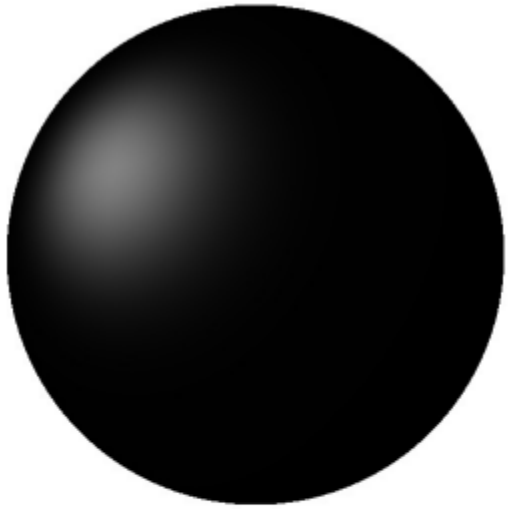
INF1761 – Computação Gráfica
TRABALHO 2 – Iluminação - Phong

MARCELO PAULON

Informações Iniciais

- Linguagem: C++
- Bibliotecas utilizadas: IUP, GLEW, Dirent
- Modelo de Iluminação: Phong
- Iluminação por vértice ou por fragmento
- 1 ou 2 fontes luminosas (na câmera e próxima a câmera)
- Materiais[1]: plástico preto, marfim preto, bronze
- Posição da câmera pode ser controlada a partir das teclas A,W,S,D,R,F

Materiais

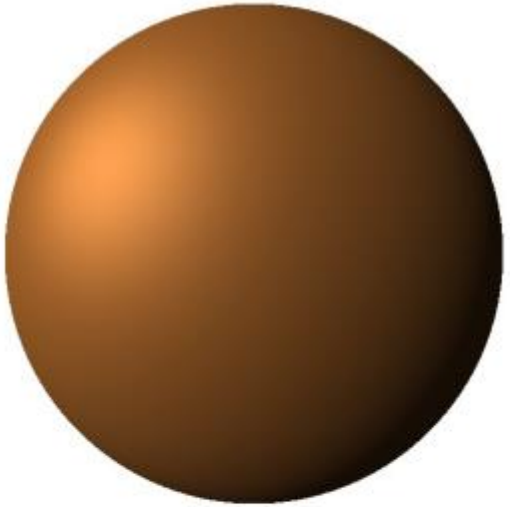


Plástico preto

$Ambient = \{r = 0.00, b = 0.00, g = 0.00, a = 1.0\}$
$Diffuse = \{r = 0.00, b = 0.00, g = 0.00, a = 1.0\}$
$Specular = \{r = 0.50, b = 0.50, g = 0.50, a = 1.0\}$
$Shininess = 32$

Marfim preto

$Ambient = \{r = 0.00, b = 0.00, g = 0.00, a = 1.0\}$
$Diffuse = \{r = 0.00, b = 0.00, g = 0.00, a = 1.0\}$
$Specular = \{r = 1.00, b = 1.00, g = 1.00, a = 1.0\}$
$Shininess = 100$

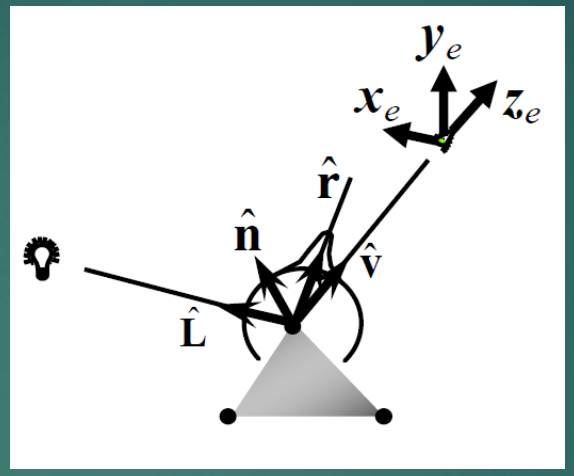


Bronze

$Ambient = \{r = 0.21, b = 0.13, g = 0.05, a = 1.0\}$
$Diffuse = \{r = 0.71, b = 0.43, g = 0.18, a = 1.0\}$
$Specular = \{r = 0.39, b = 0.27, g = 0.17, a = 1.0\}$
$Shininess = 25.6$

