Topology is the art and technology of creating (primarily) 3D characters that can be distorted realistically without producing shading artefacts. Topology always refers to polygonal models with Catmull-Clark subdivision surfaces.
You can see from the next slide how MakeHuman, a human figure generation software, developed the topology for its default face over a decade. Note how it goes from tris to quads, and then the edgeloops start to follow the muscles in the face. Poles are minimized and moved to locations where the skin does not deform.
Let’s see this in detail
Note how the edgeloops start to follow or cross the major muscles in the face. This makes animating expressions and lip synching dialog more realistic. However, there is still a pole in the center of the cheek; these are often hard to move without making the rest of the topology worse.
Topology around major joints is also important. Here, the shoulder has been improved. When you’re modeling a character in the T-pose - although it’s easier this way - the shoulders are created in a rare position. Flexing through ninety degrees can introduce serious distortions in the mesh if the topology is not carefully set up. This is true of the knee and elbow as well as the shoulder.
NEW Mesh

Important for realistic bending

smooth breast

+ details
OLD Mesh

NEW Mesh

- abdomen loops
- strategic poles
- removed wrong topology design
- added loops for muscles
Topology also includes reducing the difference in area between the largest and smallest quads. In the next side the variation has been radically reduced by careful retopologizing. This improves the results for a normal map, as shown in the second slide after this one, which shows a game character appearing to have much finer detail than the actual geometry. This is done by using a normal map.