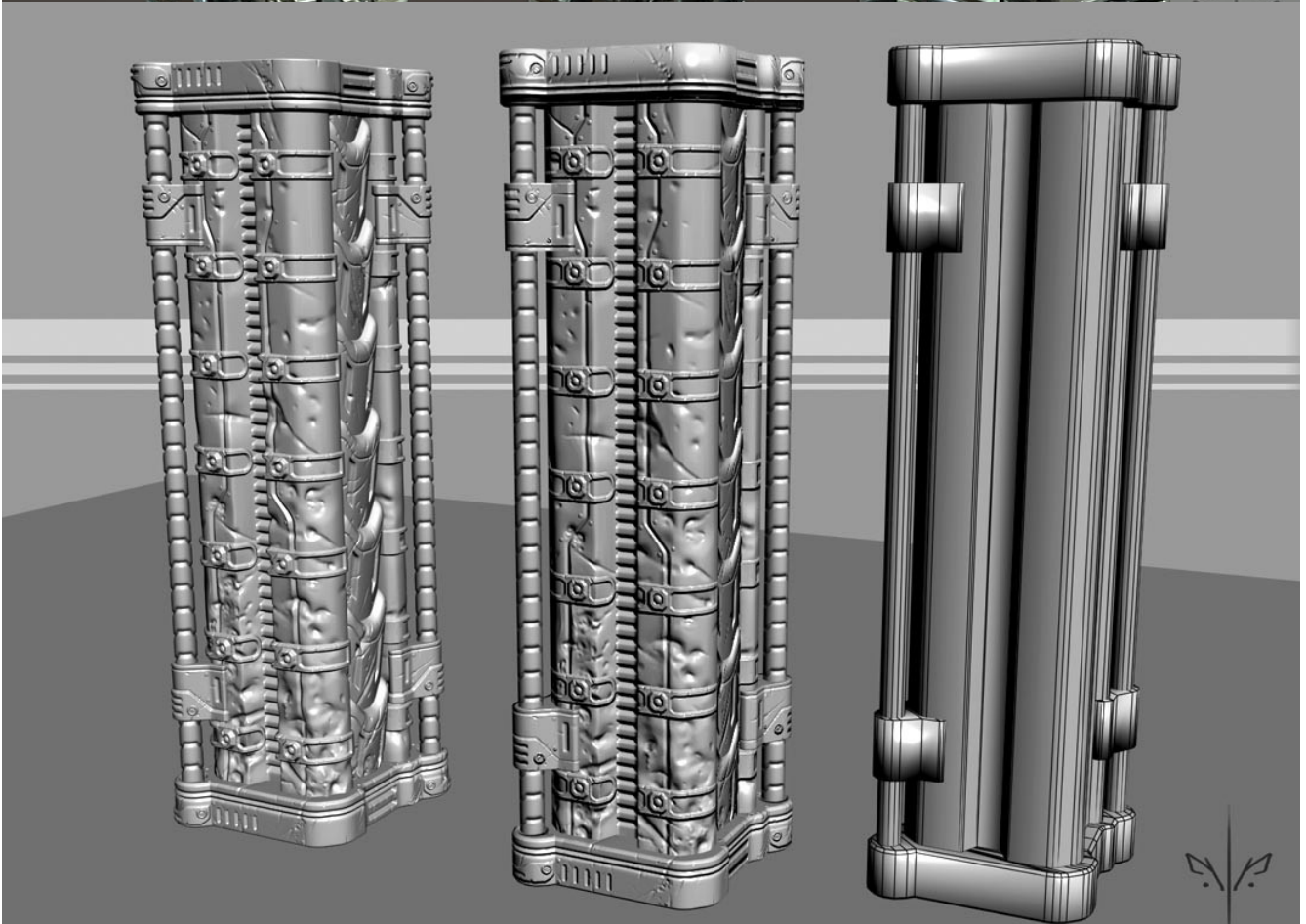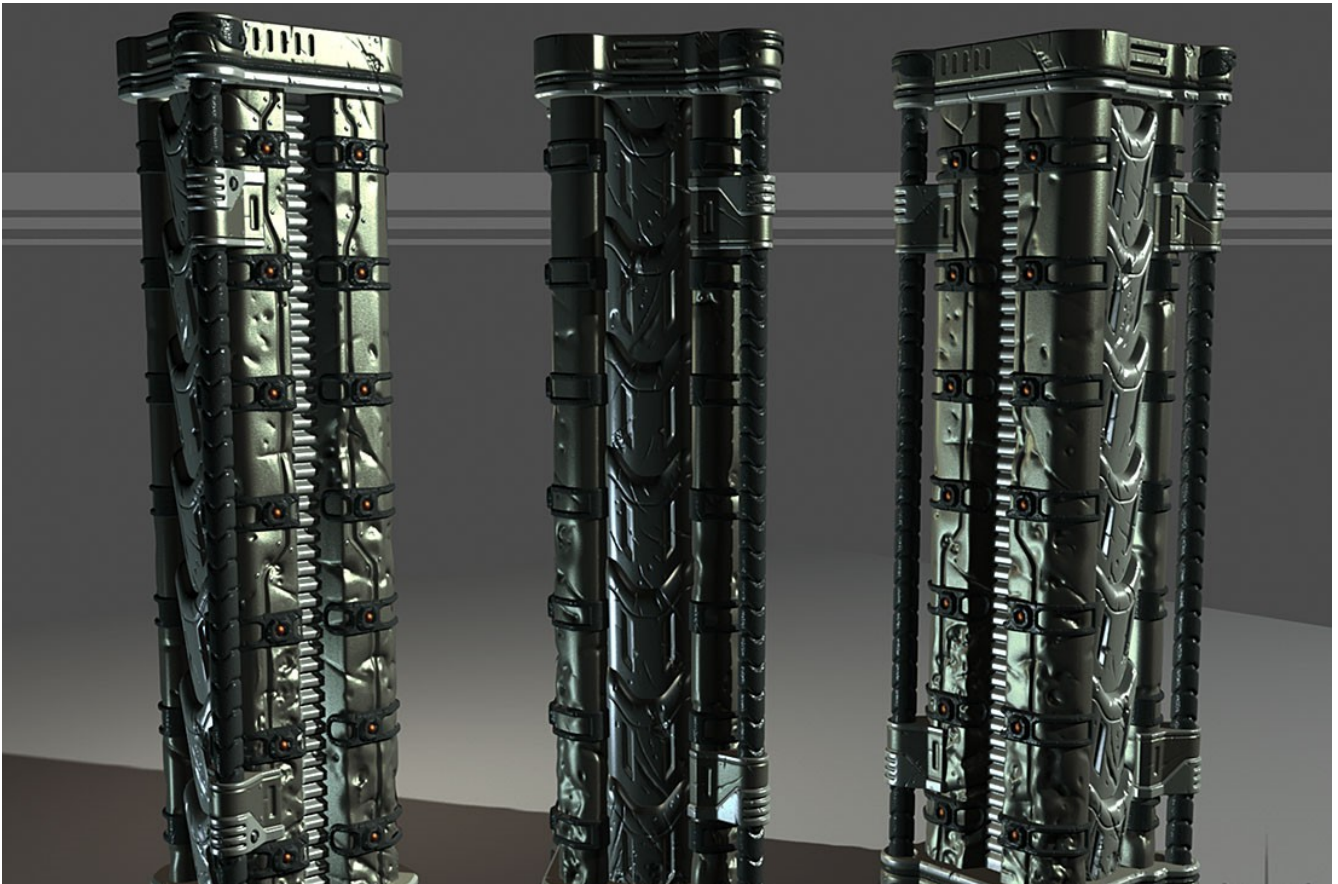# [Rorshach](#) - SciFi Support Beam for Unreal 3 Engine

