CD Joints & Skin v1.5 For Cinema 4D 9.6+

CD Joints & Skin is a plugin suite which includes joints, skinning, weight painting and several command tools to help in the skinning process. CD Joints & Skin is the perfect companion to round out the suite of CD plugins and give you a comprehensive set of character rigging tools for Cinema 4D R9.1 and above. If you only have the Cinema 4D core version, and want to do character animation, you will find this plugin and all of my other plugins indispensable.

The components of CD Joints & Skin are:

Command Tools:		Tags:
CD Joint Mirror	CD Bind Skin	CD Skin
CD Orient Joints	CD Remove Skin	CD Skin Cluster
CD Link Objects	CD Merge Skin	CD Bind Pose
CD Unlink Objects	CD Mirror Skin Weight	
CD Joint Display	CD Normalize All Weights	**Editor Tools:**
CD Joints to Polygons	CD Add Skin Cluster	CD Joint Tool
CD Convert From CD Joints	CD Mirror Skin Cluster	CD Paint Skin Weight
CD Convert To CD Joints	CD Freeze Skin State	
CD Add Joints	CD Remove Joints	**Objects:**
CD Show Joints X-Ray	CD Convert To CD Skin	CD Joint
CD Show Joints Proxy	CD Convert From CD Skin	
CD Joint Mirror Assign	CD Toggle Paint Mode	
CD Colorize Joints	CD Freeze Transformation	
CD Reroot Objects	CD Transfer Skin	

Selecting Objects in Order

CD Joints & Skin keeps track of the order in which objects are selected when selecting more than one object. This works best when shift selecting the objects one at a time in the viewport. If you drag a selection around a group of objects so that several objects are selected at once, then the order will be determined by the order in which the objects appear in the Object Manager. Remember that in R10 and above, when selecting multiple objects in the Object Manager, you must control select the objects.

CD Joints

CD Joints are used to create a skeleton to which a character mesh is skinned. They are a bit different than bones, but basically used in the same way. The main difference in CD Joints is that the joints themselves are not a deformer object. They only serve to determine the pivot points (joints) of the skeleton's bones. A joint draws a "bone" in the viewport when it has another joint as a child. This

is purely a visual indicator to show the connections between the joints and can be turned on and off.

Object Properties

Connected to Parent is for turning the visual connection on and off in the viewport for each individual joint. *Display Local Axis* will display a small red, green and blue axis at the pivot point of the joint. *Radius* sets the size of the joint's radius drawn in the viewport. *Orient Joint* will orient the individual joint so that it's Z axis is pointing to it's child joint, the next joint down in the chain. If the joint has no child joint, then it will be oriented the same way as its parent joint.
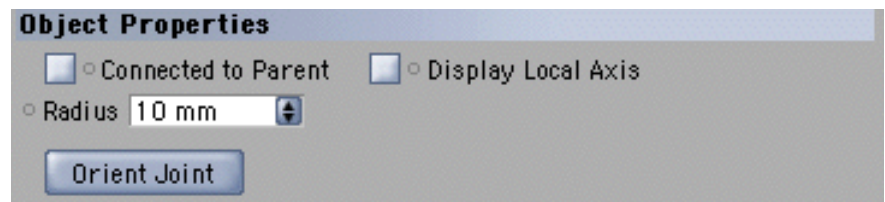
Joint Transformation

This tab gives you a readout of a second set of transformation coordinates for T-position, T-scale and T-rotation. The *Zero Transformation* button allows you to zero out the transformation coordinates with the joint in an arbitrary orientation, so that the readouts will show the position, scale and rotations from that arbitrary orientation. *Return to Zero* will return the joint to the transformation coordinates' zero orientation. Keep Local Zero Transformation locks the zeroed out coordinates so that they can't be accidentally changed.
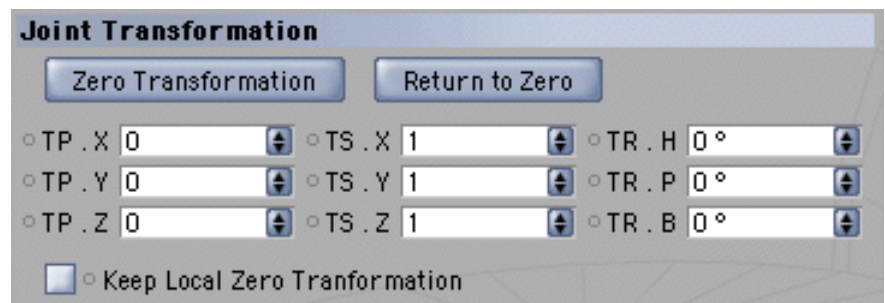
Envelope

