

# **BEYOND TRACKING IN MOCHA PRO IN-DEPTH & IN ACTION**

**Presented by Ben Brownlee**

## **Course Overview**



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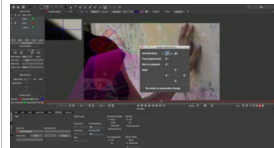
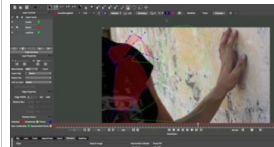
# Beyond Tracking in mocha Pro

## In-depth and In Action

### Exercise 01 – Introduction and User Interface (35:42)

#### Outline

- Set up the mocha Pro preferences to best match the system.
- Learn to avoid a common mistakes when importing footage, which could result in having to redo your project.
- Get a feel for mocha Pro's user interface and the most common tools we will be using.
- See the difference between X-spline and Bezier shapes.
- How mocha Pro's visualization tools, such as the Grid and gamma adjustments, make certain tasks easier.



#### Project Objective

No project.

#### Footage Provided

No footage provided.



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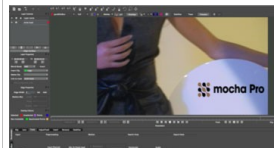
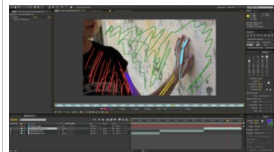
# Beyond Tracking in mocha Pro

## In-depth and In Action

### Exercise 02A – Introduction to the Planar Tracker (35:45)

#### Outline

- Define common terms, such as what a Plane is, how it can be transformed.
- See examples of how to break a scene up into separate planes, and how those planes move.
- How does planar tracking differ from point tracking?
- What advantages does that give? For example, how to track through motion blur.
- Track an image with no clear reference points.
- How to improve a track when it starts to go wrong.
- How to check the track for accuracy.

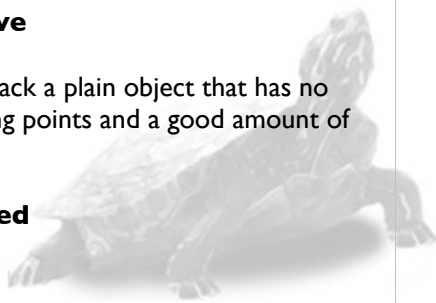


#### Project Objective

In a moving shot, track a plain object that has no easily visible tracking points and a good amount of motion blur.

#### Footage Provided

panWithBlur.mov



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## In-depth and In Action

### Exercise 02B – Further Planar Tracker (18:33)

#### Outline

- Continuing from the previous exercise, we look at how to identify co-planar elements.
- Track an element as it moves off-screen.
- How to re-track shapes to improve the track quality.
- Keyframe parameters to balance accuracy and speed.
- See the difference between adding keyframes and using the Über-key.
- Track once, use often. Linking multiple shapes to a single track.
- Learn the importance of setting Surface control points in the correct alignment.

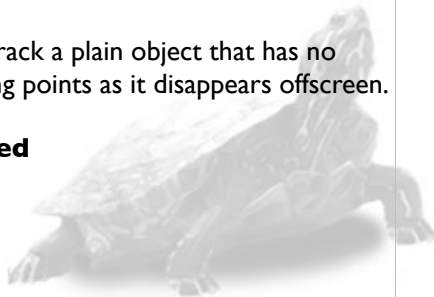


#### Project Objective

In a rotating shot, track a plain object that has no easily visible tracking points as it disappears offscreen.

#### Footage Provided

bgRotate1.mov



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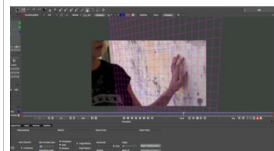
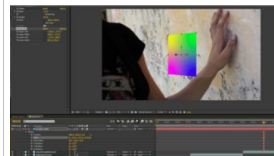
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## In-depth and In Action

### Exercise 03 – Track Mattes & Tracking Perspective (20:22)

#### Outline

- Learn when to use Perspective tracking in addition to Shear.
- How to maximise the size of the trackable shape layer when objects obscure it. This greatly increases the accuracy of the track.
- Use track mattes for the first time in the course. A vital technique for quick and precise tracking.
- See how to change the tracking shape, without compromising the tracking data.
- Work with the Grid, to visualize an accurate plane when there are no suitable points for the Surface.

