Displaying Content

How do I show my content?

- Projection
  - Projection Mapping
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Projection

Projection Mapping

Overview

Projection mapping means making video and putting it on a non-traditional surface using a projector. It is widely used to describe projected media's positioning within a projected field. (or fields) . Some folks say *projection mapping* when they actually mean corner-pinning, or mesh-warping, or keystoning. All of those things are part of projection mapping, but if the end target is a projection screen (traditional surface), it's not really projection mapping in the most basic sense.

Regardless, the skills to map, and the skills to finely position media on a traditional surface have a ton of crossover.

Methods for Projection Mapping

You can projection map at many different levels, and in a lot of situation, you might take advantage of a combination of these levels:

- In-projector : when the projector has a toolset to corner-pin or mesh-warp within its settings (higher-end projectors usually have this ability). This can be used for distortion correction, blending, and corner-pinning but it is not recommended for complex mapping.
- In-software : when the media server has a program that allows you to corner-pin or mesh-warp the media (MadMapper, Disguise, QLab, etc).
- In-media : when you've baked the media with your corner-pin and mesh-wrap rendered to the final output (think using a second window, full-screen, out of Premiere Pro or After Effects).

I recommend MadMapper for all kinds of mapping: pixel, projection, and LED. There are rentals available that are affordable for any production. I also recommend it for correcting for lens distortion, which isn’t “mapping” in the traditional sense, but it is “sometimes required.”

You can spout/syphon/NDI into MadMapper from your preferred content/media playing software (like QLab or TouchDesigner).

Mad does have cueing and scenes but I haven’t made a big effort to learn it. I do use it for basic media playback without other software often. One cue single loop.

Touch has a mapping tool, too, but it is not super-good yet. Doesn’t support Bezier in a normal way and that makes it non-viable for things on curves, or corrections that require curves.

Debugging Projection Mapping

> Things look squished or squashed in a bad warpy way?

Too many points in your mesh probably. Try to achieve **more with less.**

> Tearing on the edges (aliasing)?

Too much squeezing going on. It’s better to stretch to fill then to squeeze to fill. If you are SOL and must have tearing on edges, you can add a little feather digitally or throw some cardboard in front of the lens (be careful with tape though!!)

> Playback choppy?

Reasons for slow playback: naughty codecs, too many quads, and/or your computer isn’t able to push the pixels. Also, you can throw in the famous Timecoder tool to your video grids to check for performance (V1 design by Zack Shepard, V2-V965 have been by yours truly).

In Mad - turn on framerate display so you can see what Mad is actually pushing. I requested this feature and they put it in for me. This is my one and only brush with celebrity other than giving a private college tour to Jason Alexander.

The TImecoder tool is a baked in mograph element that you put over your video grid. It is made up of the following elements:

- Timecode frame # display
- Two boxes that are at 50% opacity and go to 0% opacity every other frame. To the naked eye, if the video is playing back at the right frame rate, the frame boxes should be smooth and without chop - and a solid box will appear in the middle! If you only see one box, there’s something wrong!

Projection Blending

For a straight up 25% blend - if you can do it in-projector, you should. You just need to feed the projectors a raster for you to match it to (a grid that includes overlap). If the blend isn’t perfect, you can further tweak in MAD. I definitely recommend at least corner-pinning in-projector before getting into software blending; as this will help to avoid anti-aliasing. Anything other than 25% requires more zhuzh between the in-projector blend and Mad.

> Need to add write up here for blending tutorial

Blending and Mapping in After Effects

Normally, you'll use AE to create your pre-blend map and raster - but, if you're a psychopath, you can bake in your blend / map / distortion in After Effects.

There is a workflow for that. It is:

- Plug the projector into the computer. Set it as an external monitor (not mirrored). Set Rez to native on projector and computer.
- Mac: turn off the menu bar (toggle system setting "displays have separate spaces" and reboot)
- After Effects: New Comp Viewer on comp that is the same rez as projector raster / default rez.
- Place that comp viewer on the projector screen.
- Lock the comp viewer so that whatever precomp you navigate to, it stays locked to the correct comp.
- Make Comp Viewer full quality (not half or quarter)
- Full screen that shit.
  - Press Command+\ for full screen
  - Press Shift+/ to make it 100%
- Here's a forum thread about it. Again, some weird guy is posting about this who seems super smart, successful, and handsome.

Playing Back Clean Loops

These are some ways to get clean (seamless) loops to play on a computer. If it doesn't work, it's probably a shitty computer or not a clean loop in content, or the player/codec combination you're using doesn't support clean loop!

- **Disguise (on Disguise Hardware)** supports clean loops with NotchLC files
- **Touch** and **Madmapper** support clean loops with HAP files.
- **QLab** supports clean loops with 422 files.
- **BrightSign** supports clean loops with H264 files.
- **Raspberry Pi** supports clean loops using Video Looper and H264 files (currently **limited** to 1080p)
- **Micca** players do not support clean loop, so best to dip to black or hard cut (or a really long loop that no one will notice)