CS5245
Vision & Graphics for Special Effects

Project Presentation and Demo

How Unreal!

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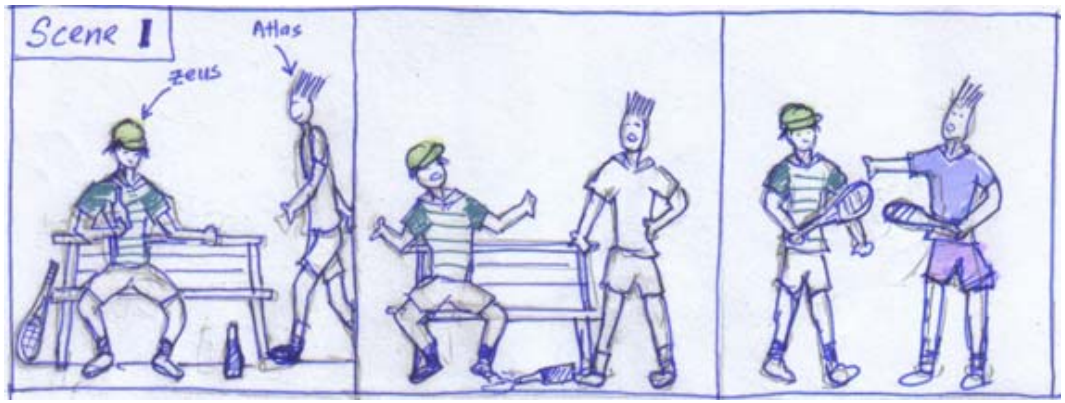
Agenda

- Storyline
- Main Effects
- Effects Walkthrough
- The Effects Video
- The Making Of *How Unreal!*

Storyline (1 of 2)

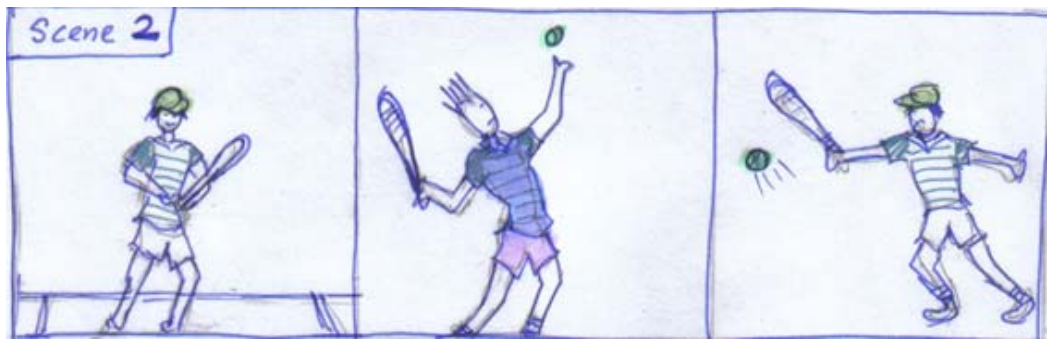
Scene 1 – The Challenge

Atlas walks pass Zeus and knocks down a bottle. The two exchange words and challenge each other to a tennis game.



Scene 2 – Game Begins

Atlas serves the ball. Zeus manage a weak return but Altas's powerful backhand sends the ball beyond Zeus's reach. Clearly Zeus is struggling with the match.



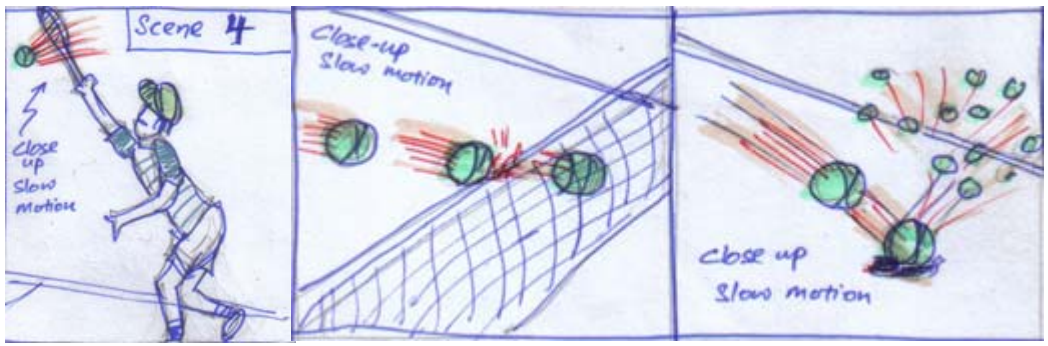
Storyline (2 of 2)

Scene 3 – Emotion Boils

Altas is getting arrogant and gives Zeus a 'Thumb Down' sign. Zeus shows a very frustrated look as he prepares to serve

Scene 4 – Super Serve

Zeus serves…The ball zooms away, it travels to the top of the net and burns through the top edge and finally disintegrated into pieces



Scene 5 – Closing Scene

Atlas shows a stunt expression and he watches in amazement.

Main Effects

The main special effects are

- Ace Serving of a Powerful Tennis Ball with Smoky Trail.
- Blasting of the Fiery Tennis Ball across the Net.
- Disintegration of the Explosive Tennis Ball into Fragments.

Effects Walkthrough

Particle Effect (1 of 4)

Aim is to create a 3D Smoke Trail effect.

