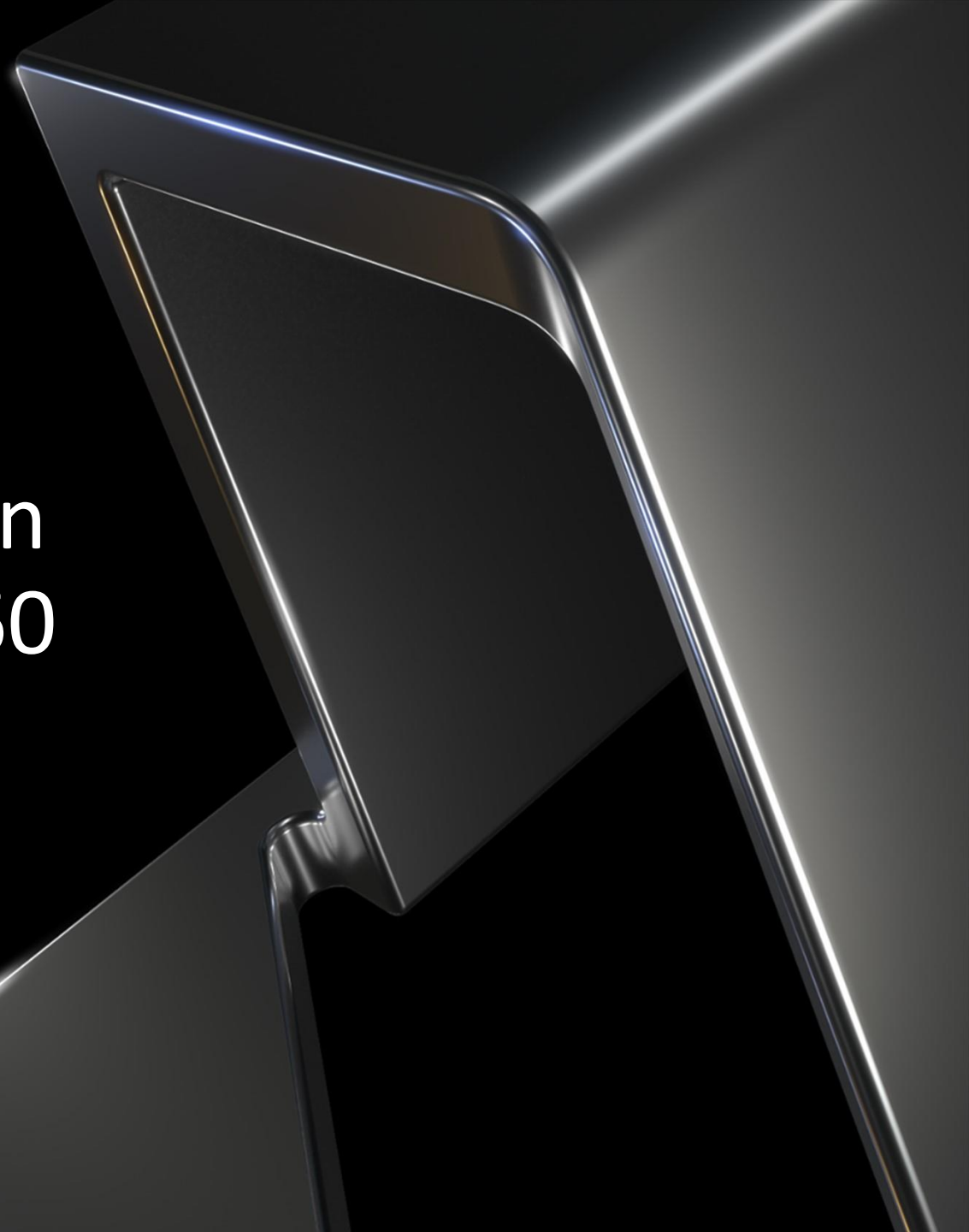


CP500033 - Generative Design Visualization: From Fusion 360 to 3ds Max to the Client

