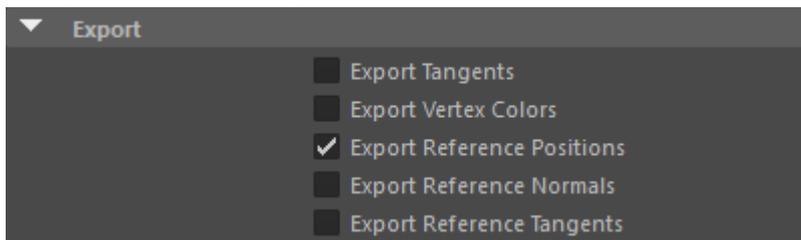# Export Settings

The following settings are provided via the Attribute Editor for geometry objects.

> Export settings for NURBS surfaces are not supported.
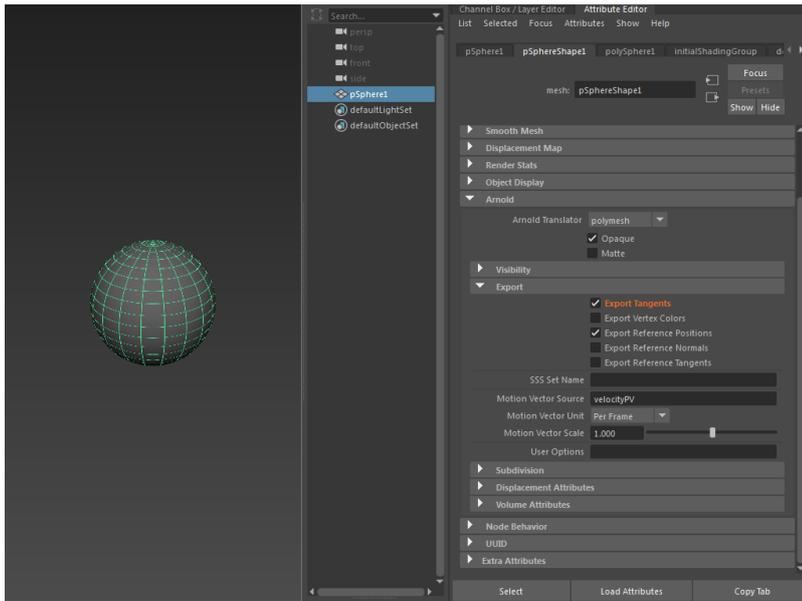
Export Tangents

