# Three-Dimensional Modeling's Necessary Evil: UV Mapping

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UV mapping or two-dimensional unwrapping of a 3D model is a little understood, yet very important, process in the 3D pipeline. While most know UVs for their ability to apply color maps to a surface, they are so much more. Knowing what makes UVs good is steps closer to knowing how to make them useful. Well planned and designed UVs can help maximize their usefulness. UVs can be leveraged for tracking a point on a surface, applying fur/hair grooms, texture variation, displacement/bump/normal mapping, and more. Models can even carry multiple UV sets for varying map pixel density, multiplying their capabilities.

Strategies for effective UV layout are explained for both hard surface and organic models. Knowing some of the various uses of UV space will help in directing the UV layout. Regardless of the software or plugin used for the layout or creation of UVs understanding strategies for maximizing their space while reducing their distortion with the least number of individual shells or islands are the goals of well laid out UV maps.

## Keywords
UV Mapping, Computer Graphics, Modeling

## Biography
**Ryan English** is an Assistant Professor of Simulation, Animation & Gaming in the School of Visual & Built Environments, College of Engineering and Technology at Eastern Michigan University. Ypsilanti, Michigan, USA. Ryan holds a BS in Industrial Design and an MFA in Design both from The Ohio State University, Columbus, OH, USA. Before becoming an educator, Ryan spent more than ten years as a Character Technical Director, Rigger, and Character FX Artist with Rhythm & Hues Studios and Sony Pictures. Imageworks. Research interests include character development, procedural animation, small scale additive manufacturing, extended reality, and storytelling.