Each joint has its own envelope, which can be used to restrict the auto weight calculation to only assign those mesh points to the joint that fall within the joint's envelope. The envelopes are shown in the viewport as an eight sided cylinder around the joint. *Use Envelope* turns the envelope display on and off. *Show Proxy* toggles between a wireframe or shaded display of the envelope when the *Use Envelope* option is enabled. If the *Use Envelope* option is disabled, then *Show Proxy* displays the joint as a shaded rectangular box. The envelope can be sized by dragging its handles in the viewport or by changing the values in the *Root Offset* and *Tip Offset* edit fields. *Skew RX* and *Skew RY* will shift the position at the root of the joint, while *Skew TX* and *Skew TY* will shift the position at the tip of the joint.
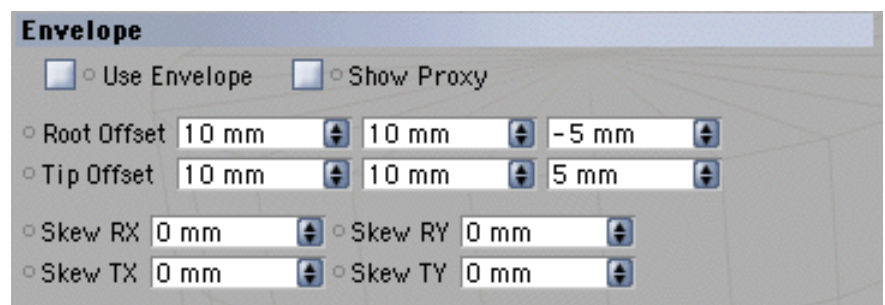
CD Joint Tool

Use this tool to create the joints by clicking the left mouse button in the viewport where you want to place the joints. Each time you click the mouse button in the viewport, another joint is created and a connection is drawn to the previous joint indicating that the joints are in a hierarchal chain. Pressing the Escape key will end the chain and allow you to start a new chain. Holding the Shift key down while clicking the mouse in the viewport will constrain the placement of the joints. The second joint placed will be constrained to every 45º angle according to the view, and each successive joint will be constrained to align to the same direction of the first joint. Holding the Control key down will split a joint by adding another joint between two joints in a chain. If the Shift key is also held down along with the Control key, the added joint will be constrained to the Z axis of the first of the two existing joints in the chain.

Tool Parameters

Enabling *Auto Size Joints* will automatically size the joints as they are created according to how far away the next child joint is positioned. *Joint Size* sets the default size of the newly created joints. This parameter is only available when the *Auto Size Joints* parameter is disabled.

CD Joint Mirror

This command will mirror a chain of joints from one side to the other. In the CD Joint Mirror dialog, there are two sections. *Mirror Direction* has options to control how the joints are mirrored. You can select which axis to mirror across and select whether it will mirror in Global or Local coordinates. Rename Joints allows you rename the mirrored joints by replacing a prefix or postfix of the original name. Once you type in a renaming prefix or postfix, it will be stored in the plugins preferences so the same prefix and postfix will be in the edit fields the next time you use the command. The Mirror button applies the mirror and creates a mirrored joint chain. The CD Joint Mirror command will also mirror other objects.

CD Joint Mirror Assign

This command will designate and store a mirror assignment for 2 selected joints. It will open an alert dialog where you can choose whether or not to include child joints.

CD Orient Joints

This command will orient a chain of joints so that each joint's Z axis is pointing to the next joint down in the chain. The Joint tool will automatically orient the joints as they are created, but if you change the joints' positions, you'll need to reorient them with this tool.

CD Link Objects

This command will link objects by placing selected objects into another object's hierarchy. To use the command you shift select the objects in order, as described above in the section **Selecting Objects in Order**, selecting the parent object last, then click on the command. All of the objects will be placed as a child of the last selected object in the order they were selected, an below any existing child objects. If you hold the control key down when you click on the command, then the selected objects will be place above any existing child objects. If the objects are CD Joints, holding the shift key down will enable their *Connected to Parent* option.

CD Unlink Objects

This command will unlink objects by pulling the selected objects out of their parent object's hierarchy. To use the command you simply select the objects and click on the command. The object's will be pulled out of their parent's hierarchy and placed at the top in the Object Manager. If you hold the control key down and click on the command, the objects will be pulled out of their parent's hierarchy and placed at the bottom in the Object Manager.

CD Reroot Objects

This command will flip a hierarcal chain of objects so that the last object in the chain becomes the first object, and the first object in the chain becomes the last object. The command will only flip the hierarchy as long as all of the objects in the chain are of the same type. To use the command you select the last object in the chain and then click on the command.

CD Show Joints X-Ray

This command will toggle the selected CD Joints' X-Ray mode on and off. When their X-Ray mode is on, CD Joints can be seen through other objects in the viewport. This command works with hierarchies in that if the selected joint has any child joints, those child joints will take on the X-Ray mode of the selected joint.

CD Colorize Joints

This command will randomly color a hierarchy of joints. The command also has an options dialog which you can access by holding the control key down when clicking on the command. You can choose to randomly color *Sub Chains* or *Individual Joints*. Selecting *Individual Joints* will randomly color each joint in the hierarchy. Selecting *Sub Chains* will randomly color sub chains so that each joint in the sub chain is the same color. A sub chain is defined when a CD Joint has its *Connected to Parent* option disabled.

CD Show Joints Proxy

This command will toggle the selected CD Joints' *Show Proxy* parameter on and off. This command works with hierarchies in that if the selected joint has any child joints, those child joints' *Show Proxy* parameter will be set the same as the selected joint.