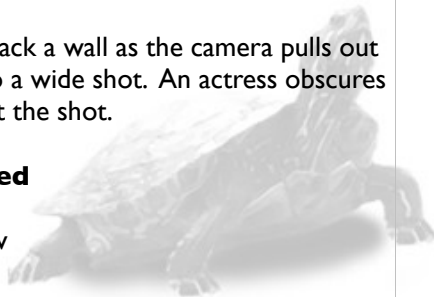


#### Project Objective

In a moving shot, track a wall as the camera pulls out from an close-up to a wide shot. An actress obscures the wall throughout the shot.

#### Footage Provided

handAlongWall.mov



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## In-depth and In Action

### Exercise 04 – Difficult Tracks & Adjust Track (50:38)

#### Outline

- What to look for when tracking a shape that rotates in perspective.
- Judge when a track gets as accurate as it can be when working with difficult source footage.
- Adjust the regular tracking data in Adjust Track.
- When and where to add keyframes.
- Use Reference Points when Surface points moves offscreen.
- Work with multiple intersecting track mattes.
- Understand the importance of the layers' stacking order.
- Track through overexposure and lens flare.
- When should you use Adjust Track and when is it best to re-track.



#### Project Objective

- 1) Track a rotating surfboard in a moving camera shot.
- 2) Track a sign post as the camera moves forward. Sign is obscured by actress, lens flare and other objects.

#### Footage Provided

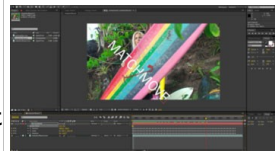
rotateSurfboard.mov  
parkingSign.mov

# Beyond Tracking in mocha Pro In-depth and In Action

## Exercise 05 – Using the Tracking Data (19:55)

### Outline

- Take corner pin and transform data out to various applications.
- Methods for bringing data into Nuke.
- Averaging multiple tracking points.
- Use mocha Pro tracking data in Final Cut Pro.
- Workarounds for several FCP limitations.
- How to use the data in After Effects.
- Exploring the different types of Corner Pin data available.



### Project Objective

Explore using the same tracking data in three different applications.

### Footage Provided

No footage required.



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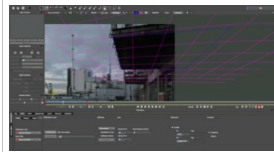
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## Exercise 06 – Correcting Distortion : Lens Module (23:34)

### Outline

- Why lens distortion is a problem in VFX work.
- Set up the shot to define the lens distortion.
- Explore the various calibration controls.
- Render out an undistorted plate.
- Use a grid to accurately calculate a particular lens distortion.
- See how to take the calibration into other Imagineer Systems applications.



### Project Objective

Match the lens distortion of a mildly wide-angle lens to perfectly match our insert to the source material.

### Footage Provided

lens\_correction.mov  
grid\_1.tif



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## In-depth and In Action

### Exercise 07 – Clip Module & Improving Tracking (12:15)

#### Outline

- Take an in-depth look at the Clip module.
- How to replace source footage with a longer or updated version.
- Which parameters can be updated after tracking and which must be correct from the start.
- Why pixel aspect ratio and field order matter.
- Adjust the working colorspace to get improved tracking data.



#### Project Objective

Improve the footage color to increase tracking accuracy.

#### Footage Provided

lens\_correction.mov from Exercise 06



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## In-depth and In Action

### Exercise 08 – Stabilize Module & Improving Render Quality in Final Cut Pro (31:50)

#### Outline

- Create multiple shapes on a single layer to increase the tracked area.
- Delete keyframes using the Curve Editor.
- Move into the Stabilize Module and explore different values of stabilization.
- Simple methods to smooth a shot.
- Add a series of locked frames to create a natural looking, smoother camera movement.
- Explore various methods to take this data out into Nuke, After Effects, Final Cut Pro & Motion.
- Look at the advantages for the different export options.



#### Project Objective

Smooth out a shot from a walking cameraman.

#### Footage Provided

walkingWithSurfboard.mov



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## In-depth and In Action

### Exercise 09 – Advanced Stabilization (18.01)

#### Outline

- Expand on the track from the previous exercise.
- Use mocha Pro's features to crop/minimize the amount of black border after the stabilization process.
- See how to take that data out.
- Work with Auto Fill to reduce the black borders without scaling.

#### Project Objective

Stabilize a walking camera shot without scaling.

