Normal Map Industry Survey

EGMENT 0: Adam Myhill with introduction

EGMENT 1: Zbrush (Scott Spencer)

EGMENT 2: (Gio Nakpil and Rich Diamant)

REAK – Lunch (1 hour)

GMENT 3: Normal Map Implementation Buffet

EAK- 10 minute

GMENT 4: Texture-based Normal Map Sampling Surve

GMENT 5: Real World Data Sampling with Steve Chap

EAK- 10 minute

GMENT 6: Issues with normal maps in the major conso

ory of normal maps

is idea of taking geometric details from a high
ad been introduced in "Fitting Smooth Surface
Meshes" by Krishnamurthy and Levoy, Proc. S
here this approach was used for creating displ
ver nurbs, its application to more common trian
ter

two papers were presented with the idea of tra
s normal maps from high to low poly meshes:
ance Preserving Simplification", by Cohen et a
APH 1998, and "A general method for recoverin
n simplified meshes" by Cignoni et al.

v of how they work

mapping is sometimes referred to as "Do
g". While bump mapping perturbs the exi
(the way the surface is facing) of a mode
g replaces the normal entirely. - Wikiped
olour channel of the normal map represen
or bending of the pixel normal on an axis
n R, G, B chnnels

s, weaknesses, common misconcepti

e

vely inexpensive way to represent highly
ces
s for much lighter meshes
r to weight + rig
r to animate
s computation from CPU to GPU (typica

s, weaknesses, common misconcepti

ve

n’t do anything for silhouettes

good for high and mid frequency detail

n’t animate (without a bunch more work.

overly used - inefficient asymmetry betw

exture

N textures are much larger than DXT1

ead: Instruction increase / shader comp

e budgets: Strive to balance normal m

g: Normal maps are only as good as th

n

lex ambient: Irradiance / Spherical Harmo

t specular contributions!

g them takes time:

es model

e our speakers and organizers

Spencer: Art Director at Gentle Giant Stu

kpil: 3D Modeler at ILM

iamant: Lead Character Artist at Naughty

o Ariza: Senior Character Artist and Nau

Myhill: Sr. Technical Artist at Pandemic

Chapman: VP of Gentle Giant Studios

elazquez: Character Modeler at Ravenso

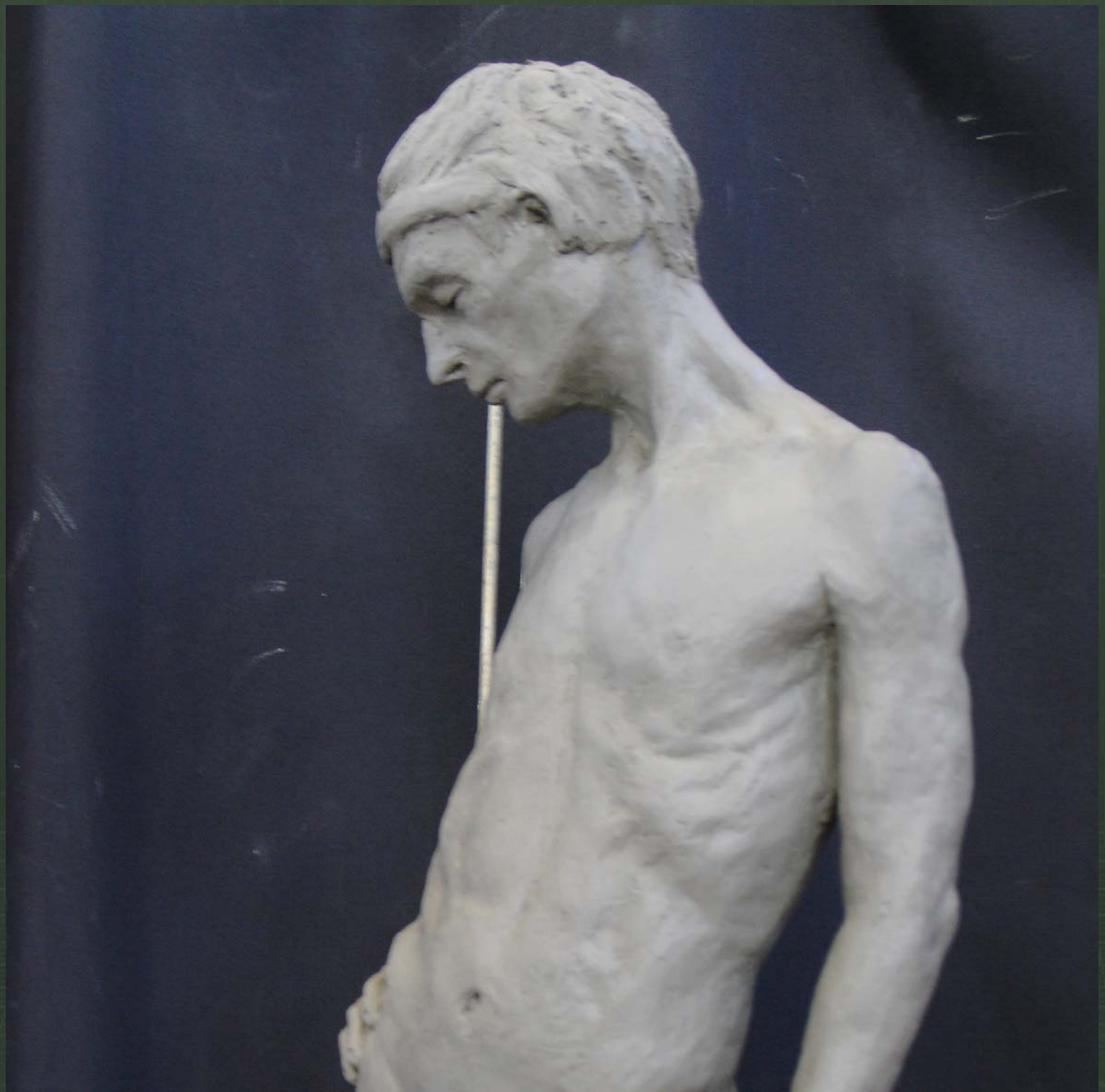
reature and Character Design: A Traditio

n

ection I will discuss using ZBrush's digital sc
create creature and character models. Whe
I try to focus on the same foundations laid b
al sculptors. When working I try and be awa
and form first leaving the details for later.

demonstration I decided to use a traditional
e which was scanned into a digital model as
ows me to also cover ways of bringing scan-
as well as illustrate the same techniques ap