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The lowpoly came in at 1676. Everything is processed but I'm tweaking the heightmap and lightmap before release of the assets.

On the above comparison shot you can see where max is getting confused about the mirrored cap section on the top. The reason for this is due to max's normal support being flaky, this flaw would not appear in the UE3 engine. In UE3, the cap at the top would appear like the cap at the bottom without the flaws.

You may be able to see from the low poly at the far right that the smoothing groups are pretty forced on the poles vclamps. This is deliberate. Low poly was best though of as a rigid hard form in previous engines, now its best though of as putty and the softer it is and the more areas are on 1 smoothing group, the more ably it will be able to grab all the hi poly information.

It may look bad in the preview window of max, but in-game it will just look like it should. It's because of this that I chamfered the cap sections to make sure they were able to support the single smoothing group and process better and also so that the object is self capping.

As for the damage looking more extra on the central section and then there being nothing on the poles, this is because I'd hoped for a texture artist to pick up on my cue to demonstrate blast damage and burned metal areas here. Also, I hope for a texture artist to further articulate the level of detail here and overlay the softer dents with harder Photoshop generated impact crater marks and scoring.

The poles are plain because not everything needs to be articulated in 3d as that would be a poor use of time, particularly on a smaller less prominent shape such as the poles where the texture guy can damage them up.

As to their lack of deformation in 3d, again it is counter productive to warp the hi poly then unwrap to a warped low poly when I can treat it much like we would a ponytail on a character and keep it straight to start with for a cleaner unwrap later to be followed by deformation in 3d once the texture is final.

In this case I have unwrapped every key area neatly into tiling squares so thatall the main sections of the center body, pipes, clamps and bases are all capped and can be deformed through the 'Deform to Path' function or recombined in different orders.

The end result of this would be that although I spent probably a full 5 days modelling, zbrushing, low polying, unwrapping and processing, I will be able to get a dozen reuseable assets out of the set minimum.

The spec here is comparable to an average piece in UT2k7 and Gears of War. It all depends of course. Recently I've been able to spend about 4x2048 normal/diffuse/spec maps and about 12k polys on a single building for Gears. However, that's because its a singleplayer game and makes use of our streaming technology more than UT7 where the spec is more optimized as there won't necessarily always be the streaming tech to rely on in tight indoor levels.

It's also worth pointing out that the Building sections collectively, thanks to making things modular and liberal use of path deforming, help to produce about 60-80 assets ingame and can also be the base

sections for later works.

I hope that helps to answer people's questions.
Environments take a lot more time when articulating to hi poly level so we try to make the most of that time by planning ahead to make everything modular, its really important to do this now and repetition is the cornerstone of good environment design anyway so its all good!

Tips –

1. Don't forget it's not really Hi poly work, its generous lowpoly work that uses hi poly assets to render out the design onto normal maps. Most people starting off on this tech forget what it is that they are really doing and put too much articulation into the silhouette which requires you to spend too many polys on the low poly later.

2. Try to model out all your low poly cages first without worrying about optimizing or turning quads into triangles so that you can use this work as a guideline and cage to restrain you from forgetting what all the hi poly assets are later going to be constrained to be processed down to.

3. Every part of your low poly needs to be capped and have a smoothing group, open edges will make it more difficult to process a normal map and ensure the asset cannot correctly light ingame and it will be much slower to render shadows from and upon.

4. Softer curves and angles produce better normal maps than overly tight chamfers and bevels because the normal map that is rendered from the HI to the LOW is relative to the normals of the LOW. What this means is that if you model a detailed Hipoly sphere and then a flat plane Lowpoly and process it down it will process an enormous amount of colour information into the normal map in an attempt to map a flat plane look like a sphere! If you however process the Hipoly information down to an identical sphere Lowpoly, there will be almost no colour information in the normal map at all because its only required when the normal map has to describe additional forms that are more complex than the Low poly asset.

It is vital that you understand this.

5. Mirroring is now flaky and requires work a around. We can no longer mirror a UVW Unwrap in the centre of an object, we need to 'almost' mirror it by ensuring that it's a ¾ unwrap of the front section and then it can mirror the rest of the object. In a nutshell, the Rorschach effect is no longer applicable as it creates shadowing and lighting errors often. Normally, when unwrapping a face for instance, people unwrap the front ¾ on a unique space and then mirror the rest apart from the back of the head which follows the same ¾ unwrap rule. This rule should be applied to all objects in general now.

