



*CS5245*  
*Vision & Graphics for*  
*Special Effects*

**Project Presentation and Demo**

*How Unreal!*

Lim Jui Hsien  
Ow Khiam Wei  
Eric Lee





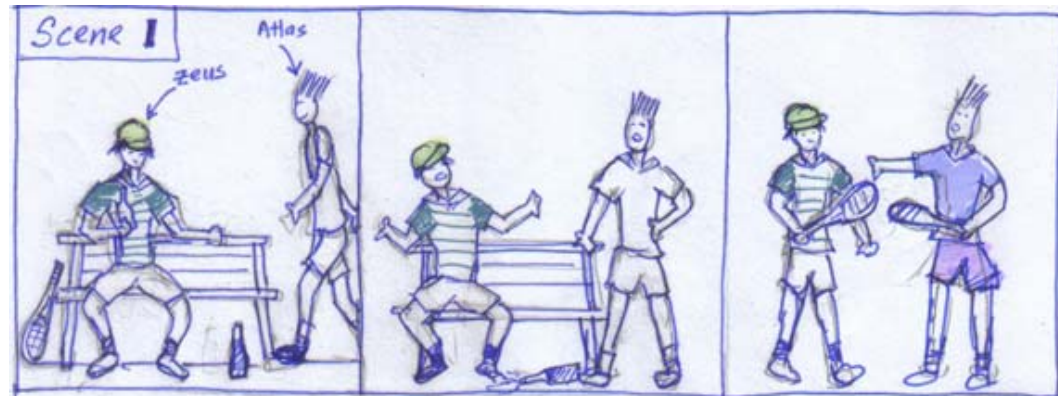
# Agenda

- 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

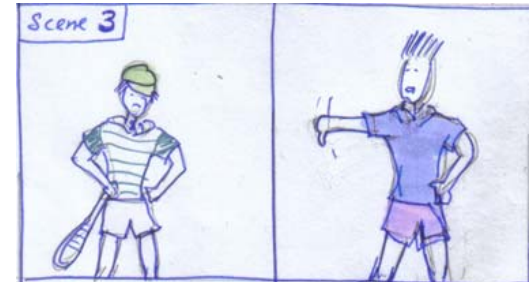
Atlas serves the ball. Zeus manage a weak return but Altas's powerful backhand sends the ball beyond Zeus's reach. Clearly Zeus is struggling with the match.



# Storyline (2 of 2)

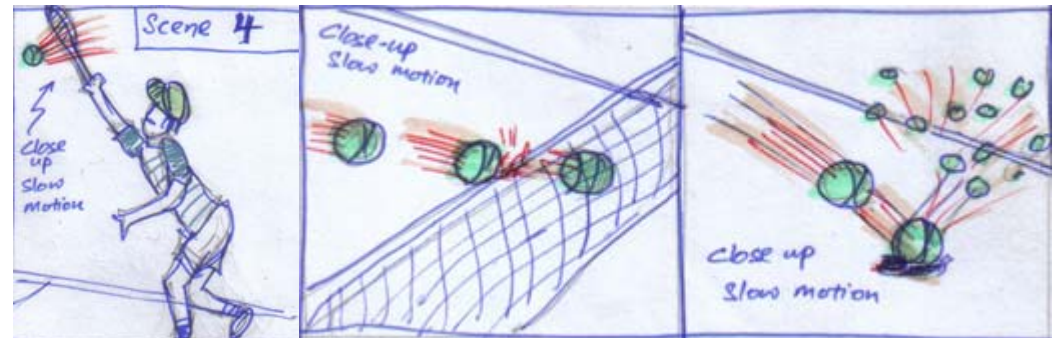
## Scene 3 – Emotion Boils

Atlas 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)



The screenshot shows the Properties panel for a particle layer named [smoke.psd]. The 'life' property is expanded, showing several sub-properties with red arrows pointing to their respective controls:

- Point:** 0.0, 1.3
- Position:** 456.6, 188.1, -118.7
- Expression: Position:** (with an expression icon)
- Scale:** 50.0, 50.0, 100.0%
- Expression: Scale:** (with an expression icon)
- Z Rotation:** 0 x +3.8°
- Expression: Z Rotation:** (with an expression icon)
- Opacity:** 22%
- Expression: Opacity:** (with an expression icon)

On the right side of the panel, the following code is visible:

```
g=30; //gravity  
max_scale=50; //maximum scale  
rmax=10; //maximum rotation  
decay=1.25; //particle fade-out time
```

The screenshot shows the Timeline for a 'Smoke Trail' effect. The timeline is set to 29.97 fps and shows a duration of 0:00:00:03. The timeline contains 13 layers, all named [smoke.psd], stacked vertically. A red vertical line indicates the current time position, which is near the end of the 3-second duration.