1) Start with an image of a single particle.
2) Apply physical expressions to the particle's properties.
3) Duplicate the layer multiple times to build up the effect.

Effects Walkthrough

Particle Effect (2 of 4)

Applying Expression Controls:

1) **“Life” Point Control** – to set a random life span of the particle

```
life = random(lmin,lmax); //life span
```

2) **“Position”** – to launch the particle at a random speed and direction in 3D space

```
s = random(vmin,vmax); //initial speed

//Calculate the x, y, and z of the particle's velocity vector
x = s*Math.sin(verticalAngle)*Math.cos(rotation);
y = -s*Math.cos(verticalAngle);
z = s*Math.sin(verticalAngle)*Math.sin(rotation);

v = [x,y,z];
origin + v*time
```

//Also added codes for gravity, wind, launch angle, drag, and //emitter velocity

Effects Walkthrough

Particle Effect (3 of 4)

Applying Expression Controls:

3) **“Scale”** – to ramp the scale from 0 to the maximum over time, creating a ballooning effect

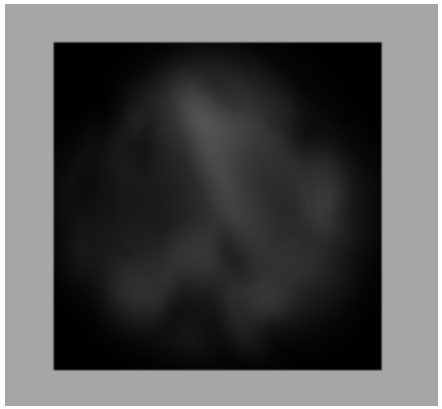
```
if (duration<rampUpTime){
      x=(duration/rampUpTime)*max_scale;
     [x,x,100]
}else{
     [max_scale,max_scale,100]
}
```

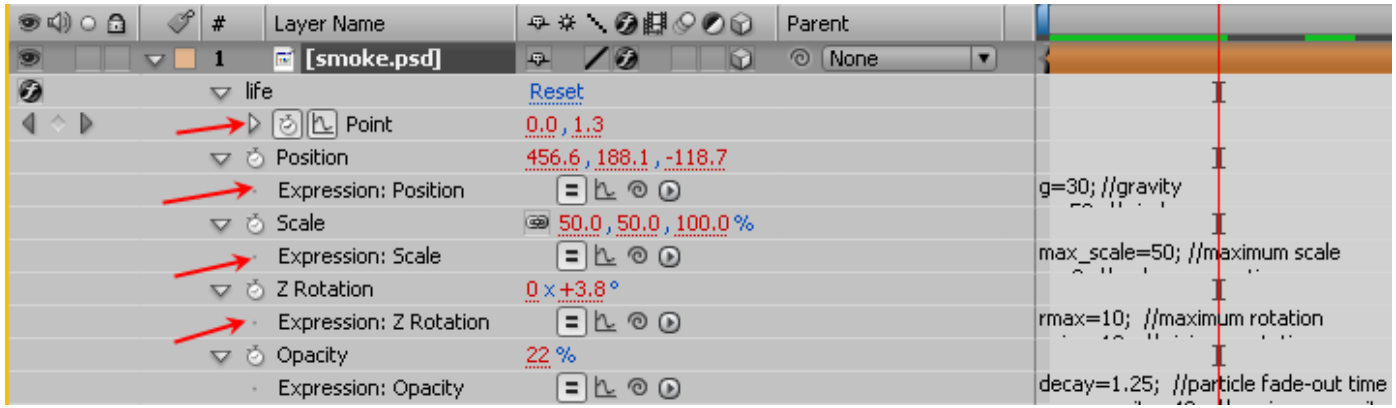
4) **“Rotation”** – to control the rotation around the z axis

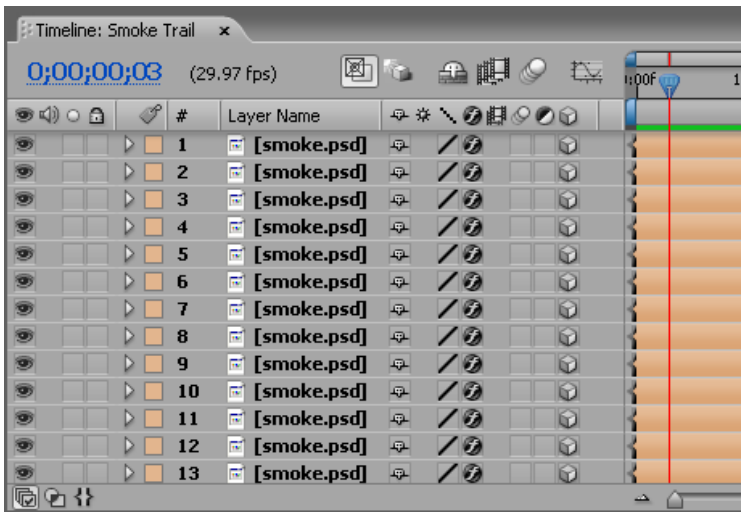
5) **“Opacity”** – control the fade-out of the particle towards the end

Effects Walkthrough

Particle Effect (4 of 4)