Export Vertex Colors

Export Reference Positions

Export Reference Normals

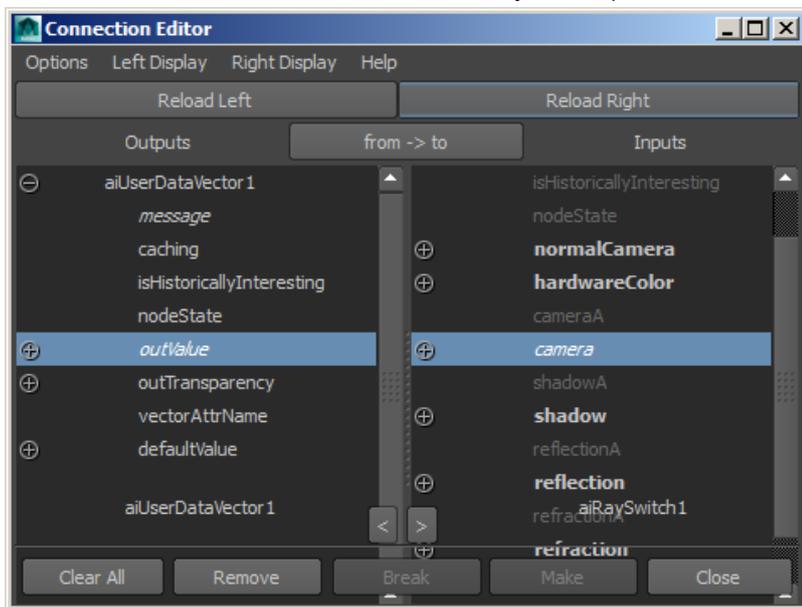**Export Reference Tangents**

Export Tangents

Exports the per-vertex tangent information as Arnold user data of vector type. This user data can be later queried within a shader for different computations. See the example below:
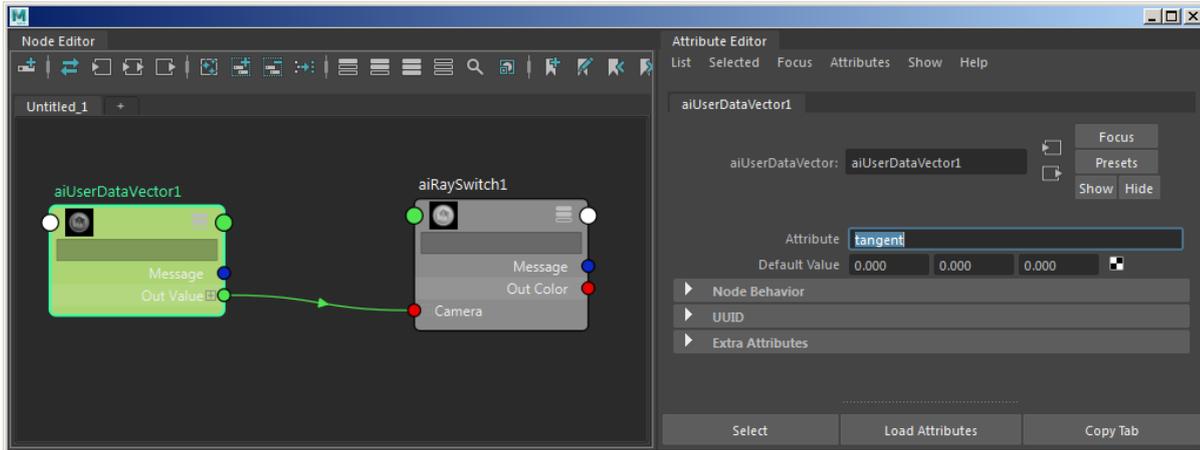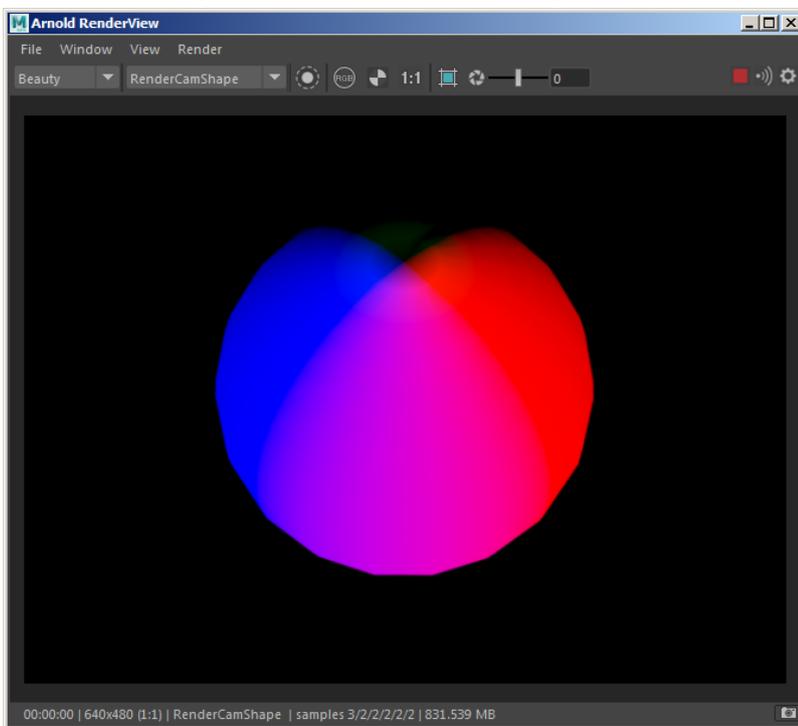
Export Tangents enabled

- Assign a shader to the mesh (in this case an aiRaySwitch) and connect an **aiUserDataVector** node to the *Camera* attribute of the aiRaySwitch).

- Type '*tangent*' into the **Vector Attr Name** of the aiUserDataVector node. If it does not work, try exporting the scene as a .ass file and check that the tangent naming is correct.

When rendered you will see the sphere's tangents represented by color:

Export Vertex Colors

Exports the per vertex color information as Arnold user data of vector of RGBA type. This user data can be later queried within a shader for different purposes, like a mask. See the example below:

