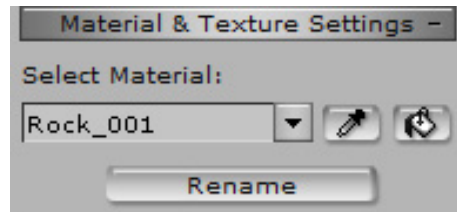
These two objects thus share the same image file as their texture. **iClone** skips compacting the image file when you save the project but instead records the path of the external file, which keeps it from increasing the project size.



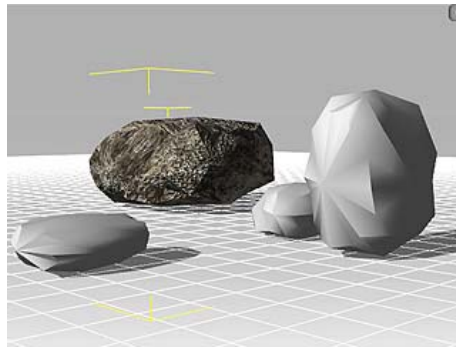
- If you modify the image file by means of any image editor, the textures for all the objects that share it update altogether.
- Please note that **Video** files are always applied using the external method.

Material Sharing

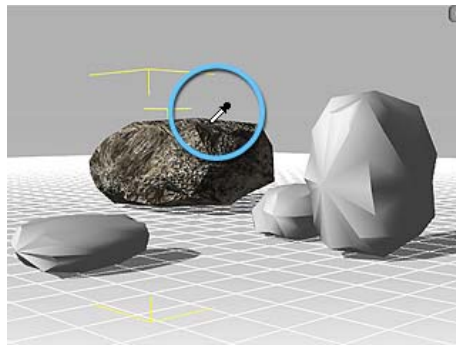
In **iClone 4**, you may also define different object to use a same material by using the **Pick** and **Paint** tools in the **Material & Texture Settings** section.



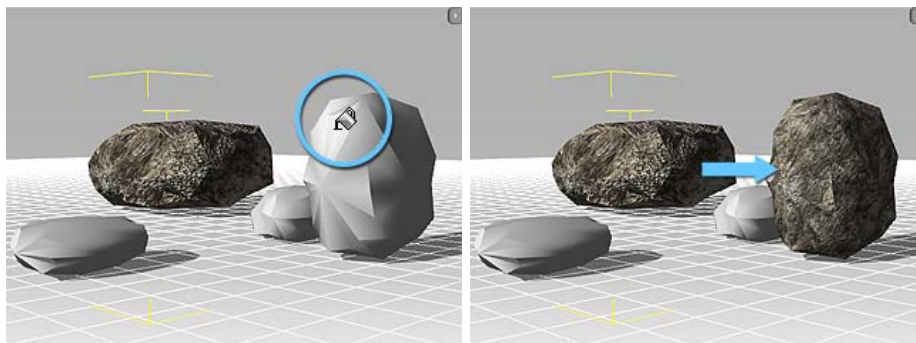
1. Select one object from which you want to share the material.



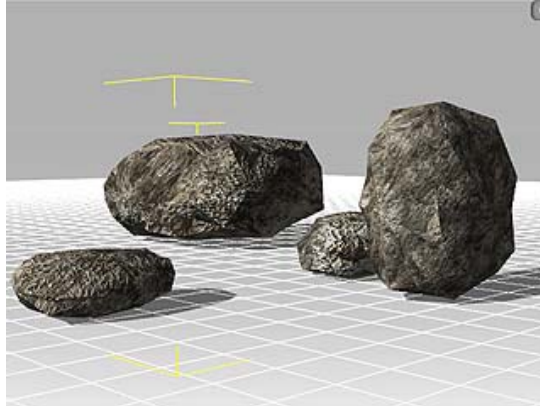
2. Press the **Pick** button and click on the face of the material for sharing. The texture images for the channels are thus retrieved.



3. Press the **Paint** button and start to click on the target faces of other objects.



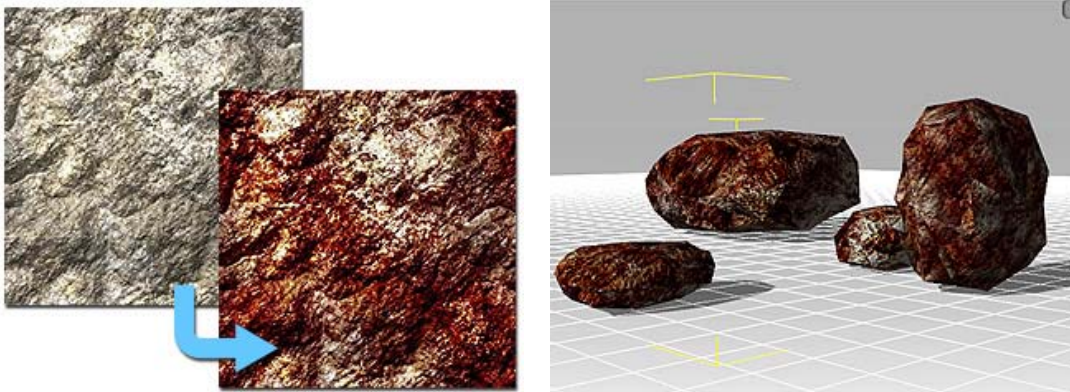
4. Repeat step 3 till all the target faces are sharing the same material (press **ESC** to cancel the **Paint** mode).



All the faces now share the same material data as the first object in step one.

Material Sync-Editing

Since these objects are using the same material, once you modify the texture channel settings in the **Adjust Color** section, the other faces sharing the same material will be altered instantly.



⦿ Material Key and Material Key Frame Animation

iClone allows you to set keys of specific parameters for the seven material channels. Thus, you may generate texture animation to enrich the look of your projects.

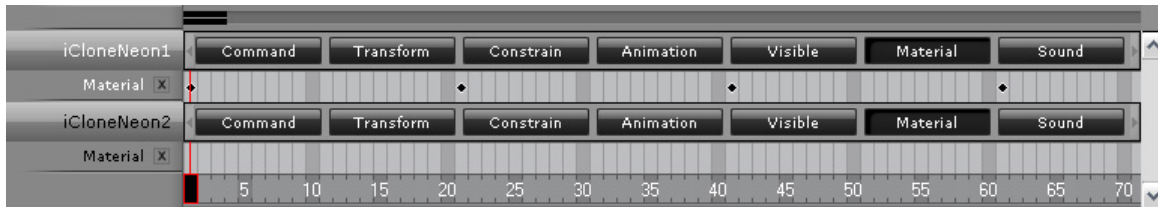
Saving Material Template VS. Material Key

The parameters that can be saved in the **Material Template** and **Material key** are slightly different as described in the following table.

	7 Channel Textures	Textures UV	Textures Strength	Reflection Refraction
Material Template (.imtl file)	Saved	Saved	Saved	Saved
Material Key (Material Track)	Saved	Not Saved	Saved	Saved

	Diffuse Color Ambient Color Specular Color	Opacity Value Self-Illumination Value Specular Value Glossiness Value	2-Sided
Material Template (.imtl file)	Saved	Saved	Saved
Material Key (Material Track)	Saved	Saved	Not Saved

Material key and the Settings

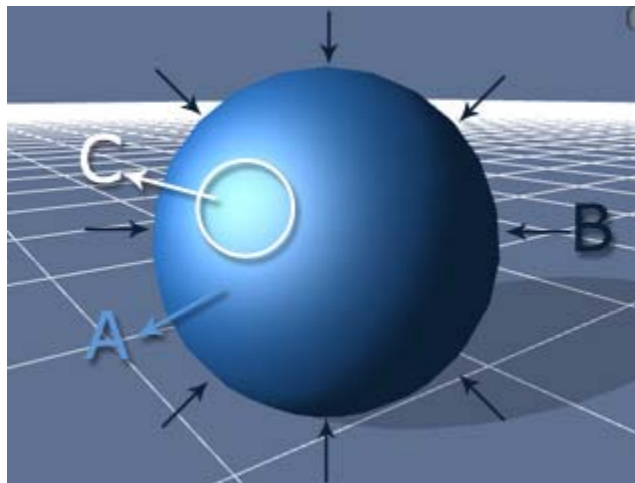


One **Material Key** stores the following settings:

A. The Strength for each texture channel

- The **Strength**.
- The values of **Refraction** and **Reflection**.

B. The Material Color: Please refer to the [Modifying Texture Settings - Advanced](#) section for more information.

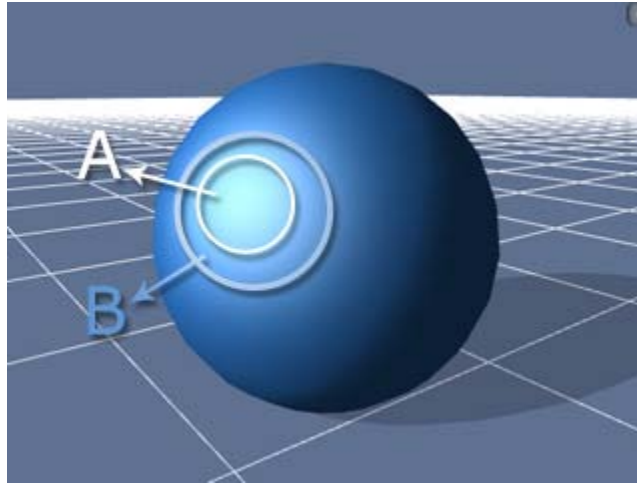


- A: The **Diffuse** color.
- B: The **Ambient** color.
- C: The **Specular** color.

C. The Opacity Value

- The value of **Opacity**: The values affect the selected material only while the other faces applied with other materials can not be influenced.

D. The Material Responding to Light: Please refer to the [Modifying Texture Settings - Advanced](#) section for more information.



- A: The value of **Specular**.
- B: The value of **Glossiness**.

E. The value of Self-Illumination.

Note:

- Material keys can only be set to **Props** and **Accessories**.
- Once you click the  button, the material keys for all the props or accessories will also be deleted.

☉ Saving Keys to Material Template

Saving your material setting as **Material Template** files can greatly save you time when you want to apply the same material to different targets.

Suppose we want to have the same neon glow effect (using the **Glow** channel) applied to several models, it would be really tedious to add keys for the glow texture to one model after another.

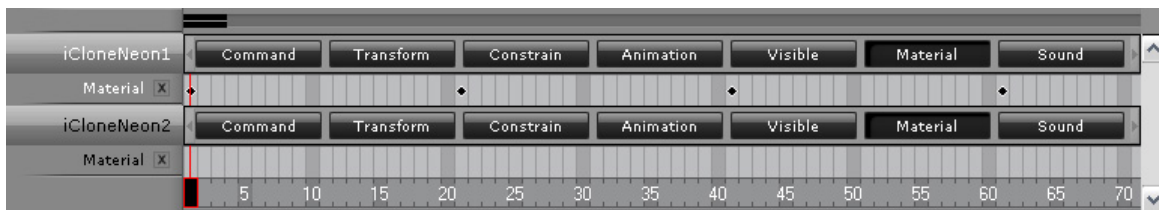


The look before adjusting textures.

1. Pick the texture for creating the glow effect of the model.



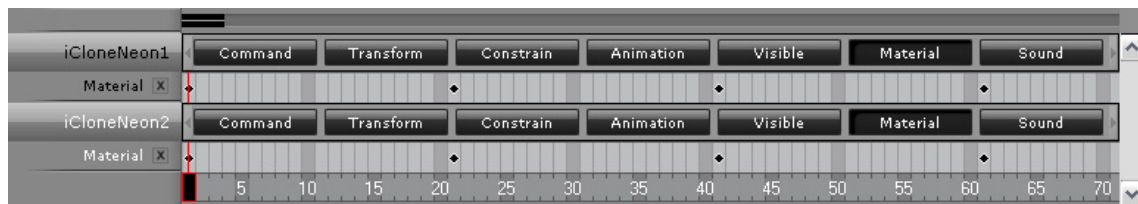
2. Add keys to create a shimmering effect of glowing.



3. Click the **Save Material** button to save the settings and **Keys**.
4. Select another model and pick its texture for the glow effect.



5. Click the **Load Material** button to load the file saved in step 3.



Keyboard Shortcuts Table

⦿ Global Shortcuts

Modify Panel		
Action (Scroll to)	Hotkey	Notes
Attach Section	I	Scroll the Modify panel to the Attach section.
Look At Section	O	Scroll the Modify panel to the Look At section.
Path Section	P	Scroll the Modify panel to the Path section.
UV Settings Section	U	Scroll the Modify panel to the UV Settings section.
Transform Section	T	Scroll the Modify panel to the Transform section.
Material & Texture Settings Section	Y	Scroll the Modify panel to the Material & Texture Settings section.
Top Section	L	Scroll the Modify panel to the Topmost section.
3D Viewer		
Function	Hotkey	Notes
Full screen mode	F11	Press  to enter, Esc to go back.
Play/pause	Spacebar	For both window mode or full screen mode.
Roll X-Z	Right mouse button	Press down and drag in the 3D viewer to roll the view on X-Z plane.

Zoom in/out	Mouse wheel	Scroll the mouse wheel to zoom in/out the 3D viewer.
Speed Zoom in/out	Right + Left mouse buttons	Press down both the right and left mouse buttons to speed up zooming of the 3D view.

Tips - Speed movement:

holding the **Shift** key while zooming, panning, rolling and rotating will increase the movement speed by 10x.

The following table summarizes the hot keys for toggling effects on/off and for performance observation

Note:

- The hotkey functions can only be used when the system is focusing on the 3D preview window. Simply click on the 3D preview area to set the window focus.
- The hotkey functions may be disabled if they conflict with other applications.

Action	Hotkey	Notes
Rendering Effects	Ctrl + F1	Switch Shader mode .
	Ctrl + F2	Toggle Bump Texturing On/Off.
	Ctrl + F3	Toggle Reflection On/Off.
	Ctrl + F4	Toggle Glow On/Off.
	Ctrl + F5	Toggle Reflection Mapping On/Off.
	Ctrl + F6	Toggle Refraction Effects On/Off.