CD Joints to Polygons

This command will create polygon objects from the selected joints. The polygon objects will be created as a rectangular box according to the *Radius* parameter of the joints. If the joints have their *Use Envelope* or *Show Proxy* parameters enabled, then the polygon object will created according to the joint's envelope parameters.

CD Joints Display

This command allows you to set the global display size of the joints. The global display size is calculated as a percent of each individual joint's *Radius* parameter. If there are any selected joints, the *Resize Selected Joints* option allows the slider to actually resize the *Radius* parameter of the selected joints. If the *Resize Selected Joints* option is enabled, the *Include Child Joints* option can be enabled to also resize the *Radius* parameter of all child joints of the selected joints. The slider can be set between a minimum of 1% and a maximum of 1000%. The Reset button resets the slider to 100%.

CD Convert From CD Joints

This command will convert CD Joints to either Cinema 4D bones or joints. In R10 through R11.5 an options dialog is available to choose between bones or joints. The options dialog is accessible by holding the Control key down when selecting the command. In R9, only converting to bones is possible and in R12 and above only converting to joints is possible.

CD Convert To CD Joints

This command will convert Cinema 4D bones or joints to CD Joints. In R10 through 11.5 an options dialog is available to choose between bones or joints as in the above CD Convert From CD Joints command.

Skin

Skinning is the processes of binding the points of a character mesh to the joints in a skeleton, so that the points will be displaced as the skeleton is animated. CD Joints & Skin has two types of skinning: skin and skin cluster. The difference between the two types of skinning is that the skin can be bound to a hierarchy of objects while the skin cluster can only be bound to one object. Both skin types do not function while in any of the edit modes. They are put on hold so that you can make edits to the mesh points, for example when you are creating morph shapes with CD Morph, or when you are making adjustments to the mesh's bind pose reference.

CD Skin

The CD Skin tag can only be added to the character mesh by using the **CD Bind Skin** command tool. Once it has been added to the character mesh object, it will only function on that object to which it was originally assigned. If the tag is moved to another object it will cease to function.

Tag Properties Tab

Bind Skin will bind the mesh to the joint skeleton, while *Unbind Skin* will unbind the mesh from the joint skeleton. Unbinding and rebinding the mesh to the skeleton is important when rigging. You must unbind the mesh whenever you make changes to ether the character mesh or the skeleton, such as adding edge loops to the mesh in problem areas, or when adding more joints to the skeleton after the mesh has been skinned. *Return to Bind Pose* only works when you turn off expressions, by selecting the menu command "Edit/Use Expressions". It returns the mesh and all of the joints in the skeleton back to their original position at which the mesh was bound to the joint skeleton. This is useful if you're in the middle of an animation and you decide to make some changes to the mesh or skeleton rig. Simply turn off expressions, click the *Return to Bind Pose* button and then click the *Unbind Skin* button. At this point you can safely make changes to the character mesh or the joint skeleton. When you're done with the changes, simply click on the Bind Skin button and then turn expressions back on.

Reference Tab

The *Edit Reference* button allows you to edit the positions of the mesh's points reference. The *Reset Reference* button sets the reference points to the new positions after editing them. These buttons will only be available if the mesh has been unbound first by clicking on the *Unbind Skin* button mentioned above.
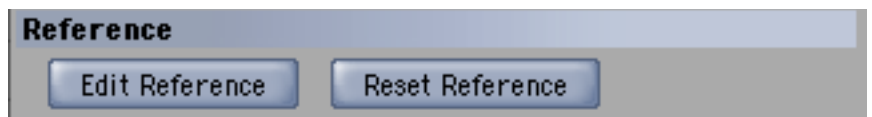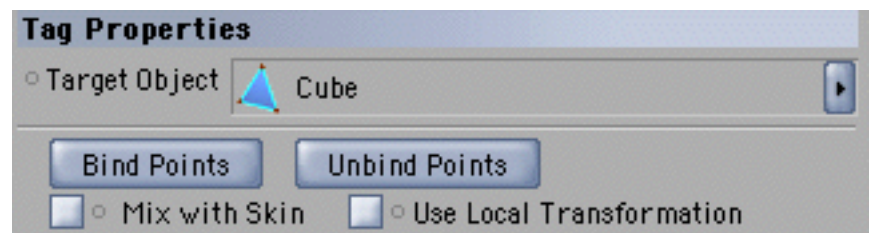
CD Skin Cluster

The CD Skin Cluster will bind a selection of a mesh's points to an object. This tag is available in the Object Manager's menu. You place the tag on a control object and drop an object, who's points are to be skinned, into the tag's link box. The CD Skin Cluster was designed to blend with the skin for extra control. You can use the CD Skin Cluster's built in blending options, or you can create an external control rig.

Tag Properties Tab

The *Target Object* link is where you drag and drop the object whose points will be bound to the control object. Bind Points will bind the select points of the target object to the control object, while

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Unbind Points will unbind the points of the target object from the control object. When the target object also has been skinned with a CD Skin Tag, the CD Skin Cluster can mix its influence with the CD Skin's influence by enabling the *Mix with Skin* option check box. *Mix with Skin* should also be checked if you are only using CD Skin Clusters and more than one CD Skin Cluster has influence on the same points of the target object. Enabling *Use Local Transformation* will cause the points to deform only when the objects local coordinates change, in other words if the object has a parent object and only the parent object moves, the mesh's points will not be displaced.