Steven Schain

The 3D Professor | steve@sli-3d.com





Steven Schain

Designer / Trainer

- Teaching 3ds since 3D Studio Dos R3.
- Autodesk Certified Instructor since 1998.
- Trainer – “The 3D Professor” (3ds Max, Inventor, Fusion 360, Maya, AutoCAD)
- Content developer for CADLearning since 2010 (M&E / Mechanical Design)
- 10 Year AU veteran

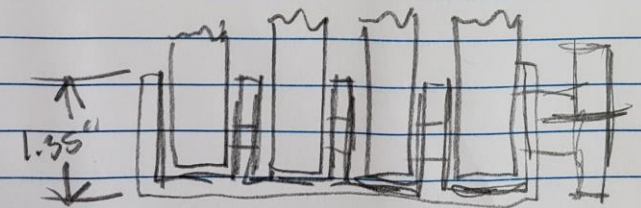
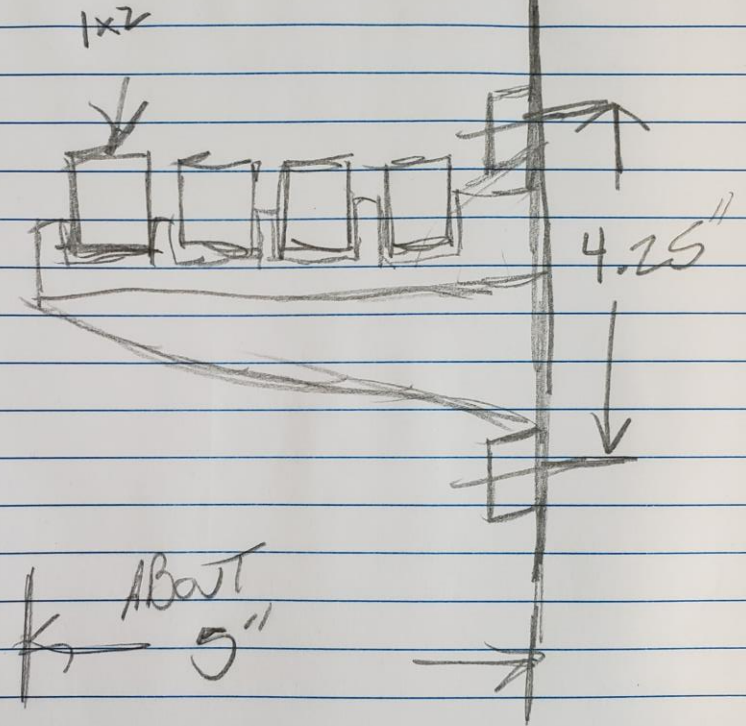
LEARNING OBJECTIVES

- Discover the basics for working with Generative Design in Fusion 360
- Discover the connection between Fusion 360 and 3ds Max for an optimal design workflow
- Learn how to import a Fusion 360 model into 3ds Max 2022
- Learn how to create and render animations of the final design using Arnold

Project Concept

- Unique shelf bracket
- Use four 1" x 2" Cherry wood
- Regular shape, but unique design desired
- Use standard mounting hardware