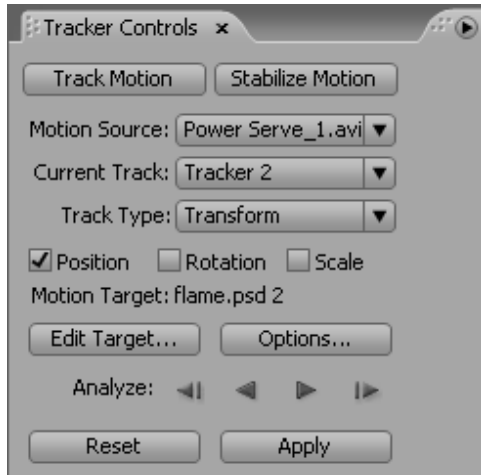
Smoke Trail:

## Effects Walkthrough

# Motion Tracking

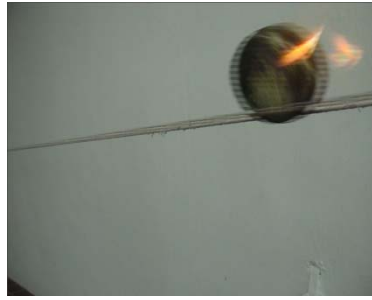
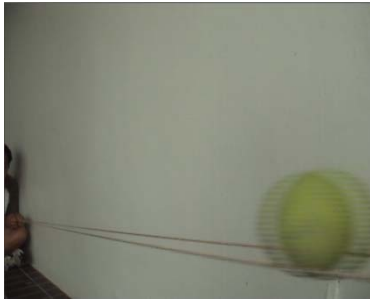
Aim is to track the motion of the tennis ball and apply it to Smoke Trail.

Uses Animation > Track Motion  
in After Effects 7.0 Pro



Effects Walkthrough

# Blue Screen Shooting



Effects Walkthrough

# Compositing (1 of 3)

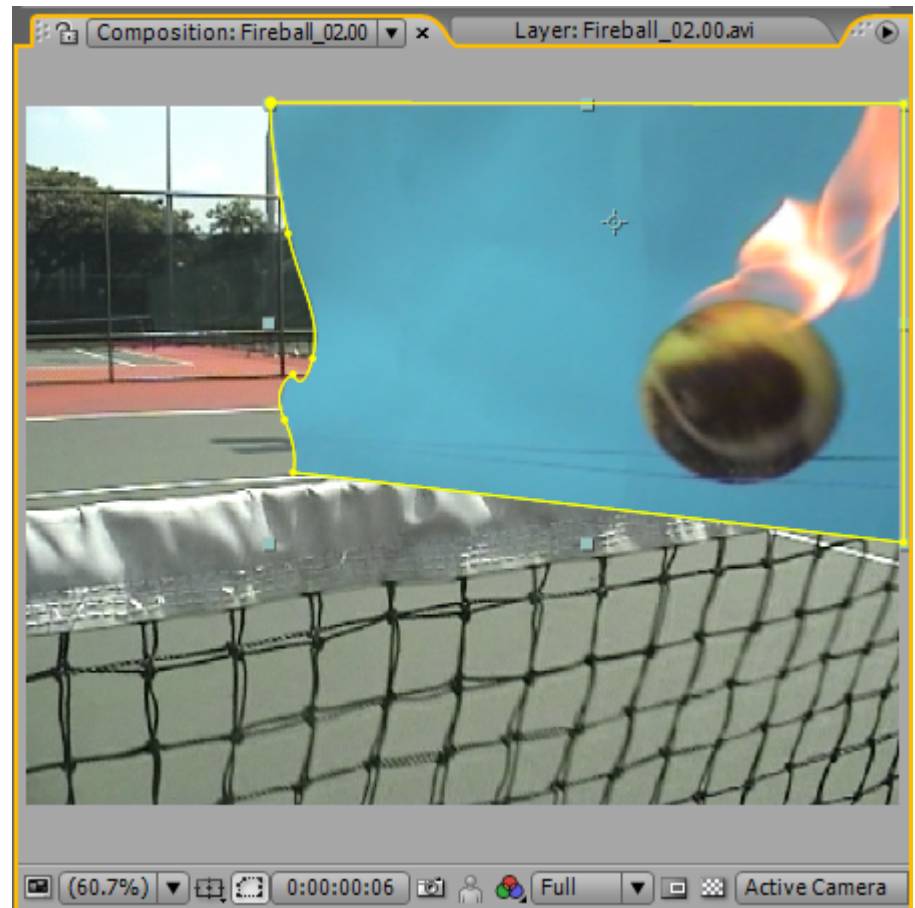
Aim is to isolate the burning tennis ball and superimpose on the tennis court.



