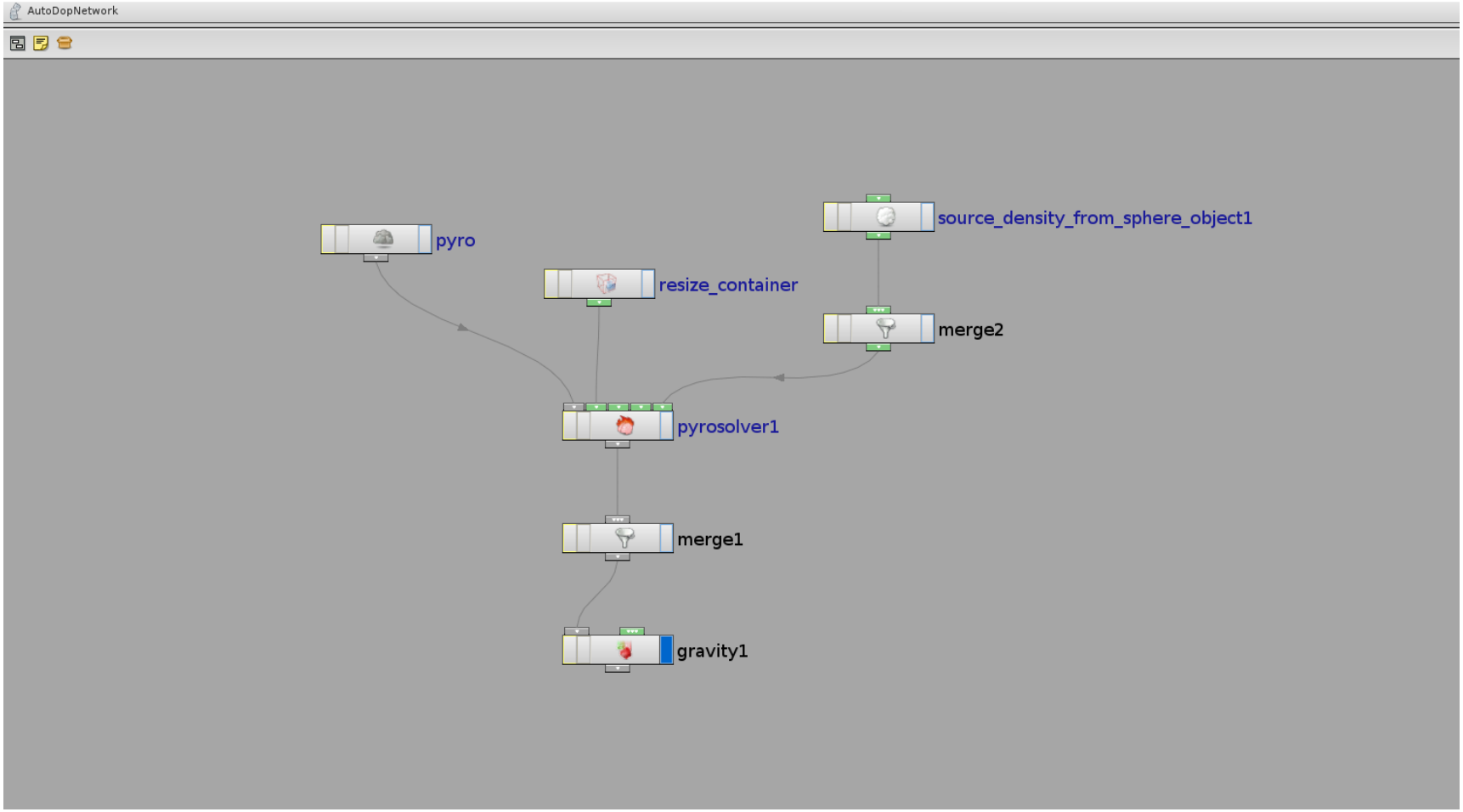
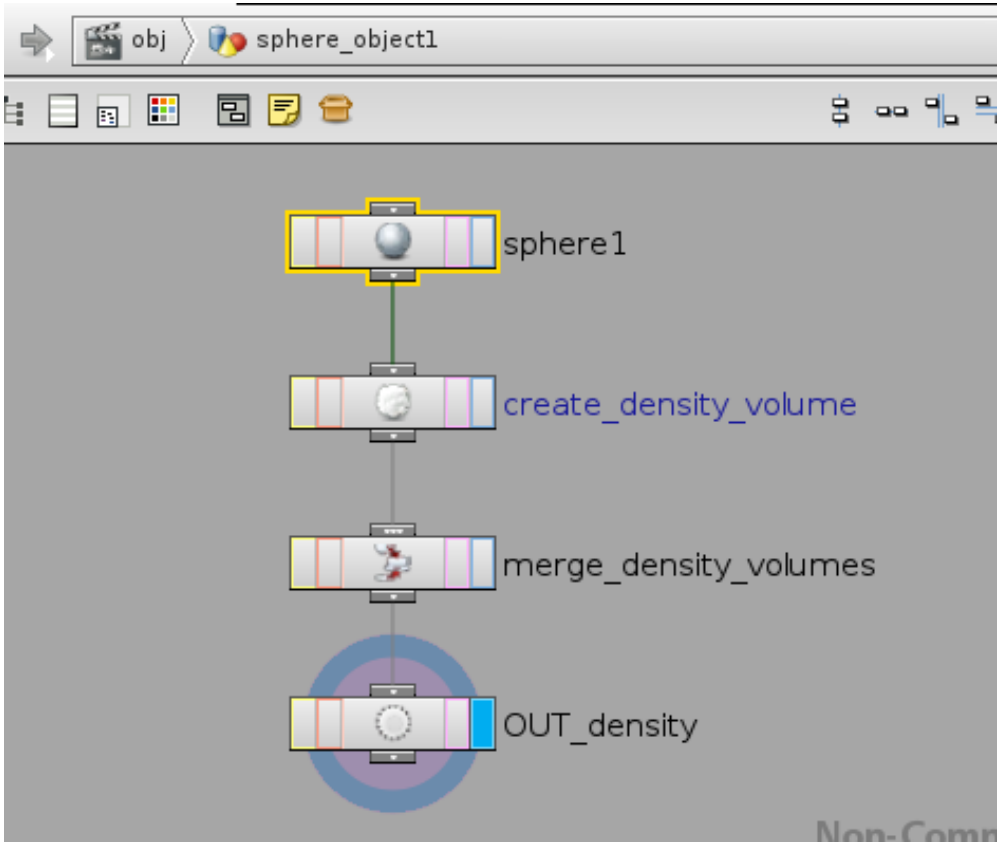
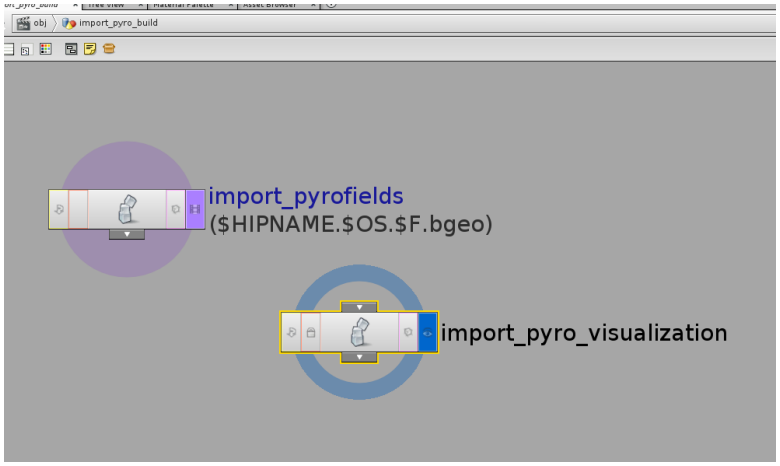
Pyro