nples



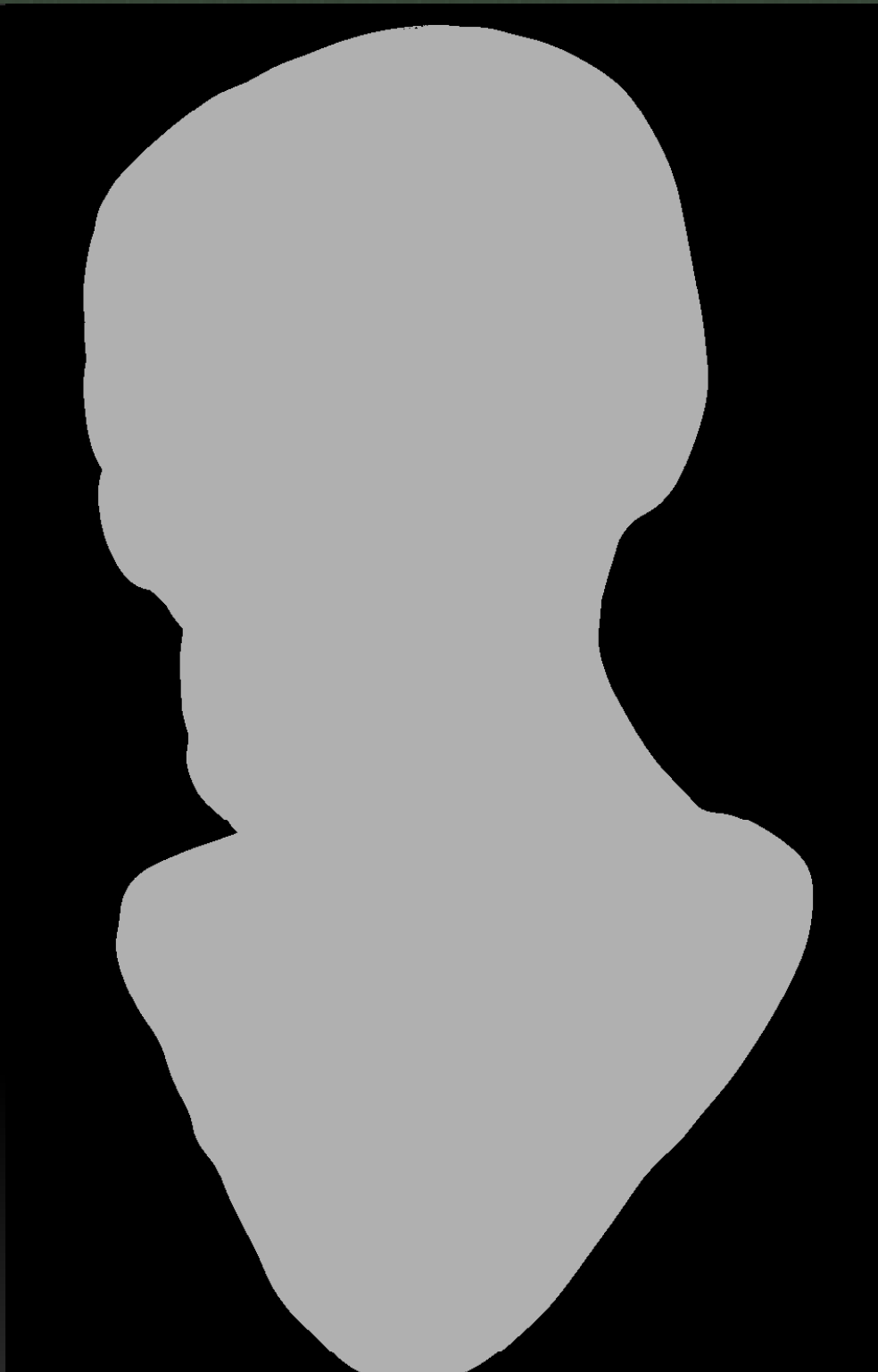
nples

culpting

culpting

lized approach to sculpting: Form Analysis

kes form



default materials do not allow for interactive li
to the Basic Material You can move the light
get a much clearer idea of the form relationsh
s

flat color shader to check the silhouette. This
not keyed allowing you to quickly switch betw
d shaded mode.

p is to export the mid subdivision level to May
ported as an obj, lit, and checked under a diff
ve camera than ZBrush's.

with rakes

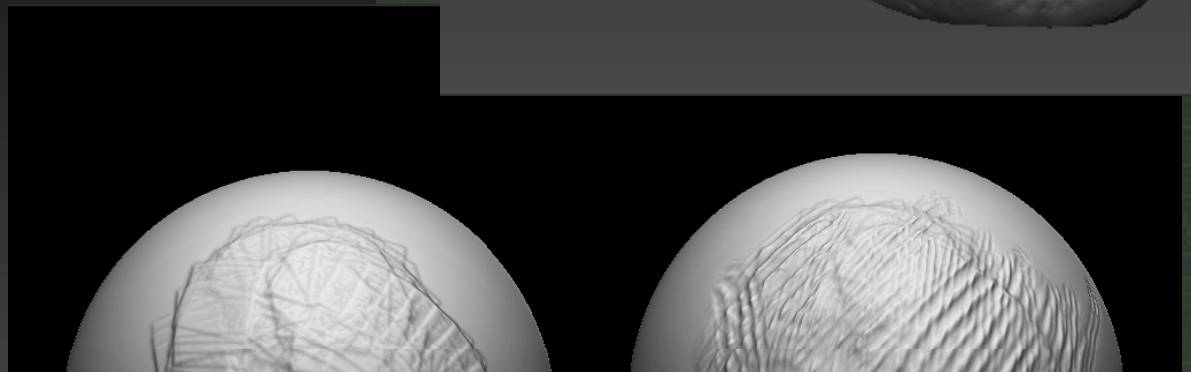
are a real world sculpting
ed for the rapid
ment of form by subtracting
e clay surface

he fake brush can be

h add or subtract form

apes in a rapid and

anner



de: From clay to game mesh

e in ZBrush

re sculpture is scanned
ught into ZBrush to
a ZTool

g the sculpture scan into ZBrush as a Zt

the mesh in Maya to 0 0 0 – scans are inher
netrical so this is not a perfect process but e
ou to use many tools in symmetry mode.

ush use the Transpose tools to center pose i
ation for remeshing.

lata must be remeshed as it consists of rand
t suitable for sculpting or animation

shing in ZBrush using topology tools.

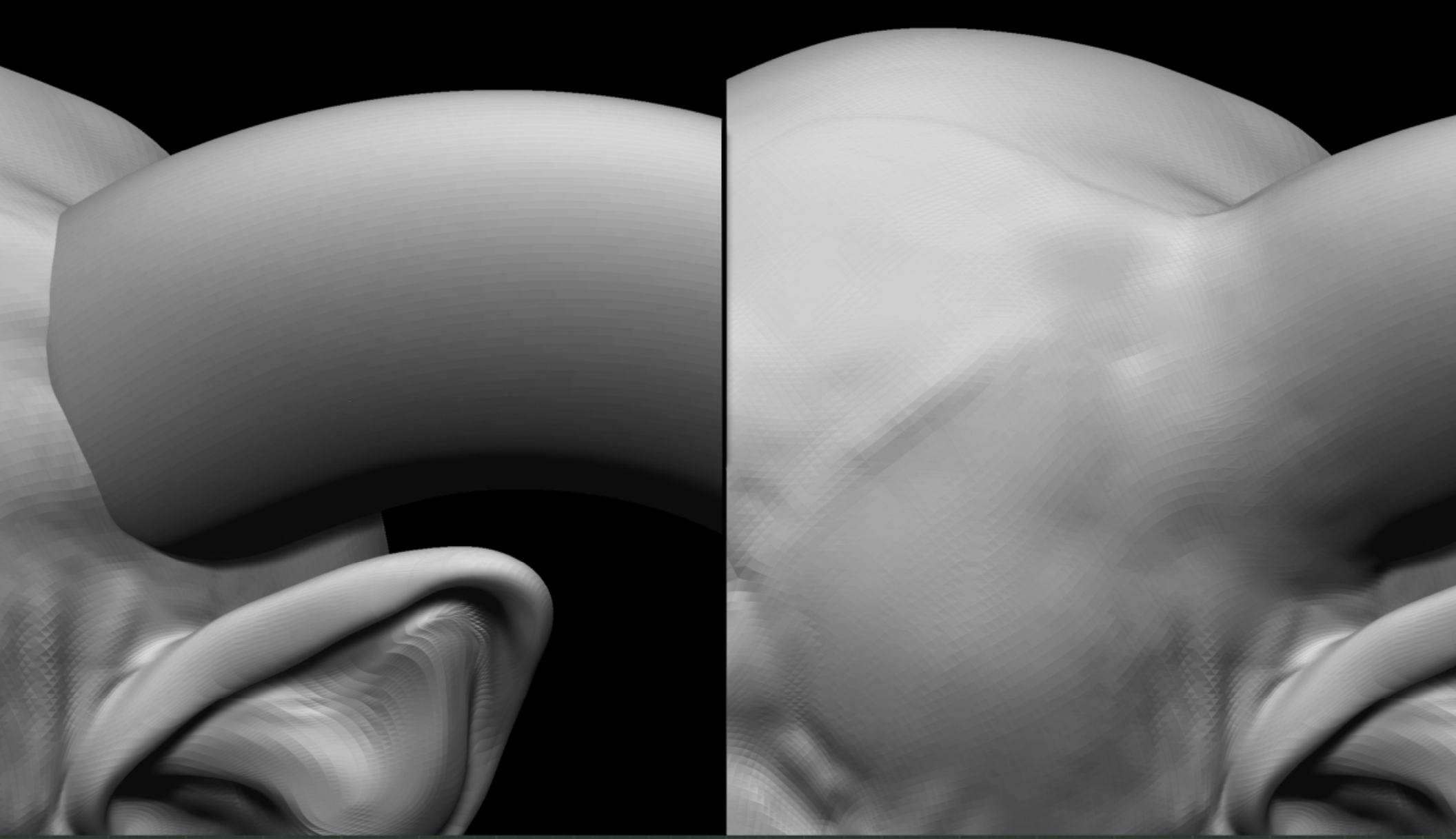
awback to this is the inability to create a mo
there is however a workaround for this we w