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)



The screenshot displays the Adobe After Effects interface. On the left, the 'Effect Controls' panel for 'Fireball\_02.00.avi' is visible, showing three 'Color Key' effects and a 'Directional Blur' effect. The 'Color Key 1' effect has a key color of blue, a color tolerance of 44, an edge thin of 1, and an edge feather of 0.0. The 'Color Key 2' effect has a key color of blue, a color tolerance of 75, an edge thin of 1, and an edge feather of 0.0. The 'Color Key 3' effect has a key color of green, a color tolerance of 17, an edge thin of 1, and an edge feather of 0.0. The 'Directional Blur' effect is also present. The main preview window shows a tennis court scene with a fireball effect applied to a tennis ball. The fireball is a bright orange and yellow flame-like shape that is engulfing the tennis ball. The tennis ball is a bright yellow-green color. The background shows a tennis court with a red and green surface, a black fence, and a person in the distance. The interface includes a timeline at the bottom showing a timecode of 0:00:00:06 and a zoom level of 60.7%.

Applying multiple color key effects

## Effects Walkthrough

# Blurring (1 of 2)

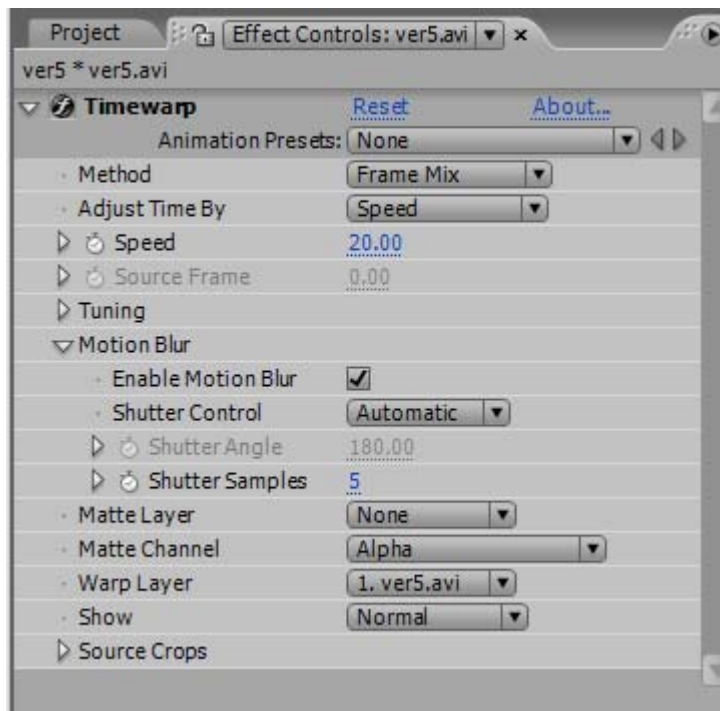
Using directional blurring effect to smoothen edges.