	Ctrl + F7	Toggle Water Effects On/Off.
Shader / Display	Ctrl + F	Toggle Frame Rate (FPS) display On/Off.
	Ctrl + G	Toggle 3D Floor Grid On/Off.
	F1	Show Online Help.
	Ctrl + P	Show Preference Panel.
	F3	Show/Hide Timeline.
	Ctrl + Z	Undo.
	Ctrl + Y	Redo.
	Ctrl + A	Toggle World Axis On/Off.
	Ctrl + Q	Toggle Transform Gizmo Mode On/Off.
	Ctrl + D	Show/Hide Dummy Props.
Pop-up Menu	Right Mouse Button	Show the Pop-up Menu.
Camera Switching	F5	Switch to Preview Camera.
	F6	Switch between Custom Cameras.
	F7	Switch between Follow Cameras (an actor or iProp must be selected)

Walk / Fly Camera Navigation	Ctrl + U	Show/Hide Crosshair in Walk/Fly Camera Mode.
Director / Editor Modes	F12	Switch between Director Mode and Editor Mode.

⦿ Editor Mode Shortcuts

3D Viewer		
Function	Hotkey	Notes
Preview	F10	Press the  button to preview the render result.
Rectify the camera angle	B	Snap the camera back to the upright position.
Quick camera Positioning	A - Left S - Right D - Back F - Front G - Top H - Bottom J - Face K - All Home - 45 Degrees	Press F to view the selected object (character, accessory, prop) face front .  Press Home to snap the camera to a 45 degrees perspective to the selected object (character, accessory, prop). 
Camera	Z - Zoom	

Manipulation Switch	X - Pan C - Rotate X - Y V - Rotate X - Z	
	N	Toggle Walk Navigation Camera Mode.
	M	Toggle Fly Navigation Camera Mode.
	ESC	Exit the Walk/Fly Camera Mode.
Manipulate Camera in Object Editing Mode	Alt + Left mouse Button	Move Camera.
	Alt + Right Mouse Button	Rotate Camera.
	Alt + Both Mouse Buttons	Zoom Camera.
Tips - Speed movement: holding the Shift key while zooming, panning, rolling and rotating will increase the movement speed by 10x.		
Note: 3. The hotkey functions may be disabled if they conflict with other applications.		
Action	Hotkey	Notes
Transform	Alt + Right/Left Arrow Keys	Move along X Axis.
	Alt + Up/Down Arrow Keys	Move along Y Axis.
	Ctrl + Up/Down Arrow Keys	Move along Z Axis.

	Ctrl + Left/Right Arrow Keys	Rotate by Z Axis.
	Combining Above Keys With Shift Key	Accelerate Movement.
File	Ctrl + O	Open Existing Project.
	Ctrl + S	Save Current Project.
	Ctrl + N	New Project.
Selection	Ctrl + Left Mouse Button	Multi-Selection.
Transform Switching	Q	Toggle to Select tool.
	W	Toggle to Move tool.
	E	Toggle to Rotate tool.
	R	Toggle to Scale tool.
Snap	Ctrl + E	Toggle Angle Snap On/Off.
	Ctrl + W	Toggle Snap to Grid On/Off.
IK Related	Left Mouse Button	Move the Bone.
	Ctrl + Left Mouse Button	Select/Deselect IK start bone of Non-Human Character.

FK Related	Drag Left Mouse Button or mouse wheel	Offset the Bone.
	Right Mouse Button	Switch among Offset Axis.
Move Tool	Left Mouse Button	Move along X-Y Plane.
	Roll Mouse Wheel	Move along Z Axis.
	Right Mouse Button	Rotate by Z Axis.
	Both Mouse Buttons	Scale uniformly.
Rotate Tool	Left Mouse Button	Rotate by Z Axis.
	Right Mouse Button	Rotate by Y Axis.
	Both Mouse Button	Rotate by X Axis.
Scale Tool	Left Mouse Button	Scale uniformly.
	Right Mouse Button	Scale along Z Axis.
	Both Mouse Buttons	Scale along X-Y Axis.
Copy	Ctrl + Move/Rotate/Scale	Copy the Selected Object.

☉ Director Mode Shortcuts

Action	Hotkey	Notes
Move	W or Up Arrow Key	Move Forward.
	S or Down Arrow Key	Move Backward.
	Shift + A/Left Arrow Key	Move Leftward.
	Shift + D/Right Arrow Key	Move Rightward.
	Shift + E or Page Up	Move Upward.
	Shift + Q or Page Down	Move Downward.
	Ctrl + Click on Terrain	Move to given location.
	Ctrl + Double click on Terrain	Run to given location.
	X	Switch to Previous Move Mode.
	Z	Switch to Next Move Mode.
Rotate	A or Left arrow key	Turn Left.
	D or Right arrow key	Turn Right.

	Q	Turn Up.
	E	Turn Down.
Perform	1 ~ 0	Proceed perform presets 1 to 10.
Operate	Ctrl + Left Mouse Button click/double-click on iProp	Proceed the default Operate motion of the target iProp when the focus is on the actor. e.g. get in the car
Select Target	Shift + click/double-click	After you switch a target, the follow cam snaps to view the new target.
Pointer	Ctrl + I	Show/Hide Pointer.
Switch Follow Camera	F7	Toggle between follow cam-actor and follow cam-bird.
Mode	ESC	Exit the Director Mode .

Customize Shortcuts for Director Mode

You may follow the instructions below to customize your own shortcuts for the **Director Mode**. It is highly recommended that you keep a copy of any file before you modify it.

1. Please open the **AMLHotKey.ini** with text editor in **C:\Program Files\Reallusion\iClone 3\Config**.
2. Follow the rules to modify the content of this file.
 - o The ini file supports alphabet, digits, Alt/Shift/Ctrl, Up/Down/Left/Right and Insert/Delete/Home/End/PageUp/PageDown.
 - o Only Alt/Shift/Ctrl can be used for combination keys and use '+' to connect them.
 - o If the defined key conflicts with iClone's function keys, the function will not work.
 - o iClone reserved keys: F1 ~ F12 (function keys), Ctrl + P (Preference Panel), Ctrl + F (FPS show/hide), Ctrl + G (Grid on/off), Spacebar, Back space, Enter, Esc, Tab, \, /, [,], +, -, Numerical Keypad (same as normal number keys).
3. Save the ini file and re-launch **iClone** to validate these settings.

⦿ Timeline Shortcuts

Hotkey	Notes
Ctrl - C	Copy keys or clips.
Ctrl - X	Cut keys or clips.
Ctrl - V	Paste keys or clips.
Shift + Left mouse button click	Multi-select continuously.
Ctrl + Left mouse button click	Multi-select individually.
Ctrl + Drag	Copy keys or clips.
Drag the right edge of the clip (Loop/ Speed Switch Button down)	Loop the clip.
Drag the right edge of the clip (Loop/ Speed Switch Button up)	Accelerate/Decelerate the clip.
Delete	Delete keys or clips.
Home	Go to Start frame.
End	Go to End frame.

Left Arrow Key	Go to previous frame.
Right Arrow Key	Go to next frame.
Tab	Jump to next key or clip.
Shift + Tab	Jump to previous key or clip.
+	Zoom in the timeline.
-	Zoom out the timeline.

Creating a 3D Stereo Project

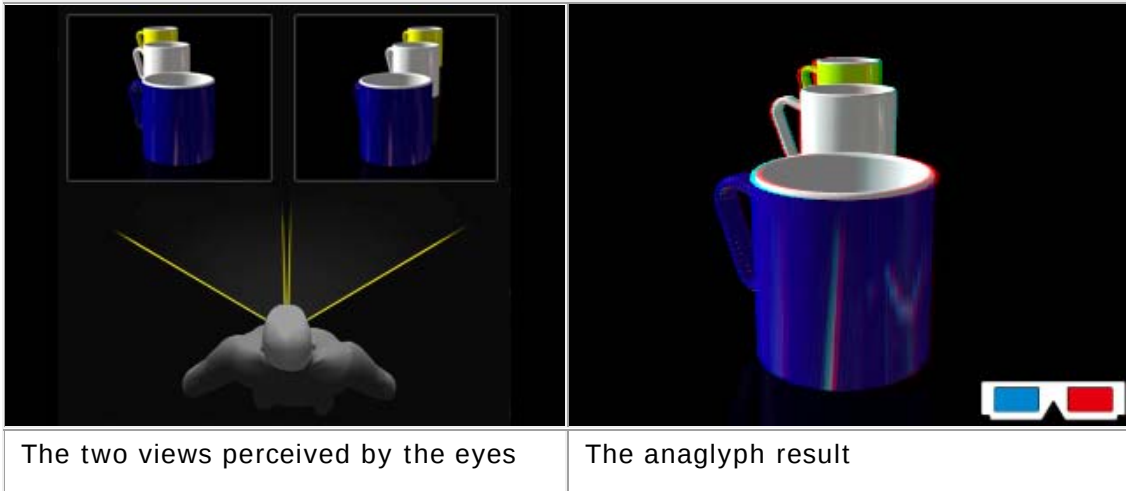
- [The Concept of 3D Stereo Vision](#)
- [Settings for Pop-out and Deep-in Effects](#)
- [How to Create a Comfortable 3D Stereo Project](#)
- [Environment for Viewing 3D Stereo Media](#)
- [Viewing Methods of 3D Stereo Media](#)

Please visit our web site for [Additional Video Demos and How-to Documents](#) .

⊙ The Concepts of 3D Stereo Vision

How is the 3D Stereo Sensation Generated?

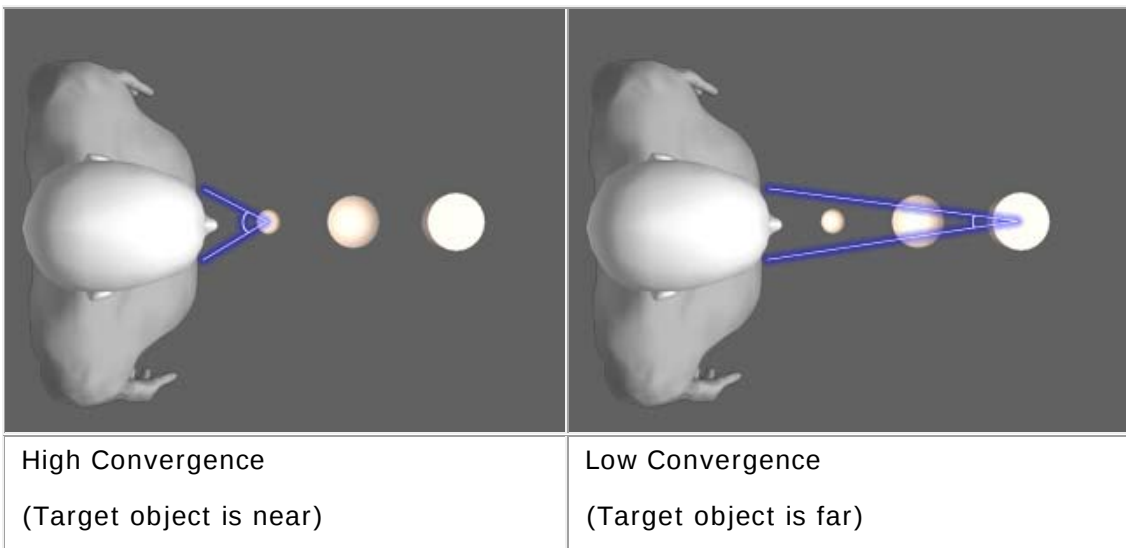
Stereo vision is generated by two perceived views in our brains. Our brain combines the similarity of the two views, while the small differences between them lead our mind to sense the depth of space. As a result, these two views turn out to be a single three dimensional stereo picture.



There are two primary factors to generate 3D stereo vision, **Convergence** and **Parallax**.

Convergence

The convergence is the angle formed by your eyes and the observed object. The higher the angle value is, the nearer the observed object is to your eyes, and vice versa.



Therefore, when the convergence is fixed, any object between you and the convergence point will be closer to you, while the object beyond the convergence point will be farther away from you.

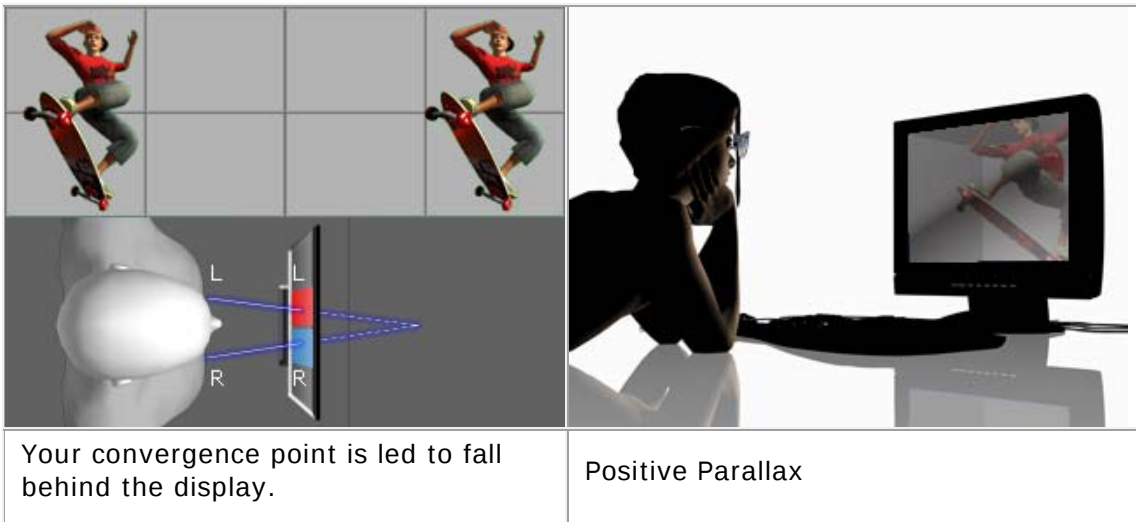
Please note that if the **Convergence** is higher then 6 degrees, then your eyes will feel uneasy as the object is too close. On the contrary, if the value is too small, then the object will seem too far away, thus losing the 3D stereo effect.

Parallax

The parallax images are the images passing through to your left and right eyes. All 3D stereo media contain a pair of parallax images that individually, and simultaneously, pass to both your eyes. This is to convince your brain that there is an existence of depth in the media.