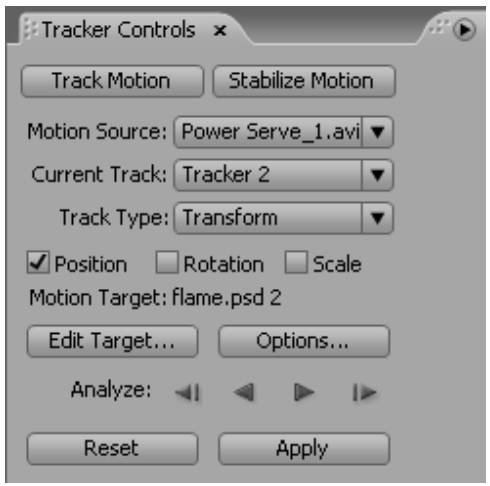
Smoke Trail:

Effects Walkthrough

Motion Tracking

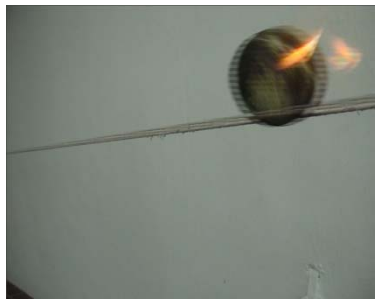
Aim is to track the motion of the tennis ball and apply it to Smoke Trail.

Uses Animation > Track Motion
in After Effects 7.0 Pro

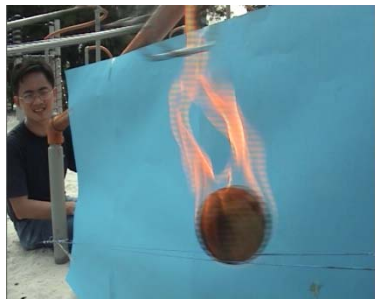


Effects Walkthrough

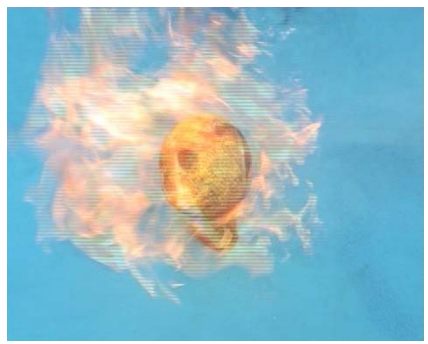
Blue Screen Shooting





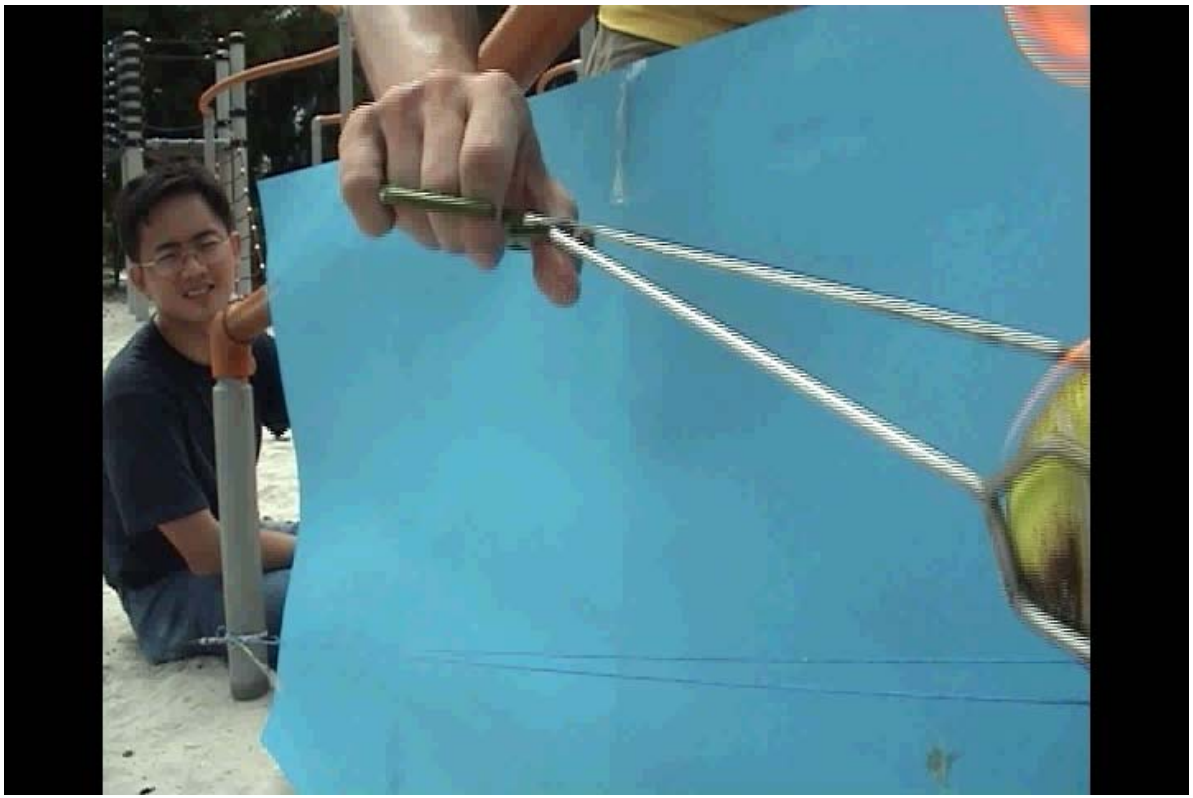




Effects Walkthrough

Compositing (1 of 3)