# Effects Walkthrough

## Blurring (2 of 2)

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

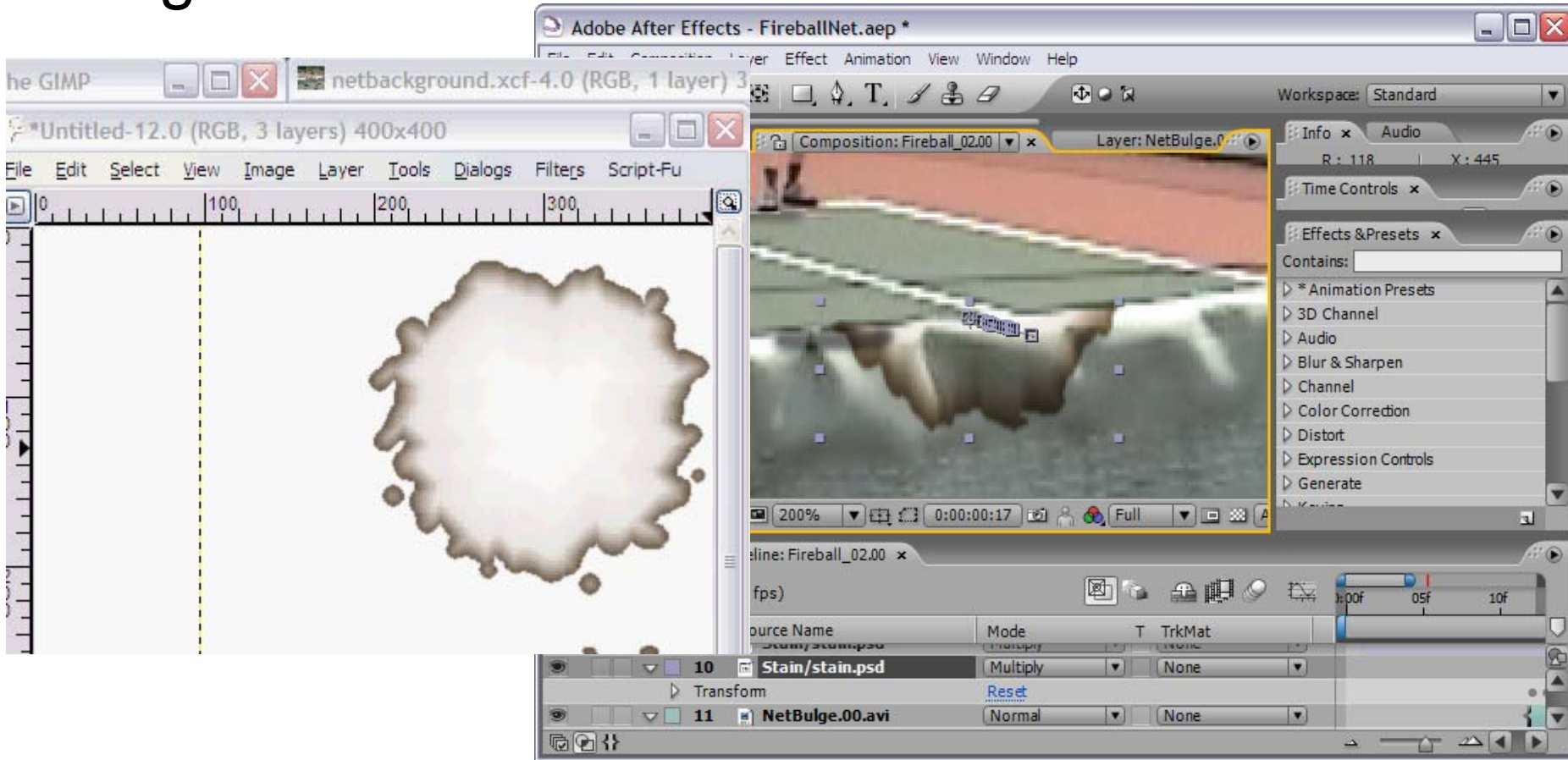




## Effects Walkthrough

# Net Burnt Mark (1 of 2)

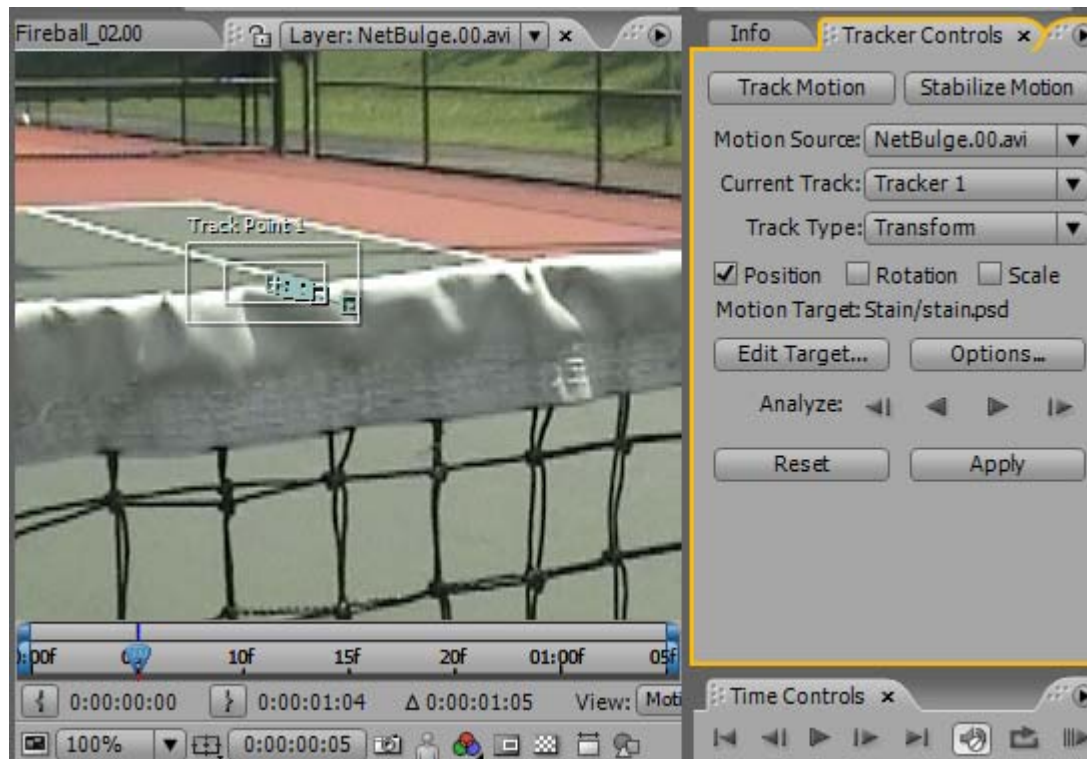