mizing the ZBrush brushes

ning the edit curve

mod and Smoothing Curves

ng details on layers and removin



design changes can be made to an existing
gh the use of mesh Insert and the clay brushe

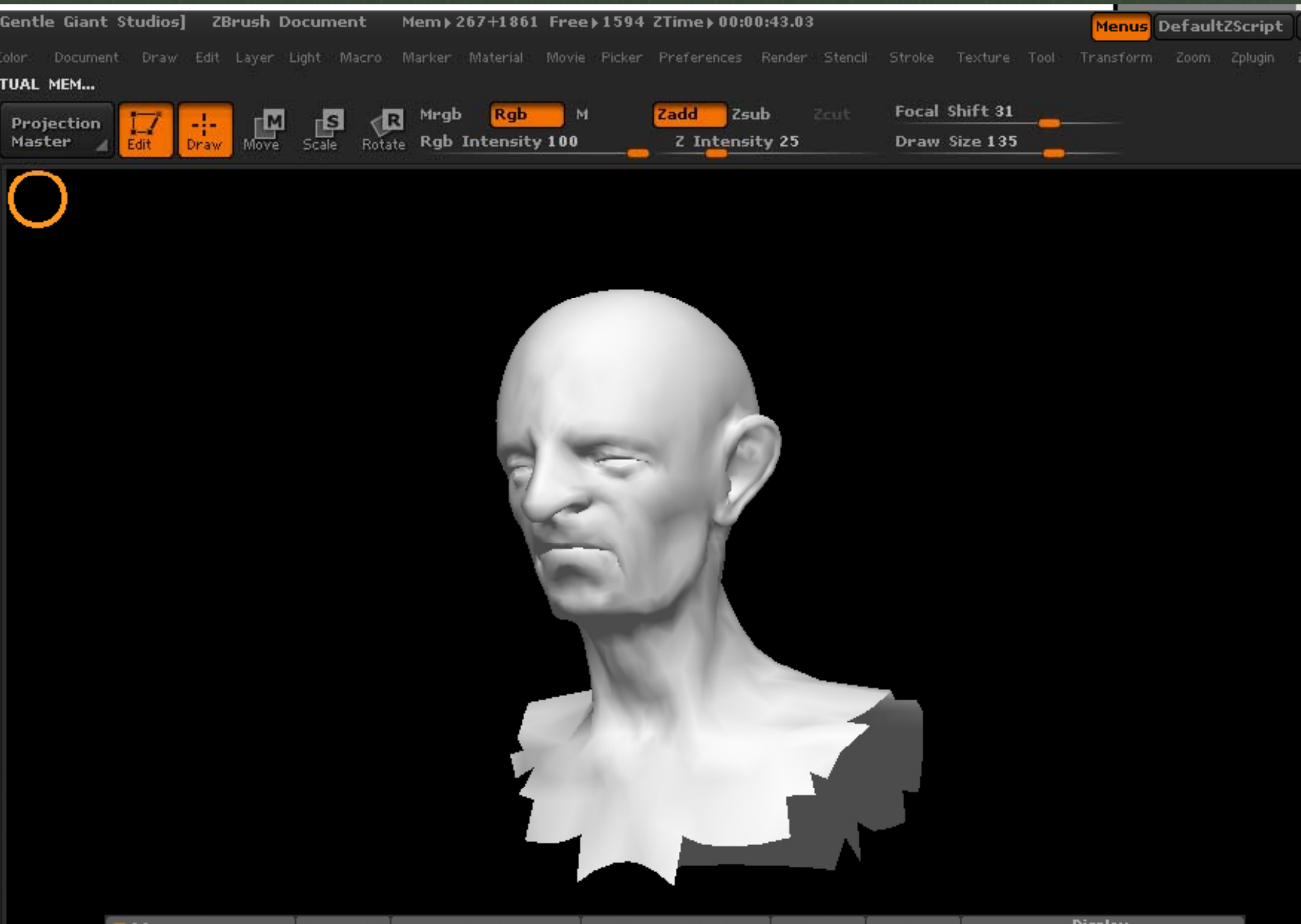
ment Map Detail Transfer

kets and mouth bags can be added onc
e is completed. by using a process calle
ement map detail transfer.

ocess uses a 16bit displacement map in
details from one mesh to another.

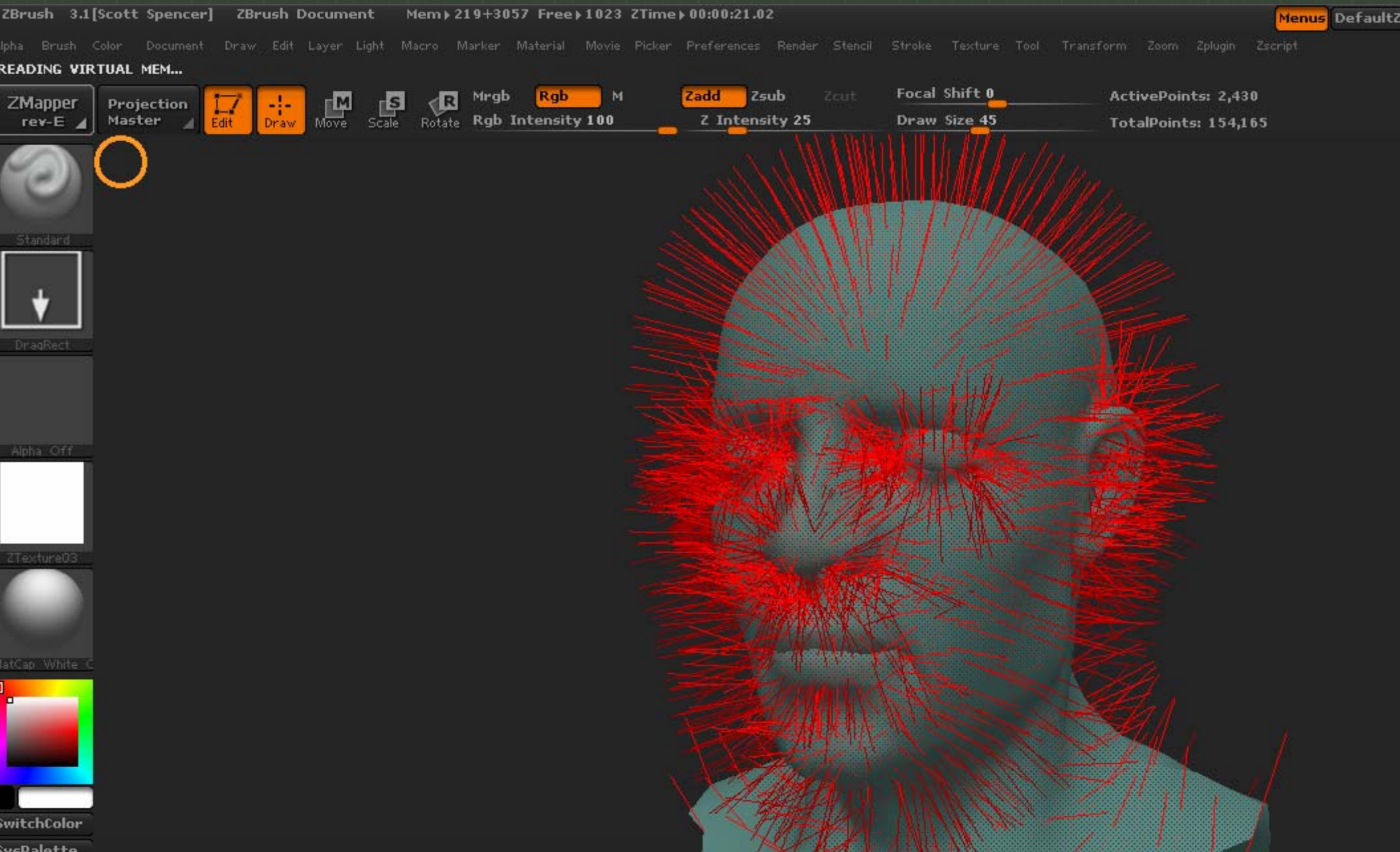
hnique can be more predictable than us
projection tools under Topology And Sub