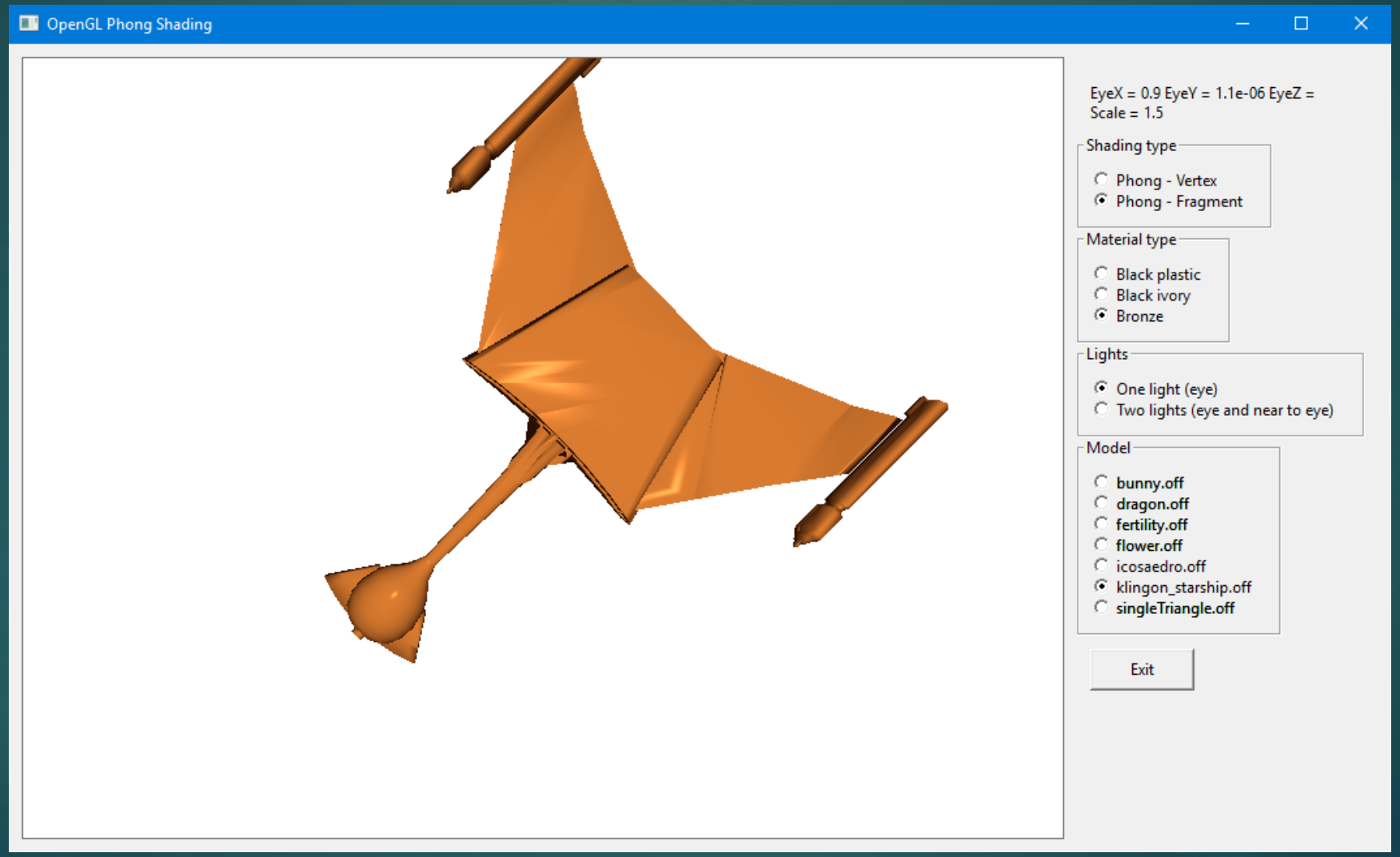
[1] http://webserver2.tecgraf.puc-rio.br/~celes/docs/inf1339/iluminacao.pdf