Important Note:
When binding and unbinding points in a CD Skin Cluster, you must always make sure your character has been returned to the "bind pose" before binding or unbinding the points. If the CD Skin Cluster is mixing with a CD Skin, then the CD Skin tag will detect any clusters assigned to the same object and the CD Skin tag's bind and unbind buttons will control the CD Skin Cluster's bind and unbind buttons. This is a convenience function so that you won't need to go searching for all related CD Skin Cluster tags when binding and unbinding the skin.

Blend Tab

In this tab, there are a couple of blending options available. These options allow you to control how the points are influenced by the control object, or the control object's child if it has one.

Please note that as it is with binding and unbinding the skin, it is important that these blending options be set up while the character is in the "bind pose" and the target object's points are unbound from the control object. Otherwise you may experience unpredictable blending results.

Enabling *Blend Rotation with Bind* will blend the control object's current rotation with the bind rotation (which is the rotation when the points were bound to the control object). The *Blend* slider controls the blend amount. 0% is the control object's bind rotation and 100% is the control object's current rotation.
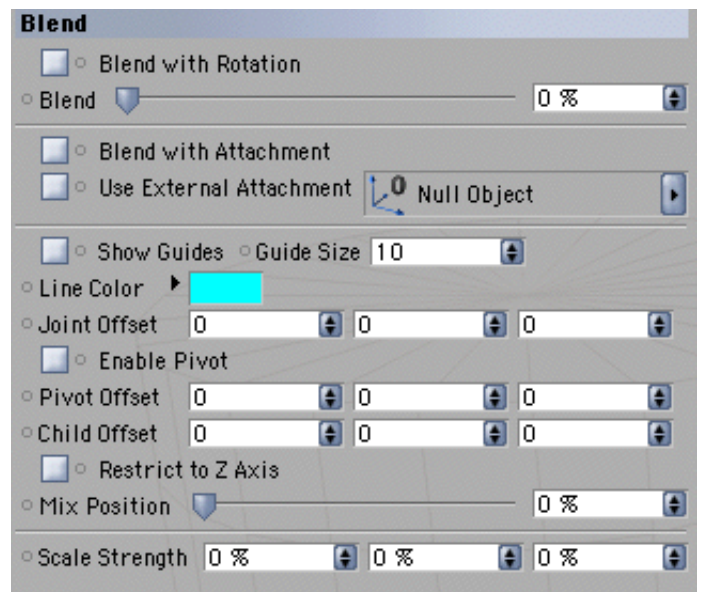
The *Blend with Attachment* will blend between an offset position on the control object and an offset position on its child object. When this option is enabled, the mesh's selected points are bound to a control position instead of the control object. *Use External Attachment* allows the offset position to be on the object in the corresponding link, instead of the control object's child object. When *Show Guides* is enabled, this control position is displayed as an axis with red, green and blue lines denoting the X,Y and Z direction vectors. Two locators are also drawn showing the offset positions from the control object and its child object with a line drawn connecting the two locators.

Show Guides turns the display of the guides on and off. *Guide Size* sets the radius of the offset locators and the control position axis. Line Color sets the color of the offset locators and the line that is drawn between
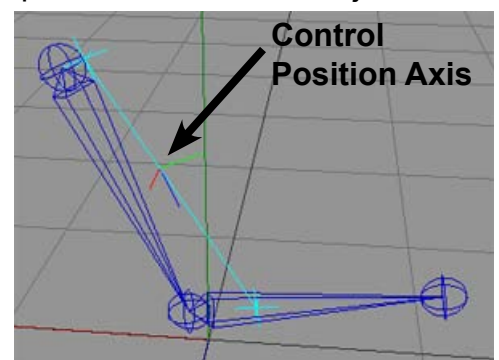
them. The *Joint Offset* and the *Child Offset* sets the offset position of the two end locators. *Enable Pivot* turns the pivot option on. This option allows you to add a pivot point so that the control position axis can be pulled from around the pivot point. That way the axis will stay on the original side of the control object even though the child position locator moves to the opposite side of the control object. *Pivot Offset* sets the offset position of the pivot point from the child objects position. *Restrict to Z Axis* restricts the control axis' position to the Z axis of the control object. *Mix Position* sets the control axis' position between the *Joint Offset* position and the *Child Offset* position. If *Enable Pivot* is turned