for Normal Maps

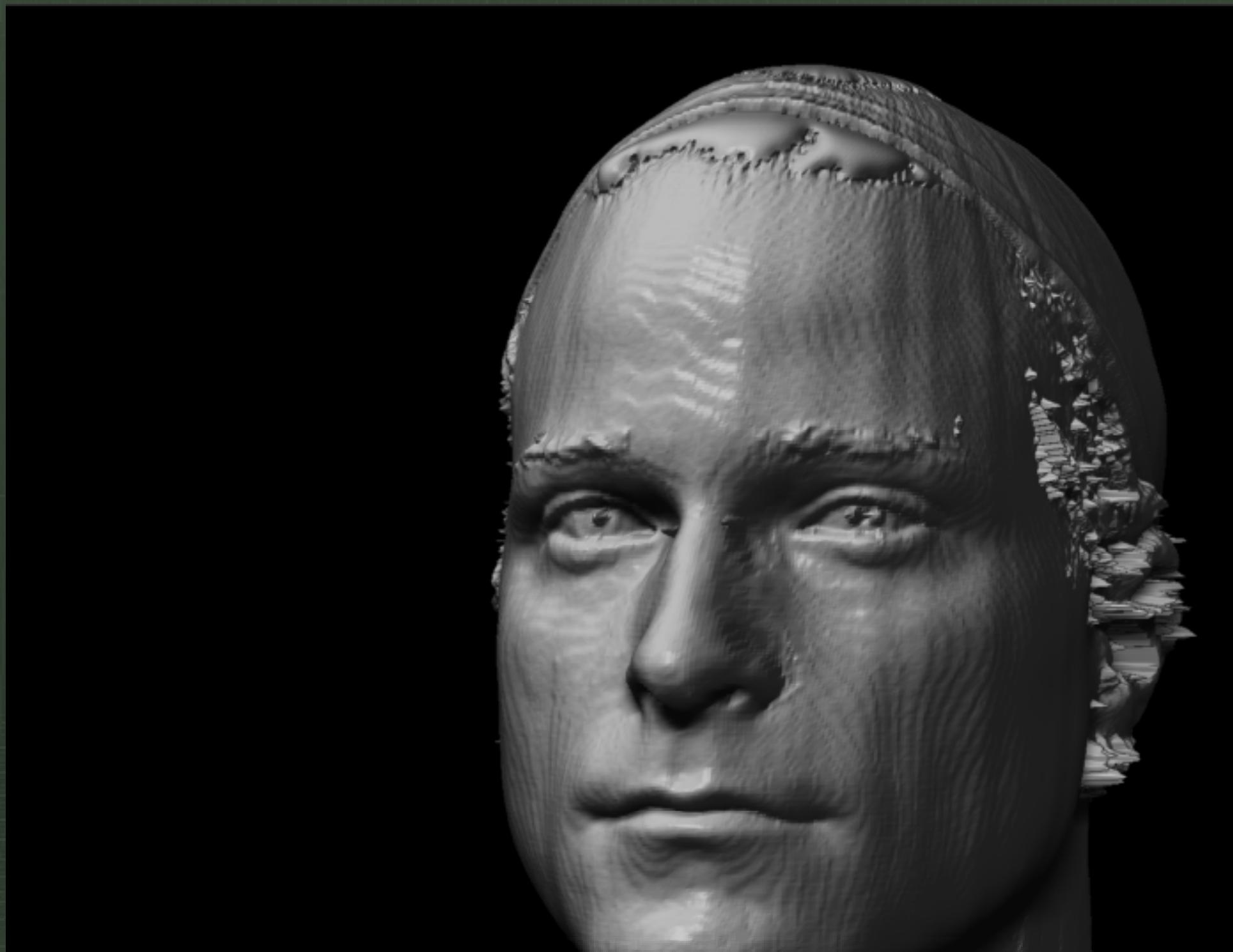


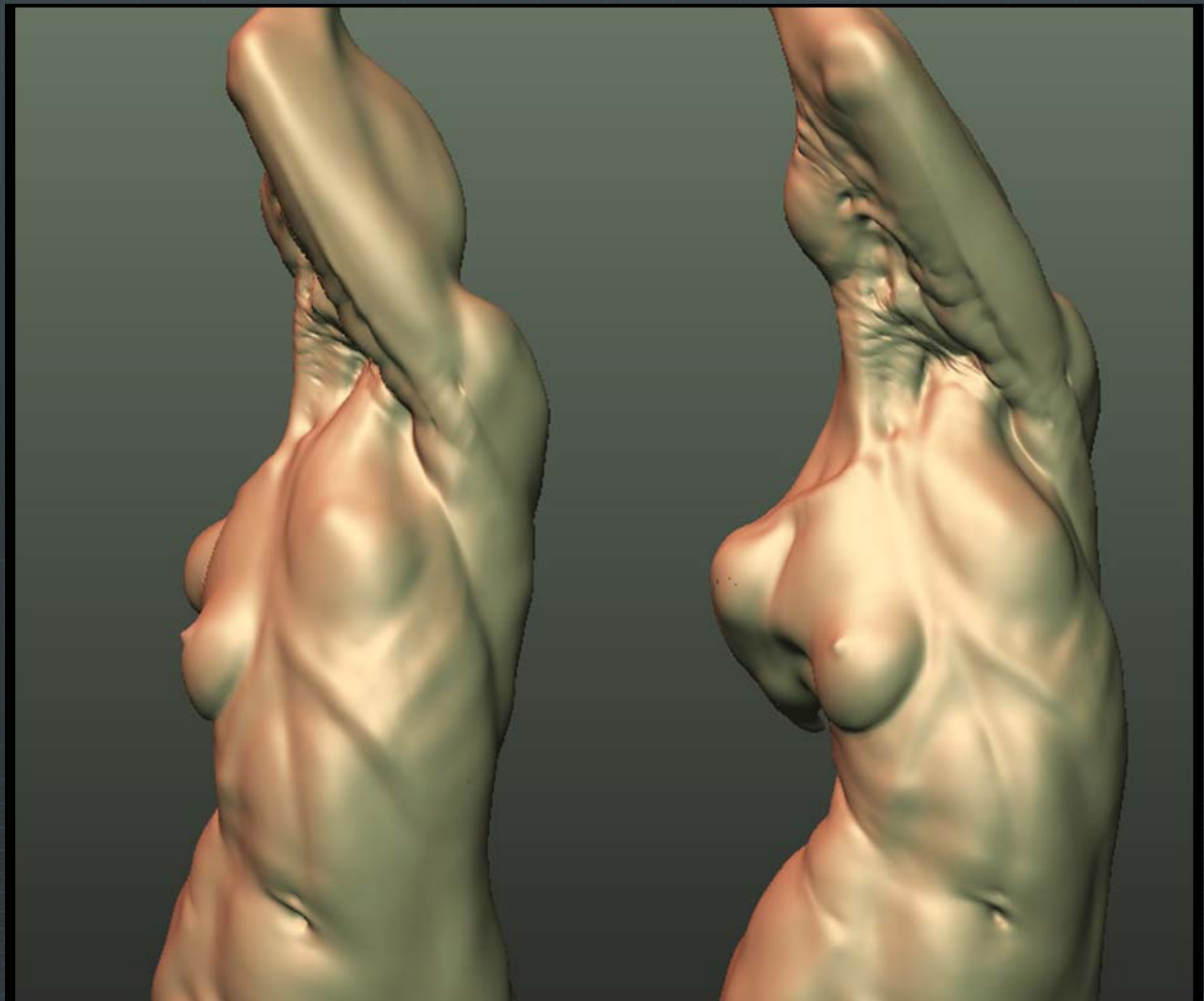
can also be used to generate normal ma

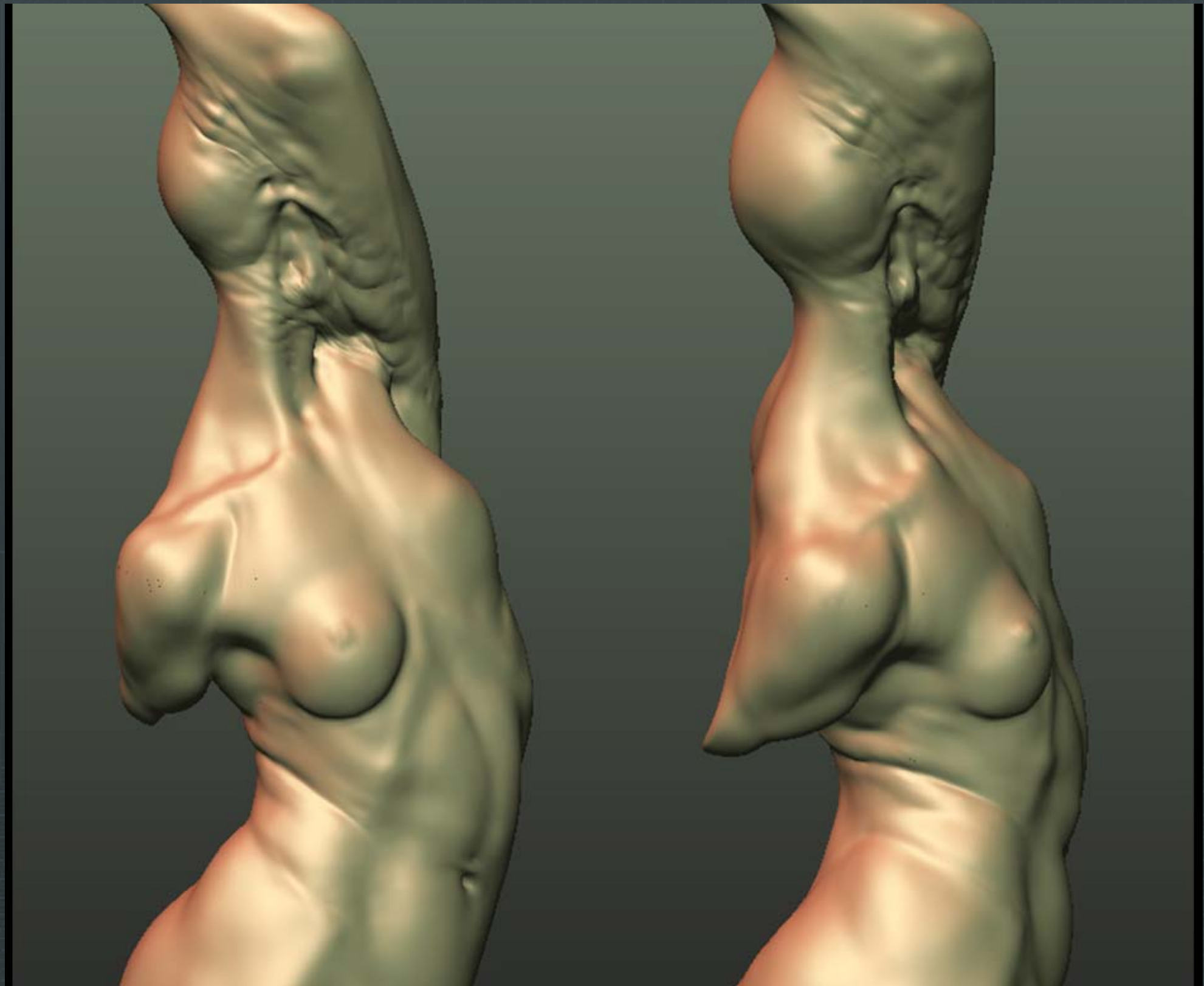
meshes



e process can be applied to this scan of a







ral approach to digital creature creation

- ny of forms
- ry forms
- ndary forms
- ry forms

ms

prominent forms that define the character

re all the other sub-forms (secondary and tertiary) will

forms

- t add complexity to primary forms
- ways compliment primary forms rather than overpower