Modelo

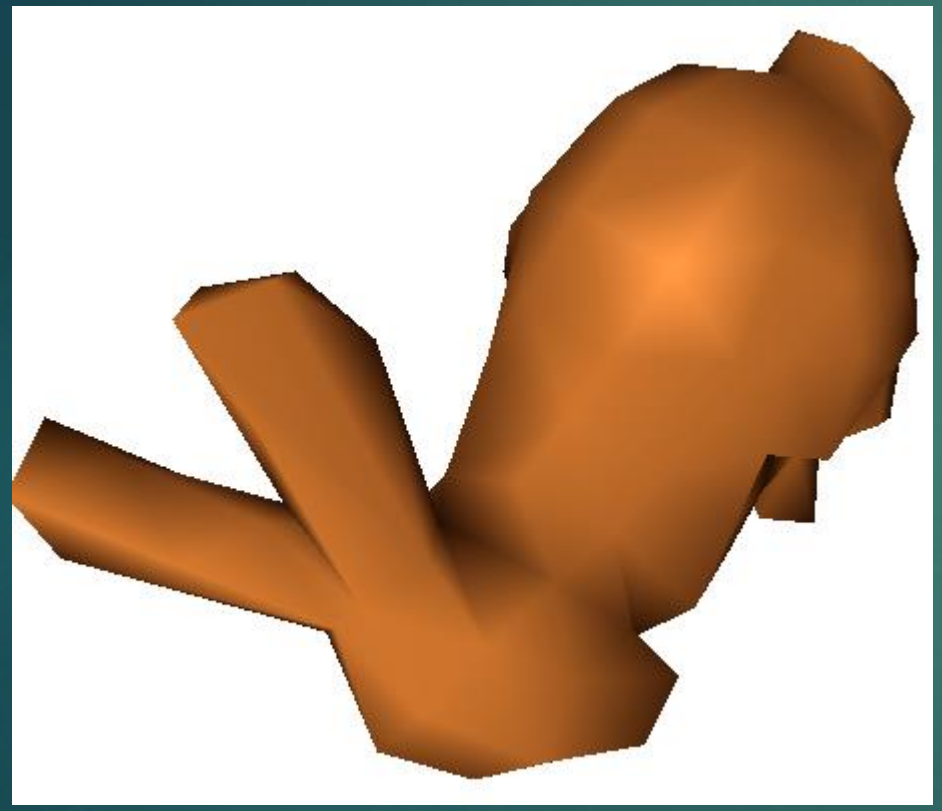


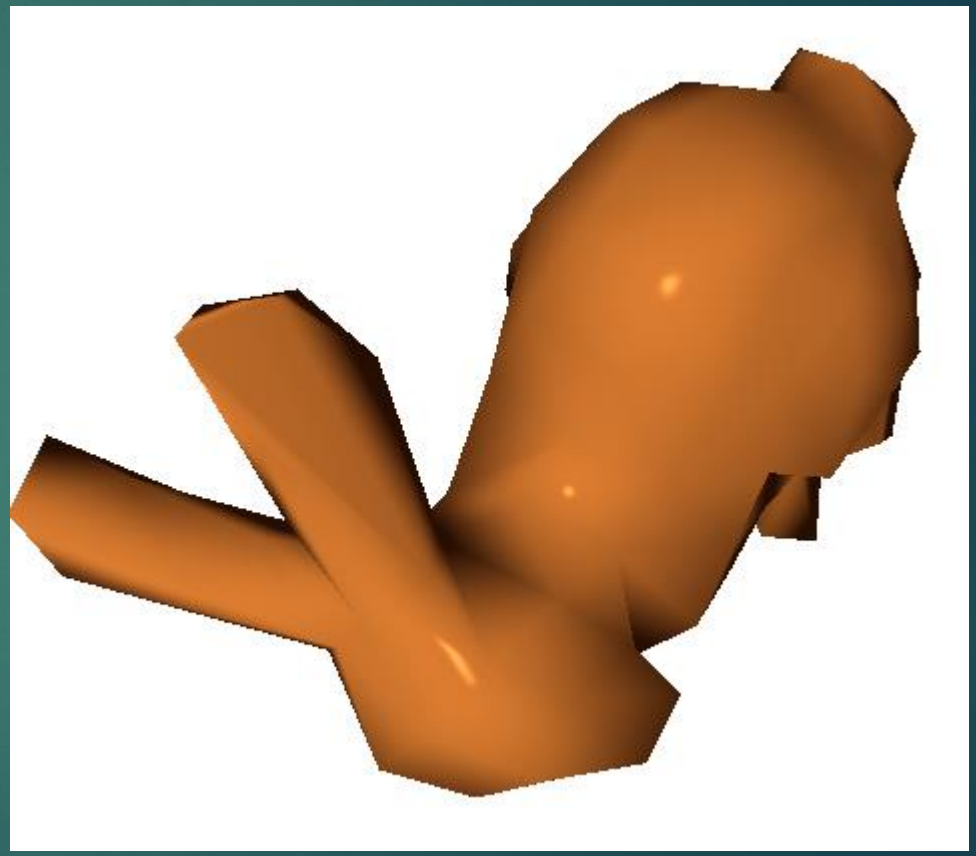
$$\begin{pmatrix} r \\ g \\ b \end{pmatrix} = \begin{pmatrix} r_a \\ g_a \\ b_a \end{pmatrix} \otimes \begin{pmatrix} r_d \\ g_d \\ b_d \end{pmatrix} + \sum_{l=1} \left(\begin{pmatrix} r_l \\ g_l \\ b_l \end{pmatrix} \otimes \begin{pmatrix} r_d \\ g_d \\ b_d \end{pmatrix} \left(\hat{\mathbf{n}} \cdot \hat{\mathbf{L}} \right) + \begin{pmatrix} r_l \\ g_l \\ b_l \end{pmatrix} \otimes \begin{pmatrix} r_s \\ g_s \\ b_s \end{pmatrix} \left(\hat{\mathbf{r}} \cdot \hat{\mathbf{v}} \right)^n \right)$$

