Individual Extension Plan

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While the ball is rolling around in the maze, it is going to encounter several power-ups. These power-ups will transform the ball and give it certain characteristics. It could become faster, bigger, change material, get skills like; jumping, shooting or be able to break through walls. To be able to do the last mentioned thing I need to look into destructible objects. Focus will be on destroying walls that the ball hit.

Google.com will be my guidence. I have read a lot this matter and it seems quite hard to do. Because I do not want to make premade geometry like lots of people seem to do, for example:

http://forum.unity3d.com/threads/163017-Destructible-Objects-A-simple-tutorial-for-Unity-and-Blender-By-Request

I want the parts of the wall to break into dynamically calculated parts depending on how the ball hit the wall. I would rather just break the ball in several small squares than premake the wall of squares, which for now is my goal. There are some people that has made stuff like this but i bit more advanced, with slicing and the things breaking in more realistic parts like:

https://sites.google.com/site/kryotechindustries/articles/unity3ddestructibleenvironmentsystemcode
http://gustavolsson.squarespace.com/shatter-toolkit/
http://u3d.as/content/arcadium-playware/impact-deformable/3uB
http://forum.unity3d.com/threads/91183-Released-Mesh-Destruction-quot-Piecemaker-quot?p=590220#post590220
http://blog.almostlogical.com/2010/06/10/real-time-terrain-deformation-in-unity3d/

Some of these projects are sold at the assets store so I consider this type of destructible objects a bit too hard to make, and they are not part of my goal right now.

I am not hundred percent sure on how I am going to achieve my goal yet. But my thought right now is to look more into meshes, which is geometry that can be created and modified by code. When a wall is breaking I am hoping I can use vertices in a cube and divide it by two to break it and make two smaller cubes, and then these two into two smaller cubes and so on, using some sort of binary tree algorithm. Currently I have the board with a ball rolling at it when you tilt the board with the arrow keys, and I have just also been able to create a mesh:
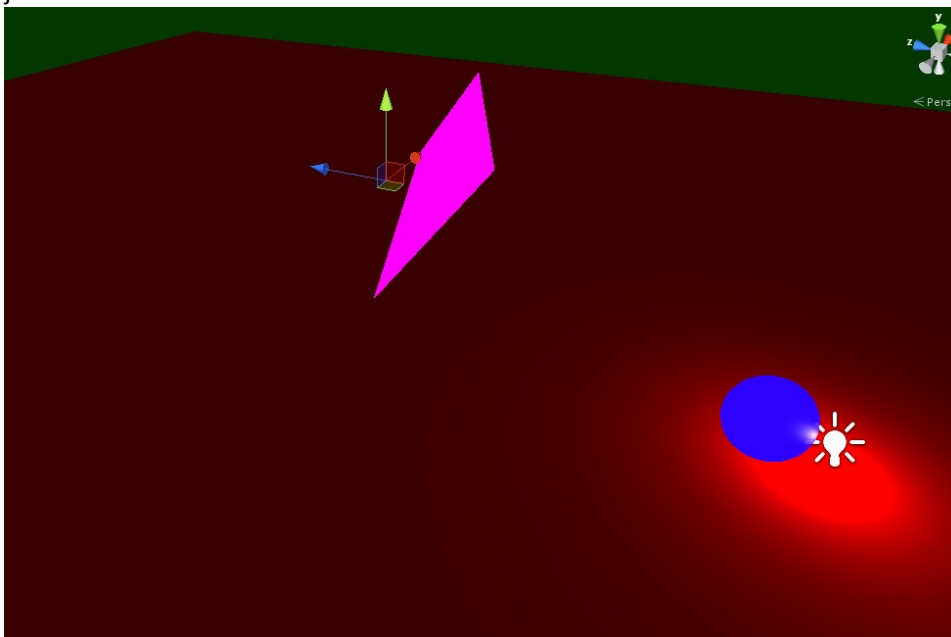
So my plan right now is to continue reading and working with these meshes to see if I can use these to create my destructible walls. There are good documentation in Unity's script reference and also at the unity forums and other places:

http://docs.unity3d.com/Documentation/ScriptReference/Mesh.html
http://forum.unity3d.com/threads/103627-Destructible-environment
http://www.leadwerks.com/files/csg.pdf
http://forum.unity3d.com/threads/2391-Physics-of-Glass
http://blog.nobel-joergensen.com/2010/12/25/procedural-generated-mesh-in-unity/

I will also be using some common tutorials on unity and physics and perhaps some books that seem to be nice:

http://www.unity3dstudent.com/2010/07/beginner-b04-destroying-objects/
http://www.unity3dstudent.com/2010/07/beginner-b11-basic-joints/
http://www.adlibris.com/se/product.aspx?isbn=1430234229
http://www.adlibris.com/se/product.aspx?isbn=1849691444

I will also look more into joints, batching and voxal systems to see how they could help me with the destructible objects.

http://docs.unity3d.com/Documentation/Manual/DrawCallBatching.html

Some of the papers on the course web page is also interesting but I have not been able to read them all, but I will.

So, I want my wall to get destroyed in the easiest way except not by premade geometry. But within the scope of this project I do not think I will be able to make anything more advanced than wall falling apart in some simple calculated geometry depending on how the ball hit the wall.

My extension will add to the project so that the ball can do more funnier stuff then just rolling around in a maze.