6. Assets that do not have a 100% unique unwrap now require a 2nd UVW channel where there are unique UVW coordinates for all parts of the model. This 2nd UVW channel is for the light and shadow information to work correctly ingame rather than trying to use the mirrored unwrap as it creates mirrored shadowing.

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7. Processing normal maps in Max requires that all mirrored sections of the UVW coordinates must be detached and moved away from the original coordinates or when the normal map has processed it overlays the wireframe of the lowpoly over the top of the normal map.

8. It is often a requirement to process separate parts of the scene in separate files or processing passes because of the amount of polygons being hi enough that Max or Melody or our inhouse tools can't handle it all at once and needs small chunks. Typically once your scene starts hitting a 100meg in size this may be a requirement.

9. The more objects you instance (like bolts and mirrored sections) in Max, the easier it is to process and the smaller the file size and the easier it is to update. Using layers to neatly group all the sections and then freezing the areas you are not working on is a good way to go to reduce waiting times between complex operations.

10. PolyCruncher from www.mootools.com is a vital plugin when working between Max and Zbrush. It is capable of optimizing zbrush chunks, generally between 75-90 percent without any real noticeable difference in quality. When using it, always remember to use the 'select and optimize' button as it causes less crashes when selecting parts you want to optimize. Always keep your chunks below half a million when optimizing them in PolyCruncher.

And thats me done! The Diffuse is just a mask like base
to make it easier for you to seperate pieces out from the whole.
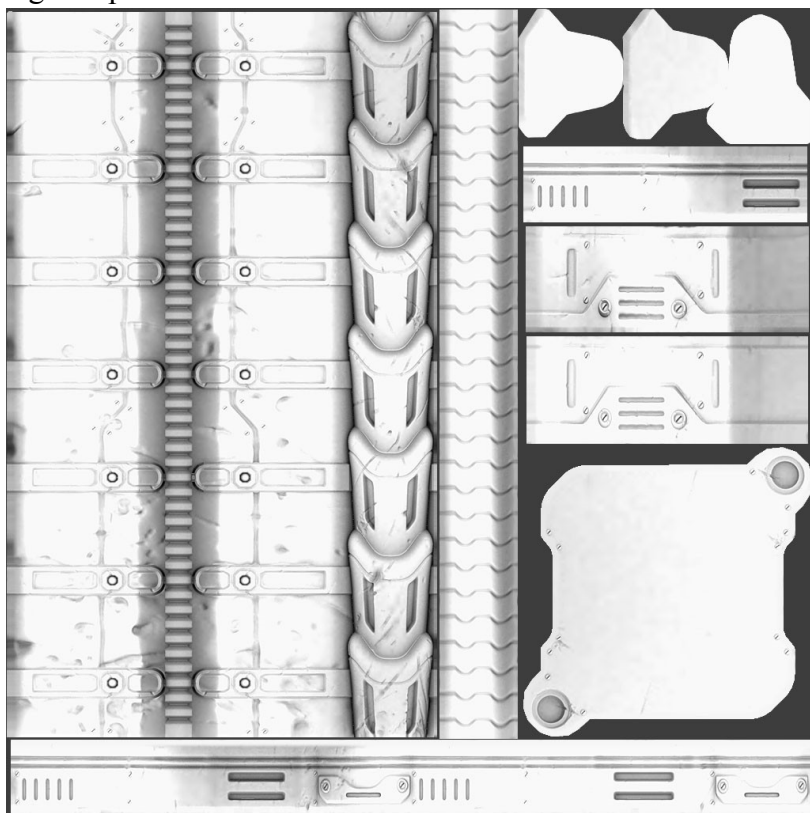The Heightmap and lightmap are just aides to help you work out the depth of things and construct your specular.

Lightmap - Its just a lightmap render-to-texture in max that uses the light tracer advanced lighting option and a skylight.