Interface

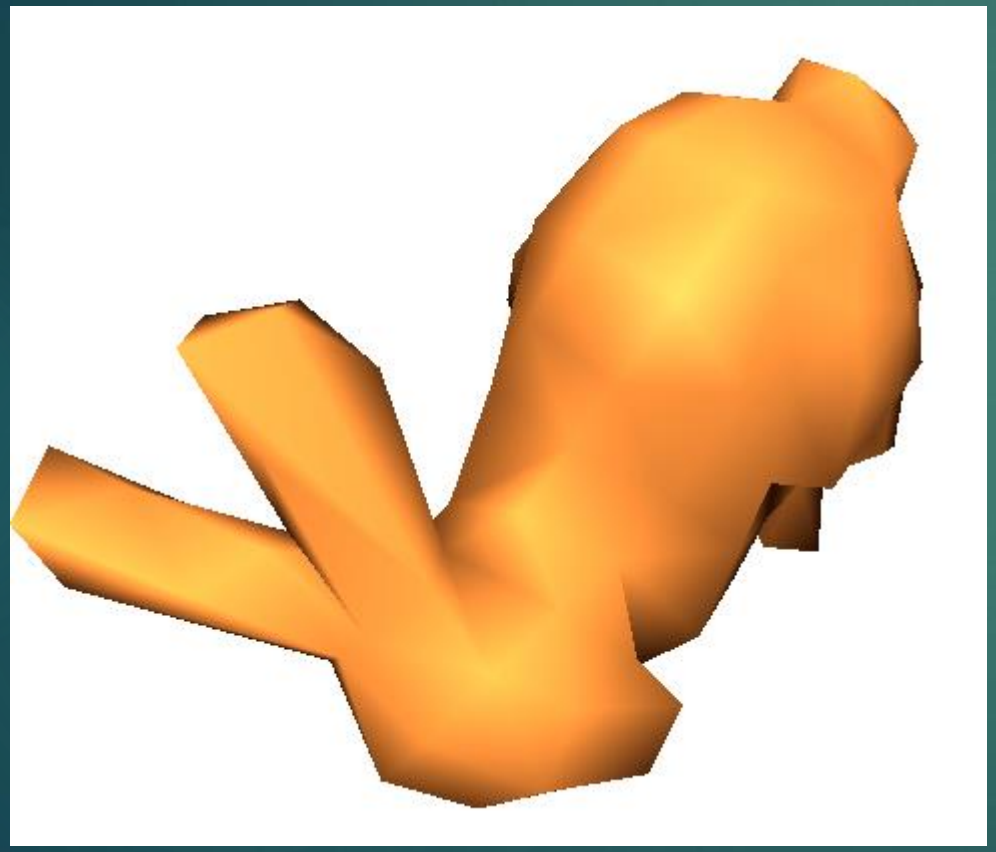

OpenGL Phong Shading
EyeX = 0.9 EyeY = 1.1e-06 EyeZ =
Scale = 1.5
Shading type
Phong - Vertex
Phong - Fragment
Material type
Black plastic
Black ivory
Bronze
Lights
One light (eye)
Two lights (eye and near to eye)
Model
bunny.off
dragon.off
fertility.off
flower.off
icosaedro.off
klingon_starship.off
singleTriangle.off
Exit