#### Footage Provided

walkingWithSurfboard.mov



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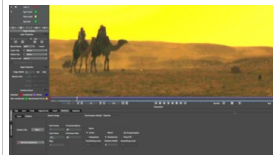
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## In-depth and In Action

### Exercise 10A– Introducing the Remove Module (26:57)

#### Outline

- Build on techniques from the Auto Fill exercise.
- See the correct way to prepare your different track layers for the Remove module.
- Separate tracking shapes from the Remove shapes.
- Create a simple remove, then tweak the settings to improve the result.
- Remove a second object iteratively, using the results of the first Remove.
- Blend away artefacts and telltale signs of the remove.



#### Project Objective

Using stock footage, remove a lens flare and one person from the shot.

#### Footage Provided

No footage provided.



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## In-depth and In Action

### Exercise 10B – Further Remove – Using Cleanplates (19:27)

#### Outline

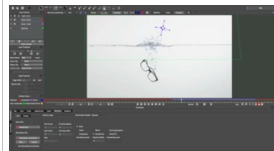
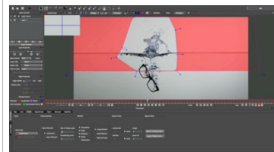
- Two simple rules for using Remove.
- How multiple shapes on a single layer, affects the Remove process.
- What is a cleanplate?
- Create a cleanplate within mocha Pro.
- Editing a cleanplate's range.
- Softening the transition between the removed pixels and the originals.

#### Project Objective

Paint out a series of water drops on a glass plate.

#### Footage Provided

waterDrops.mov



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## Exercise 11 – Advanced Remove – Problem Planes (22:26)

### Outline

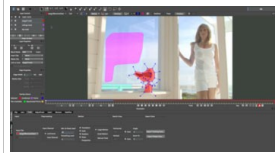
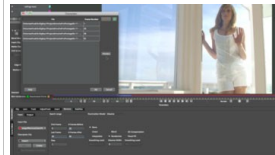
- Breakdown a shot to identify how much work needs to be done.
- Track through a glass window.
- How to remove an object when the background is never visible in shot.
- Import and placing multiple cleanplates.
- Clean up problem reflections.

### Project Objective

Remove a foreground element, whilst retaining the mid- and background planes. Reflections must be preserved.

### Footage Provided

seagullRemoveCleanPlate.mov



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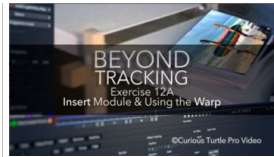
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## In-depth and In Action

### Exercise 12A – Insert Module & Using the Warp (19:11)

#### Outline

- Take a standard planar track into the Insert module.
- Adjust the composite properties, add focus & motion blur.
- Model a non-flat surface using the Warp feature.
- Offset the track in 2D and 3D.
- Export out tracking data.
- Render out the composite's elements.



#### Project Objective

Add a new front page to a magazine. The magazine has several curves on it. Offset this new shape in 3D.

#### Footage Provided

noisyRoom.mov

walkingWithSurfboard\_rotated.mov



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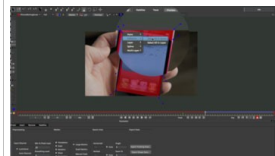
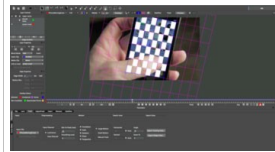
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## In-depth and In Action

### Exercise 12B – Insert Module and Complex Tracking (36:14)

#### Outline

- Identify five problems with what appears to be a straightforward screen replace shot.
- Arranging multiple track mattes.
- Keyframing layers on and off.
- What to do when almost the tracking shape is obscured.
- Why using mocha Pro's tracker isn't always necessary nor advised.
- Check out other features in Insert, including adding alpha channels and blending in edges.



#### Project Objective

Track in a screen replacement without the use of tracking markers, focus or consistent lighting..

#### Footage Provided

iPhoneMovingScreen.mov  
alphaInsert.tif



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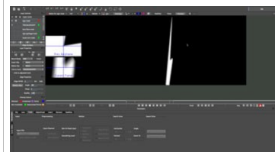
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## In-depth and In Action

### Exercise 13 – Troubleshooting and Round-up (20:59)

#### Outline

- Solve problems with the frame offset.
- Consequences of a wrong pixel aspect ratio.
- Reiterate when to use Shear and Perspective.
- Fixing problem tracks in the Curve Editor.
- Linking rotoshapes to a separate track layer.
- Add and control motion blur in roto splines.
- Gotchas when adding edge softness.



#### Project Objective

Revisit an earlier shot.

#### Footage Provided

parkingSign.mov



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