Control Position Axis

on, then the mix will be between the *Joint Offset* position and the *Pivot Offset* position. As the control position axis moves, scale is calculated according to the amount of movement from the original "bind" position of the control position axis. Scale Strength adjust the XYZ strength effect of the scale on the mesh points.
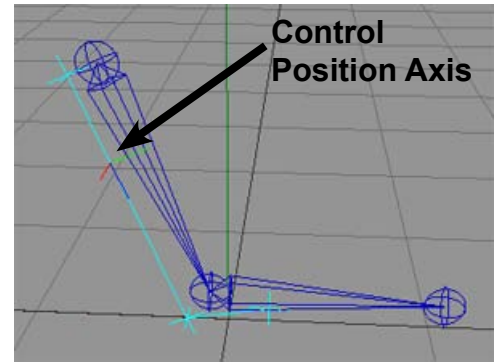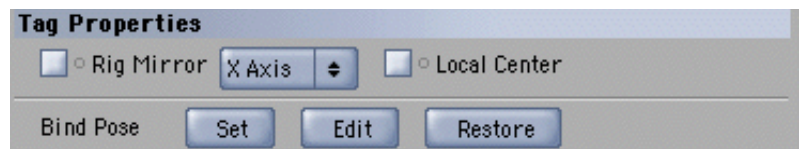
CD Bind Pose

This tag is not only for storing the bind pose of the character rig but also for storing additional poses. It stores the PSR of objects that you add to a list, typically a character rig's controller objects.

Tag Properties Tab

When *Rig Mirror* is enabled it will establish a mirror plane when the Bind Pose is set. This option needs to be set to be able to mirror poses. With *Local Center* enabled, the center of the mirror plane will be in the **Local** coordinate

space of the object the tag is on. Otherwise the center of the mirror plane will be in **Global** coordinate space. The *Bind Pose* is a permanent pose which can not be deleted from tag. It has 3 buttons: *Set*, *Edit* and *Restore*. The *Set* button will set the pose by storing the current PSR of the objects in the list. The *Edit* button will restore the previously stored pose and put the pose in edit mode. Once the pose has been edited, you click on the *Set* button to store the edited pose. The *Restore* button simply restores the previously stored pose.

Objects Tab

Objects is the drag box where you drag and drop the objects you want to add to the list. These objects will typically be the character rig's controller objects. The objects will not only have their PSR values stored in the pose, but
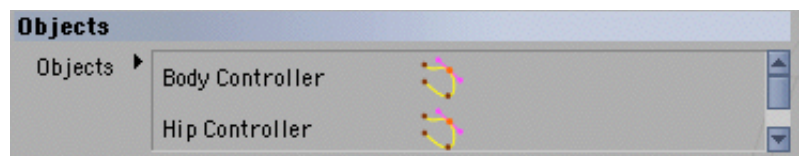

have their PSR values stored in the pose, but they will also have their User Data values stored if the object has any User Data parameters. If any of these objects have a CD Hand tag on them, then the CD Hand Tag's parameters will also be stored in the pose.

Pose Tab

In this tab is where you store and manage the additional poses. *Add Pose* will add poses to the bottom of the pose list. *Remove Pose* will delete poses starting at the bottom of the pose list. Each pose has an edit field, where you can type in a name for the pose, and 4 buttons: *Set*, *Edit*, *Restore* and *Mirror*. The *Set* button will

set the pose by storing the current PSR of the objects in the list. The *Edit* button will restore the previously stored pose and put the pose in edit mode. Once the pose has been edited, you click on the *Set* button to store the edited pose. The *Restore* button simply restores the previously stored pose. The *Mirror* button will restore a mirrored version of the stored pose. This option is only available if you enabled the *Rig Mirror* option in the **Tag Properties Tab** before you set the Bind Pose.
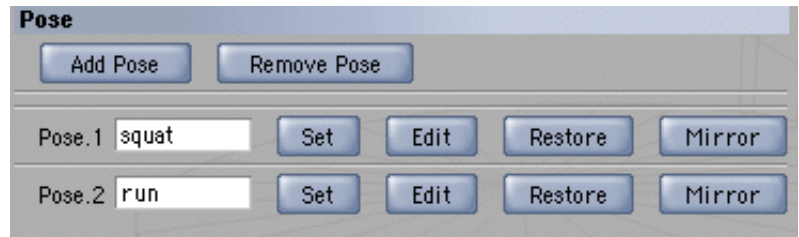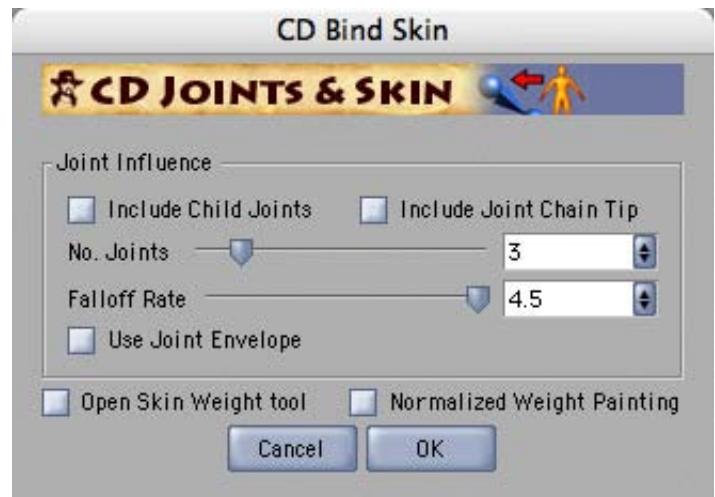
CD Bind Skin

This command tool will bind the character mesh to the joint skeleton, and auto calculate the skin weights for each joint in the skeleton. The CD Skin tag can only be added to the character mesh by using the CD Bind Skin command tool. The CD Bind Skin command can only be used on an object that is classified as a "point object", which means any object that has points you can edit in Point mode.