Anatomy of a Pyro dopnet

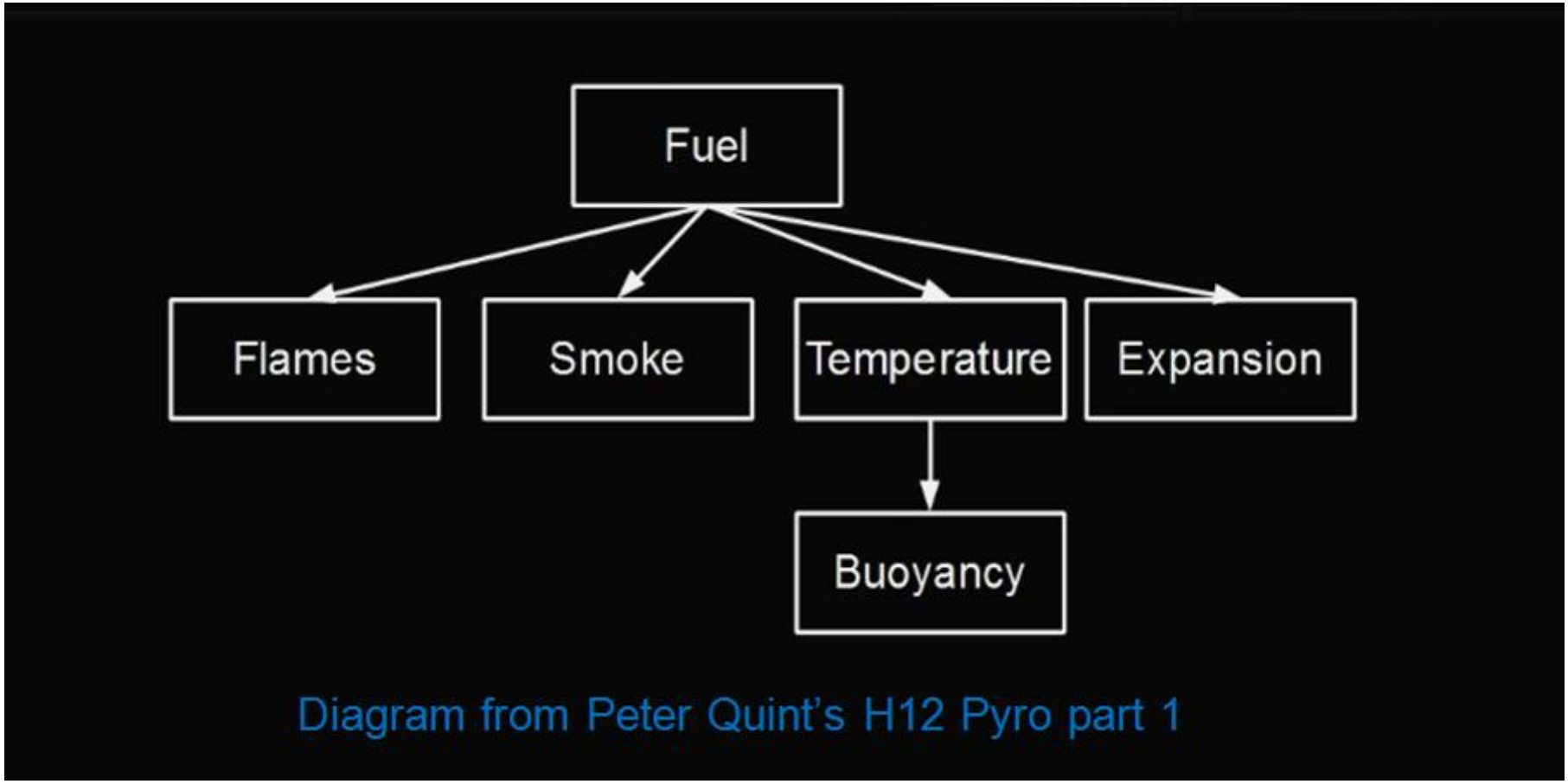


source object and render object

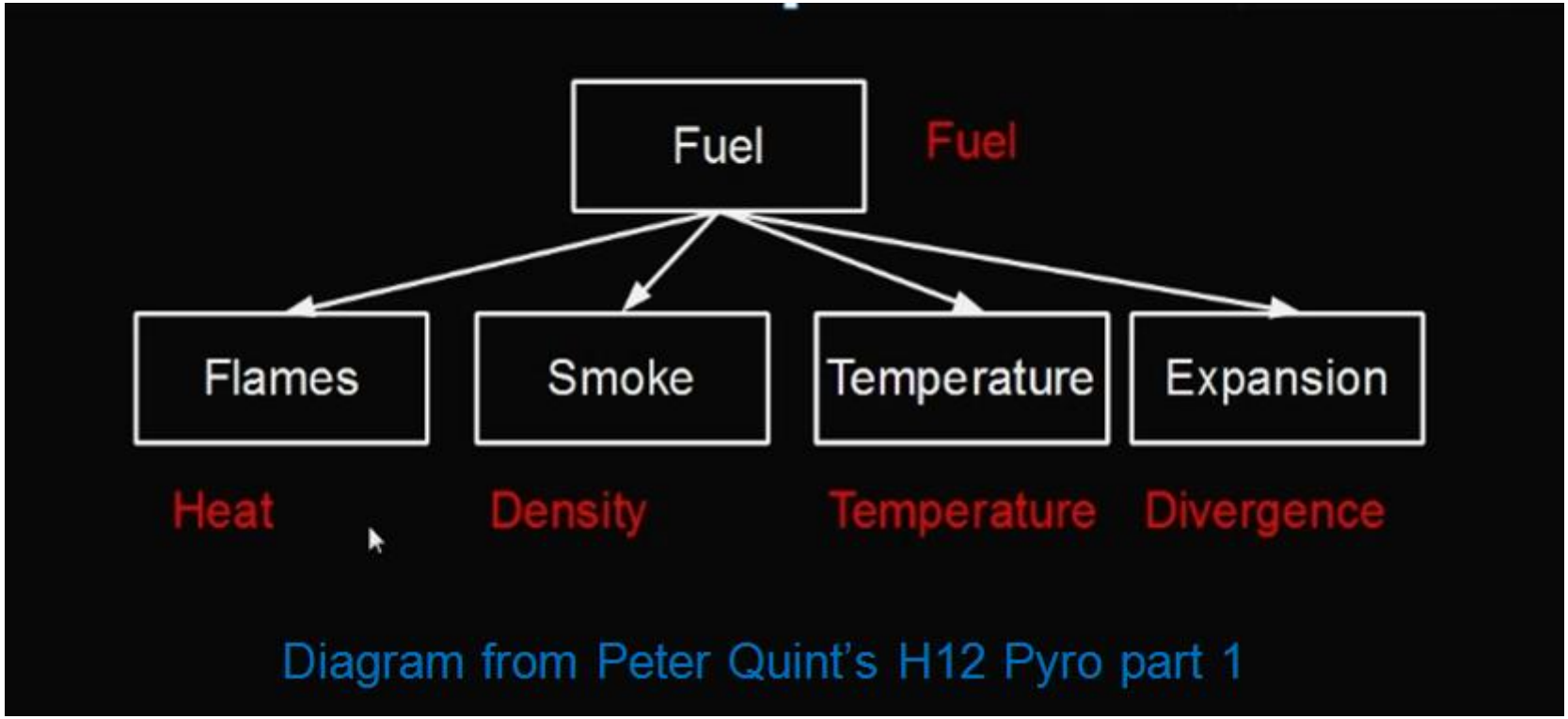




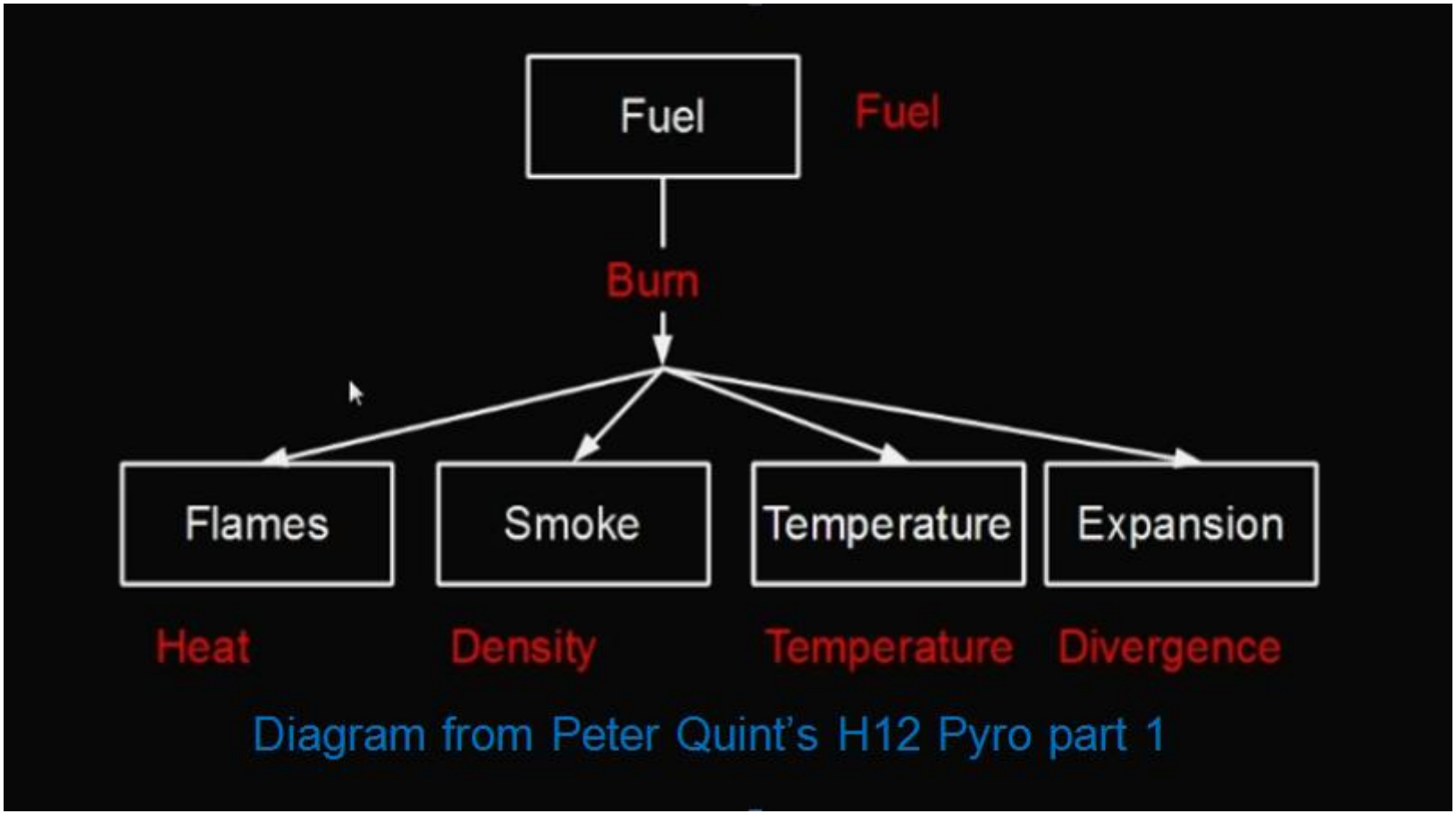
Combustion Process



Equivalents in Houdini



Additional Burn (calculated each step)



Process

The Main Variables

- Fuel : what you burn
- Temperature : influences whether the fuel will ignite, and how fast your smoke and flames will rise
- Burn : a temporary field representing the process of converting fuel into smoke and flames
- Density : smoke, but you also need to have it to render flames correctly
- Heat : your flames
- Divergence : whether your smoke and flames expand outwards

From Peter Quint's H12 Pyro part 1

The Combustion Process

Where temperature>ignition

Set burn = fuel * burnrate

Generate new smoke by burn*sootrate

Set heat = to the maximum of heat, burn

Increase divergence by burn * gas_release * burn_influence

Increase temperature by burn * heatoutput * temp_burn_influence

Reduce fuel by burn * (1 - fuelinnefficiency)