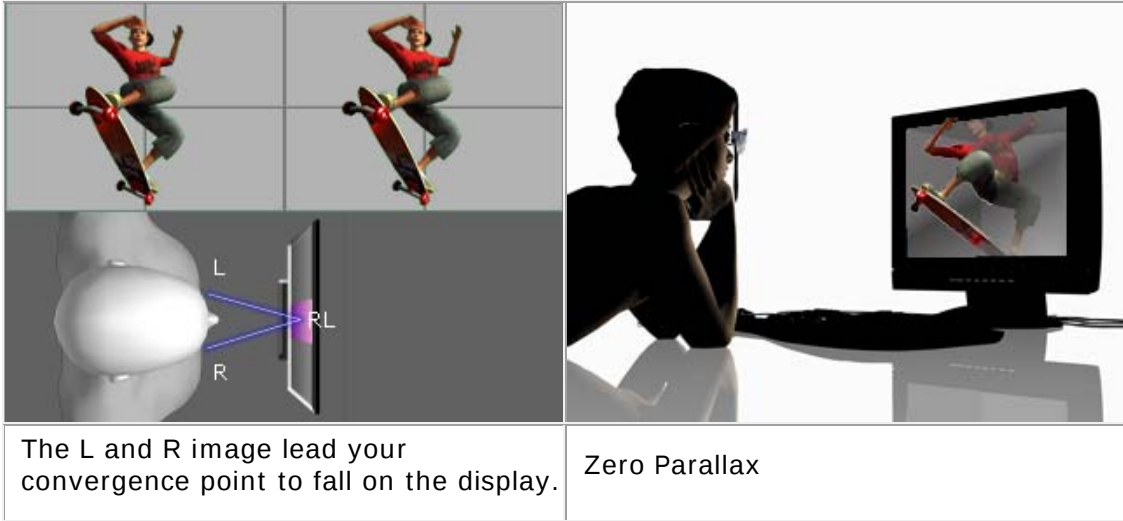
Positive Parallax

When the target object offsets to the right in the left image, and offsets to the left in the right image, then your binocular focus is led to fall behind the display. This phenomena is called **Positive Parallax**.



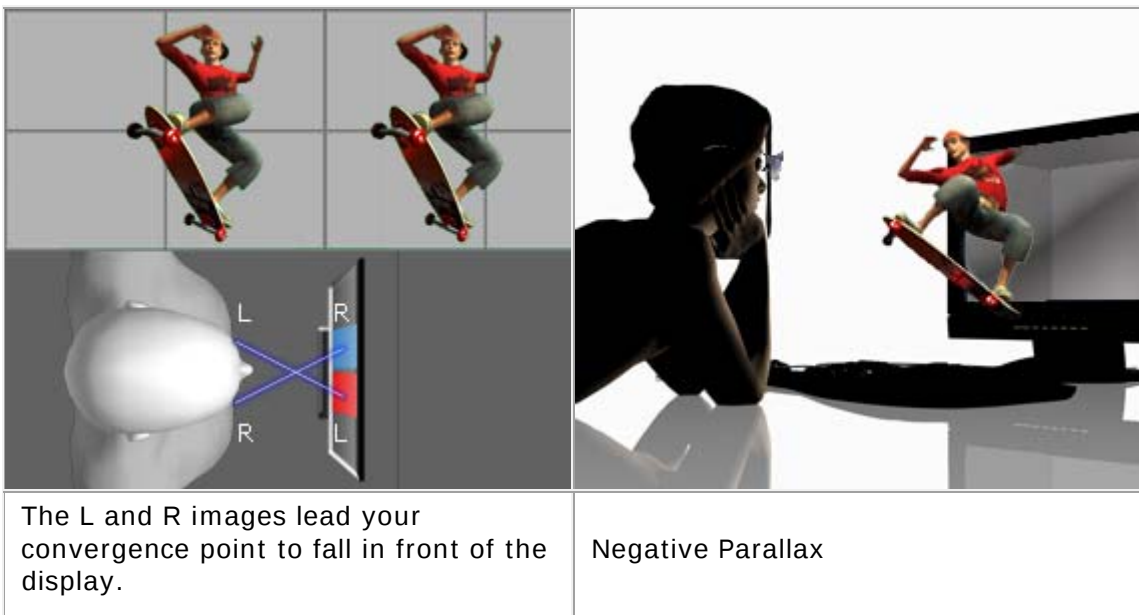
Zero Parallax

When the paired parallax images superimpose on the display, then your binocular focus is led to fall on the same display. This phenomena is called the **Zero Parallax**.



Negative Parallax

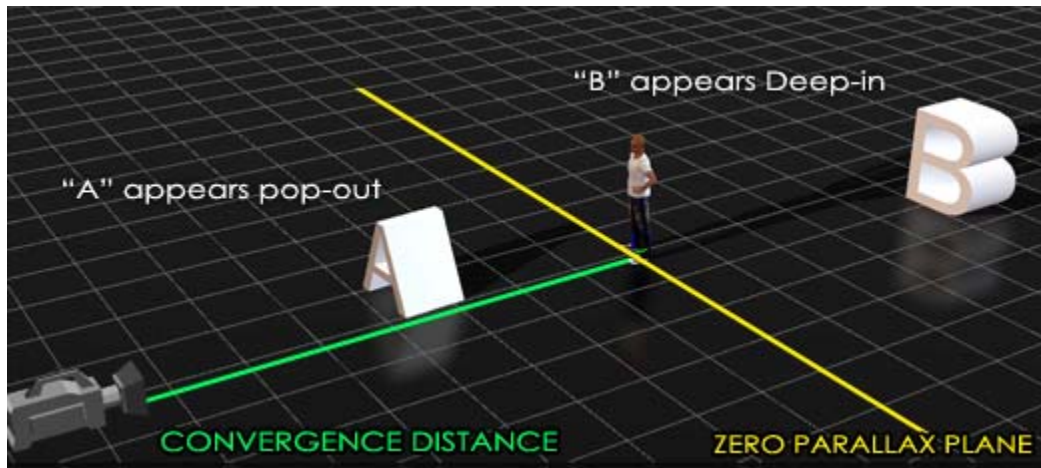
When the target object offsets to the left in the left image, and offsets to the right in the right image, then your binocular focus is led to fall in front of the display. This phenomena is call **Negative Parallax**.



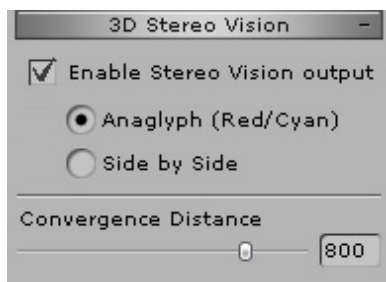
⦿ Settings for Pop-out and Deep-in Effects

Determine the Pop-out and Deep-in Effect

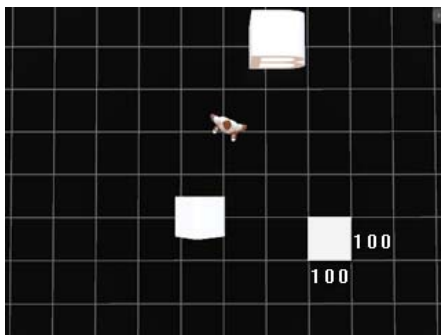
The **Convergence Distance** (cm) defines the **Zero Parallax Plane** location that is away from the current camera.



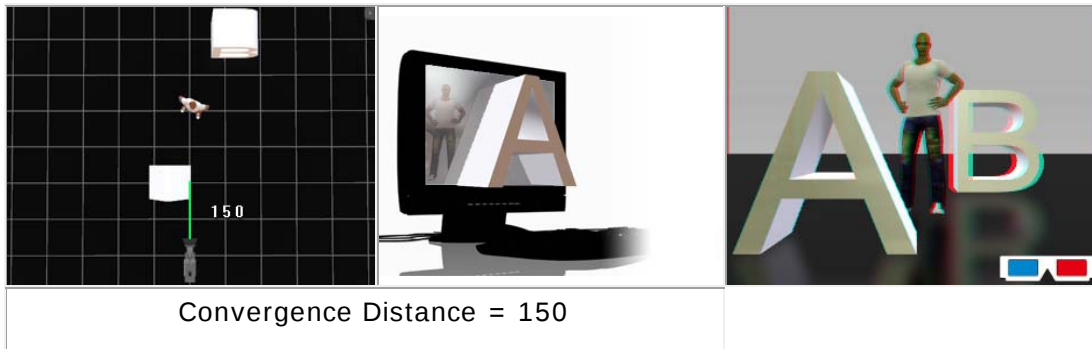
To define the pop-out and deep-in effects in **iClone**, you only need to set the **Convergence Distance** value.



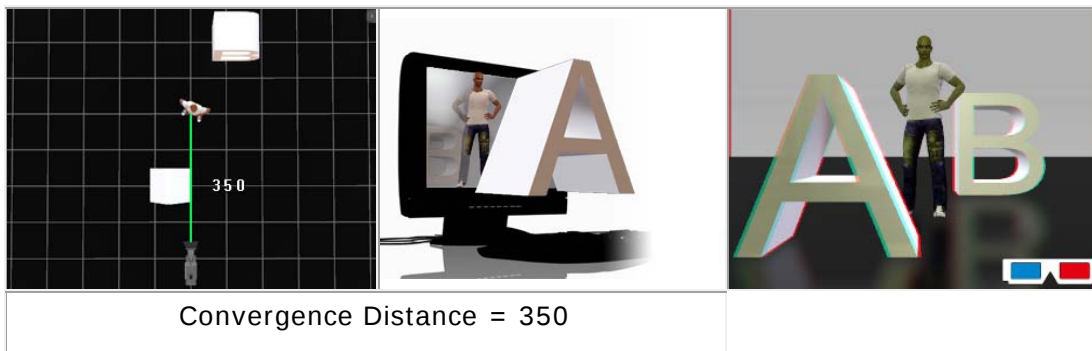
The default grid size is 100 cm x 100 cm. Therefore you may use the **Top** view of the camera to define the approximate Convergence Distance.



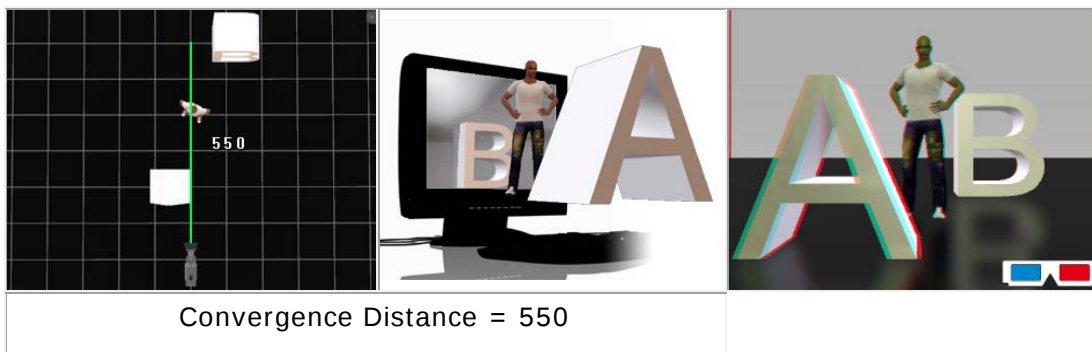
If you set the convergence distance to the "A" 3D text, then the other objects will appear with a deep-in effect.



If you set the convergence distance to the actor, then the "A" 3D text will pop-out and the "B" 3D text will appear with a deep-in effect.



If you set the convergence distance to the "B" 3D text, then the other objects will pop-out as they are in front of the **Zero Parallax Plane**.



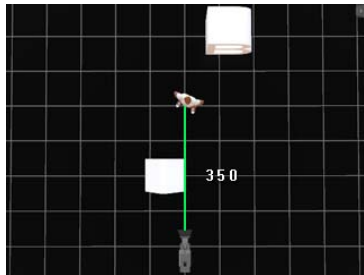
Please note that when you export an anaglyph media, any object on the **Zero Parallax Plane** will not split while the **pop-up** objects split into cyan (left) and red (right) and the **deep-in** objects split into red (left) and cyan (right).

Calculating the Best Position for Viewing 3D Stereo Media

To find the best position for viewing in the real world, calculate the width of the **Zero Parallax Plane** (In this section, the actor in the above example is now taken as the target object).

Finding the Ratio in iClone

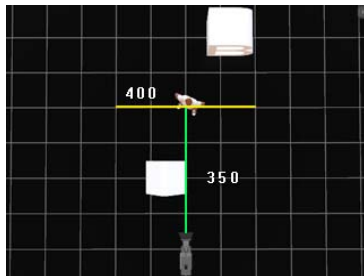
1. Use the top view to count the **Distance** value between the camera and the target object.



2. Switch to the frontal view and calculate the visible **Width** value (by counting the grid) where the target object is.



3. Use these two values to get a ratio. This ratio is unique for this project and will be later used in real world viewing.



400 : 350

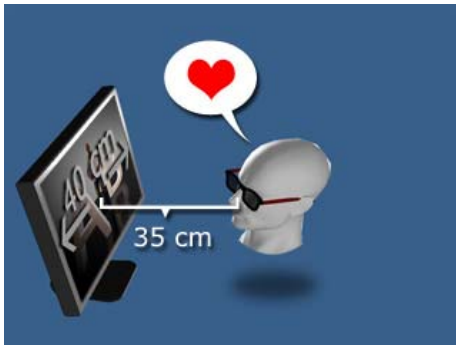
4. Export the project as a 3D stereo media.

Best Position for Viewing in the Real World

1. Count the width of the display device that is playing the media.

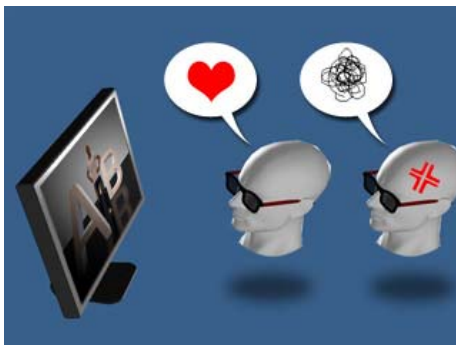


2. Then decide the approximate viewing distance away from the display device in accordance with the ratio. This is the ideal distance position for viewing the best 3D sensation.

