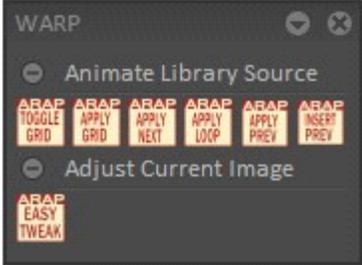


# ARAP Warp Deformation Grid

Svengali - Feb 5, 2015

## Buttons for Easy Access to the Warp Tool: Animation and Image Deformation



Assign buttons to Shortcut keys to make it easy to animate...

The Warp Button Panel

### 1. Animate Library Source

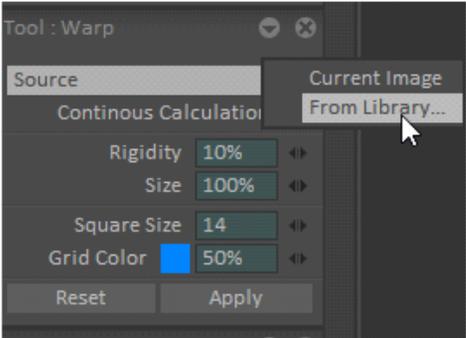
- a. **ARAP Toggle Grid** - turn Warp grid on and off (does NOT stamp)
- b. **ARAP Apply Grid** - Apply (stamp) image on current frame
- c. **ARAP Apply Next** - Apply (stamp) image ,move to next frame
- d. **ARAP Apply Loop** - Apply (stamp) image, move to next frame or loop if end of layer
- e. **ARAP Apply Prev** = Apply (stamp) image, move to previous frame
- f. **ARAP Insert Prev** = Apply (stamp) image, insert new previous frame and move to it (extends current layer length by one)

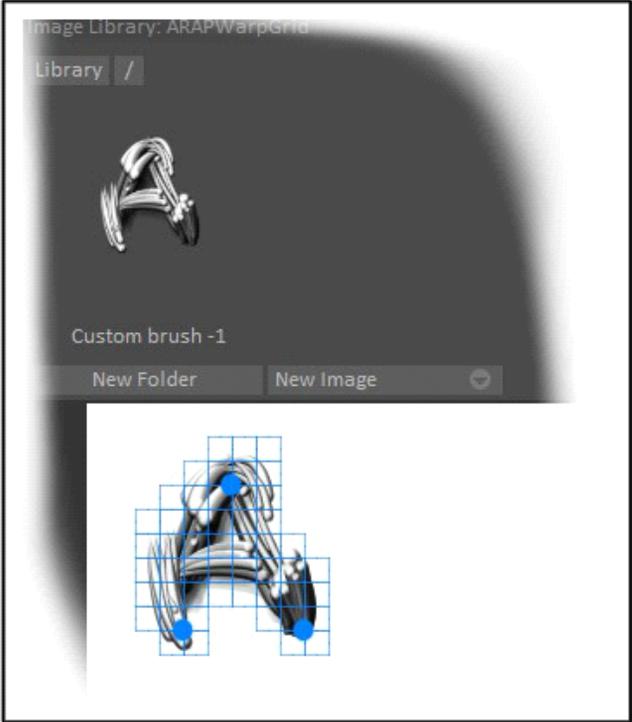
### 2. Adjust Current Image

- a. **ARAP Easy Tweak** - Open Warp Grid, stamp changes, Close Warp Grid

## Animate Library Source - Warp Deformation Grid and Three Anchor Points

Here is a very simple workflow that shows how to setup a source image and manually animate it, a frame at a time, using the Warp Deformation Grid and Three Anchor Points.





## Setting up the Project

1. Setup a project consisting of a single empty layer which is 20 frames long, 768 x 480 is a good size.
2. Create a quick sketch of the letter A.
3. CutBrush a copy of the Figure A.
4. Store the Figure A CutBrush in the Library (RMB click and choose "Add custom brush current image).
5. Minimize library but don't close it.
6. Go to frame one of the layer and Click the ARAP Toggle Grid button which activates the Warp tool and opens the Tool:Warp Panel.
7. In the Tool:Warp Panel, click on the Source button and choose the "From Library" option.
8. When the Library window opens, double click the Figure A you stored there. This selects the Figure A Sketch as the image you will import to animate.
9. Click the Reset button in the Tool:Warp Panel forces the Figure A Sketch (with a blue grid superimposed on it) to be displayed in the upper left corner of the project window on frame one.
10. Hold down the Shift key and LMB click on the A image, to place three blue anchor points: on the left foot, the right foot and the forehead of the letter A. These are going to be the control points you use to "pose" the A sketch image for each frame.

## Creating the Animation, Frame by Frame

1. IF you hold down the Ctrl key, you can move the A Sketch image AND the Grid AND the three blue anchor points all as one unit to place it in some starting position within the current frame.
11. Use the three blue anchor points to stretch, pinch, bend and rotate the A Sketch image into a start pose.
12. Click on the ARAP Apply Next button. This single click will stamp the posed A Sketch to the current frame, then move on to the next frame, redisplaying the Figure A Sketch in the exact same pose and exact same position as in the previous frame with the three blue anchor points also still in place.
13. Use the three blue anchor points to repose the A Sketch image to its new position. If you wish, you can turn the LightTable on, to refine the new pose relative to the previous frame.
14. Click on the ARAP Apply Next or the ARAP Apply Loop button. The new pose will be stamped and you will find yourself on the following frame, with image, grid and anchor points in place, ready for further deformation.
15. Repeat these steps for each succeeding frame, finishing the entire animation sequence.
16. Once done, end the process by clicking on the Source button in the Tool:Warp Panel and select "Current Image" which will cancel the presence of the Figure A Sketch image as well as the blue deformation grid and the three blue anchor points.
17. Now you can view the animation results by pressing play.

## Review:

- Place the sketch you want to animate in the Library.
- Activate Tool:Warp Panel by clicking the ARAP Toggle Grid button to begin animating.
- In the Tool:Warp Panel, first click on Source and choose "From Library" then double click to choose your Library image.
- Click the Reset button in the Tool:Warp Panel to enable the display of the library image in the upper left corner of the project window with the Warp grid applied.
- Place anchor points to control the progressive posing of the library image in the project window.
- Stamp posed image using the ARAP Apply Next button which stamps the pose and moves on to the next frame displaying the image, the grid and the control points.
- Repose the image and click the ARAP Apply Next button or the ARAP Apply Loop button to stamp it again. Repeat posing, stamping and moving to next frame until the animation is complete.
- End the animation process by clicking on the Source button and choose "Current Image".
- You can now watch the animation.

## More about the Animation Process

Bringing the Source image from the Library puts the following three things in effect:

1. Each warped frame is stamped as a first-generation deformation (no progressive degeneration!)
2. One frame to the next, the warping is progressive (the Warp pose in frame one is brought over to frame two ready for more Warp deformation) making smooth, graceful movement dirt simple.
3. Once placed, the three control anchors are persistent, frame to frame. Note however that additional control anchor points can be added in individual frames, as necessary.

## Adjust Current Image

ARAP Easy Tweak button can be used to adjust the current image with the Warp Deformation Grid. Click once to activate the Warp Deformation Grid which can be used to adjust or deform pixels on screen. Click it a second time to deactivate the Warp Grid AND stamp

**IMPORTANT: THE EASY TWEAK BUTTON ONLY WORKS IF THE SOURCE OPTION IS SET TO "CURRENT IMAGE".**

If the Source Option is set to a Library image, then that image (and the Warp Deformation Grid) will appear in the upper left corner of the current frame.