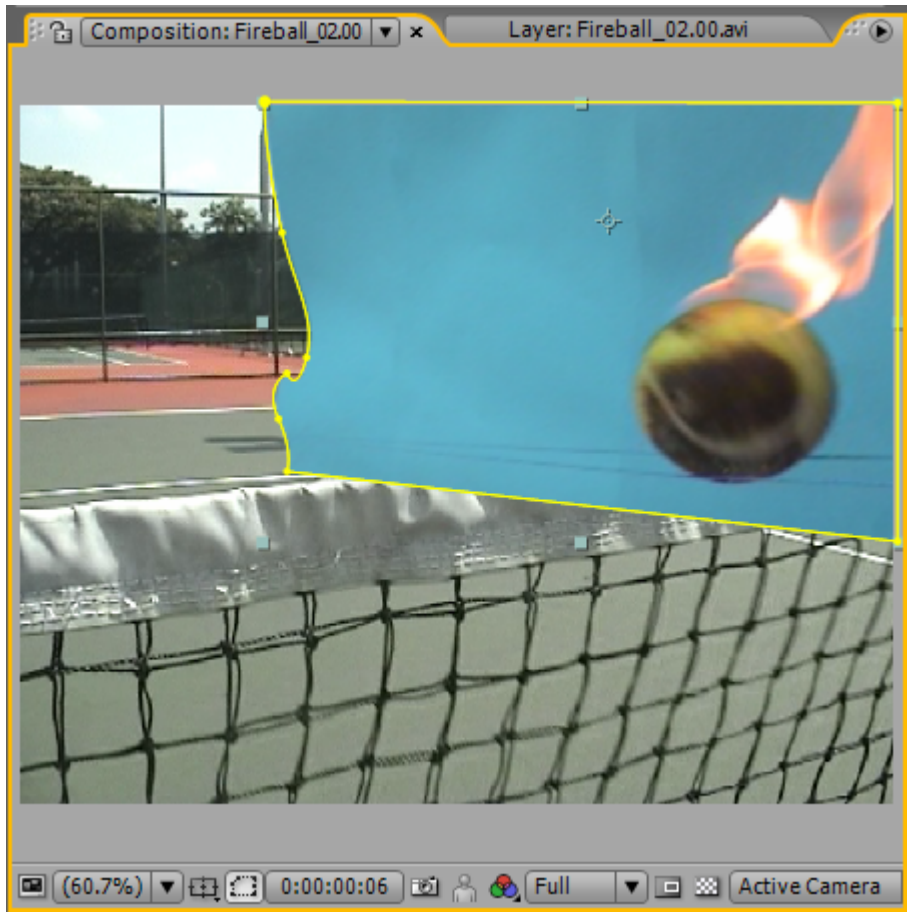
Aim is to isolate the burning tennis ball and superimpose on the tennis court.



Effects Walkthrough

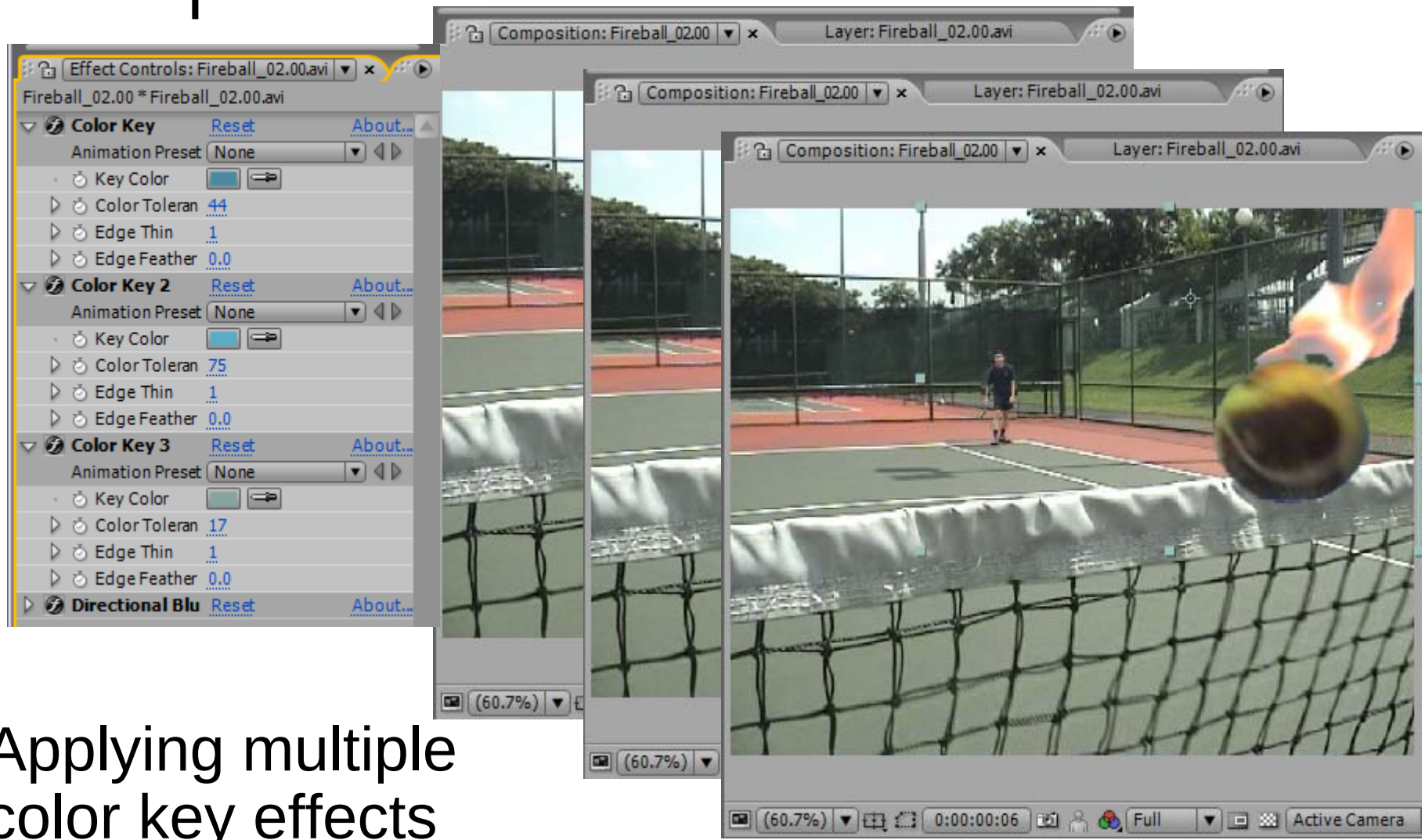
Compositing (2 of 3)