Shelf Bracket

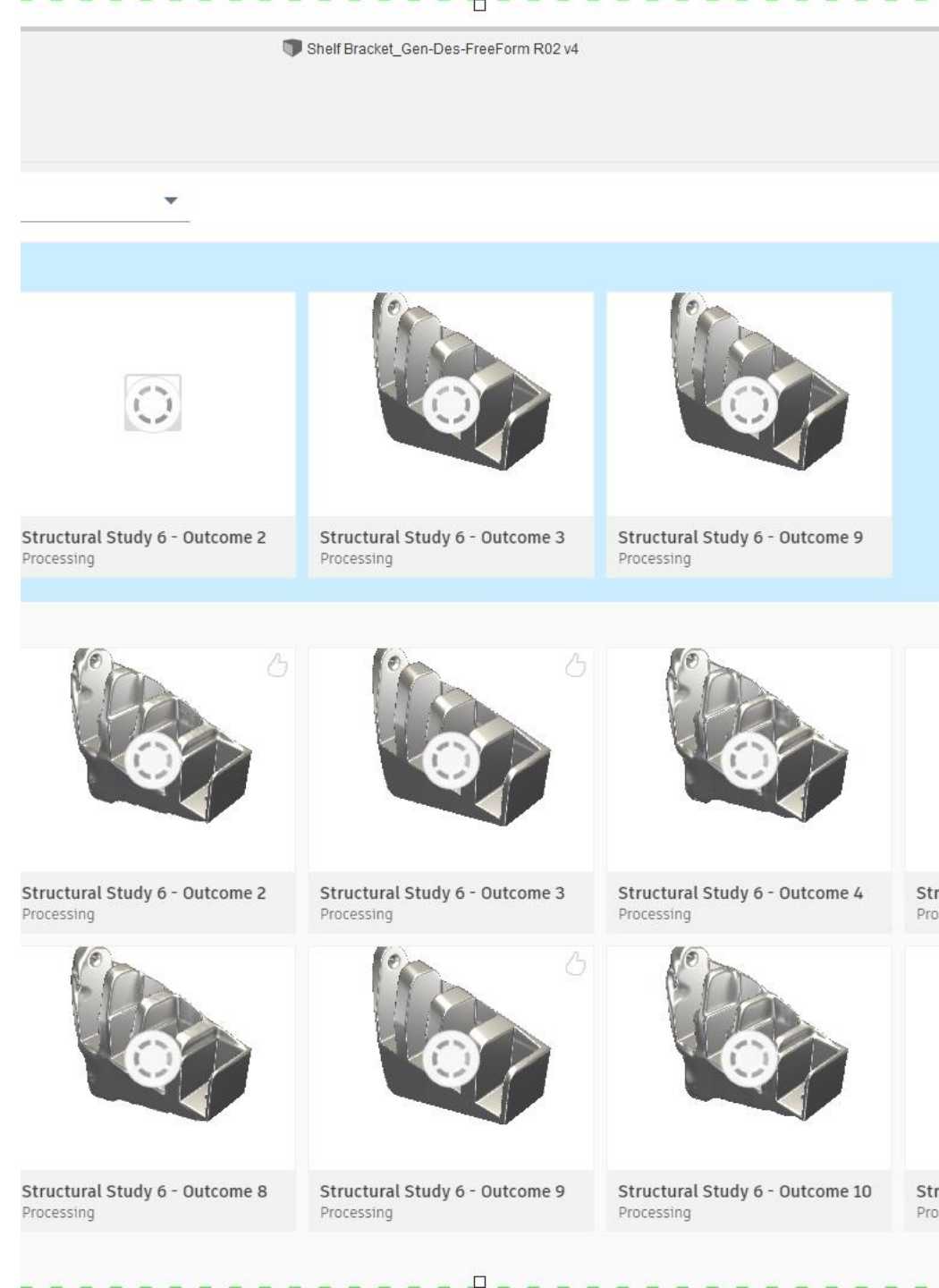


Generative Design in Fusion 360

Generative Design in Fusion 360

What is Generative Design?