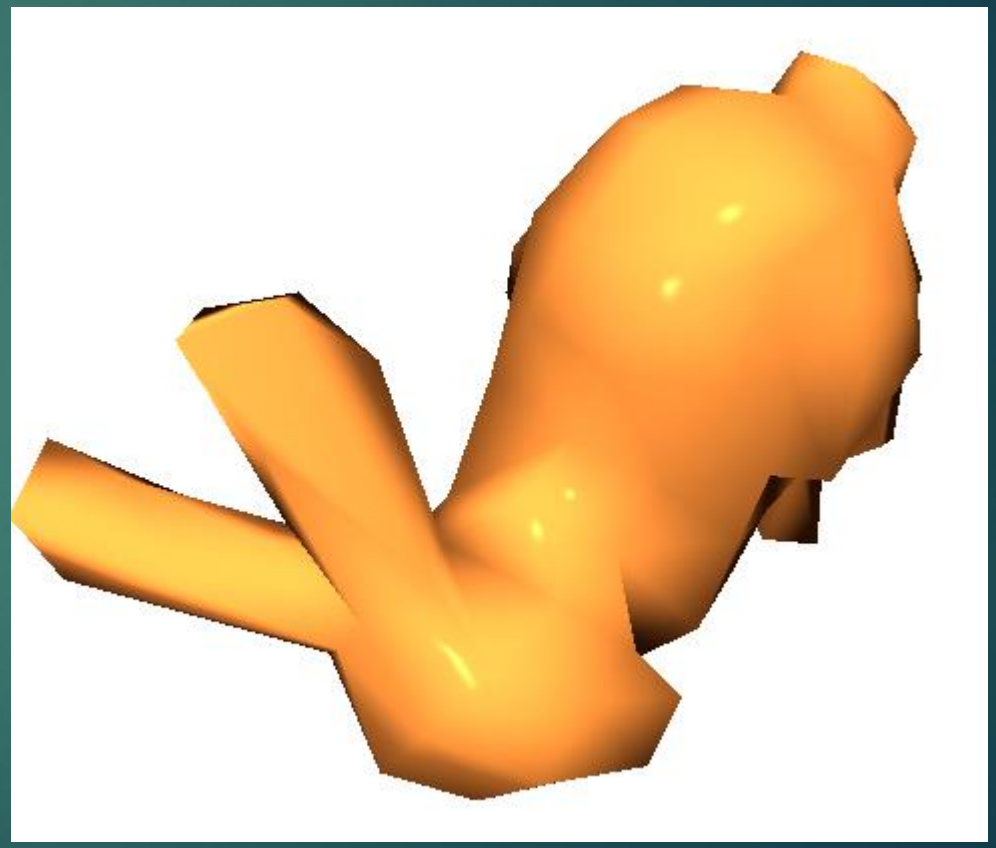
Diferença – Vértice / Fragmento
1 luz - bronze