- stance, secondary forms should be the least prominent
  to primary forms

ms

s that add complexity to secondary forms (ie. Wrinkles)

important of the forms

overly used in digital sculpting

ed properly however, these forms define the quality and

stance, tertiary forms should be the least prominent of

y on top, The cake can do without it, but sure looks goo

erly)

ht and Shadow)

orms that define how light and shadow hits the surface

lpture depth and contrast

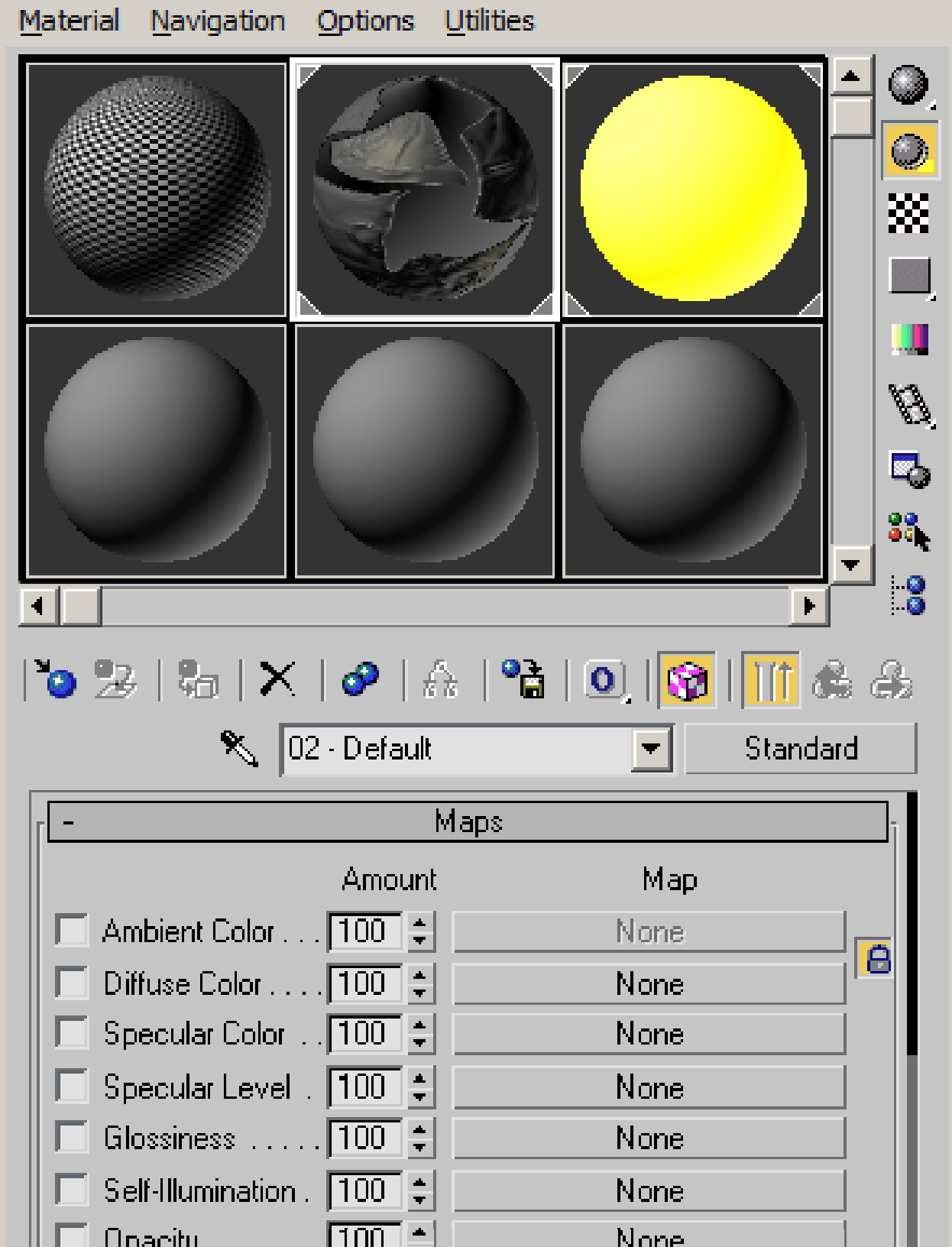
Mapping inside of Mudbox:

ions

ng your normal map

Editor

Maps
he
Slot.
Normal
rom the
l/Map
r.

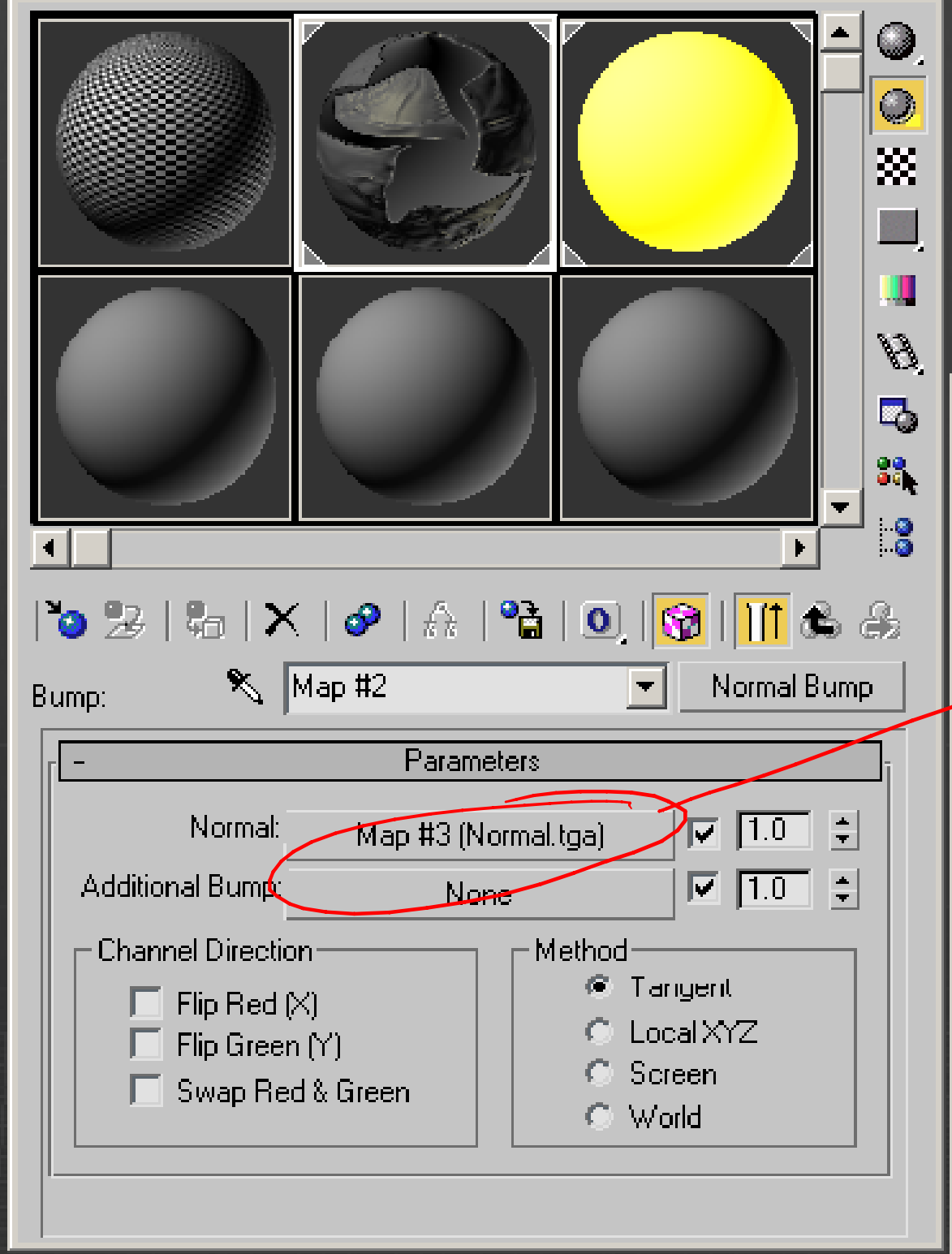


ump

he Normal

itmap from
erial/Map

open a file
for you to
our normal



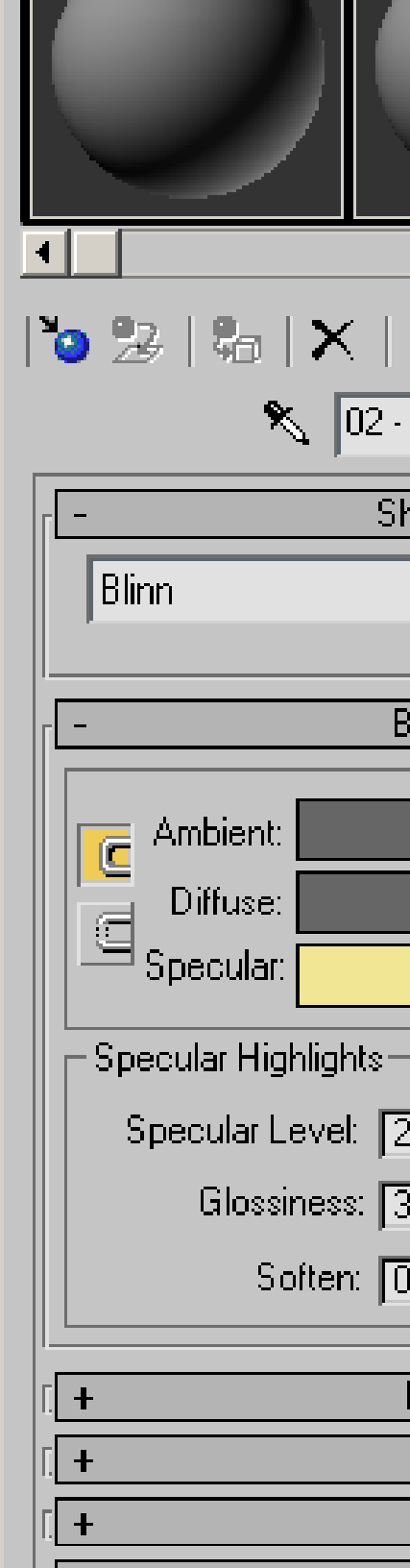
Manager.

on the DX display of Standard
l.

he Show Map in viewport button.

n now view the normal map in
ded viewport. Perspective will
e model with specular settings.

of the DX display off as it slows
our scene, especially when using
The material is still viewable in
derer.