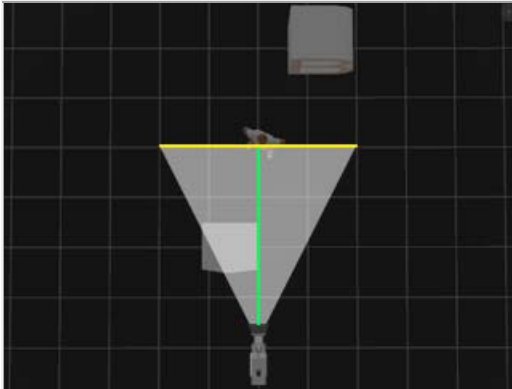


$$400 : 350 = 40 : 35$$

3. Viewers within this distance will experience a better 3D stereo effect while viewers outside of the distance will perceive a weak 3D stereo effect.



To experience the best 3D viewing results in the real world, arrange your display device and your viewing location to the similar ratio triangle in **iClone**.



Triangle in **iClone**



Similar Triangle in the Real World

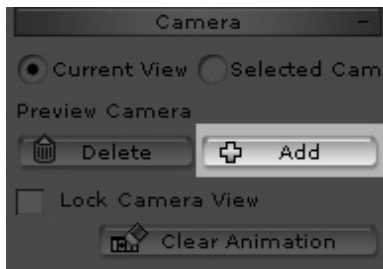
⦿ How to Create a Comfortable 3D Stereo Projects

If you would like to create a project with the best 3D stereo results, then please follow the guidelines below. In the below example, the character is set to be the main target:

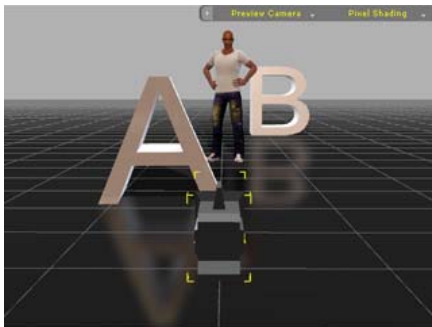
1. Adjust the **Preview Camera** to the perspective from which you want to view the scene.



2. Add a custom camera. By default, it will have the same settings as the preview camera.

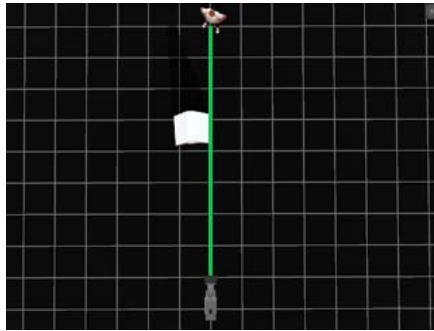


3. In the **Preview Window**, switch the view to the **Preview Camera**.
4. Move the preview camera backwards to where you can see the **Custom Camera**.

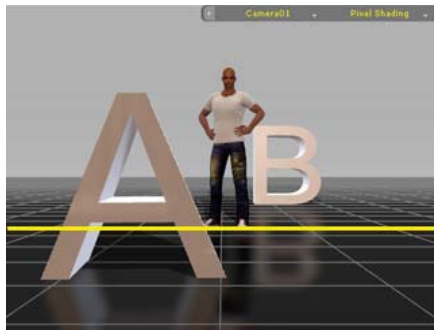


5. Change to the **Top View** of the preview camera. (Hotkey: G)

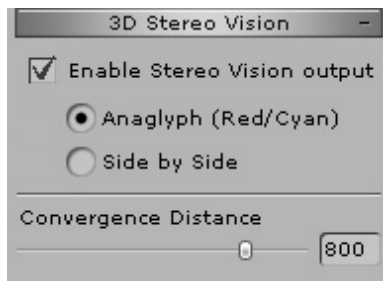
6. Measure the distance value between the custom camera and the target object. This value will be the [Convergence Distance](#).



7. Switch to the custom camera and measure the width value of the [Zero Parallax Plane](#).



8. Go to **Export**, and select any of the **Image**, **Video** or **Image Sequence** buttons.
9. Enable the **3D Stereo Vision** box and choose the **Anaglyph (Red/Cyan)** or **Side by Side** radio button.
10. Set the **Convergence Distance** to the number value measured in step 6.



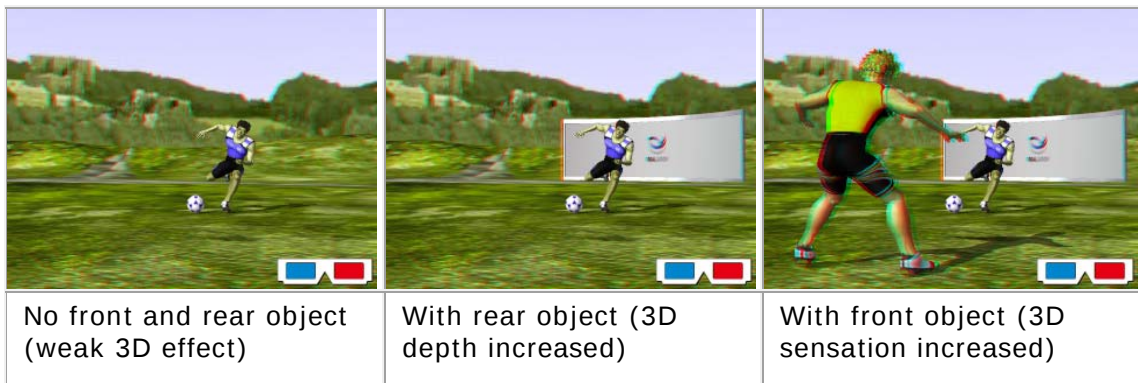
11. Export the project as a 3D stereo media.



Strength the 3D Sensation: Object Arrangement and Camera Lens.

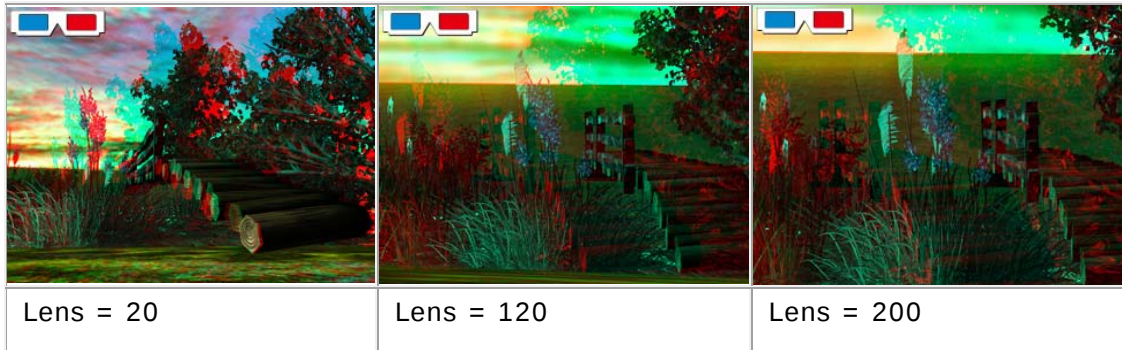
Object Arrangement

In order to generate believable 3D stereo content, it is recommended that you create a scene with objects in near perspective, middle perspective and far perspectives.



Camera Lens

The camera lens may increase or decrease the sensation of 3D stereo depth. Given a same project, a wide angle (low lens value) may provide a more pronounced 3D stereo sensation than a long-take angle (high lens value) may. The higher the lens value, the harder for your eyes to focus on the target object.



Note:

- Any 2D-based effects, such as **2D Backgrounds** or **Image Layers**, may hinder the 3D sensation. It is recommended that you avoid these effects in your 3D stereo projects.
- Please refer to the [How to...](#) page for more information about how to create an appropriate 3D stereo media.

🕒 Environment for Viewing 3D Stereo Media

After exporting your 3D stereo content, you may need some specific viewing devices.

	No 3D Device Required	3D Device Required	
	Anaglyph (Red / Cyan)	Polarization	Shutter
Stereo Format	Anaglyph	Side by Side	Side by Side
Player	Any General Video Player	3D Player (Usually Bundled with 3D Displays) Free Stereo Movie Maker Stereo Movie Player Paid DDD Player Stereoscopic	3D Player (Usually Bundled with 3D Displays) Free Stereo Movie Maker Stereo Movie Player nVidia 3D Vision Player Paid DDD Player Stereoscopic
Glasses	Red/Cyan Glasses 3D Passive Glasses List	Polarization Glasses 3D Passive Glasses List	Shutter Glasses 3D Active Shutter Glasses List
Display	General Display	3D Display (Polarization)	3D Display (Shutter)
Graphic Card	General Graphic Card	General Graphic Card	3D Graphic Card (nVidia 9600 or above) NVidia Total Solution
For more information on available 3D products, please refer to the Available 3D Products page. Also visit our web site: More Live Demos and How-to Documentations .			

⊙ Viewing Methods of 3D Stereo Media

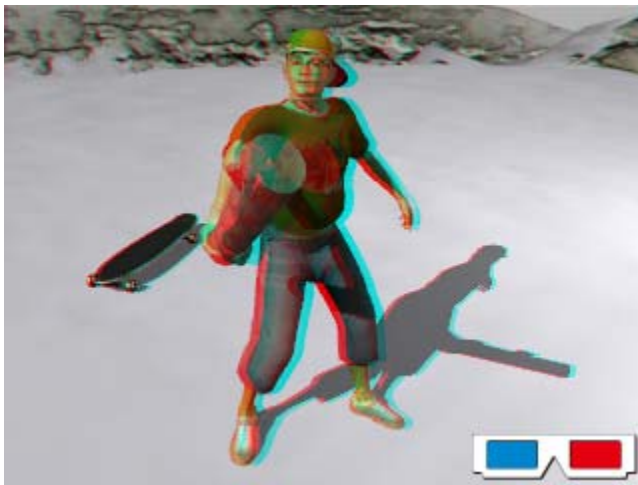
- [Viewing with Any Device](#)
- [Viewing with Specific External Devices](#)
- [Viewing with Bare Eyes](#)
- [Viewing on YouTube](#)

► Viewing with Any Device

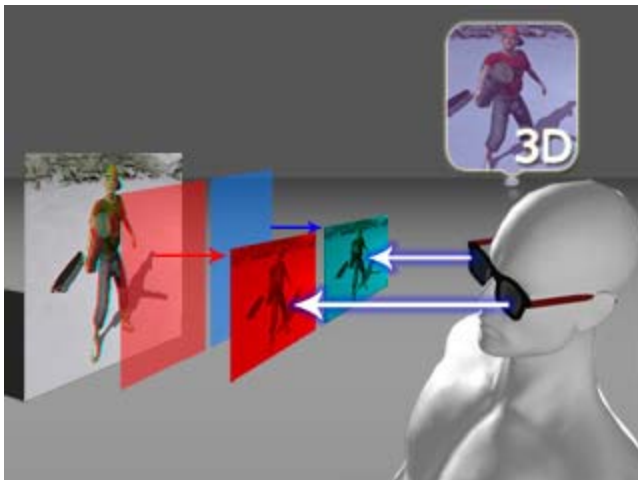
If you would like to view your 3D stereo media with any common device, then you may export the media in **Anaglyph** format. The only equipment needed is a pair of **Red-Cyan** glasses.

Anaglyph (Red/Cyan) Method

This method employs anaglyph media and anaglyph filters. Anaglyph media can be videos or images made of two color layers. These two layers, containing differently filtered colored images for left and right eyes (as described above), superimpose in each frame (for video) or image.



In order to produce the sensation of depth, you must use two identical color filters (**Red-Cyan** glasses) to pass images separately to the left and right eyes. However, this method can result in color-loss issues due to the colored filters.

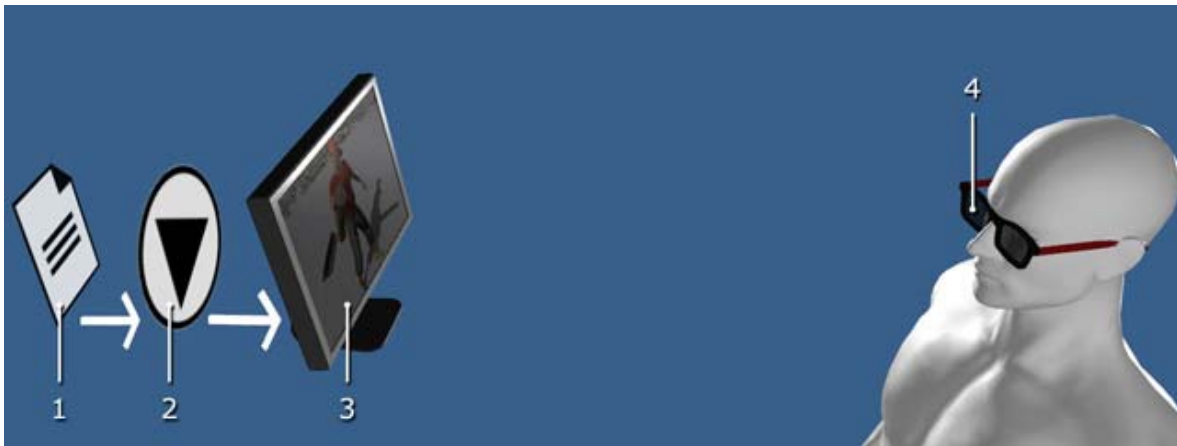


► Viewing with Specific External Devices

If you would like to view your 3D stereo media without any color loss issue present in the anaglyph solution, then you may choose to export your media in **Side by Side** format. However, this method requires specific playback devices for viewing.

Side by Side Method

In order to have a better stereo vision experience, then it is recommend that users employ the following prerequisites:



1. Side by side media (exported from **iClone**).
2. Specialized player (for creating alternating-frame sequencing or superimposed video).
3. Specialized display.
4. Filtering devices (for separately filtering images to the left and right eyes).

The interval time to playback the left and right images are rather short. The human brain takes the paired images and synchronizes them together in order to generate the feeling of depth.

For more details about players, displays and filter devices, please refer to the [Environment for Viewing 3D Stereo Media](#) section.

► Viewing with Bare Eyes

Side by Side Method - Without Equipment

This method utilizes media that consists of a pair of side-by-side offset frames (for video) or images. You do not need any special device to view this media, you only need to adjust the focus of your binocular vision so that the images from both sides overlap with each other.



In order to overlap the paired frames, or images, and sense the depth of the media, you may employ your bare eyes with the **Parallel Viewing** technique.

