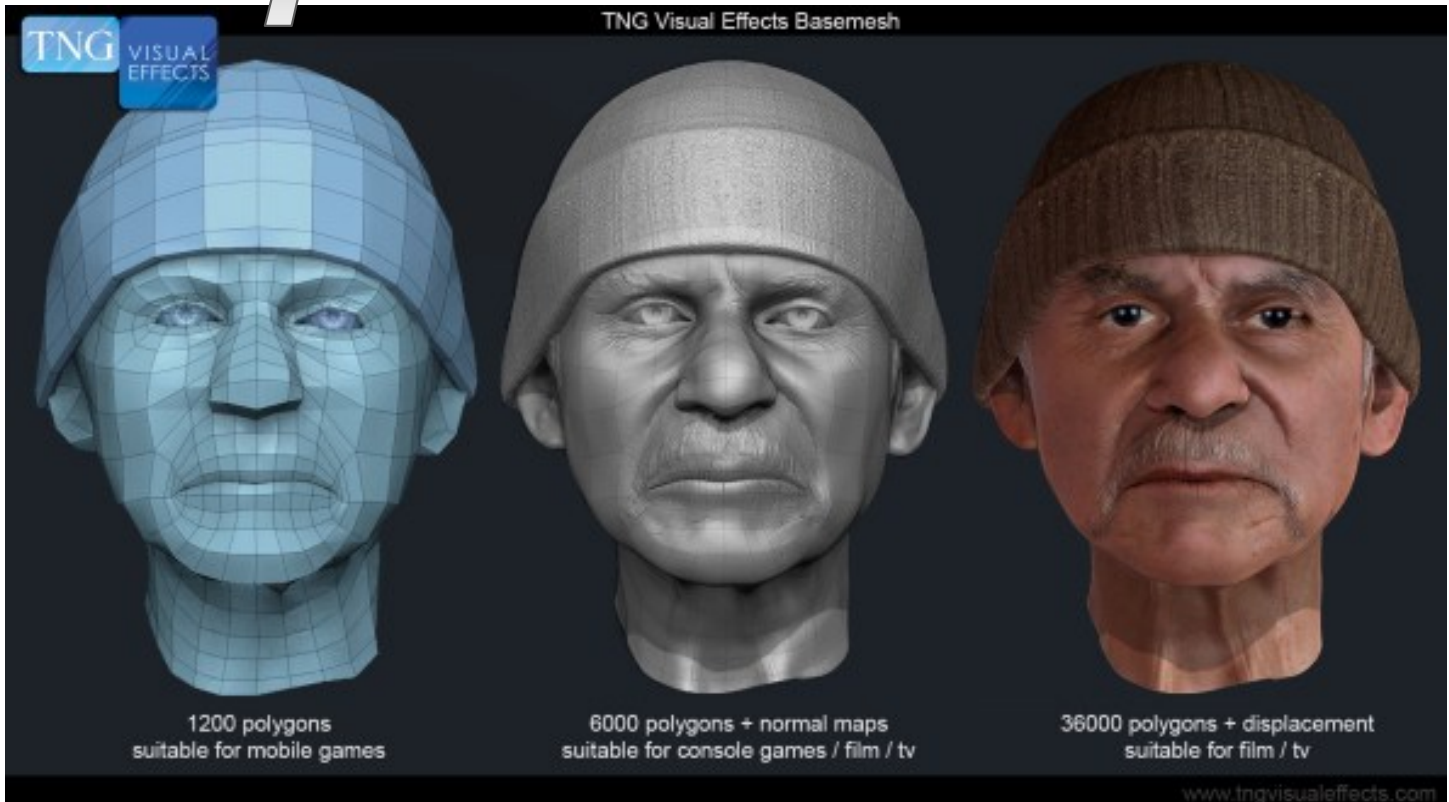


Polycount

~ noun / adjective ~

A term used to describe how detailed/complex a 3D model is by way of an approximate tally of how many polygons are utilized throughout the model.



The image above illustrates how the visual detail of a computer-generated image is affected by the number of *polygons* used to create it. The 1200-*polycount* model above is sufficient to make the above character identifiable as an older male human wearing a cap, but little else. By the time the *polycount* is increased to 6000, details such as wrinkles and facial hair, as well as the texture of his cap, become discernible. Increasing the *polycount* to 36000 creates a 3D model which is nearing *photo-realism*.

The term originated as a portmanteau of polygon and count, used to give an approximation of how complex a particular computer-generated 3D model is. This can cause some confusion as most models use *quads* during their creation due to how easily they can be subdivided for finer manipulation of the model's geometry. It is easy to be lulled into a false sense of accomplishment when modeling software reports that a model uses x number of *quads* — which is actually double the number of *polygons*.

polygon ~ a triangular plane defined by three *vertices*

vertices ~ plural of *vertex*

vertex ~ a single point in three-dimensional space, defined using Cartesian coordinates

photo-realism ~ the goal of creating a computer-generated model and/or image which cannot be distinguished from a photograph of the subject being represented

quad ~ a square plane defined by four *vertices*; can cause confusion as *quads* are used extensively during the modeling process, but rendering uses triangles exclusively

Even with the near-exponential advancement of computer technology, rendering graphics is usually the most demanding task required of devices such as home computers and video game consoles. As much as many developers would love to use nothing but high-*polycount* models, that extra detail comes at the price of drastic increases to the amount of time required to render them. The highly-detailed scenes from movies such as PIXAR's *Cars 2*, for example, required 143,750 processor hours to render a single frame. While this is not a tremendous issue for the creators of movies, television shows, commercials, and special effects, render time is of paramount importance to those who create video games.

Most televisions and computer screens refresh sixty times per second, while films are recorded and played back at twenty-four frames per second. As a result, game developers try to balance the detail of the game's visual assets against the systems they are developing for in order to maintain around forty-five frames per second on average. The exact contents of a scene is constantly changing, there's no advantage to rendering more than sixty frames per second (as they'll never be displayed), and anything below thirty frames per second looks choppy and breaks the immersion.