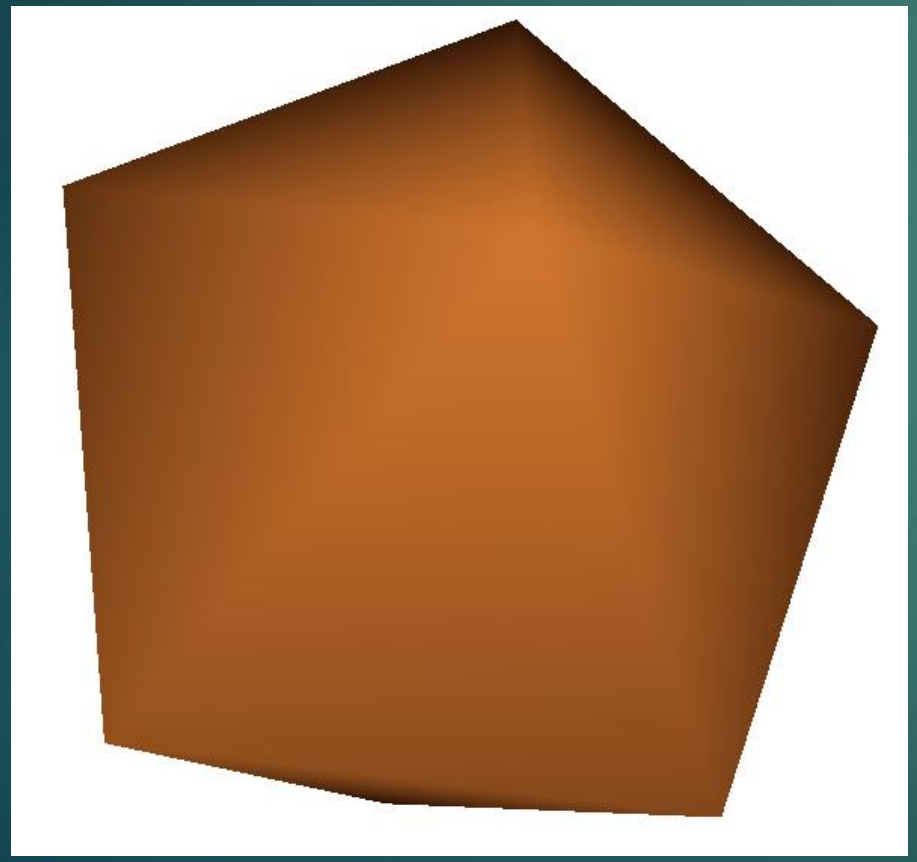


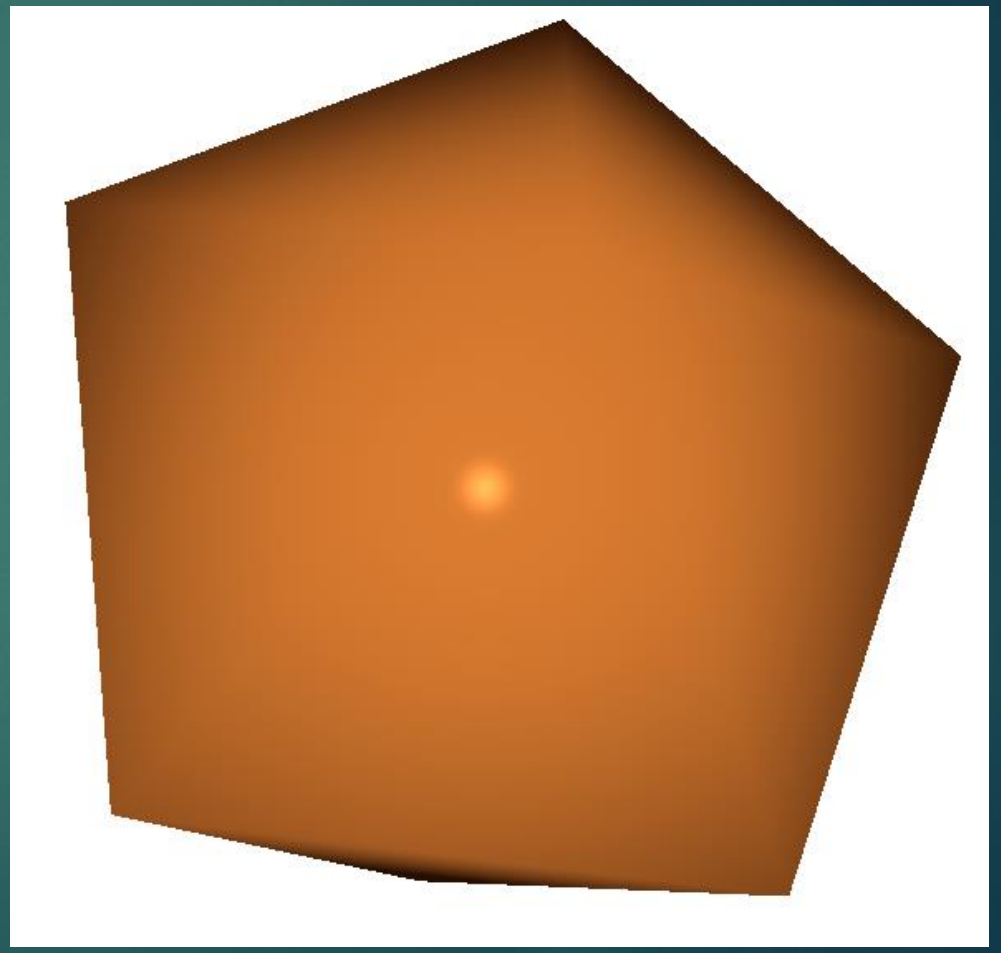
Diferença – Vértice / Fragmento
2 luzes - bronze



