



Borderlands 2 has a special visual effect where all the 3d objects in the game have a black line around their silhouettes in addition to the game's shading. I like how this effect helps add to the game's aesthetics. Borderlands 2 is a game filled with dark humor, the game takes itself seriously and not so seriously at the same time. The black outlines make the game look more cartoony which makes the game feel less serious. This contrasts from the realistic aspects of the game. The game would feel different if I were slaying enemies where the graphics were more realistic than if I were doing the same thing in Borderlands 2.

I believe this effect was created through cel shading. Cel shading attempts to make 3d models look more flat by using less shading color instead of a shade gradient. The black lines are created typically by first rendering a black outline that is slightly larger than itself. Then backface culling is inverted and the back facing triangles are drawn in black. After that, the image is goes through a z buffer which gives the final black outline and interior contour lines.

The effect changes depending on the camera view. For example moving around an object in Borderlands 2 updates the black outlines of that object. The object's shading will change according to which triangles face the light and which ones do not like objects in real life. 3d objects in the game also cast shadows. I would say the effect

alters the color of the pixels since there is an outline on every 3d object's silhouettes which updates whenever the player moves.