Parallel Viewing Method

You may need to practice in order to learn how to use this viewing technique:

1. Look at any far away object that is beyond your display device.
2. You may then notice that the two actors may double and appear as four.



3. Then adjust your eyes so that the two actors, in the middle, overlap with each other. Eventually you will see the 3D actor pop-out in front of you.

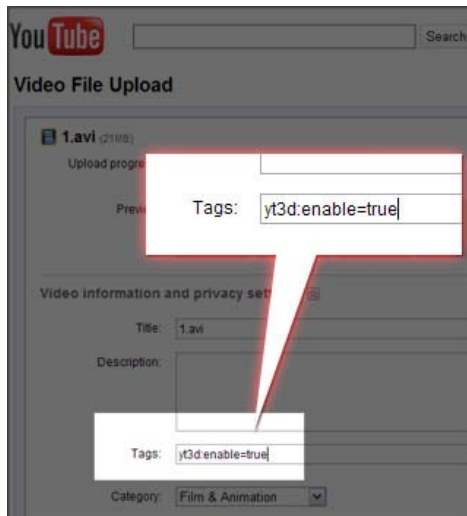


► Viewing on YouTube

Uploading to YouTube

If your 3D stereo media is in **Anaglyph** format, then you may simply upload it to **YouTube** with any conventional method. If you would like to upload your 3D stereo media to **YouTube** in **Side-bySide** 3D format, then follow the steps below:

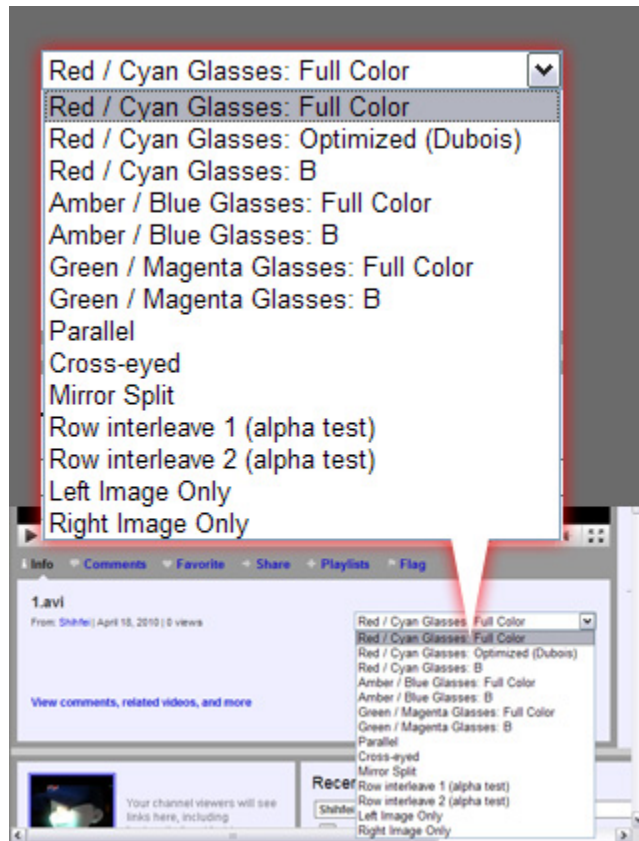
1. Prepare your 3D stereo media.
2. Upload it to **YouTube**. In the **Tag** section, type in "**yt3d:enable=true**".



3. On the video page, you may encounter a warning message. Click on **Click Here** to enable the 3D controls.



4. You may then select your media type in the drop-down list.



5. Any Visitor may then use **YouTube** as a 3D player.

Note:

- o If the 3D result is not correct, you may add "**yt3d:swap=true**" to fix the issue.
- o If you choose any type other than two-color methods in step 4, then you must have [specific display devices](#) to perceive the correct 3D stereo effect.
- o For more details on 3D stereo settings, please refer to the **YouTube** [Getting Started: 3D Content](#) page.

Export

You can export a project in the following ways:

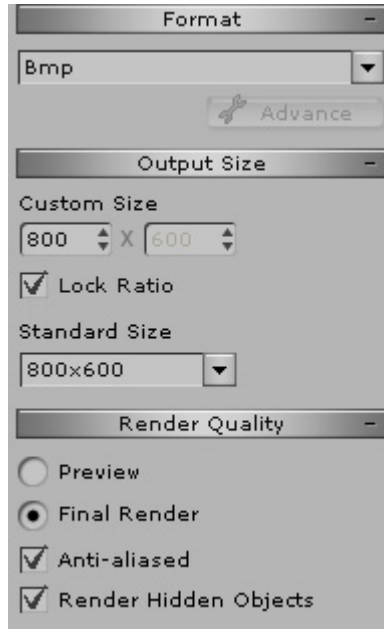
- [3D Stereo Media](#): Export your project as 3D stereo media in **Anaglyph** or **Side-by-side** format.
- [Images](#): Export as still images in BMP, JPG, TGA, GIF or PNG.
- [Video](#): Export as video in AVI (**HD format included**), RM, WMV, Mp4 for PC or Flash Video.
- [Alpha Video](#): Export as alpha video in AVI (**HD format included**), RM, WMV, Mp4 for PC or Flash Video.
- [Image sequence](#): Export as animated graphic files such as GIF animation, BMP sequence, JPG sequence, TGA sequence, or PNG sequence.
- [popVideo](#): Export as popVideo files for editing in **iClone** or **WidgetCast**.
- [Widget Output](#): Export as iWidget files for editing in **WidgetCast**.

⦿ **Exporting 3D Stereo Vision Media**

If you want to output a 3D stereo media, then please refer to the [Sharing 3D Stereo Media](#) section for more information.

🕒 Exporting an Image

The export images area is split into three sections: **Format**, **Output Size** and **Render Quality**



Format

1. Use the drop down list to choose BMP, JPG, TGA, GIF or PNG format.
2. Click the **Advance**  **Advance** button to display the advanced options.
Advanced options vary according to the output format you have selected.

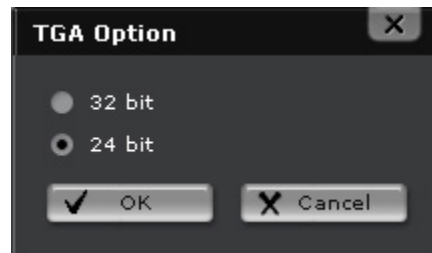
JPG

Use the slider to adjust JPG quality.



TGA

Select 32 or 24 bit TGA output. 32 bit TGA images containing Alpha channels are more suitable for image and video composition.



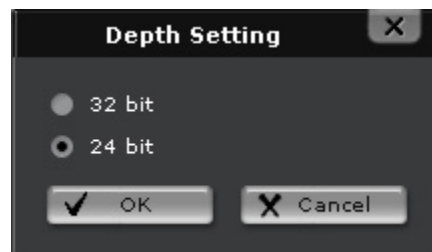
GIF

Select the number of colors and transparency options for GIF output. When exporting GIF images with transparency, turning off the Anti-Aliased option will produce cleaner edges.



PNG

Select 32 or 24 bit PNG output. 32 bit PNG images containing Alpha channels are more suitable for image and video composition.



Output size

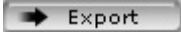
You can define the size of the exported image in the **Output Size** field. To define output size:

Select either a **Standard Size** or define a **Custom Size** using the spinner arrows.

Please note that if you activate the **Lock Ratio** box, you can only adjust the width of the project while the height is updated automatically in current ration.

Render quality

The render quality can be set to **Preview** or **Final Render** using the radio buttons. Check the **Anti-Aliased** checkbox to export an anti-aliased image. An anti-aliased output will produce an image with less jagged edges and pixelated areas. You may also enable the **Render Hidden Objects** option in case some objects were hidden during the editing process.

Click the **Export**  button to export the image.

⦿ Exporting a Video

The export video area is split into 4 sections: Format, Output Size, Render Quality, and Output Range.

The screenshot shows a vertical panel of video export settings. It is divided into four main sections, each with a title bar and a minus sign on the right:

- Format:** Contains a dropdown menu set to "AVI", an "Advance" button with a wrench icon, and another dropdown menu set to "No Profile".
- Output Size:** Includes a "Custom Size" section with input fields for "320" and "240" separated by an "X", a checked "Lock Ratio" checkbox, a "Standard Size" section with a dropdown menu set to "320x240", and a "Pixel Aspect" section with a dropdown menu set to "100".
- Render Quality:** Features three radio buttons: "Preview" (unselected), "Final Render" (selected), and "Anti-aliased" (checked). There is also a checked "Render Hidden Objects" checkbox.
- Output Range:** Includes two radio buttons: "All" (unselected) and "Range" (selected). Below the "Range" button are input fields for "From 1" and "to 2000".

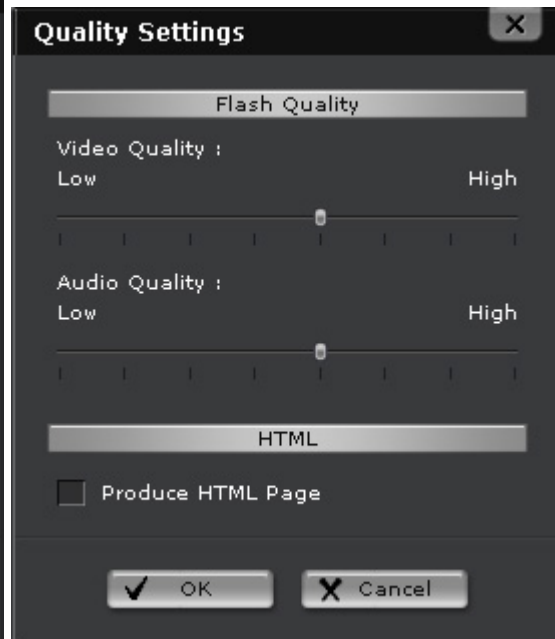
At the bottom of the panel, there is a "Frame rate" section with a slider and a numeric input field set to "15".

Format

1. Use the drop down list to choose AVI, RM, WMV, MP4 or Flash Movie format.
2. Click the **Advance**  **Advance** button to display advanced options.
Advanced options are only available when you select MP4 for PC format or Flash Video.



MP4 for PC settings



Flash Video settings

Output size

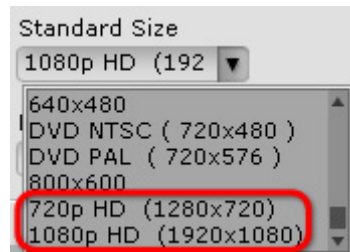
You can define the size of the exported image in the **Output Size** field. To define output size:

Select either a **Standard Size** or define a **Custom Size** using the spinner arrows.

Please note that if you activate the **Lock Ratio** box, you can only adjust the width of the project while the height is updated automatically in current ration.

Note:

- The **HD** media files of the AVI format can be selected in the **Standard Size** drop-down list.



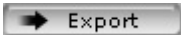
- The flexibility of the output size depends on the video format you choose. WMV and MP4 have specific restriction on output size defined by the profiles.

Render quality

The render quality can be set to **Preview** or **Final Render** using the radio buttons. Check the **Anti-Aliased** checkbox to export an anti-aliased image. An anti-aliased output will produce an image with less jagged edges and pixelated areas. You may also enable the **Render Hidden Objects** option in case some objects were hidden during the editing process.

Output range

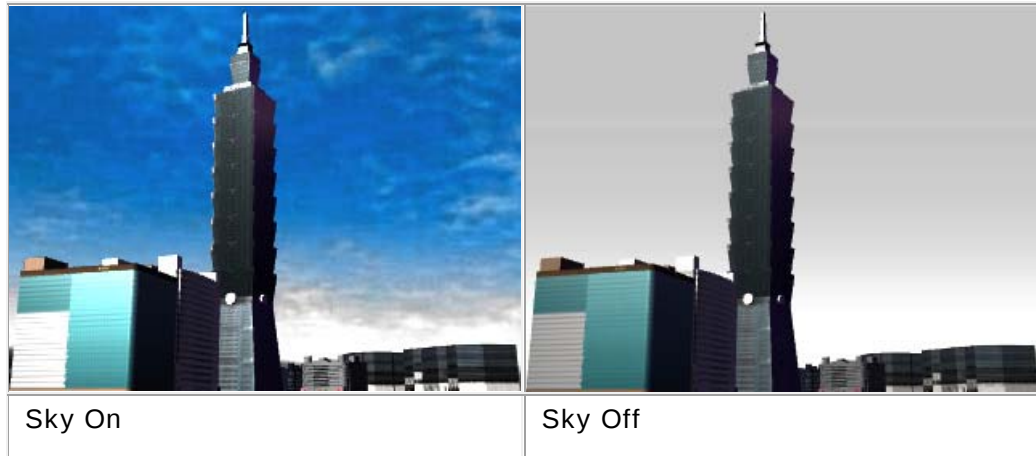
You can either export the entire video, or a specific range of frames. Select the output range using the radio buttons in the **Output Range** field. You can also set the **Frame Rate** here using the slider. The output range can also be set using the [triangle markers](#) below the play bar.

Click the **Export**  button to export the video.

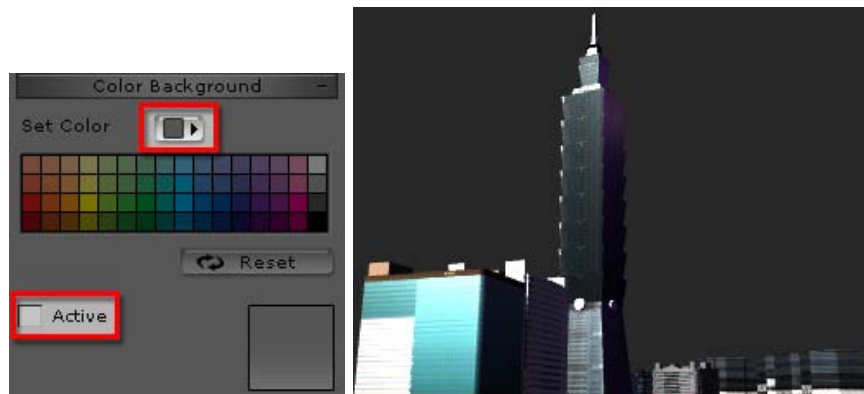
⦿ Exporting an Alpha Video

If you would like to export an alpha video in order to mask out other videos with external video editing tools, then please follow the steps below:

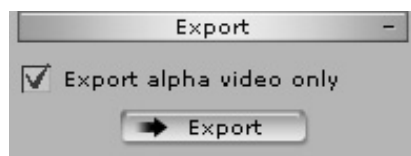
1. Prepare an **iClone** project. Remove the **Sky** and optionally remove the **Terrain**.