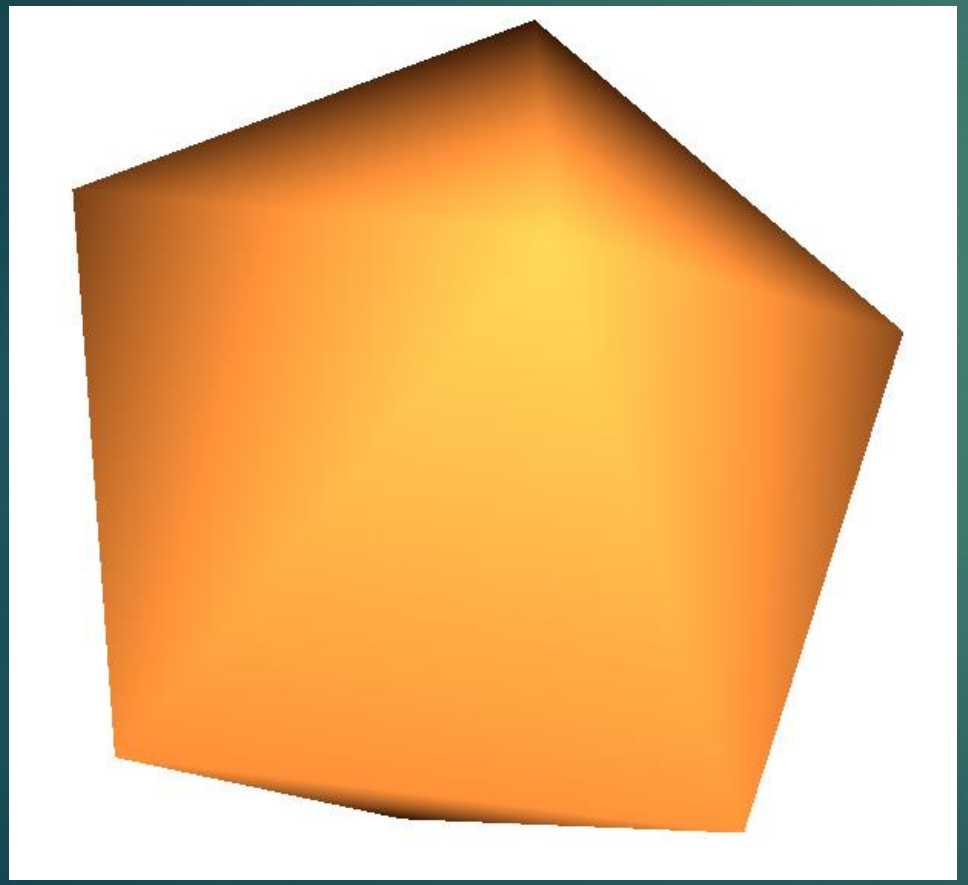


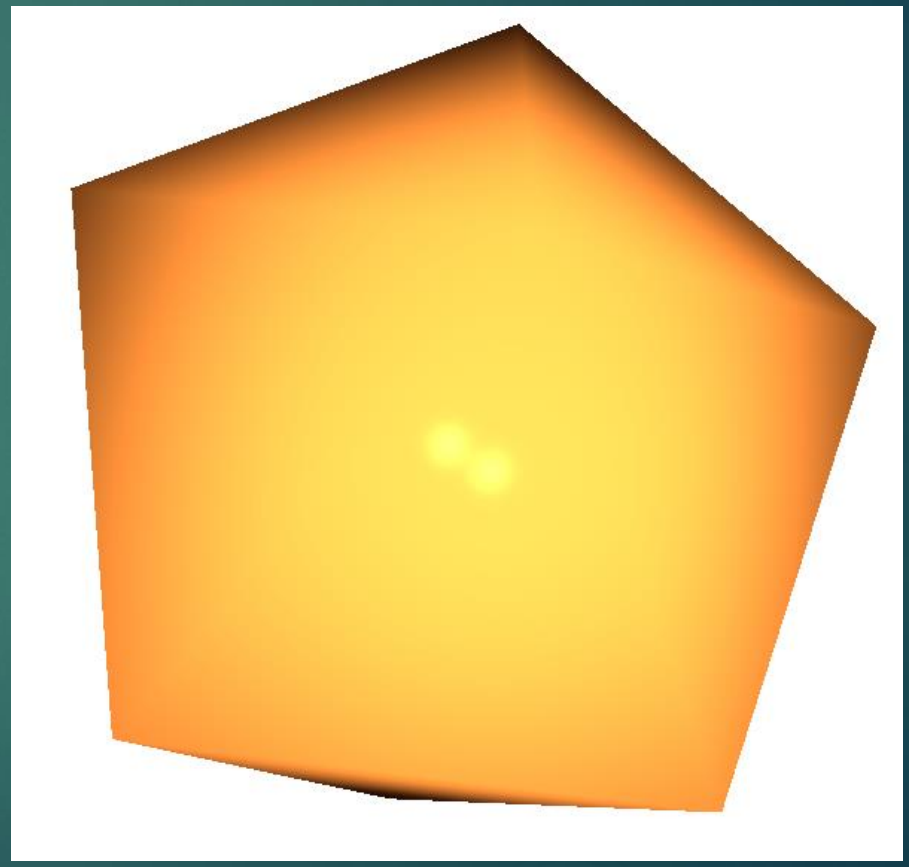
Diferença – Vértice / Fragmento
1 luz - bronze