Creating a mask to crop to required region and move to the intended location.



Effects Walkthrough

Compositing (3 of 3)

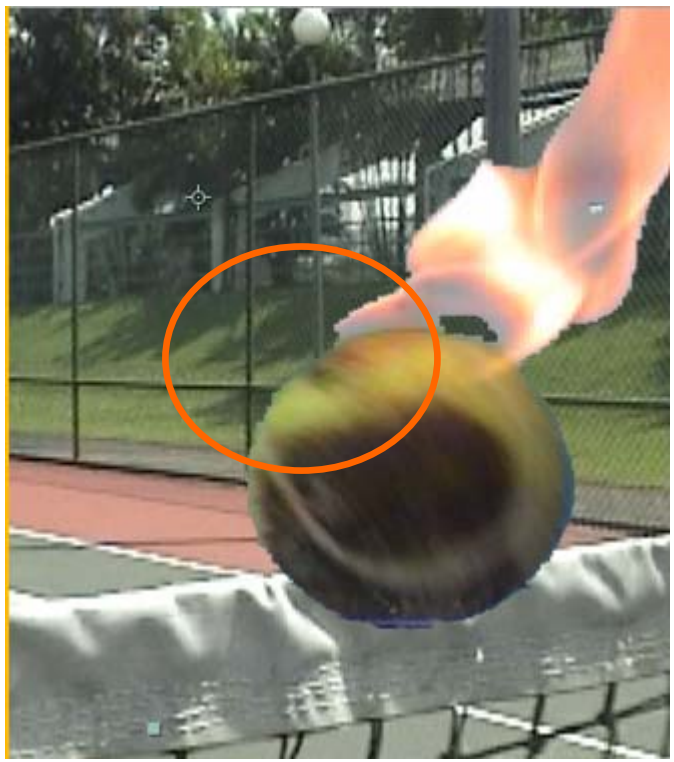


Applying multiple color key effects

Effects Walkthrough

Blurring (1 of 2)

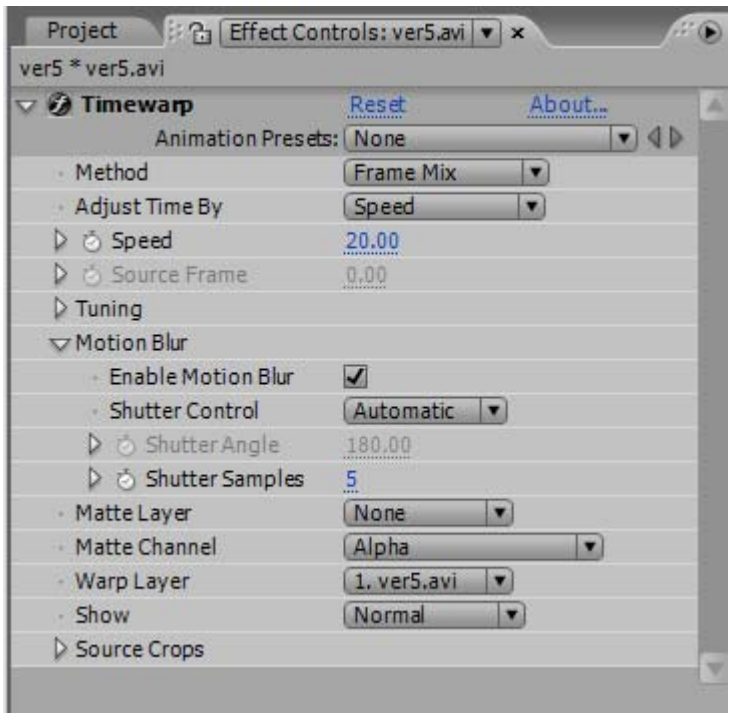
Using directional blurring effect to smoothen edges.