- Use Maya's Paint Vertex Color Tool to paint the vertex points to the color(s) of your choosing.
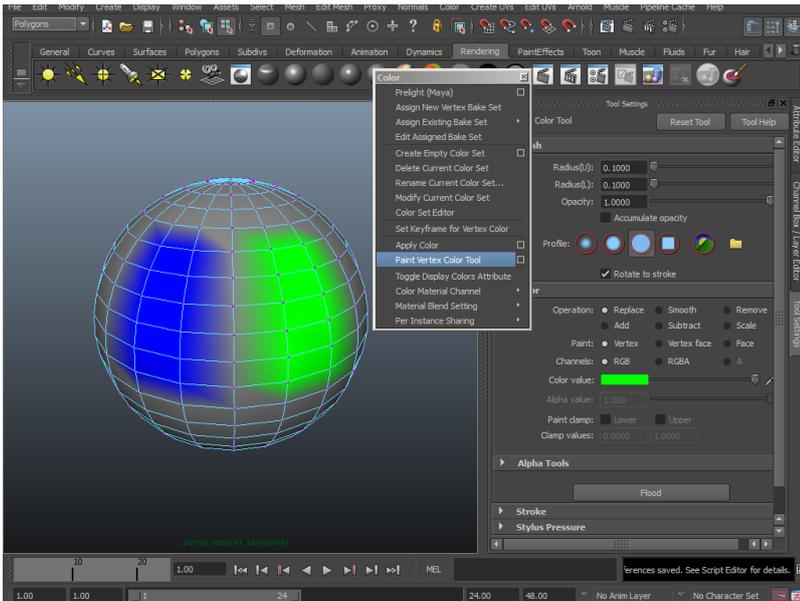
- Select the mesh whose vertex colors you wish to export and enable **Export Vertex Colors** within the Arnold attributes for the mesh:
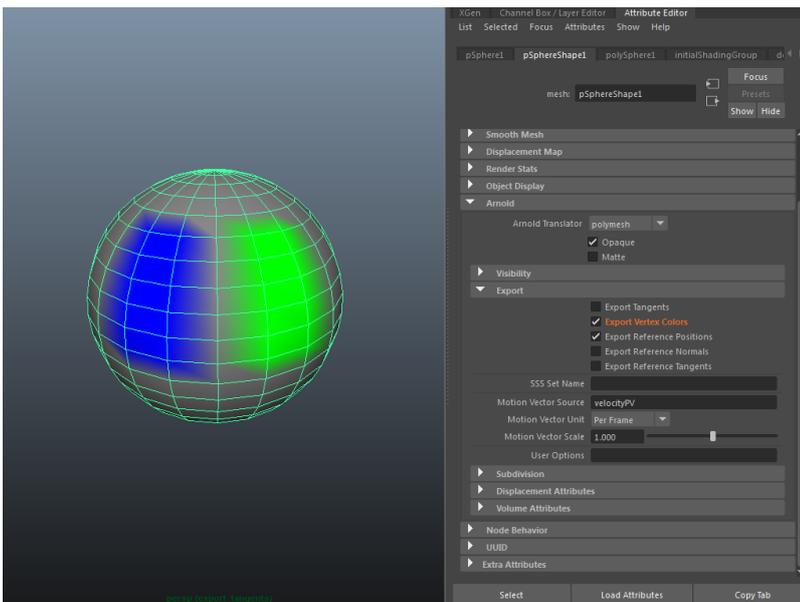
- Assign a shader to the mesh (in this case an aiRaySwitch) and connect an **aiUserDataColor** node to its color output (Camera attribute when using aiRaySwitch).