2. Go to **Stage/2D Background**, and in the **Modify** page, disable the **Active** box so that the background turns to a solid color.



3. Go to **Export/Video**, and in the **Modify** page, disable the **Enable the Stereo Vision Output** box.
4. Leave the other settings in default. For more information, please refer to the [Exporting a Video](#) section.
5. At the bottom of the **Modify** panel, enable the **Export alpha video only** box.



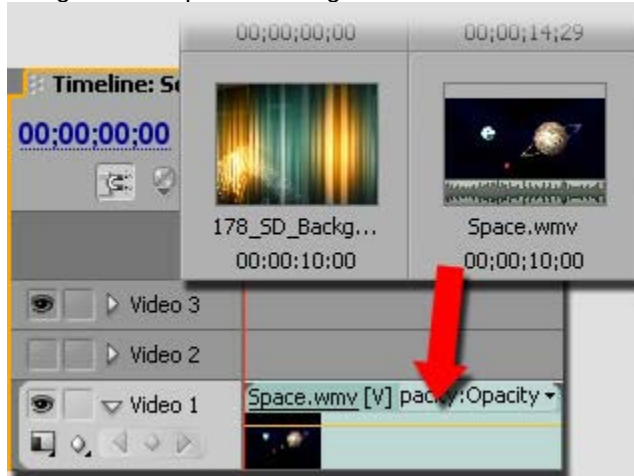
6. Click the **Export** button to export as an alpha video.



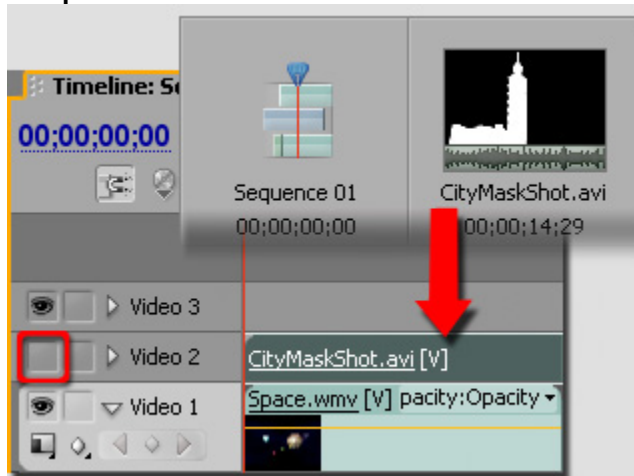
Using Alpha Videos in Video Editing Tools

The exported alpha video can be imported into any video editing tool to create frame or special overlaying effects. We will use **Adobe Premiere** as an example in the following case.

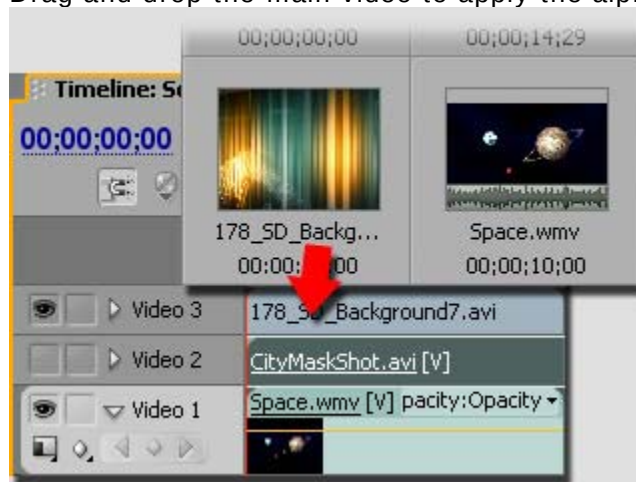
1. Drag and drop the background video into **Video 1** track.



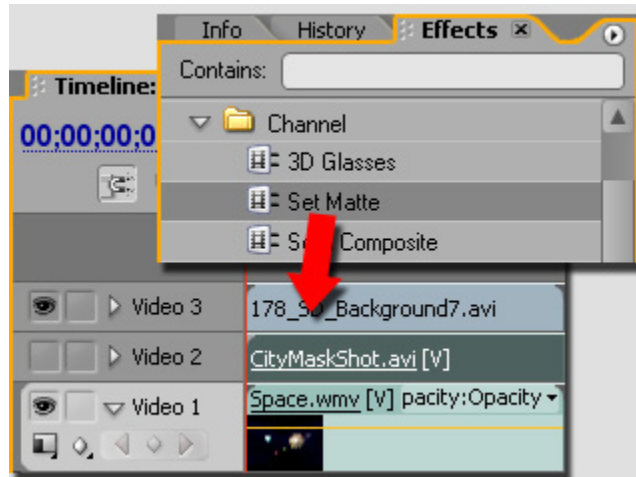
2. Drag and drop the alpha video into **Video 2** track. Disable the **Toggle Track Output** box to make the video invisible.



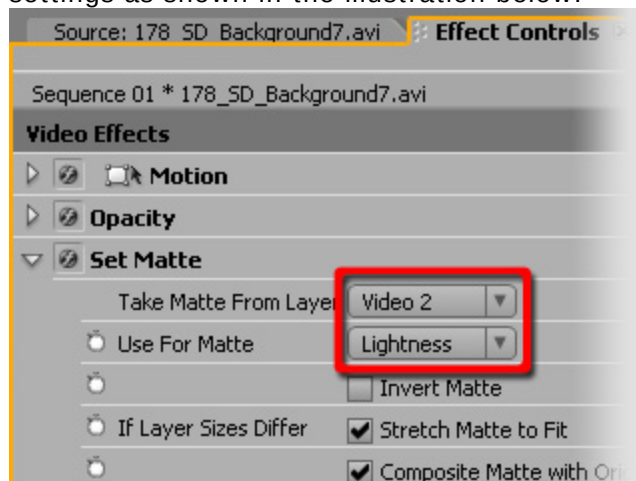
3. Drag and drop the main video to apply the alpha video into **Video 3** track.



4. Optionally, you may adjust the size of the main video.
5. Drag and drop the **Channel/Set Matte**, in the **Effect** panel, onto the main video.



6. In the **Effect Control** panel, collapse the **Set Matte** effect and set the two settings as shown in the illustration below.

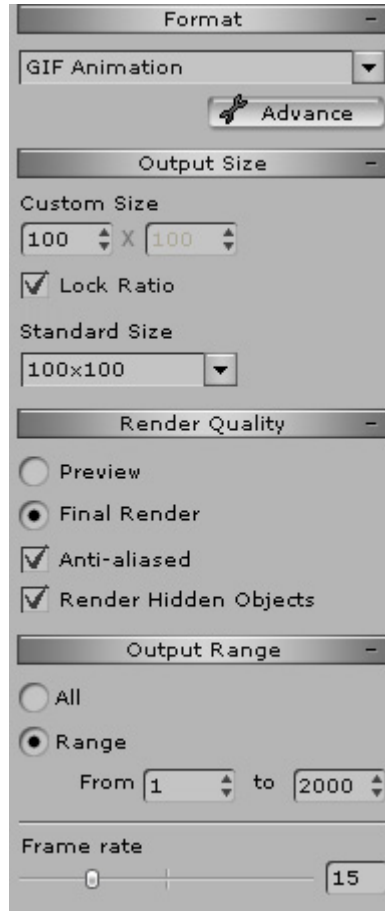


7. Export the video.



⦿ Exporting an Image Sequence

The export image sequence area is split into 4 sections: **Format**, **Output Size**, **Render Quality**, and **Output Range**.

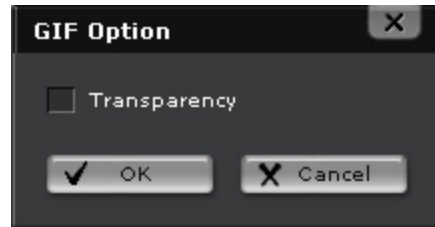


Format

1. Use the drop-down list to choose GIF animation, BMP sequence, JPG sequence, TGA sequence or PNG sequence format.
2. Click the **Advanced**  **Advance** button to set image options depending upon your output format.

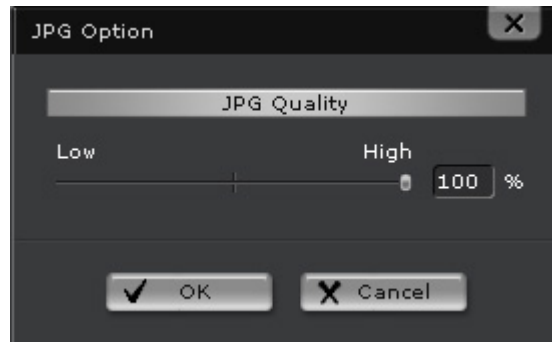
GIF animation

Select the number of colors and transparency options for GIF output. When exporting GIF images with transparency, turning off the Anti-Aliased option will produce cleaner edges.



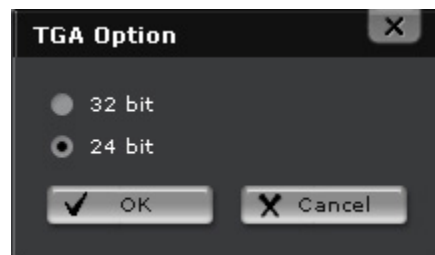
JPG sequence

Use the slider to adjust the JPG quality.



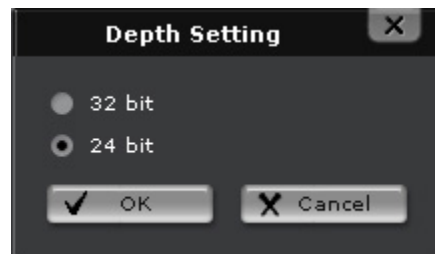
TGA sequence

Select 32 or 24 bit TGA output. 32 bit TGA images containing Alpha channels are more suitable for image and video composition.



PNG

Select 32 or 24 bit PNG output. 32 bit PNG images containing Alpha channels are more suitable for image and video composition.



Output size

You can define the size of the exported image in the **Output Size** field. To define output size:

Select either a **Standard Size** or define a **Custom Size** using the arrow icons.

Please note that if you activate the **Lock Ratio** box, you can only adjust the width of the project while the height is updated automatically in current ration.

Render quality

The render quality can be set to **Preview** or **Final Render** using the radio buttons. Check the **Anti-Aliased** checkbox to export an anti-aliased image. An anti-aliased output will produce an image with less jagged edges and pixelated areas.

Output range

You can either export the entire video, or a specific range of frames. Select the output range using the radio buttons in the **Output Range** field. You can also set the **Frame Rate** here using the slider. The output range can also be set using the [2 triangle markers](#) below the play bar.

Click the **Export**  button to export the video.

⦿ Exporting a popVideo

PopVideo is a video file with a **Transparent** background. The exported file can be loaded into **iClone** or **WidgetCast**.

Inside iClone, popVideo is presented as a flat plane, for this reason, it may significantly and efficiently reduce your project's resource needs. If your project contains too many 3D objects (actors, props, etc.), then you may encounter the lag issues due to the high resource needs.



Scene Manager	
Name	Info
Avatar	
Jack	25781
Cow	3936
Prop	
Locomotive	47705
RailFence	3068
Scene & Enviro...	
Dir./Spot Light	

A project with 3D objects

The face count for each minor object

Convert all minor objects into **popVideo** and then load them back into your project to replace the original 3D objects. Doing this will decrease the project size and reduce your system-resource loading.

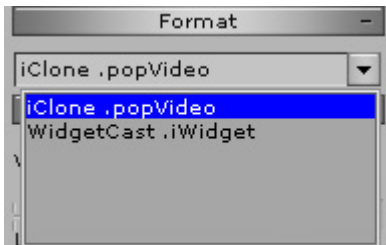


Scene Manager	
Name	Info
Avatar	
Jack	25781
Prop	
Clothe01	1224
popVideoCow	12
popVideoLocomotive	12
popVideoRailFence	12
Scene & Environment	

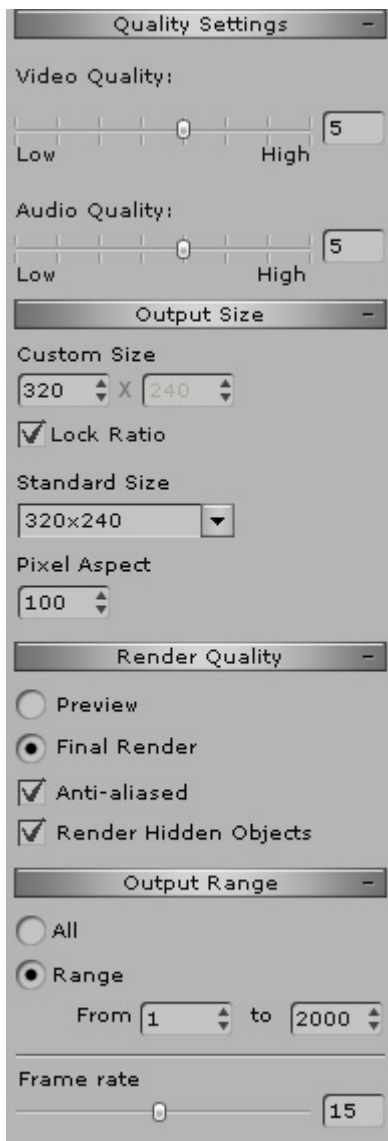
3D objects replaced with popVideos

The face count for each popVideo

In the **Format** section, select the **iClone .popVideo** format from the drop-down list.



The export popVideo area is split into 4 sections: Quality Settings, Output Size, Render Quality, and Output Range.



Quality Settings

Use the sliders to define the **Video** and **Audio** quality.

Output size

You can define the size of the exported image in the **Output Size** field. To define output size:

Select either a **Standard Size** or define a **Custom Size** using the arrow icons.

Please note that if you activate the **Lock Ratio** box, you can only adjust the width of the project while the height is updated automatically in current ration.