From Peter Quint's H12 Pyro part 1

- Smoke (=density) depends on

  Fuel, Burn Rate, Smoke Amount
- Flames (=heat) depends on

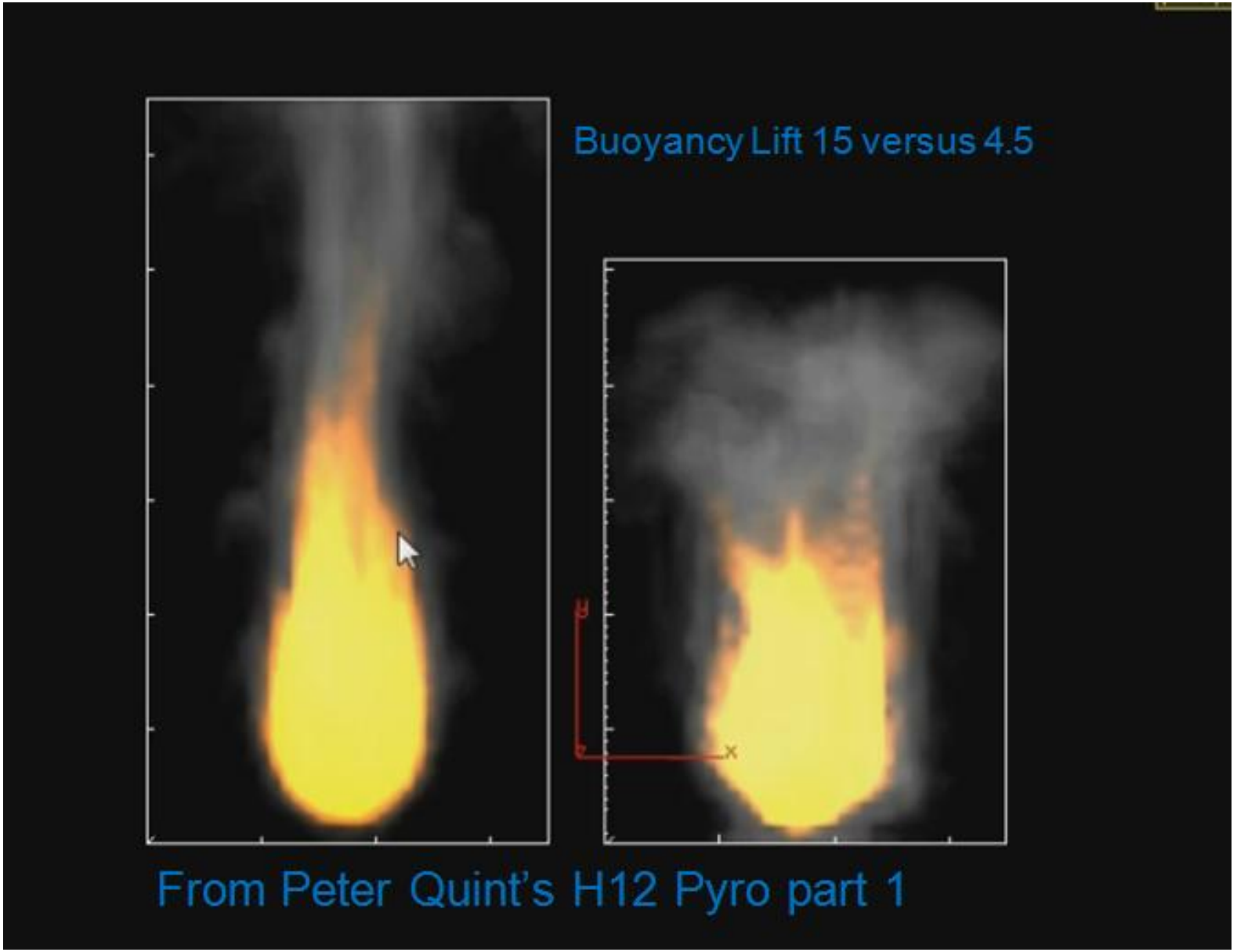
  Fuel, Burn Rate
- Temperature (and therefore how fast things rise) depends on

  Fuel, Burn Rate, Flame Contribution, Burn Contribution
- Expansion (=divergence) depends on