Mapping inside of Maya:

- ions
- Transfer Maps for normal mapping
- nting errors
- g normal maps in Real-time and renc
- l maps

w of the XSI workflow

nce photography

ular extraction

h

orkflow

shop cleanup / tips and tricks

mpression:

k as far as you can and zoom in. At least 70

g:

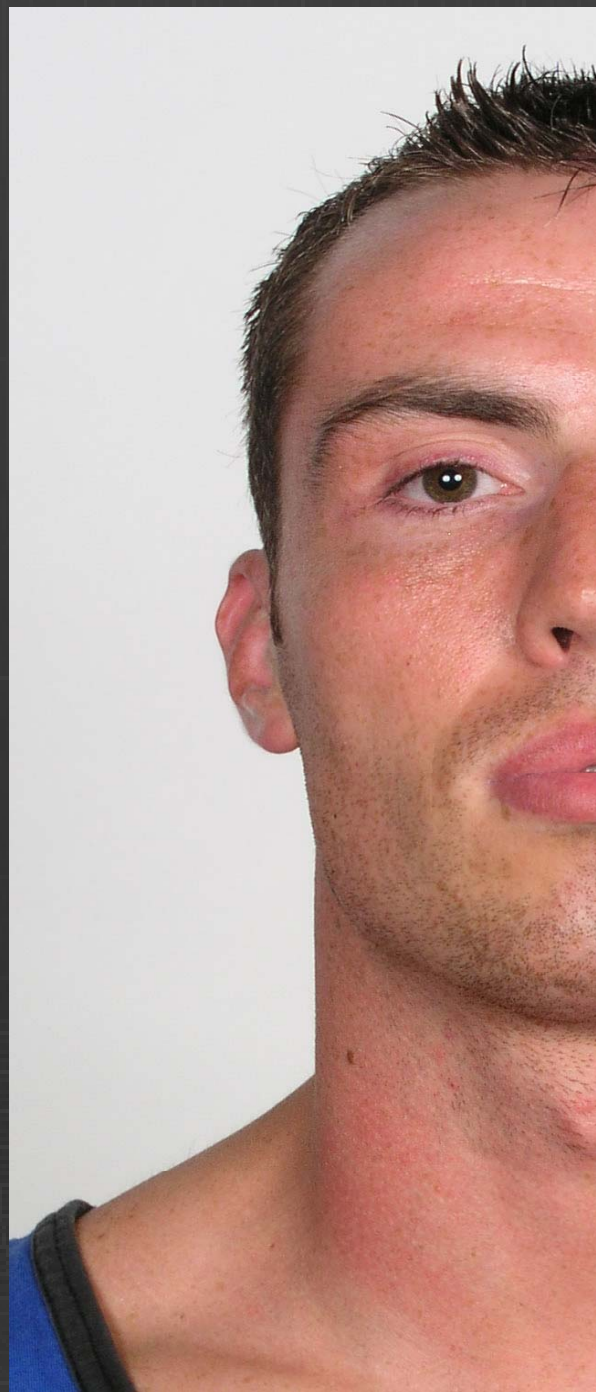
get it as flat and even as possible. Overcast
nce card is great

osition:

ck and close eyes for a shot, so you get the
hin information

shot of eyes closed, model and texture head
s closed then animate open (otherwise your

ce Photography



ce photography

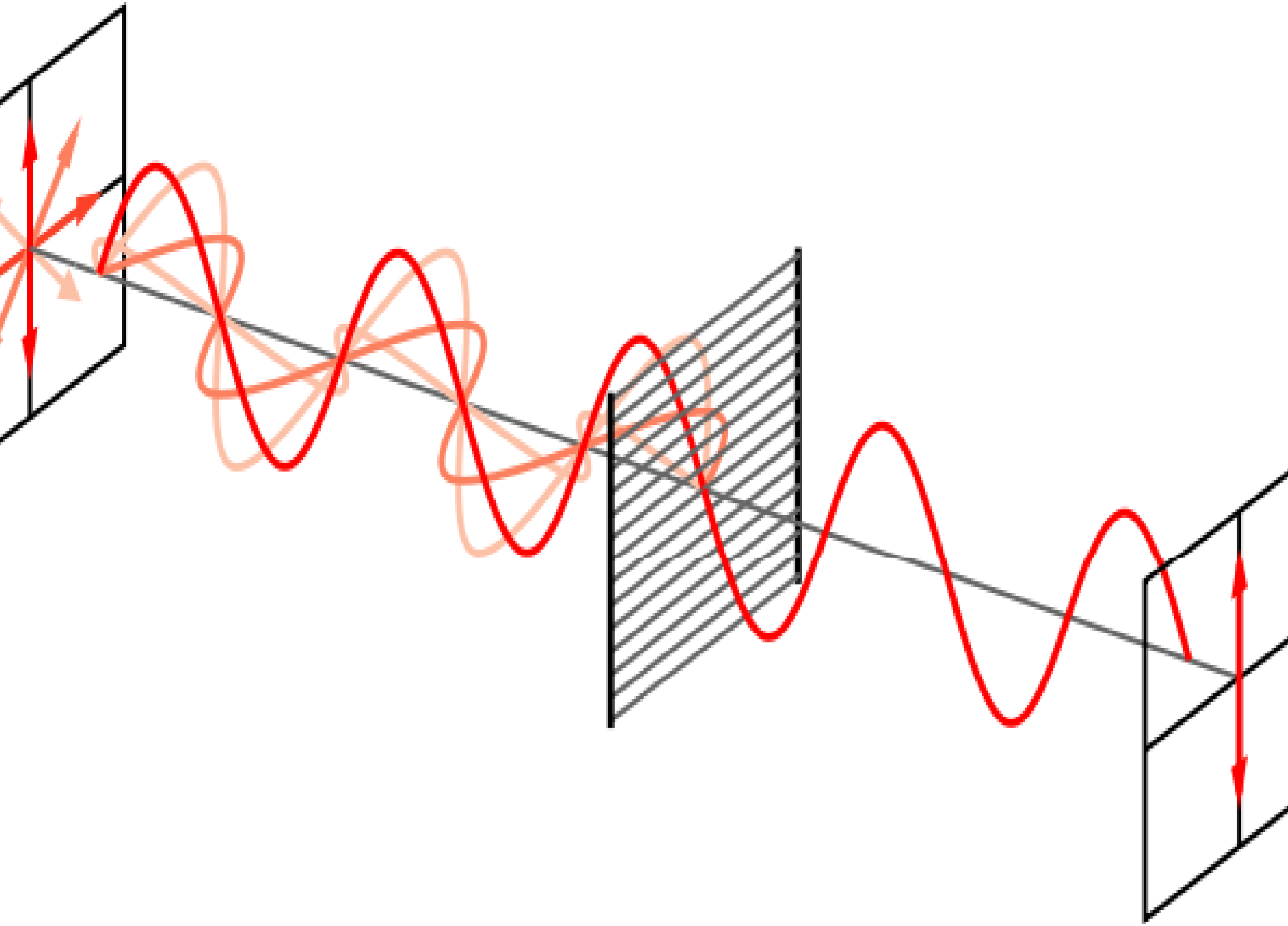
lar extraction through differential cros

ation: How to create perfect specmap

equency normal map detail

extraction through differential cross polorization

- larizing filter + tripod
- character down and face them into the afternoon sun
- our camera at 90* to sun angle
- olarizer until you see max sheen and max specular b
- gles on filter, they'll be 90* apart
- ne at 'open', quickly rotate 90* to 'closed' shoot again
- o Photoshop, stabilize images over top of each other
- erence multiply function
- ate and add contrast
- erfect specular capture !!



