Week 6: Simulation II.

**Motivation:**  
BOOM! The other VFX lesson. Explosions …

**Learning Objective:**  
Methodology of: exothermic reactions, combustion, smoke  
Concepts of: caching, data, cache channels, rendering, flipbooks, sprites

**Schedule:**

Part 1:

* Again, using the system across different simulation basics nodes
* Recap last week
* A note on the importance of resolution
* Reiterate Fuel/Heat/Oxygen setup, and how an explosion works
* Vary attributes
* Influences
* Completing the volcano tutorial

**Break: 10m**

Part 2:

* Setting up a basic explosion based on the browser example
* Caching
  + Bob and VDB, the differences, when and why
  + What to cache and what not to cache
  + How to cache your explosion, run a check on caching all the channels vs only the channels you need to cache
  + Load in the cache you just made, advect some particles with it – this uses concepts from the PowerPoint, but doesn’t follow the PowerPoint, feel free to reference in class
  + Using the supplied advect\_points compound, and how it works
  + Sampling a volume, sampling your volume cache
  + Colouring the particles

**Break: 10m**

Part 3:

* Volumes to unreal 2 ways
* 1: Via rendering a flipbook and a sprite sheet:
  + How to use the prebuilt rendering setup and how it works, run through the supplied graph
  + How to get normals from a volume
  + Why we are using Arnold, render settings, AoVs, setting up a render
  + Using Arnold Volume rather than bf rendering tools
  + Rendering different outputs
  + Introduction and recommendations to slate/flipbook creators and recommendations
  + Pass the students onto the UE Flipbook tutorial (see links provided)
* 2: Via Open VDB plugin
  + Loading the VDB cache sequence in the unreal Engine
  + Direct the students to the VDB plugin resources on guthub (see links.txt)
* Optional homework here would be to finish up the tutorials in the PowerPoint, and get the caches across to Unreal