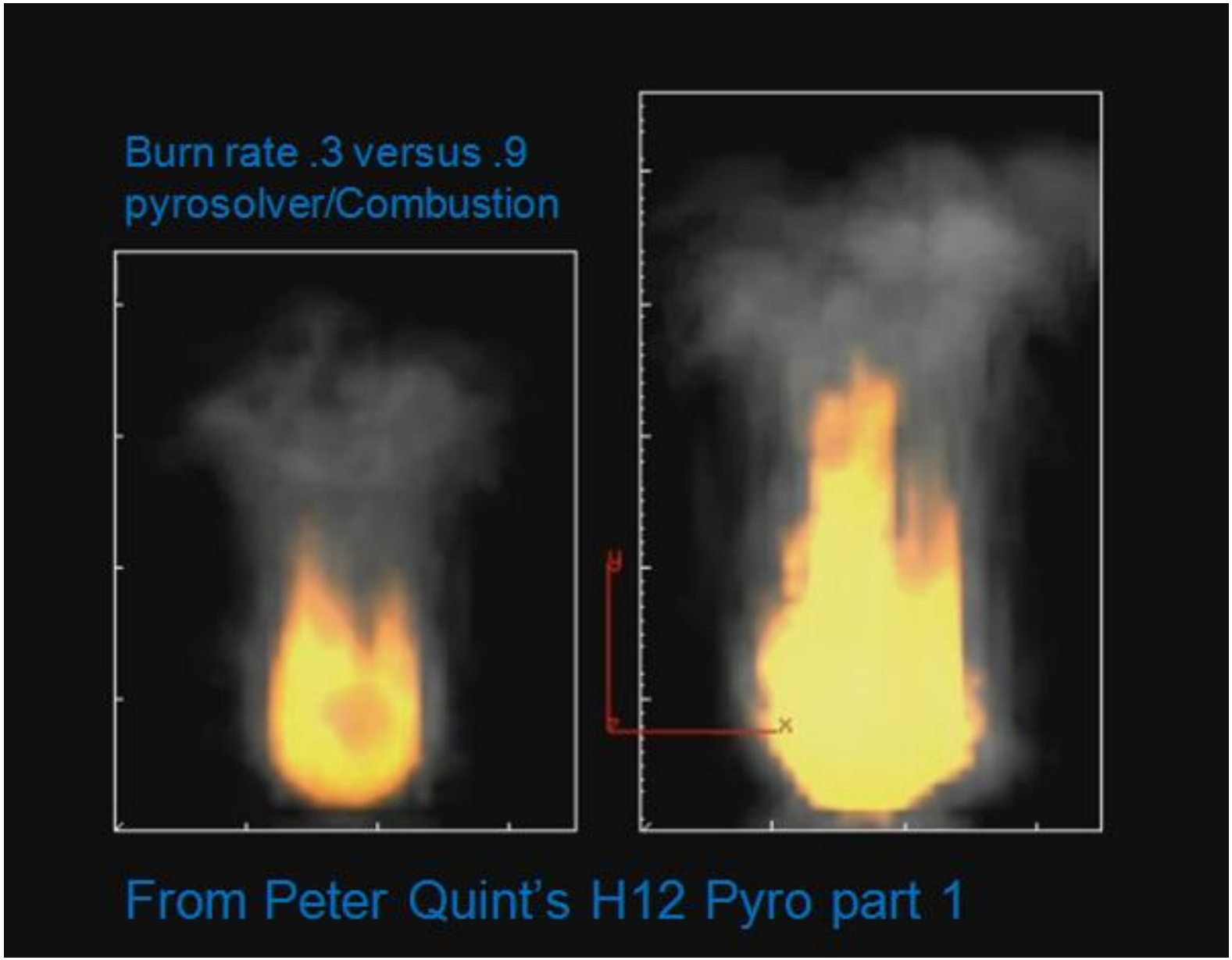
  Fuel, Burn Rate, Gas Released

From Peter Quint's H12 Pyro part 1

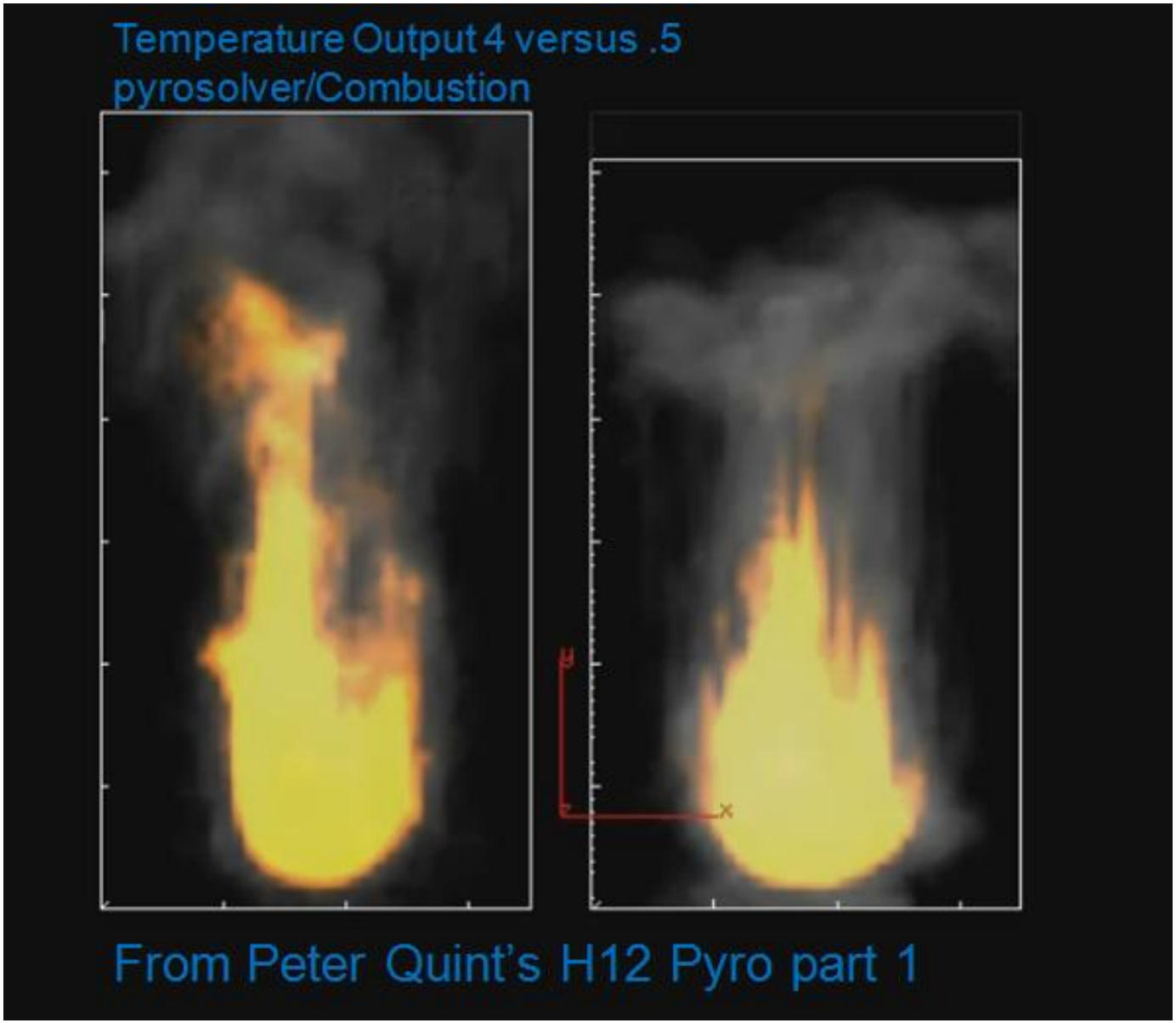
Simulation Tab – Buoyancy Lift



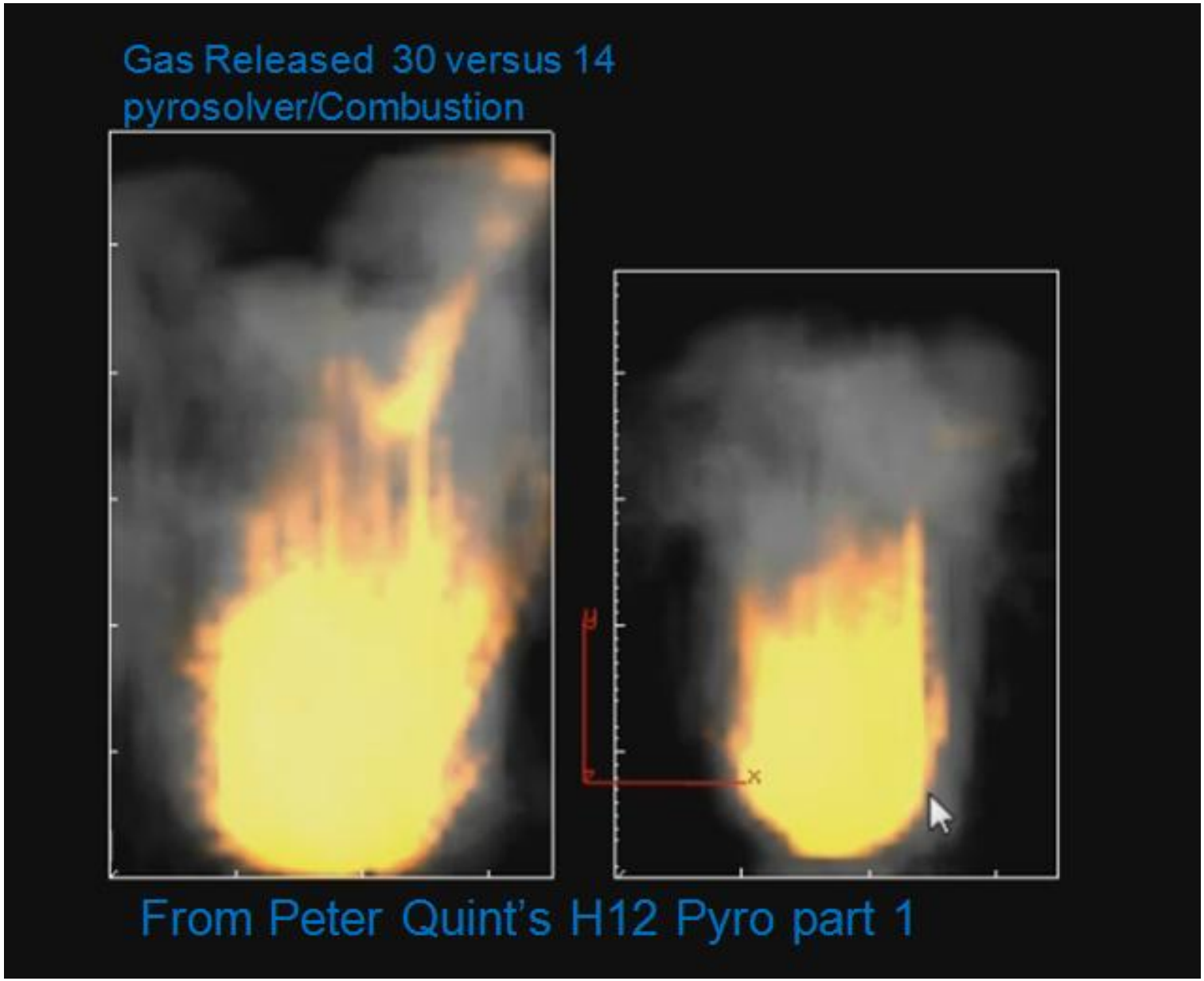
Combustion tab – Burn Rate



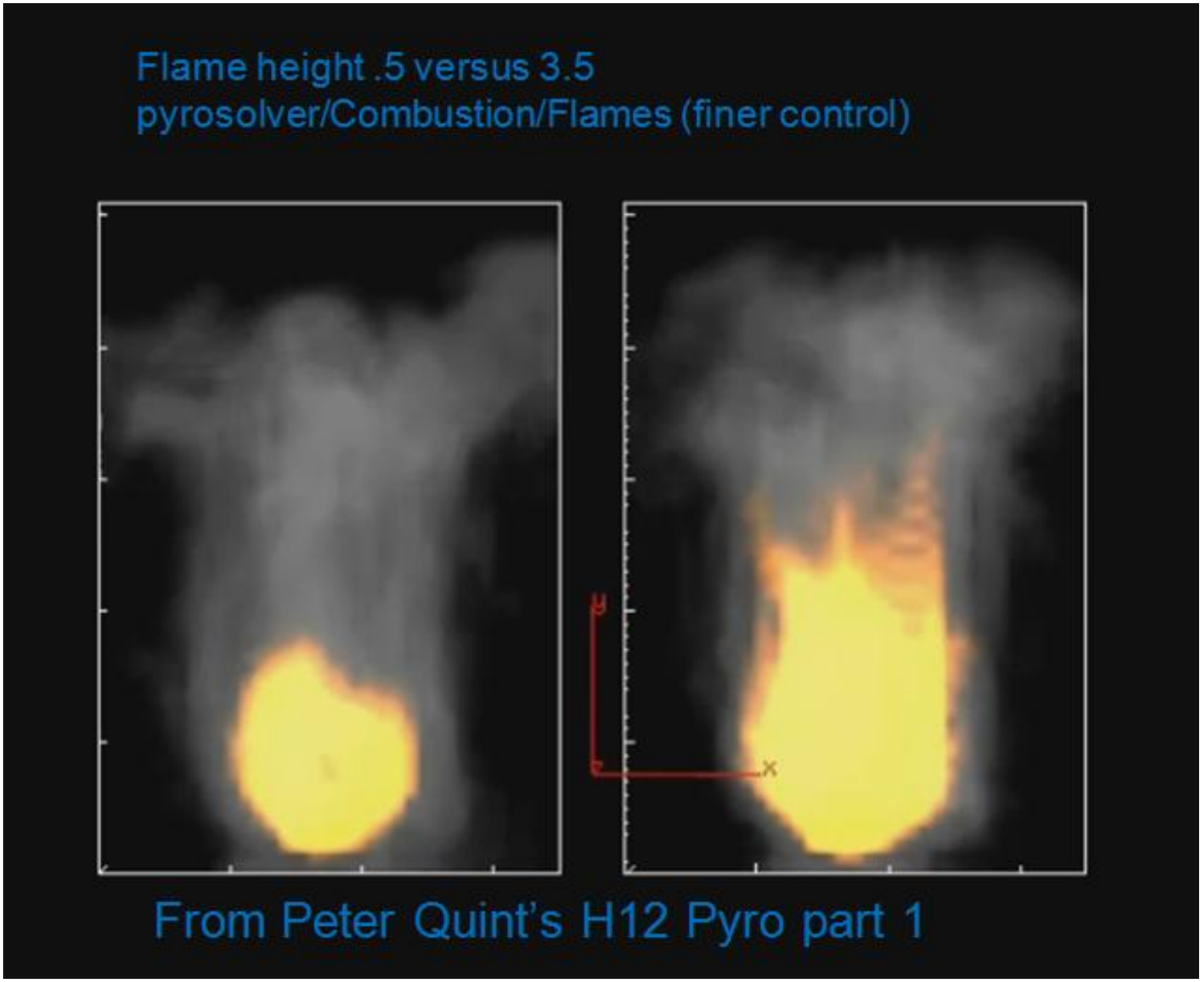
Combustion tab – Temperature Output