Effects Walkthrough

Blurring (2 of 2)

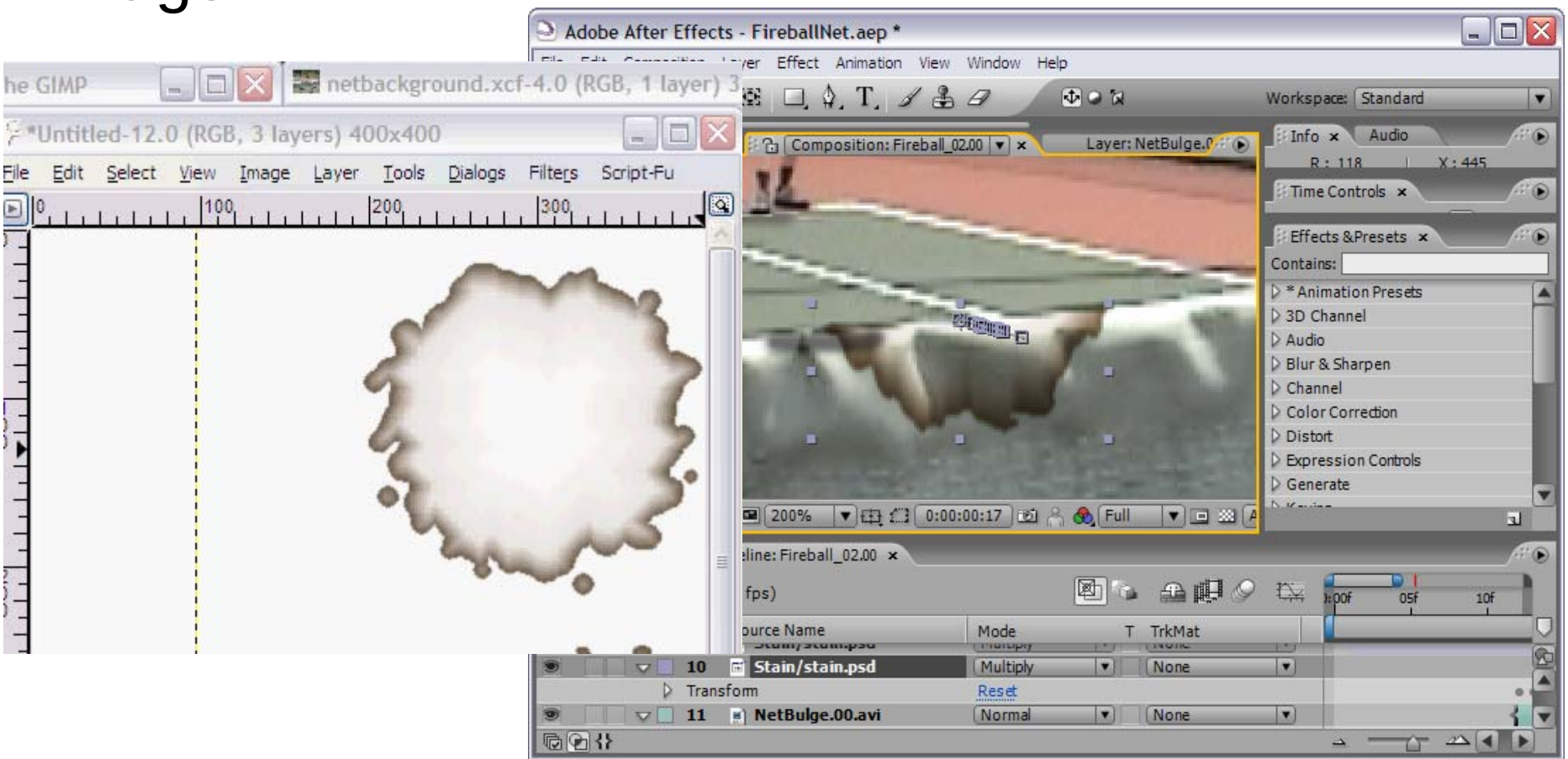
Motion blur is accomplished by time warping with frame mix method.



Effects Walkthrough

Net Burnt Mark (1 of 2)