To use the command you first select the character mesh object and then shift select the joints, as described above in the section **Selecting Ob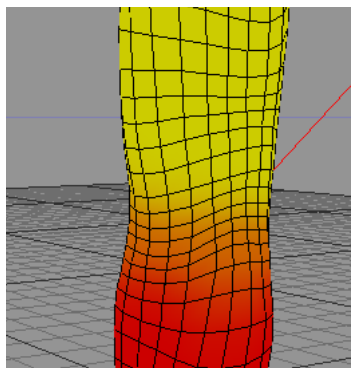jects in Order**, to which you wish to bind the mesh. If you want to bind the mesh to the entire joint skeleton you only need to shift select the top most joint in the skeleton hierarchy, and then make sure to enable the *Include Child Joints* option in the **CD Bind Skin** dialog. If you enable the Include Joint Chain Tip option, the tip joints of each joint chain will also be included in the auto weight calculation. *Use Joint Envelope* restricts the weights to only those points that fall within the boundary of the individual joint envelopes of those joints which have their *Use Envelope* option enabled.
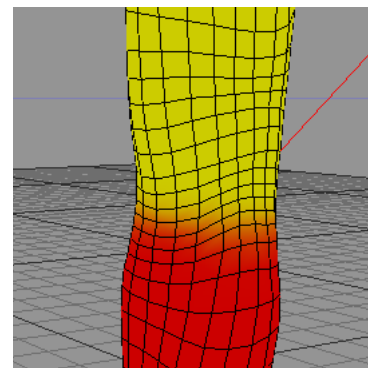
You can set the *No. Joints* parameter to how many joints you wish the CD Bind Skin to consider when auto calculating the weights. The *Falloff Rate* adjusts the falloff at the end of the joints. Adjusting the *No. Joints* and the *Falloff Rate* parameters is the key to getting a good auto weight calculation. The images below show how
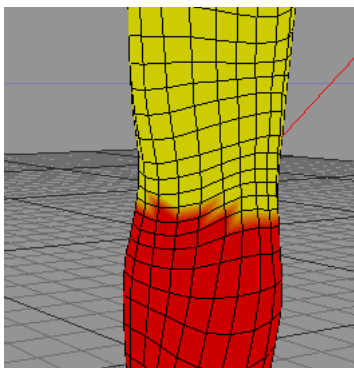
No. Joints = 1, Falloff = 0   No. Joints = 3, Falloff = 0   No. Joints = 3, Falloff = 4.5

changing these parameters affects the way the auto weights are calculated.

Open Skin Weight tool allows you to choose whether or not the **CD Paint Skin Weight** tool will become active immediately after the auto weight calculation is completed. With *Normalized Weight Painting* enabled the weights will always be normalized when painting. This option will set the *Normalize Weights* option in the **CD Paint Skin Weight** tool. Normalized weights mean that all accumulated weights for each point will add up to 100%. In CD Joints & Skin, normalized weight painting can be turned on and off on the fly.

CD Paint Skin Weight

This tool will paint weights only for CD Skin and CD Skin Cluster tags. When a CD Skin Cluster tag is selected, only the top part of the tool interface will be available. The *Joints* list is only available when a CD Skin tag is selected.

Radius sets the radius of the brush. The brush can have a minimum radius of 1 unit and a maximum radius of 100 units. Enabling the *Only Modify Visible Elements* will restrict the weight painting to the front side of the mesh visible in the viewport. Other wise the weight painting will paint weights on both sides of the mesh. *Display Contrast* allows you to adjust the color contrast between 0% weight and 100% weight. This helps you visually distinguish the differences in weight when painting very low percentages. There are 3 painting modes: *Set*, *Add/Subtract* and *Smooth*. These modes work in conjunction with *Strength* parameter. The *Set* mode will paint the weight according to the *Strength* value, overwriting any existing weight. If you hold down the control key while painting in *Set* mode, the weight will be totally erased, no matter what the *Strength* value is. The *Add/Subtract* mode will add weight to the existing weight according to the *Strength* value. If you hold down the control key while painting in *Add/Subtract* mode, weight will be subtracted from the existing weight according to the *Strength* value. The *Smooth* mode will smoothly blend the existing weights according to the *Strength* value. The result of the smoothing is a bit different between painting for CD Skin and painting for CD Skin Cluster. *Enable Soft Edges* allows you to paint with a soft edged brush. The *Softness* parameter determines width of the soft edge, with a setting of 100% being the widest soft edge. *Use Joint Colors* will color the weights in the viewport according the color of the joints. *Normalize Weights* will auto normalize the weight as you paint so that the accumulated weight for each point addes up to 100%.
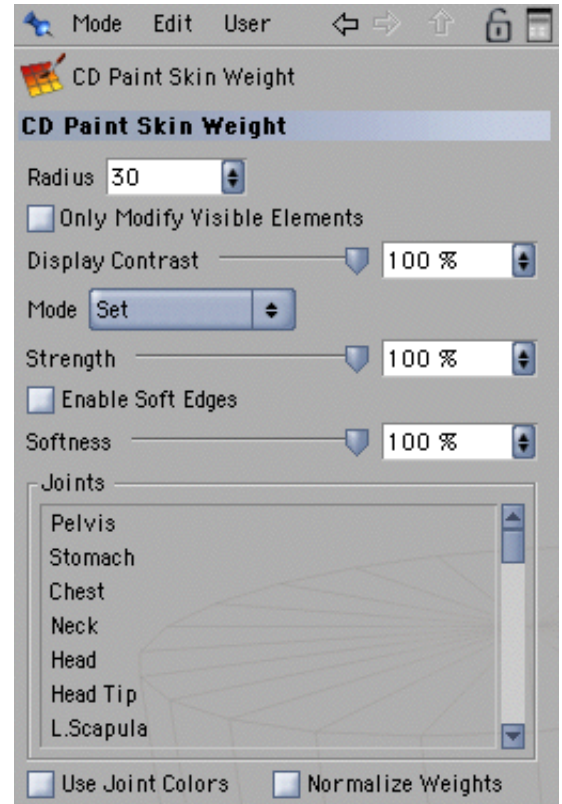
CD Normalize All Weights