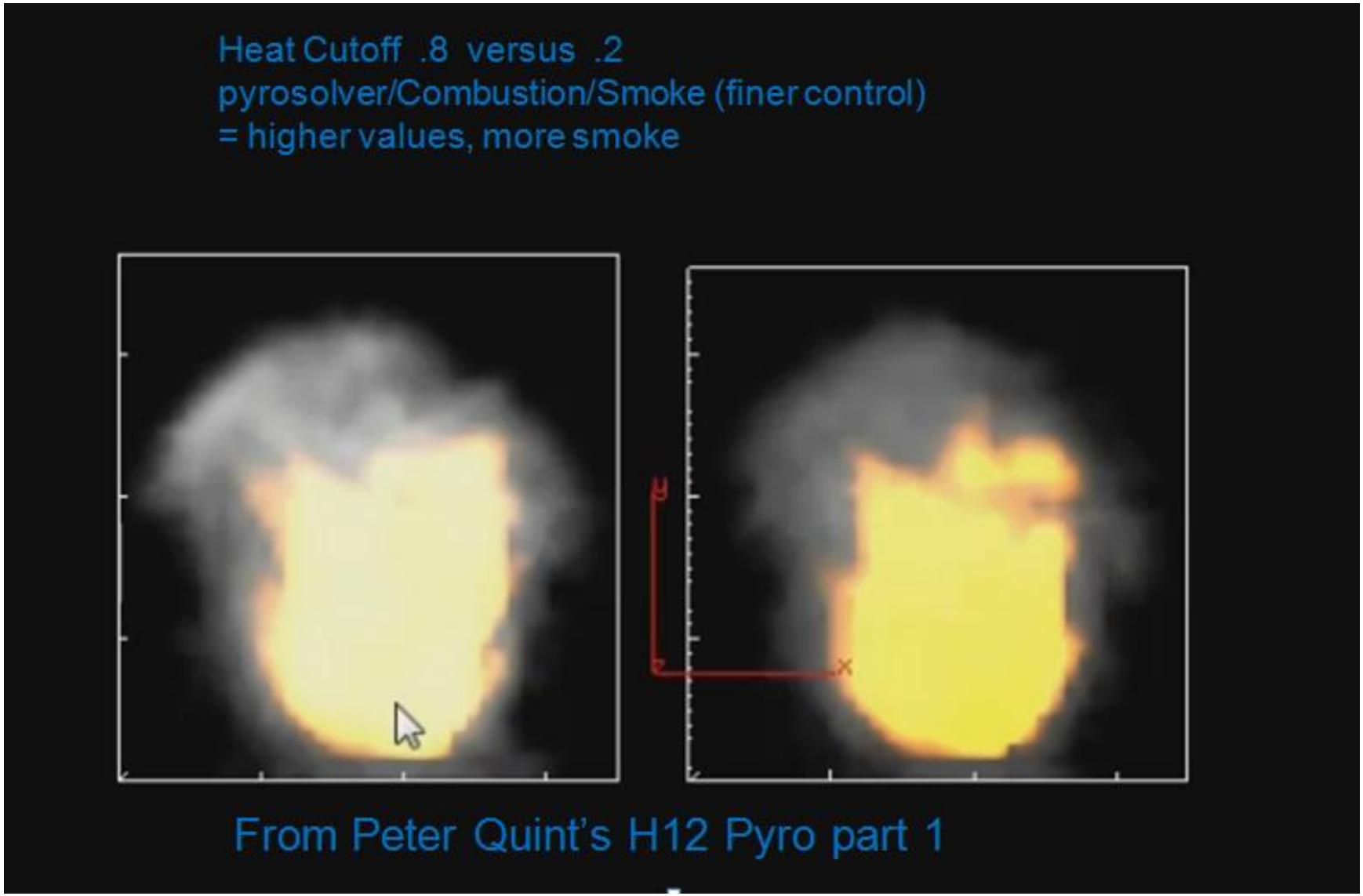
Combustion tab – Gas Released



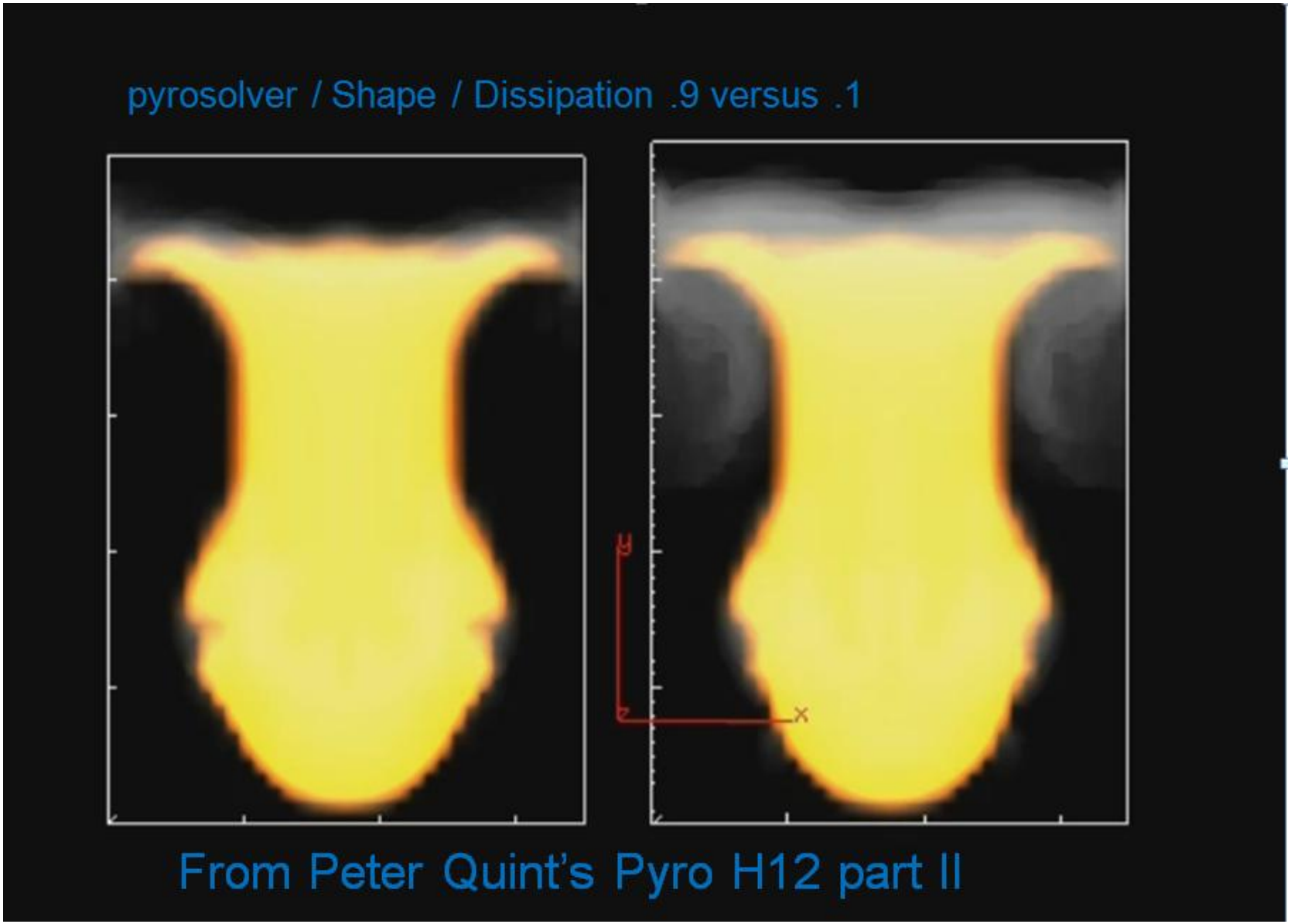
Combustion tab/Flames – Flame Height



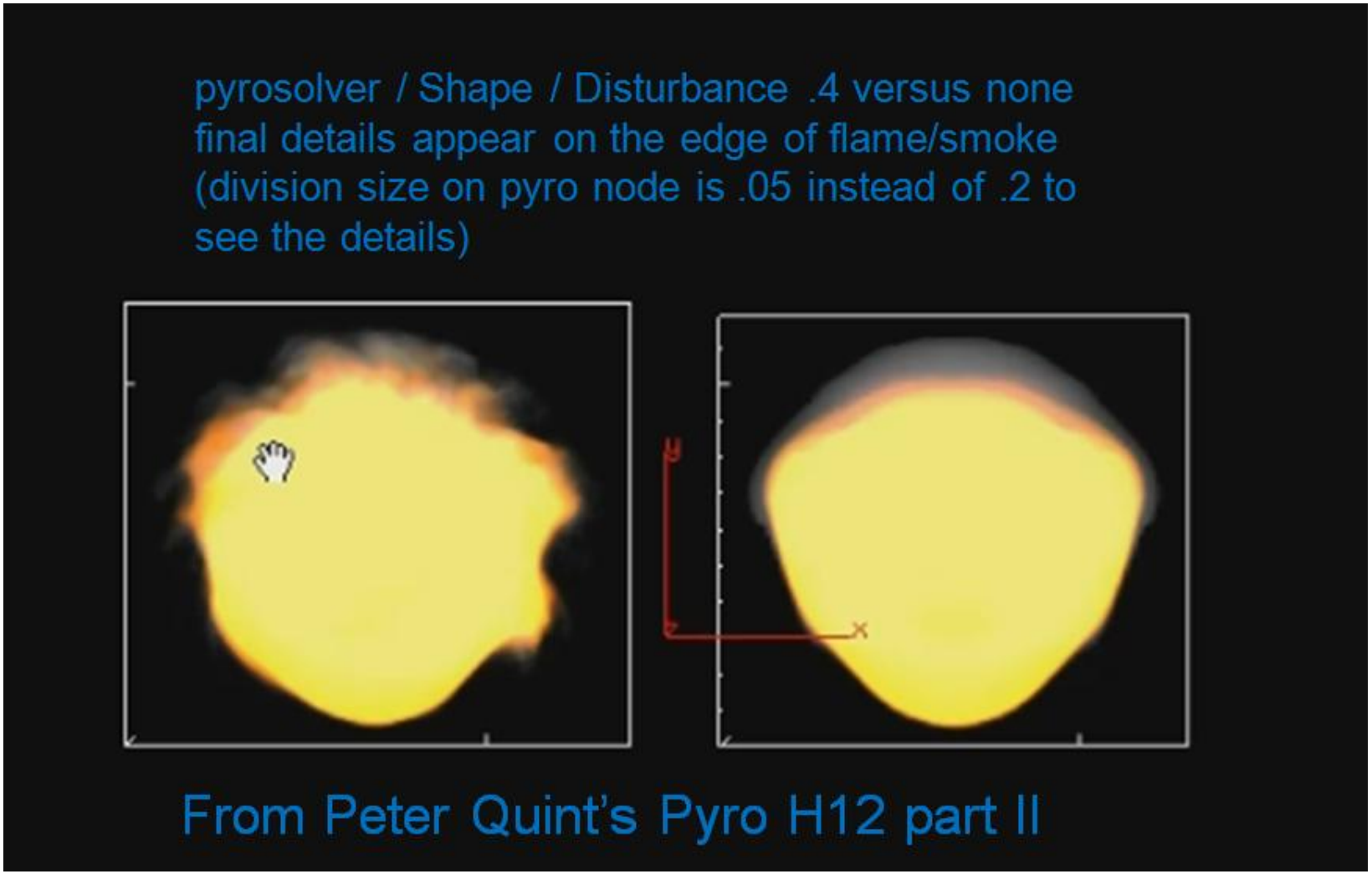
Combustion tab / Smoke – Heat Cutoff



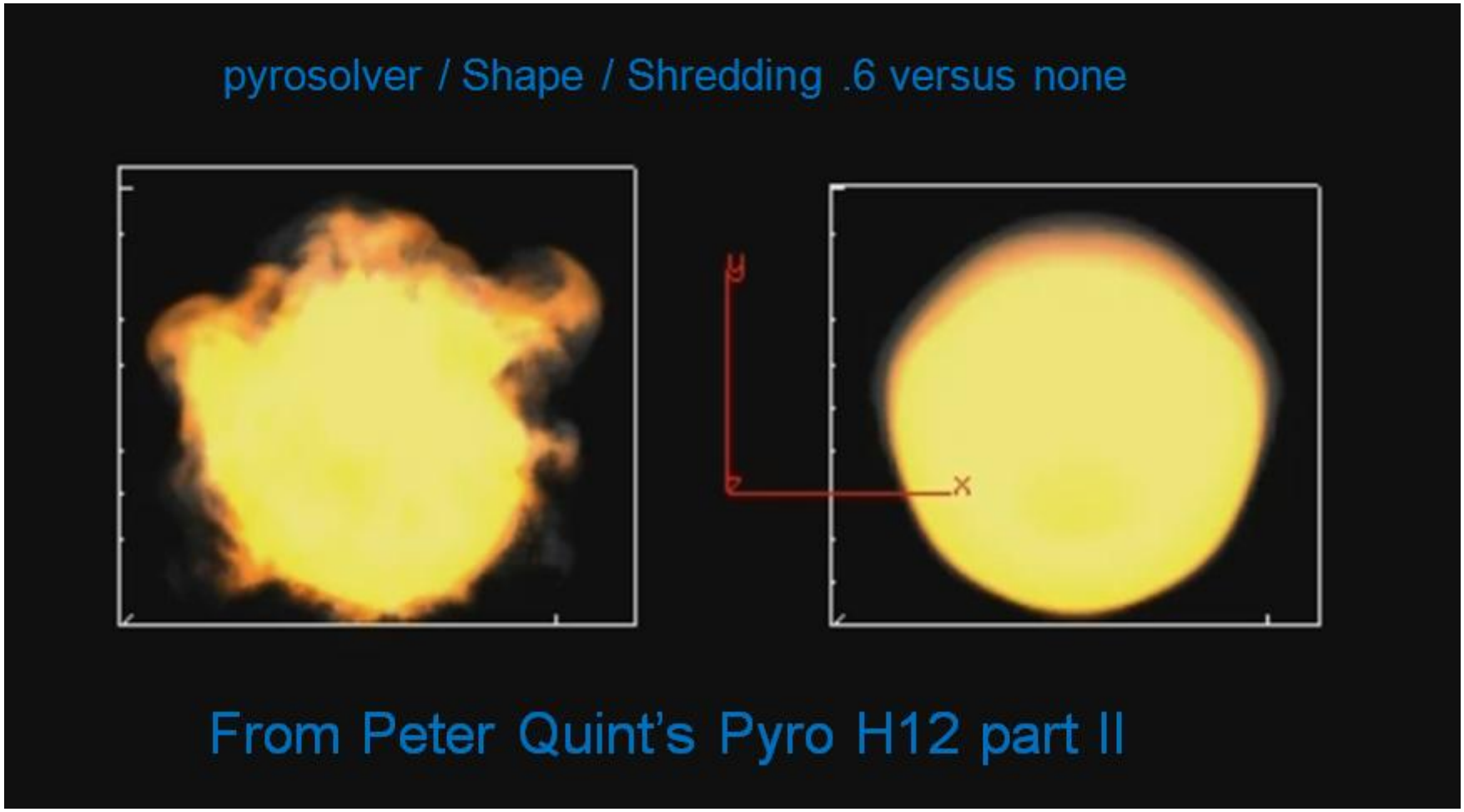
Shape tab (effect velocity) – Dissipation (evaporates smoke)



Shape tab (effect velocity) – Disturbance (adds detailed noise)



Shape tab (effect velocity) – Shredding (adds detailed noise)



more controls – but you get the idea …

Let's talk about the shader … there are videos about the shader on the forums

Most importantly – you can use the openGL display to adjust your shader and then write that data into the shader.

If you have the Multi field displayed – you can use the tab controls for both

- Smoke (diffuse component) which uses density and color controls
- Emission (fire) which uses heat (the extent of the glow) with the color controls as well

On the pyro shader in the shop under the **Utils** tab