Render quality

The render quality can be set to **Preview** or **Final Render** using the radio buttons. Check the **Anti-Aliased** checkbox to export an anti-aliased image. An anti-aliased output will produce an image with less jagged edges and pixelated areas. You may also enable the **Render Hidden Objects** option in case some objects were hidden during the editing process.

Output range

You can either export the entire video, or a specific range of frames. Select the output range using the radio buttons in the **Output Range** field. You can also set the **Frame Rate** here using the slider. The output range can also be set using the [triangle markers](#) below the play bar.

Click the **Export File**  button to export the iWidget file.

Note:



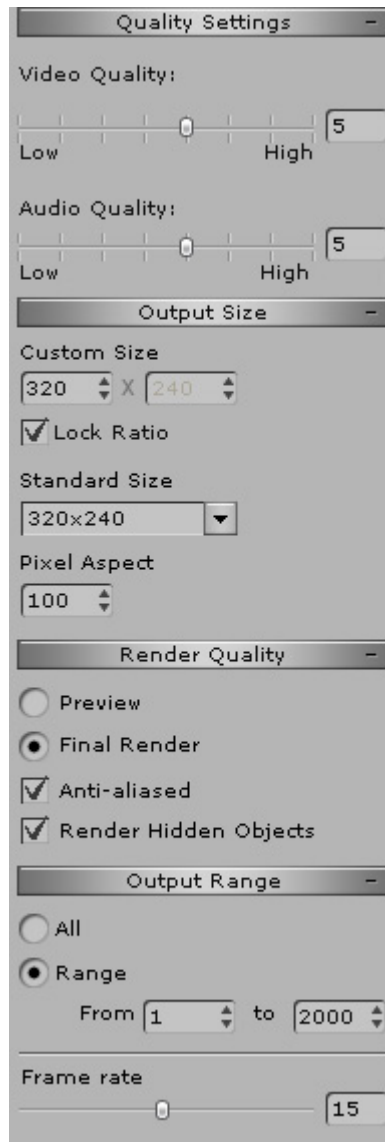
- Through popVideo files, users can export masked videos from iClone and publish them to the web.
- To make a **popVideo** output, please go to **Stage/2D Background/Modify** page, uncheck the **Active** box and select a **Grey Color** as the background color.
- The Grey color gives the maske **popVideo** a neutral edge blending result when overlaying it on a different colored background in **iClone** or **WidgetCast**.

- For more information about how to use **popVideo** in **iClone**, please refer to [Utilizing popVideo](#) section.
- For more information about how to use **popVideo** in **WidgetCast**, please refer to [Inserting popVideo and popVideo Properties](#) section.

⦿ Exporting an iWidget

iWidget is a **Flash**-based video file with **Transparent** background users can publish **iClone** content to the web with. The exported file can be edited in **WidgetCast**. For more information about **WidgetCast**, please refer to <http://www.reallusion.com/widgetcast/help/>.

The export iWidget area is split into 4 sections: Quality Settings, Output Size, Render Quality, and Output Range.



Quality Settings

Use the sliders to define the **Video** and **Audio** quality.

Output size

You can define the size of the exported image in the **Output Size** field. To define output size:

Select either a **Standard Size** or define a **Custom Size** using the arrow icons.

Please note that if you activate the **Lock Ratio** box, you can only adjust the width of the project while the height is updated automatically in current ration.

Render quality

The render quality can be set to **Preview** or **Final Render** using the radio buttons. Check the **Anti-Aliased** checkbox to export an anti-aliased image. An anti-aliased output will produce an image with less jagged edges and pixelated areas. You may also enable the **Render Hidden Objects** option in case some objects were hidden during the editing process.

Output range

You can either export the entire video, or a specific range of frames. Select the output range using the radio buttons in the **Output Range** field. You can also set the **Frame Rate** here using the slider. The output range can also be set using the [triangle markers](#) below the play bar.

Click the **iWidget File**  **iWidget File** button to export the iWidget file.

You may also click the **Launch iWidget**  **Launch iWidget** button to export the .iWidget file and open it with **WidgetMe** or **WidgetCast**.

Note:



- Through iWidget files, users can export transparent flash videos from iClone and publish them to the web.
- To make a transparent **iWidget** output, please go to **Stage/2D Background/Modify** page, uncheck the **Active** box and select a **Grey Color** as the background color.
- The Grey color gives the transparent **iWidget** a neutral edge blending result when overlaying it on a different colored background in **WidgetMe** or **WidgetCast**.

Preference



Click the **Preference** button to display the preferences pane.

Preference

System

Temp Folder
D:\

Texture Editor

XML Editor

Undo Times
20

Grid Options

☐ Show Grid (Ctrl + G)
Grid Color:
Grid Spacing: 100
Grid Size: 100

☐ Snap to Grid
☐ Angle Snap 0

Display Information

☐ FPS (Ctrl + F)
☐ Crosshair in Walk/Fly Camera Mode
☐ Editor/Director On-screen Display
☐ Pointer in Director Mode
☐ World Axis (Ctrl + A)
☐ Dummy Object (Ctrl + D)

Real-time Render Options

Quality: Custom

☐ Quick Shader
☐ Vertex Shader
☒ Pixel Shader

Shader Options

☐ Bump/Normal Map
☐ Glow Map
☐ Reflection Map
☐ Reflection
☐ Refraction
☐ HDR

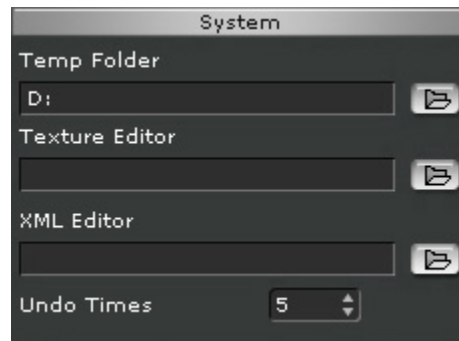
☐ Anti-alias
☐ Mipmap
Anisotropic Filtering:
4X

☐ Enable Spring/Flex Effect
Max Real-time Map Size:
2048x2048

Object Manipulation

☐ Transform Gizmo (Ctrl + Q)
☐ Drag and Drop Automatic External Files

⦿ System Section



Temp Folder

The temp folder is a folder for temporary files created by iClone during operation. You can define where temporary files are saved in the preferences settings.

- Click the **Choose...**  button in the **Temp Folder** option and browse to a folder you wish to use as the temp folder.
- Make sure the harddisk the temp folder is located on has sufficient free space especially when you are using **iClone** to produce high resolution videos.

Texture Editor

You can select an **external** application for use as a texture editor with **iClone**. Textures edited using the "Launch" feature of the **iClone** material editor will open with the image editor selected in this section. (e.g. Adobe Photoshop)

- Click the **Choose ...**  button in the **Texture Editor** option and browse to the executable file of a suitable texture editor application.

XML Editor

You may select an external application for use as the **XML** editor with **iClone**. Thus you may modify the **Persona** of the actor and the **DramaScript** of the iProp.

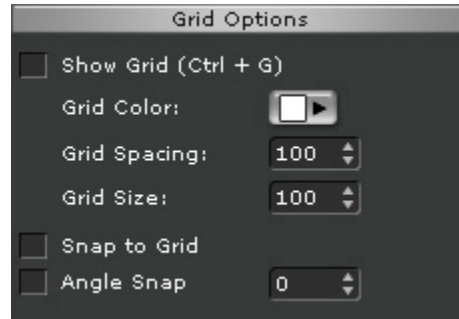
- Click the **Choose ...**  button in the **XML Editor** option and browse to the executable file of a suitable text editor application.
- Basically, any text editor may work as the editor; however, a higher-level text editor can make the **Persona** or **DramaScript** editing more legible.

Undo Times

Set the **Undo times** to decide how many actions you can **Undo/Redo**. The maximum is 99. A higher value requires more resources of your system.

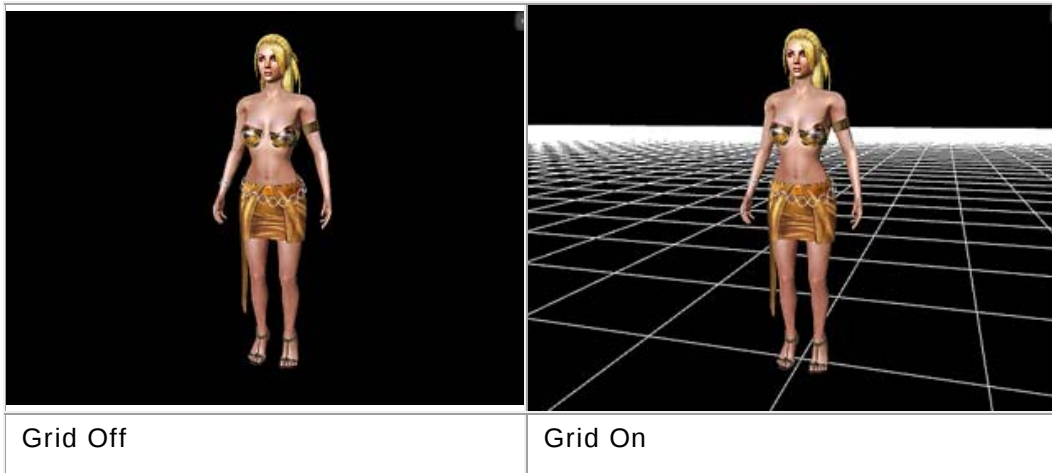
⦿ Grid Options Section

When setting an iClone scene, it may be useful to draw a grid to represent the floor (X - Y plane).

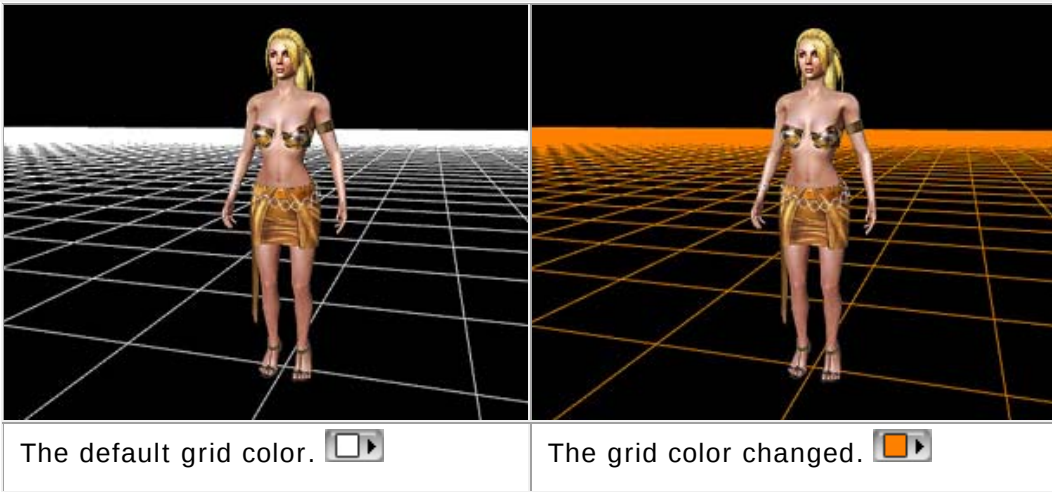


Show Grid, Grid Color, Spacing and Size

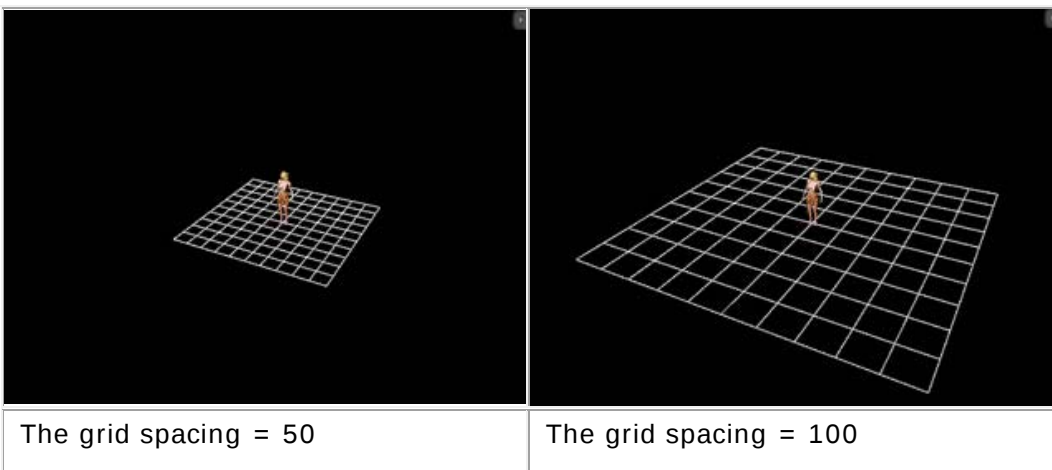
- If you want to show the grid in the 3D viewer, you may check the **Show Grid** box. Alternatively, you may press **Ctrl + G** to toggle the grid.



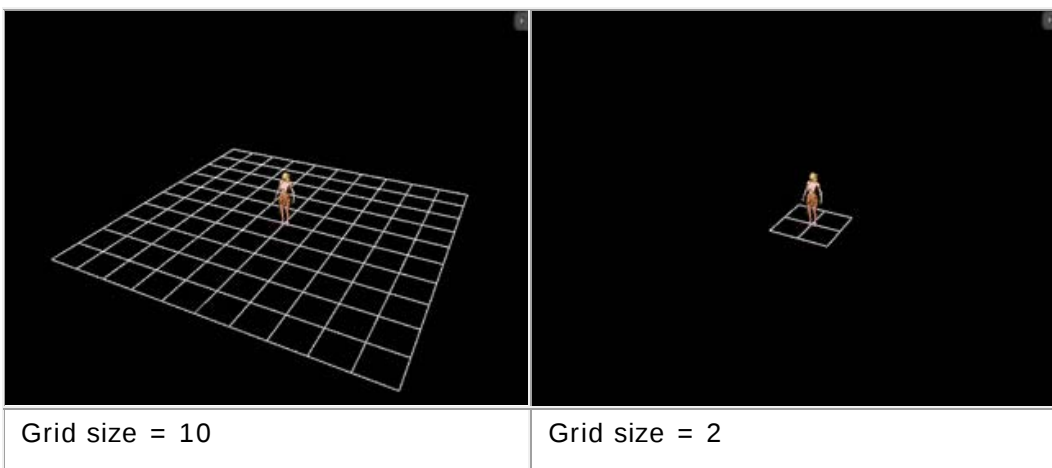
- You can change the color of the grid by using the color picker.