Using GIMP's Coffee Stain effect to create an image.



## 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)

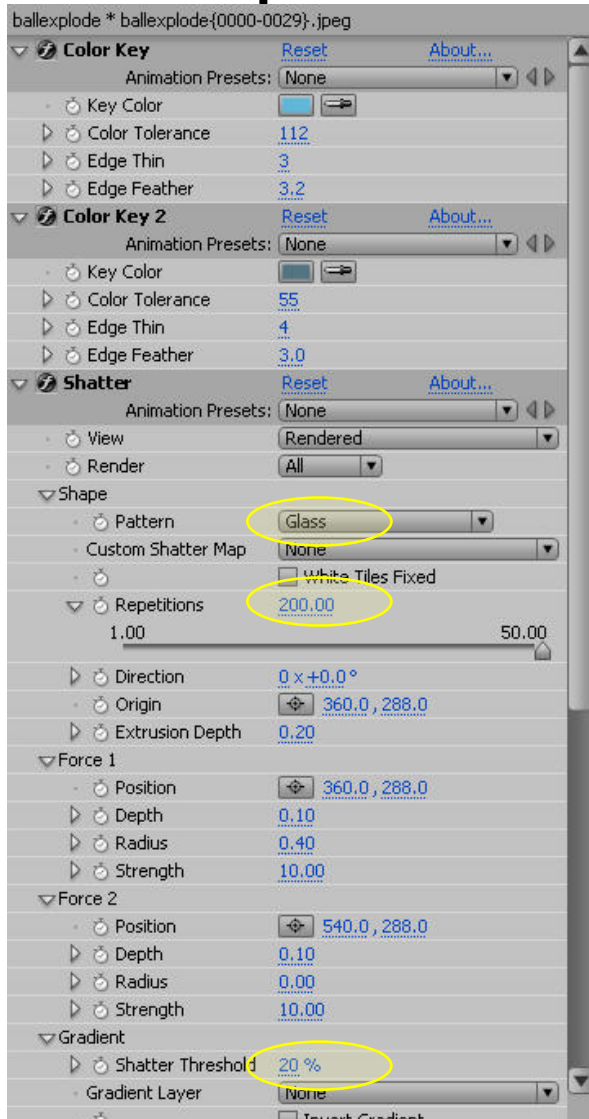
Aim is to create a 3D **Shatter Effect** of tennis ball into fragments.