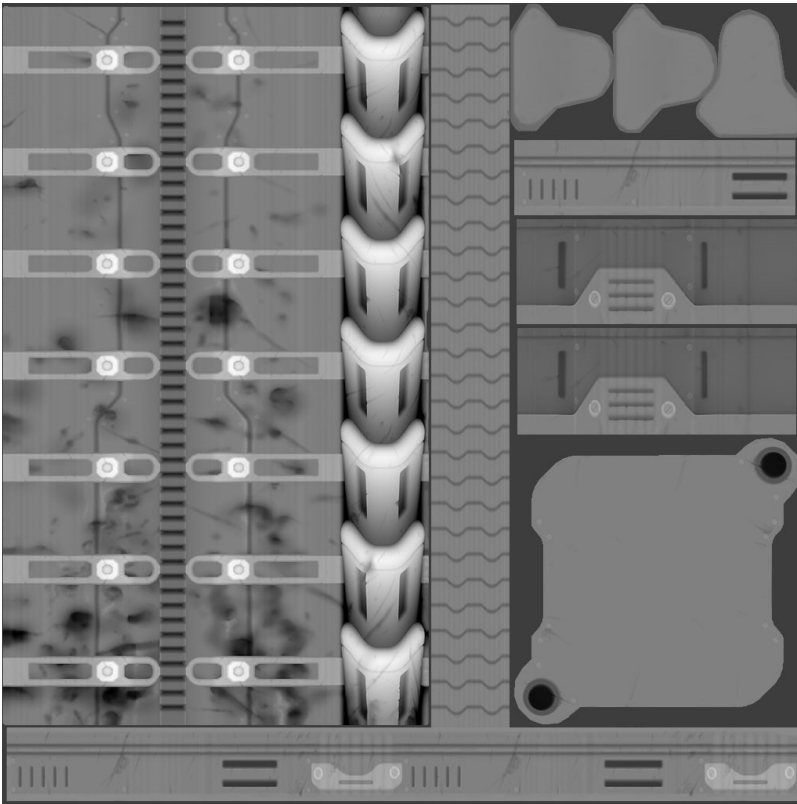# [Rorshach](#) - SciFi Support Beam for Unreal 3 Engine

Normal Map
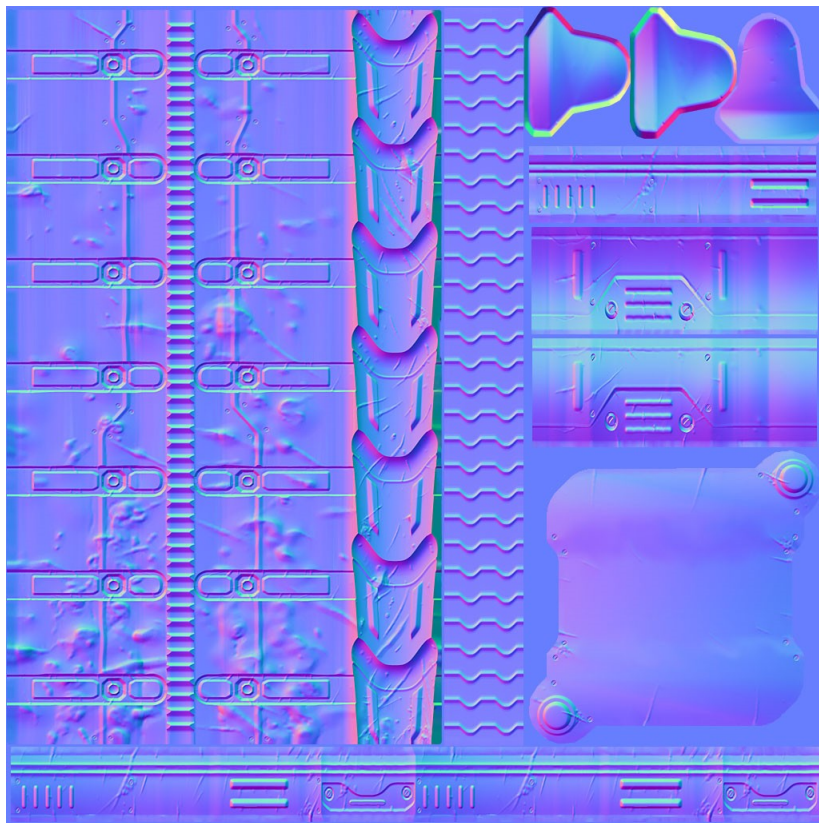
Lightmap

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HeightMap

Diffuse Map