- Type the name of the color set you want to use into the *Color Attr Name* of the aiUserDataColor node. In this case '**colorSet1**'. Be careful, the name is case sensitive.
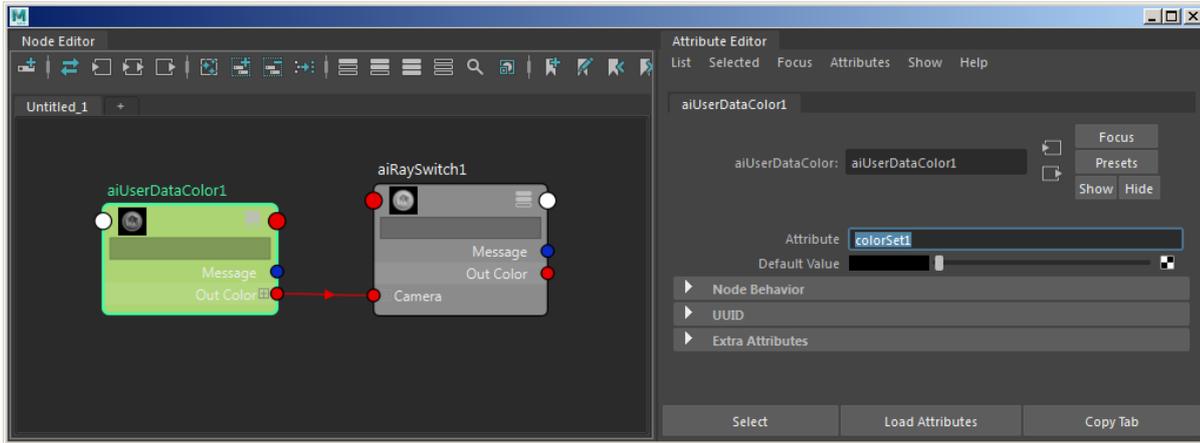
When rendered you will see the spheres Vertex Color representation.
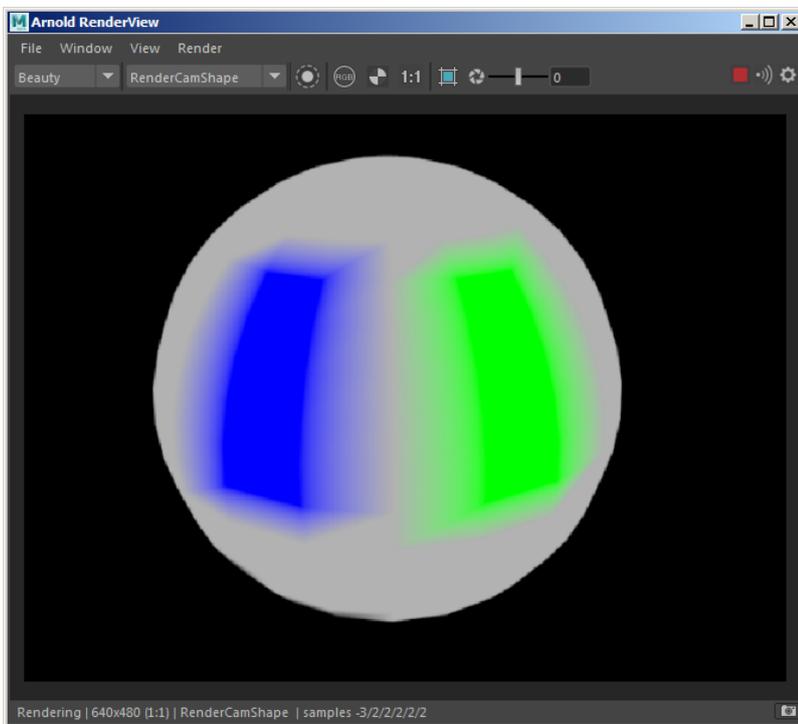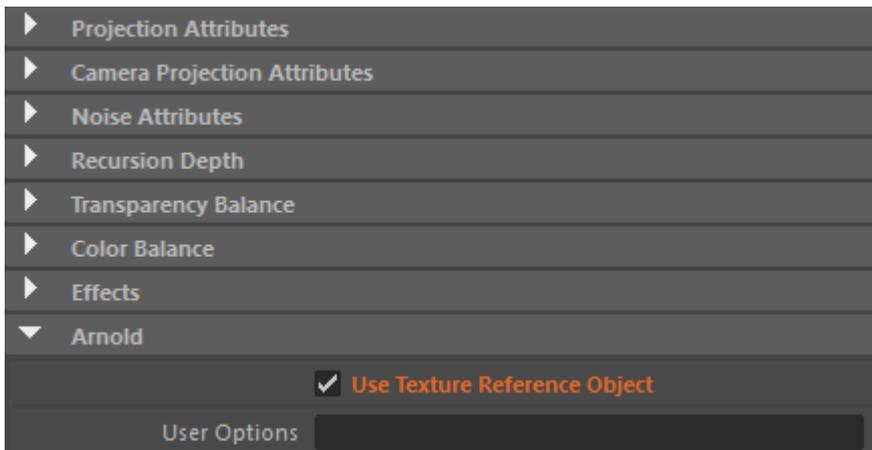

Export Reference Positions

This option exports the vertex positions of a texture reference object in the Pref user data parameter of the polymesh. Pref positions are used with procedural textures to avoid swimming when the mesh is distorted.

<div align="center">'Export Reference Positions' disabled   'Export Reference Positions' enabled</div>

With Pref coordinates, you can always reference the same point on an object, even when the object deforms.

The Maya 3d texture projection will always use the reference positions if they are available. However, there is an option to disable its use in the Arnold attributes of the 3d texture node. For example, this option may be useful if you want to use the reference points with displacement using a 3d fractal texture (so that it sticks) and a projected color texture map which you don't want to stick or be distorted by the displacement.

Maya 3d texture projection with 'Use Reference Object' enabled (default).

> NURBS objects do not currently support PREF user data. If there is a texture reference object and **Export Reference Positions** is checked, MtoA will not export its PREF.

Export Reference Normals

This option exports the normals of a texture reference object in the Nref user data parameter of the polymesh. Nref is used in the triplanar mode of the Maya Projection shader.

Export Reference Tangents

This option exports the tangents and bitangents of a texture reference object in the Tref and BTref user data parameter of the polymesh. These can be used in custom shaders.