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

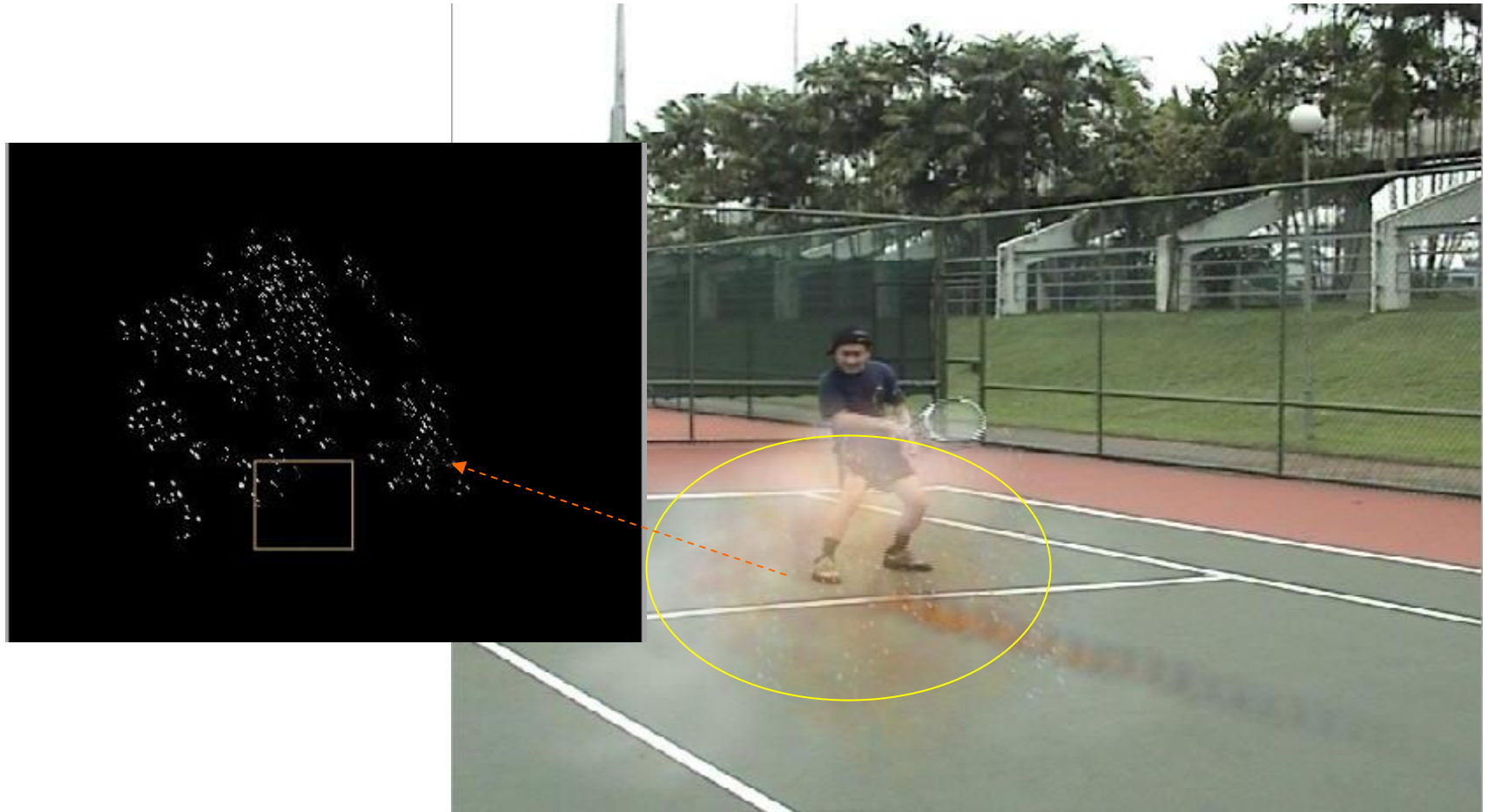
# Disintegration Effect (1 of 2)

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.

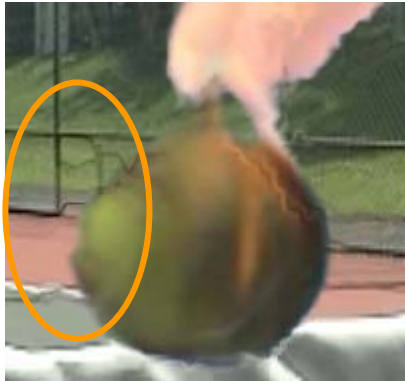


Effects Walkthrough

# 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!*