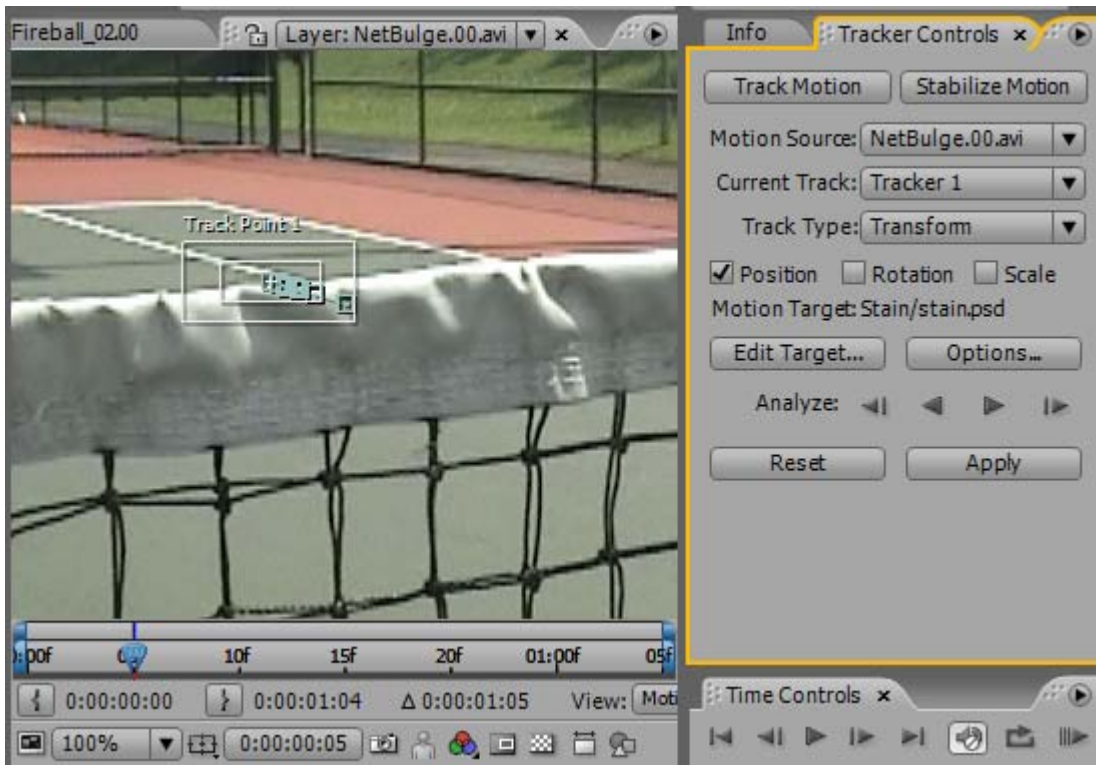
Using GIMP's Coffee Stain effect to create an image.



Effects Walkthrough

Net Burnt Mark (2 of 2)

Using motion tracking to track net's movement and apply to the burnt mark as target.



Effects Walkthrough

Shatter Effect (1 of 2)

Aim is to create a 3D Shatter Effect of tennis ball into fragments.

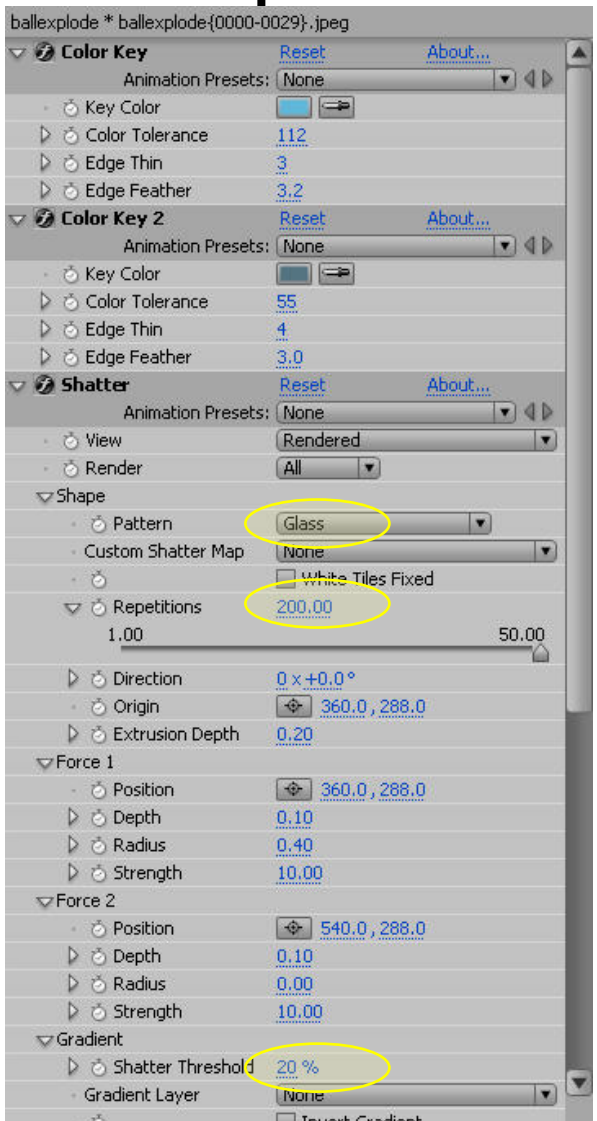
1. Start with an image of a burning tennis ball.
2. Key out the blue screen background.
3. Apply the Shatter effect on the tennis ball image after experimenting with the parameters.

Uses Effects > Simulation > Shatter

in After Effects 7.0 Pro

Effects Walkthrough

Shatter Effect (2 of 2)