ng 5 minutes from Z-Brush to XSI vide

ng 7 minute XSI workflow video

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n rendertree interface: Only display

s

erly display normal maps in realtime v

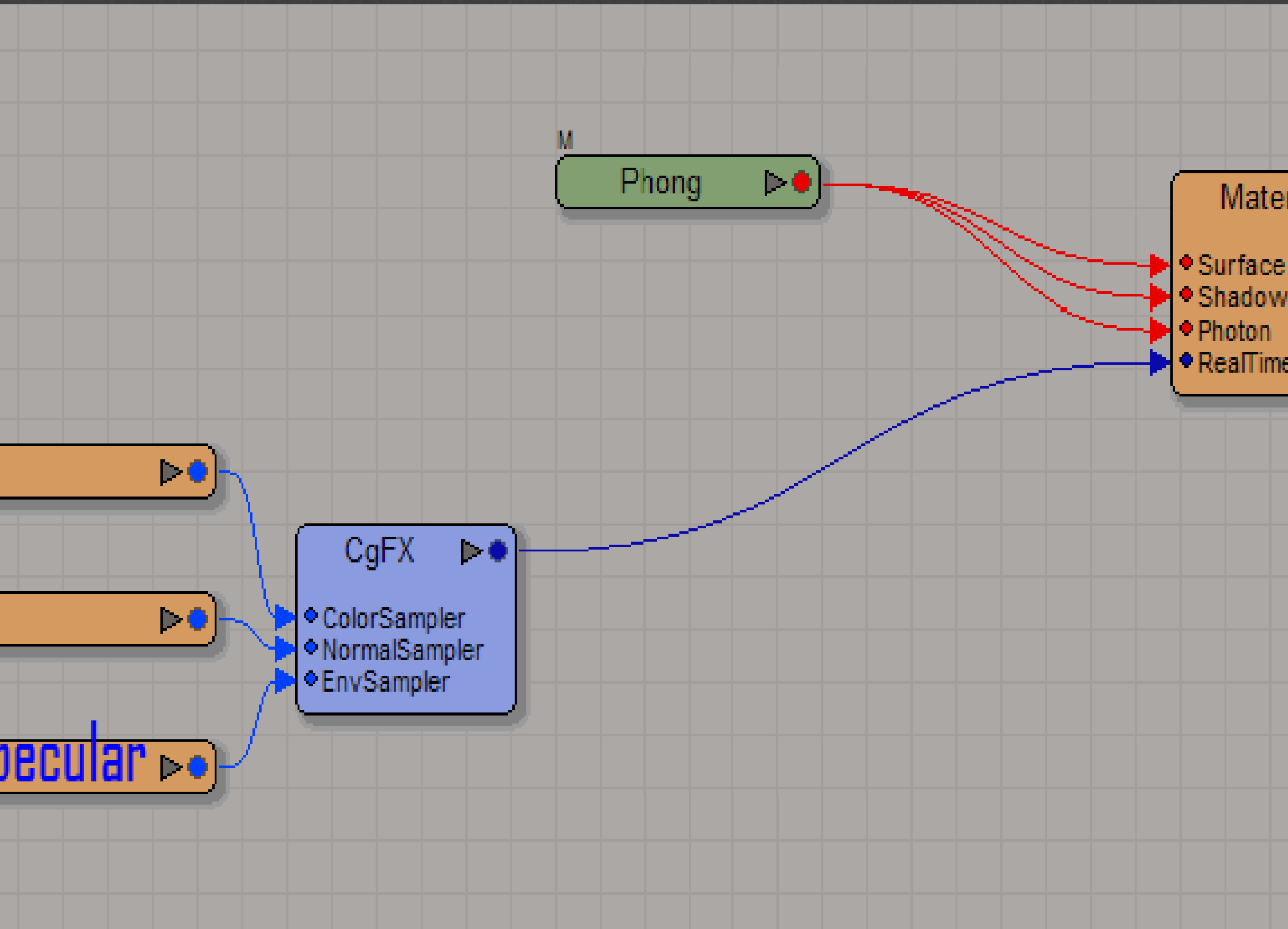
lay requirements:

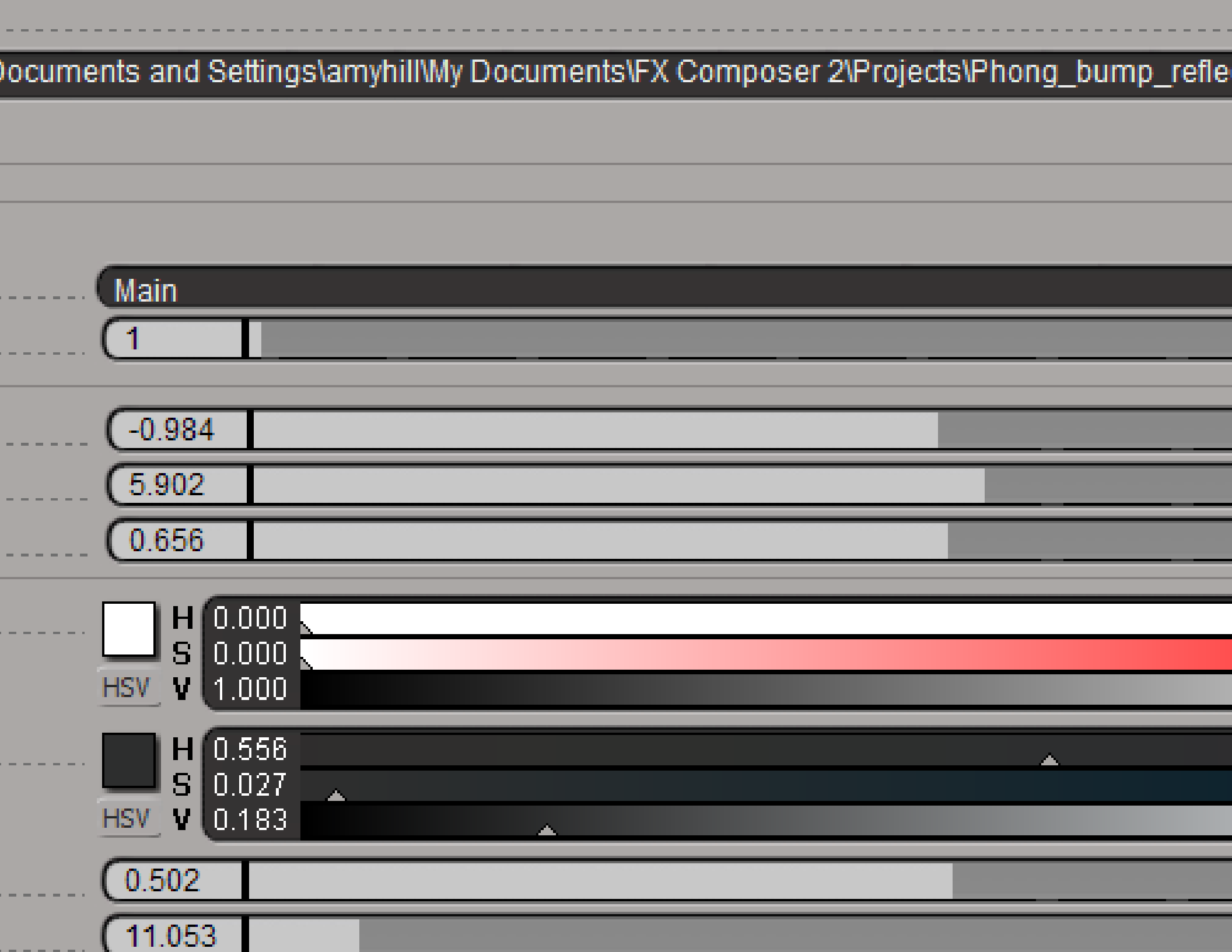
es

nelper objects / nulls

eframes

nera safe guides


M
Phong
Surface
Shadow
Photon
RealTime
CgFX
ColorSampler
NormalSampler
EnvSampler
pecular


Documents and Settings\amyhill\My Documents\FX Composer 2\Projects\Phong_bump_refle
Main
1
-0.984
5.902
0.656
H
S
HSV
V
0.000
0.000
1.000
H
S
HSV
V
0.556
0.027
0.183
0.502
11.053