- You may also change the **Grid Spacing** value to decide the size of the grid cell.



- The **Grid Size** decides the number of the grid cells on both sides of the grid.

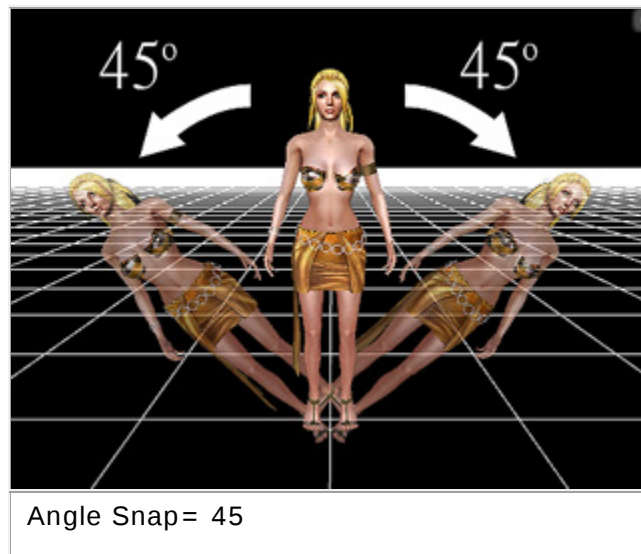


Snap to Grid

Check the **Snap to Grid** box so that your objects always snap to the intersection points of the floor grid when they are manipulated by the **Move** tool (X and Y values only).

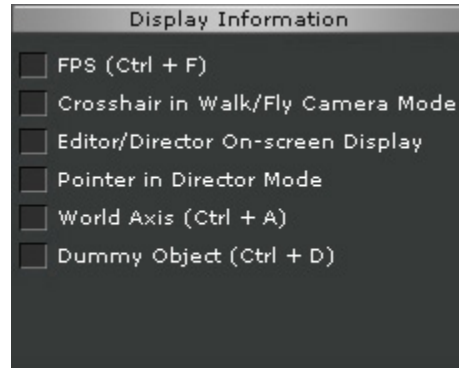
Angle Snap

You may check the **Angle Snap** box and define an angle that your objects will snap to when they are manipulated by the **Rotate** tool. They will rotate by the specified angle each time.



⦿ Display Information Section

The settings in this section provide information for your reference during editing or recording. However, these information can not be seen in the output files.



FPS

FPS (Frames Per Second) indicates the rendering performance of your system with the current project.

- Check/Uncheck the **FPS** box to show/hide the **Frames Per Second** information on the 3D viewer.
- Alternatively, you may press **Ctrl - F** to toggle FPS on/off.



Crosshair in Walk/Fly Camera Mode

The **Crosshair in Walk/Fly Camera Mode** may show the crosshair in the center of the 3D viewer to indicate if your camera is in **Walk** or **Fly** mode.

- Check/Uncheck the **Crosshair in Walk/Fly Camera Mode** box to show/hide the **Crosshair** on the 3D viewer when the camera is in walk/fly mode.
- Alternatively, you may press **Ctrl - U** to toggle the crosshair on.



Editor/Director On-screen Display

The **Editor / Director Mode** may show the mode name at the bottom of the 3D viewer to indicate if you are in the **Editor** or **Director** mode.



Pointer in Director Mode

The **Pointer in Director Mode** places a pointer on the selected object in the **Director Mode**.

- Check/Uncheck the **Pointer in Director Mode** box to show/hide the mode name.
- Alternatively, you may press **Ctrl - I** to toggle the pointer on/off.



World Axis

When the **World Axis** box is on, a coordinate displays in the origin. It is very useful when you need to input x, y, z value, or create custom **Helper**.

- Check/Uncheck the **World Axis** box to show/hide the world axis, or press **Ctrl - A** to toggle on/off.
- The R.G.B. color of the World Axis represent the X, Y, Z direction (**R=X, G=Y, B=Z**)



Dummy Object

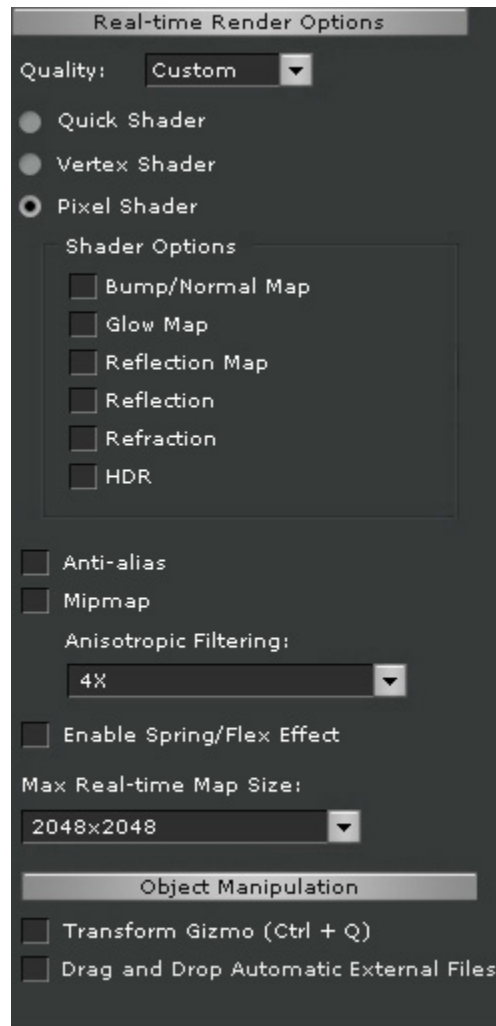
This box (Ctrl + D) decides whether the preview window displays all the dummy objects in the current project. For more information, please refer to [Setting Prop as Dummy](#) section.



Show Dummy Object

Hide Dummy Object

⦿ Real-time Render Options



Real-Time Render Options

Render

iClone supports three levels of shader for real-time rendering: Quick, Vertex and Pixel Shader and automatically detects the 3D graphics card installed in the PC and provides available **Quality** options. The **Quality** setting is dependent on the 3D graphics card installed on the PC. For example, with Nvidia 7x00 series or ATI Radeon 9x00, users can select High, Middle, Low and Custom render settings. However, with older 3D graphics card such as Geforce4 MX that do not support shader model 1.0, users can only select Low and Custom options. The new **Pixel Shader** function will be disabled if the requirement is not met.

The **Quick Shader** produces an efficient real-time render with most 3D effects disabled for faster performance.

The **Vertex Shader** disabled some of the 3D effects to have medium visual quality.

The **Pixel Shader** takes advantage of shader model 3.0 and has options including: Bump/Normal, Glow, Reflection Map, Reflection, Refraction and HDR effect. Turning these options on increases the visual quality but consumes more system resources.

Please refer to the [Shading Methods of 3D Viewer](#) section for more information.

Anti-alias

An anti-aliased output will produce a smooth image with less jagged edges and pixilated areas. Check the box to turn the **Anti-alias** feature on.

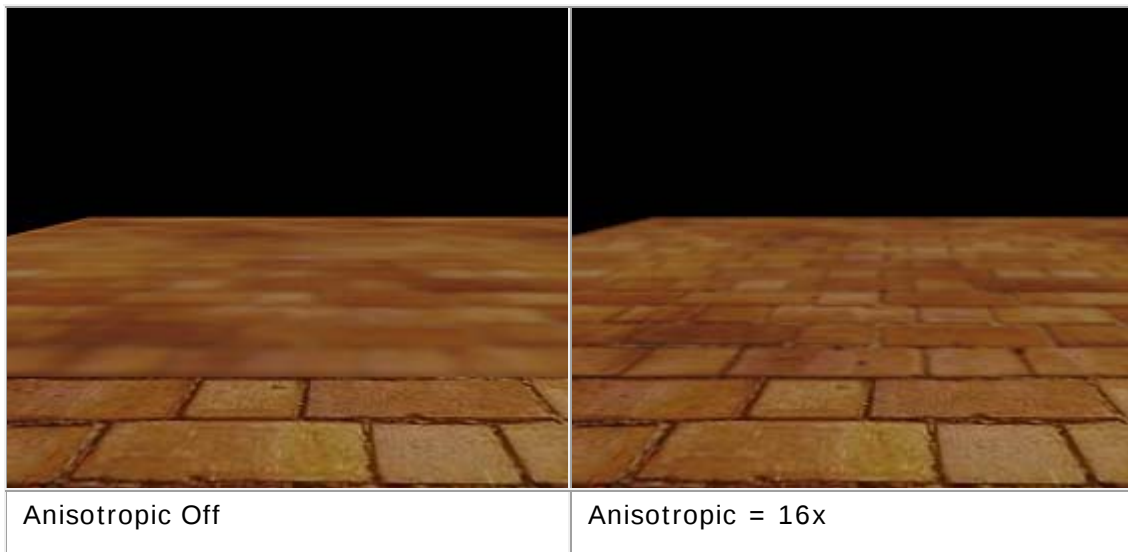


Mipmap

The **Mipmap** force to render object with gradually-lower-resolution texture along with the distance.



As the camera angle turns to be too oblique, **MipMap** feature may cause some surfaces that are near the camera blur. To compensate the disadvantage, you may increase the **Anisotropic** value to gain more mapping quality.



Enable Spring/Flex Effect

The basic theory **Flex** and **Spring** in **iClone** is to have the effect to be displayed on 3D viewer by calculating the result depending on its status in the previous frame. Thus the result can be smooth for playing back. However, as for exporting, the maximum of **FPS** is 30, which may fail the flex and spring engine to calculate flex and spring status one by one and thus the wrong result generates.

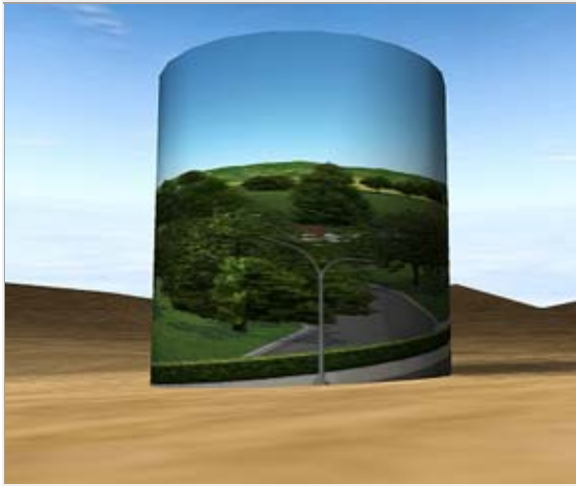
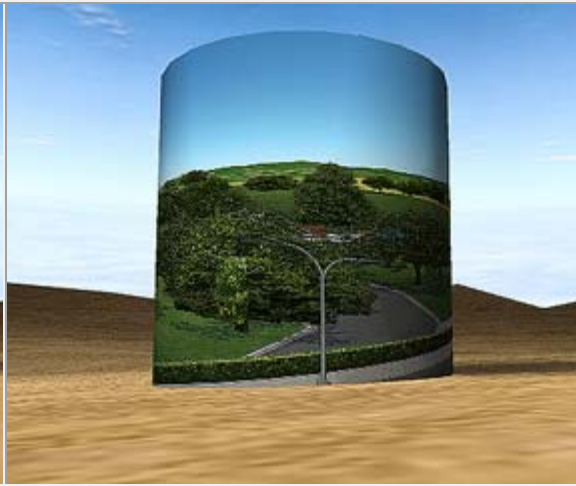
This check box, **Enable Spring / Flex Effect** may solve this problem. If you check this box, **iClone** forces itself to calculate the two effects one frame after another for the exporting procedure. The exported file may then has the most correct **Flex** and **Spring** result. However, this may exhaust more of your system resources and decrease the performance during the exporting.

Max Real-time Map Size

Your textures may look blurry when you apply them to large objects or view them in a close-up. This could be resulted from the maximum allowable texture size.

The default texture size setting for **iClone** is 512 x 512. This setting determines the maximum allowable texture size. Therefore, if any texture is larger than 512 x 512, after you apply it to a 3D object, the texture size will be scaled down to 512 x 512 (pixel as unit), which results in the blurry look of your texture.

Users can define the maximum allowable texture size applied to 3D objects in **Max Real-time Map Size** tool in the **Preference** panel. If you have high-resolution textures, you can set the texture size higher (from 1,024 x 1,024 to 4,096 x 4,096) to maintain your original texture quality. Since texture images take your graphics card memory, please consider the overall texture budget for the optimized visual quality.

	
Source Image = 3000 x 3000 Max Real-time Map Size = 512 x 512	Source Image = 3000 x 3000 Max Real-time Map Size = 4096 x 4096

Object Manipulation

Transform Gizmo

You may check this box to toggle the gizmo mode on/off (**Ctrl + G**) in the preview window. Please refer to the [Gizmo of Objects in Preview Window](#) section for more information.

Drag and Drop Automatic External Files

Activate the **Drag and Drop Automatic External Files** box so that all the images applied will be taken as external files. For more information, please refer to [Sharing Projects and Props with External Files](#).

Troubleshooting

☉ Troubleshooting

For the latest troubleshooting information, visit the support section of our web site at <http://www.reallusion.com/support.asp>.

☉ Frequently asked questions

Please visit our web site for the complete FAQ contents:

http://www.reallusion.com/iclone/ic_faq.asp.

If you can't find the answer you desire, please fill in the form for further service:

<http://www.reallusion.com/CustomerSupport/user/QForm.aspx>.

☉ Technical Support and Feedback

By purchasing iClone, you are eligible for premium support from our technical support team, should the need arise!

Please take a look at our support resources available from our website (<http://www.reallusion.com/CustomerSupport/user/FAQList.aspx>). In many cases this will be able to immediately answer your questions; if you have any comments or concerns about iClone, or you desire to contact our support team, please fill in the support form in www.reallusion.com/CustomerSupport/user/QForm.aspx.

⦿ **Contacting Reallusion**

Contact us:

Technical and Customer Service:

<http://www.reallusion.com/CustomerSupport/user/FAQList.aspx>

Reallusion forum:

<http://forum.reallusion.com/>

Reallusion Developer Center:

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