Effects Walkthrough

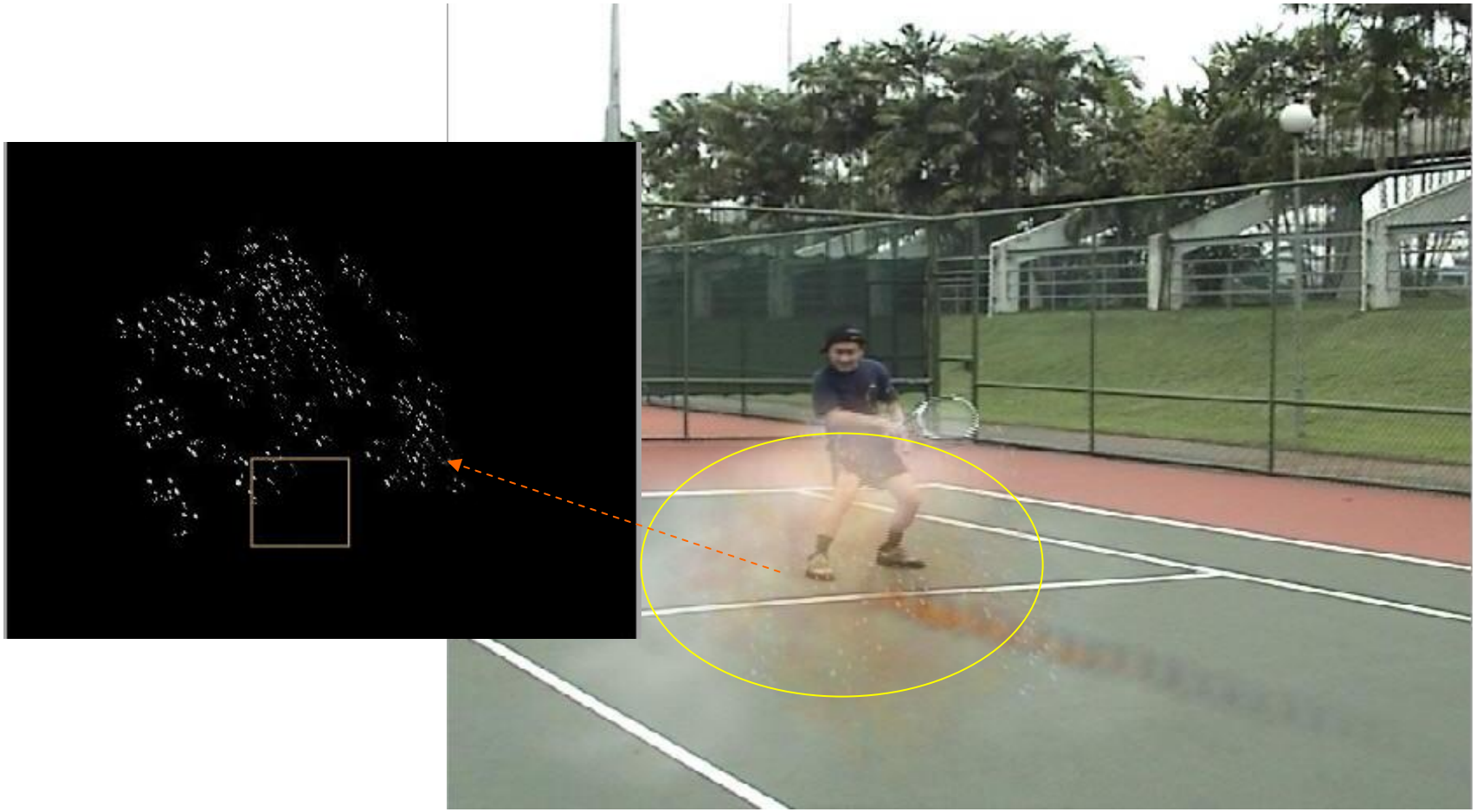
Disintegration Effect (1 of 2)

Aim is to achieve a realistic Disintegration effect of tennis ball into fragments.

1. Start with a smoke image of a single particle.
2. Apply physical expressions to the particle's properties.
3. Duplicate the layer multiple times to build up the smoke effect.
4. Repeat the above steps for debris image and glowing fire blast image to achieve scatter of fragments with explosive fiery effects.
5. Composite the 3 layers onto the video footage for the final outcome of tennis ball disintegration.

Effects Walkthrough

Disintegration Effect (2 of 2)



Effects Walkthrough

Lessons Learnt

- Hardware Requirements
  - Digicam’s USB Interface could not provide expected resolution 320 X 240 instead of 720 X 480 pixels.
- Software
  - Video de/encoding to and from various software can be very tricky if not done properly.
  - Results in resolution and aspect ratio distortion and quality issues.

Effects Walkthrough

Lessons Learnt

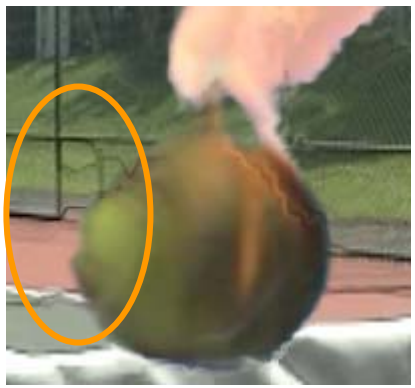
- Storyboarding
  - Needs to be more detailed and specific to ease subsequent actions.
- Filming
  - Detailed planning needs to be done to avoid re-shoot (e.g. camera angles, props etc).
  - Importance of venue, weather and lighting condition.
- Blue Screen Shooting
  - Re-shoot once for the blue screen.
  - Importance of a VERY good uniform Blue Screen.

Effects Walkthrough

Lessons Learnt

- In-Between Frames

  Best recommended method (Pixel Motion) is not suitable, Frame Mix gives a better result.



Pixel Motion distorts the background

Frame-mix gives a better blur effect

Effects Walkthrough

Improvements

- Ball and particles shadows can be added to the ball shattering. Shatter Effects can be simulated better using 3D software such as Maya.

- Use of high-speed cameras to achieve smoother fire ball motions.

- Use of Matchmover software to track camera motion.

The Effects Video

The Making Of *How Unreal!*

Q & A Session

Thank You !