This command will normalize all existing weights. This command is useful if you've painted the weights by alternating between normalized and non-normalized weights, and want renormalized all of the painted weights.

CD Remove Skin

This command will remove all CD Skin and CD Skin Clusters associated with the selected object. You should always use this command to remove the skinning from an object because it also removes the hidden tag that stores the skin reference.

CD Mirror Skin Weight

This command will mirror the skin weights of the selected joint chain. To use this command you must first unbind the skin. Then select the joint you wish to mirror, select the CD Skin tag associated with the weights you want to mirror and click on the command. A dialog will open up where you must set a few parameters. You set the Axis you wish to mirror across and set the *Mirror Direction* to either mirror the positive side to the negative side or mirror the negative side to the positive side. In the *Tolerance* section you have a separate tolerance for the points and the joints which you can adjust for better results. Once you've set the mirror parameters you then click on *OK* to perform the mirror or *Cancel* to abort.
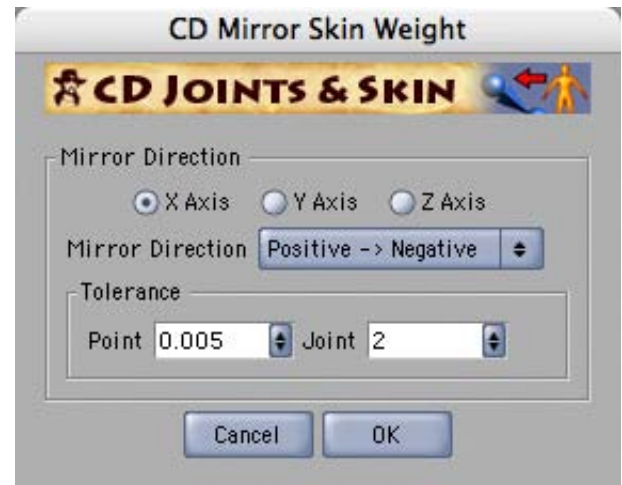
CD Add Joints

This command allows you to add joints to an already skinned mesh. To use this command you must first unbind the skin. Then select the joint or joints you wish to add to the skin, select the CD Skin tag and click on the command. The joints will then be added to the skin. If you control click the command, an options dialog will open where you can choose whether or not to auto weight the joints
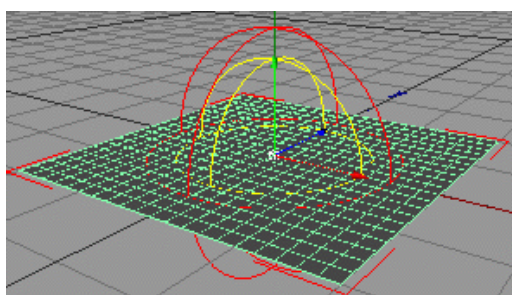
CD Remove Joints

This command allows you to remove joints from a skinned mesh. To use this command you must first unbind the skin. Then select the joint or joints you wish to remove from the skin, select the CD Skin tag and click on the command. The joints will then be removed from the skin.

CD Add Skin Cluster

This command adds a CD Skin Cluster to a selected object. To use the command you first select the mesh object, then shift select the controlling object, as described above in the section **Selecting Objects in Order**, and click on the command. A dialog box will open where you can set the auto weighting parameters. When the dialog opens, there will also be a couple of spherical guides drawn in the viewport. The guides give you visual representation of the *Radius* and *Falloff Rate* parameters in the dialog. The *Radius* sets the outer radius for the auto weight calculation. No points will be weighted outside of this radius. *Max Weight* sets the maximum value of weight that can be applied to the points. *Falloff Rate* sets the inner radius for the auto weight calculation, where all points

within this radius will have a weight value of the *Max Weight* parameter.