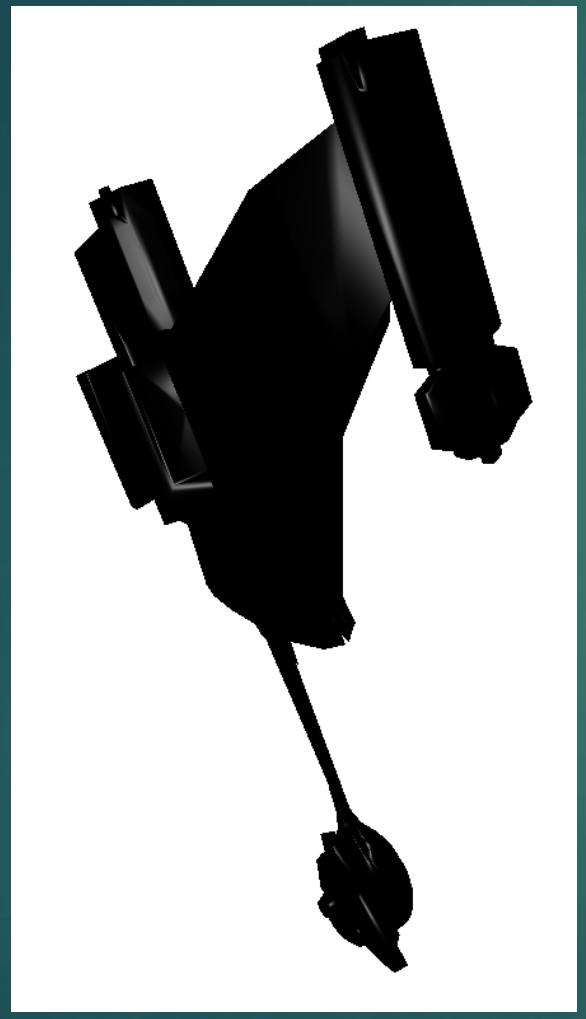


Diferença – Vértice / Fragmento
2 luzes - bronze

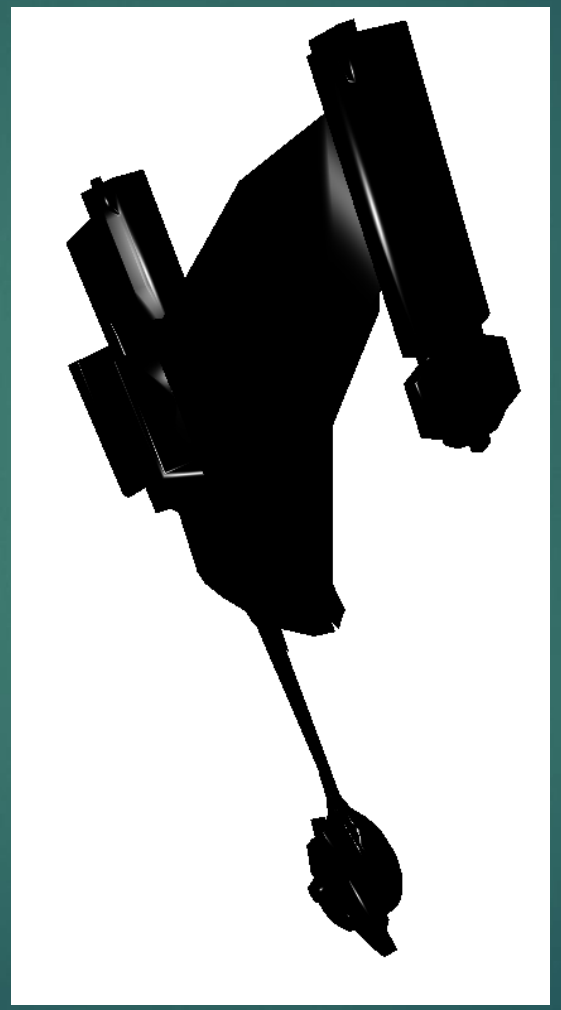




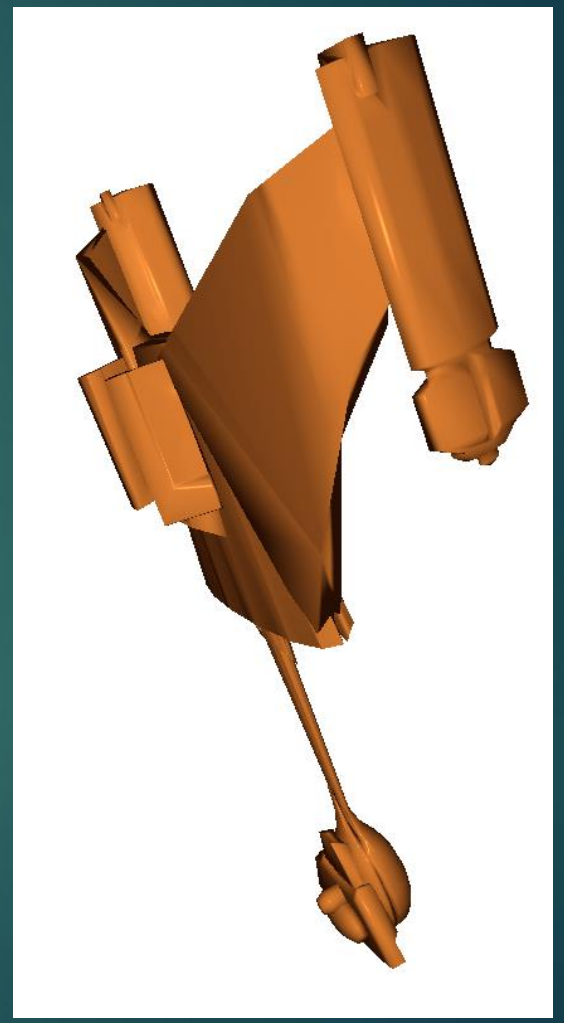
Comparação – Materiais
1 luz – Iluminação por Fragmento



Plástico Preto



Marfim Preto



Bronze