CD Mirror Skin Cluster

This command will mirror a CD Skin Cluster tag. It will create a new tag on a joint that is the mirror of the joint the original CD Skin Cluster tag is on. To use the command you first select the mirror joint, then select the CD Skin Cluster tag you want to mirror and click on the command. A dialog will open where you can set the mirror parameters. The *Mirror Direction* option determines which axis to mirror across. *Rename Skin Cluster* allows you to rename the newly created CD Skin Cluster tag by replacing a prefix or a postfix in the original name. *Tolerance* sets the tolerance for the mirror calculations. Once you've set all the mirror parameters, you then click on the Mirror button to perform the mirror.
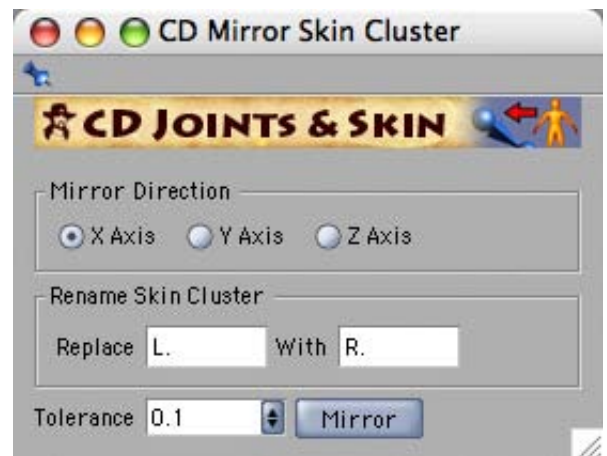
CD Convert From CD Skin

This command will convert CD Skin to Cinema 4D's Claude Bonet or CA weights. In R10 through R11.5 an options dialog is available to choose between Claude Bonet and CA weights. The options dialog is accessable by holding the Control key down when selecting the command. In R9 only converting to Claude Bonet and in R12 and above only converting to CA Weights is available.

CD Convert To CD Skin

This command will create a CD Skin tag from existing Claude Bonet weights. This command is useful for converting files with bones and Claude Bonet weights over to CD Skin weights. This command is not available for R12 and above.

CD Freeze Transformation

This command will "freeze" (or normalize) the transformation of the selected objects. If you control click on the command, it will open up the options dialog where you can choose to freeze the *Position*, *Scale* or *Rotation* of the object. Freezing an object's position will move the axis to world 0,0,0 position. Freezing an object's scale will set the axis scale to 1,1,1. Freezing an object's rotation will set the objects axis rotation to 0,0,0. If the object is a polygon object, freezing the object will leave the geometry where it is and only change the object's axis according to which of the PSR options are enabled. You can also freeze primitive objects in the same way by enabling the *Convert Primitives* option, which will convert the primitive object to a polygon object. Otherwise a primitive's geometry will

change according to how the axis is changed. The Include Children will also freeze all child objects of the selected objects.

CD Merge Skin

This command works similar to Cinema 4D's built in Connect command, but it will recognize objects that have a CD Skin tag on them and it will also merge the skin weights into a single CD Skin tag. To use the command you first select the main polygon mesh object, then shift select the polygon mesh objects you wish to connect to the main object, as described above in the section **Selecting Objects in Order**, and click on the command. A new object will be created with a new CD Skin tag on it.

CD Toggle Paint Mode

This command works with the CD Paint Skin Weights tool, when the CD Paint Skin Weights tool is the active tool. It will toggle between Set mode and Add mode. The addition of this command was so that you can assign a hot key to the command and use the hot key to toggle the painting mode and thereby speeding up your workflow when painting skin weights.

CD Freeze Skin State

This command works similar to Cinema 4D's built in Current State To Object command, but it will recognize objects that have a CD Skin tag on them. To use the command you select the polygon mesh object which has a CD Skin tag on it and has been deformed by the joints, and then click on the command. A new object will be created with a new unbound CD Skin tag on it. The new object's CD Skin tag will have the same weights as the original. If you control click on the command, it will open up an options dialog box where you can choose to enable the *Reset Original Mesh* option. This option will reset the original mesh's reference to the mesh's current posed state, and not make a duplicate mesh.

CD Transfer Skin

This command will transfer the skinning from one mesh to another. To use the command you would first adjust the rig of the source skinned mesh to fit the destination skinned mesh. Then select the source mesh and shift select the destination mesh, as described above in the section **Selecting Objects in Order**, and click on the command. A new CD Skin tag will be added to the destination mesh with the weighting of the source mesh projected onto the destination mesh. Of course as with all automatic weighting tools, some manual adjustments will need to be made to the destination mesh's weights.

C.O.F.F.E.E. Functions

These functions provide C.O.F.F.E.E. with access to a CD Joint's squash and stretch values.

[float] CDGetSquashValue([BaseList2D] joint, [float] posZ);
Get the squash value of a CD Joint at a specific point along the CD Joint's Z axis

Returns a float value.

Parameters

    BaseList2D joint   The CD Joint object from which to get the squash value.

    float posZ   The position along the Z axis of the CD Joint to sample.

[float] LayerOff([BaseList2D] joint);
Get the stretch value of a CD Joint.

Returns a float value.

Parameters

    BaseList2D joint   The CD Joint object from which to get the stretch value.