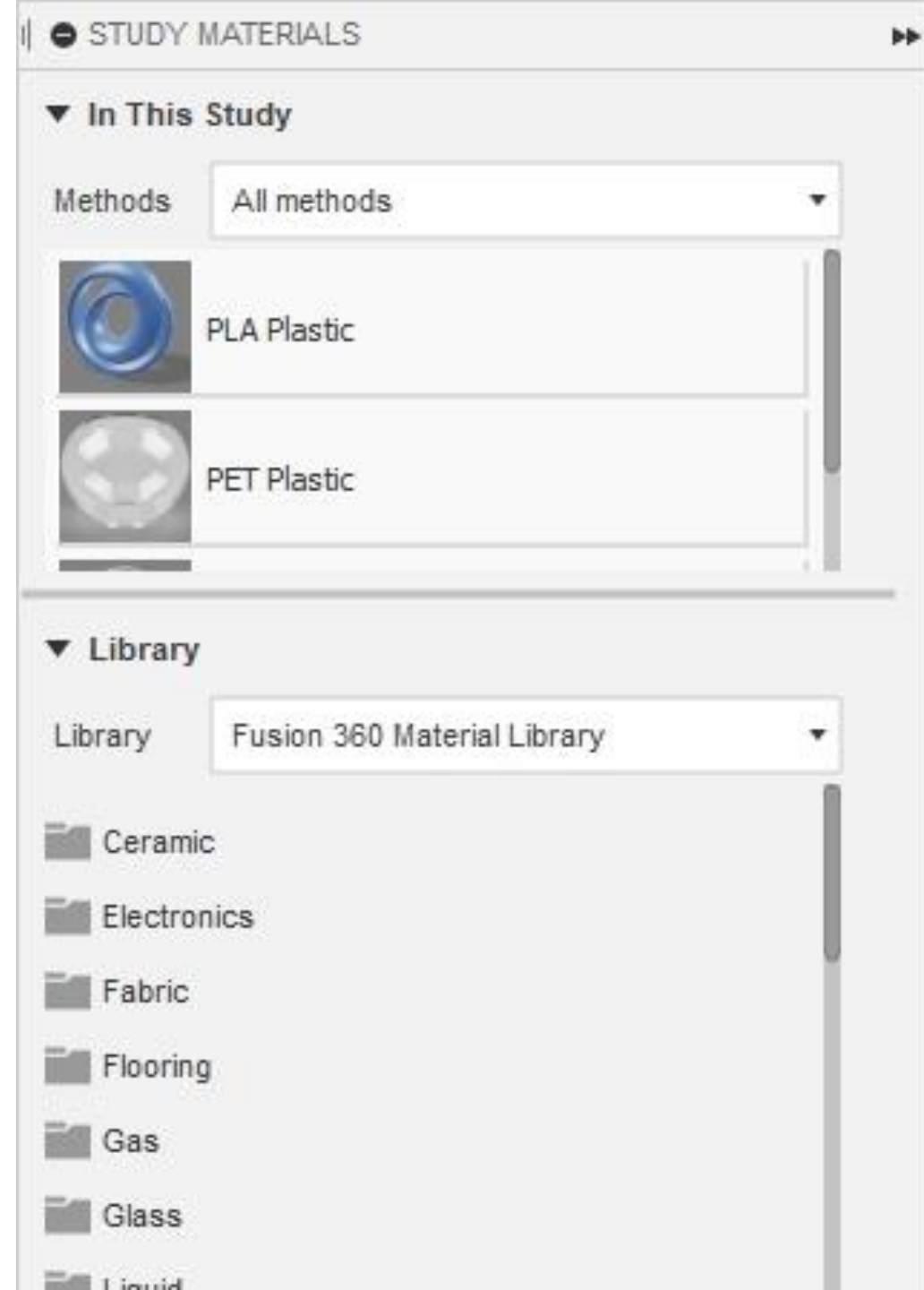
- A Design Exploration Tool
 - Thousands of unique designs
- Mimics evolutionary approach to design
- Cloud based
- Multiple Applications
 - Automotive
 - Aerospace
 - Consumer Goods
 - Construction
 - Artistic



Generative Design in Fusion 360

What is Generative Design?

- Define Parameters:
 - Design objectives
 - Functional requirements
 - Constraints
 - Material type
 - Performance requirements
 - Load forces
 - Manufacturing method

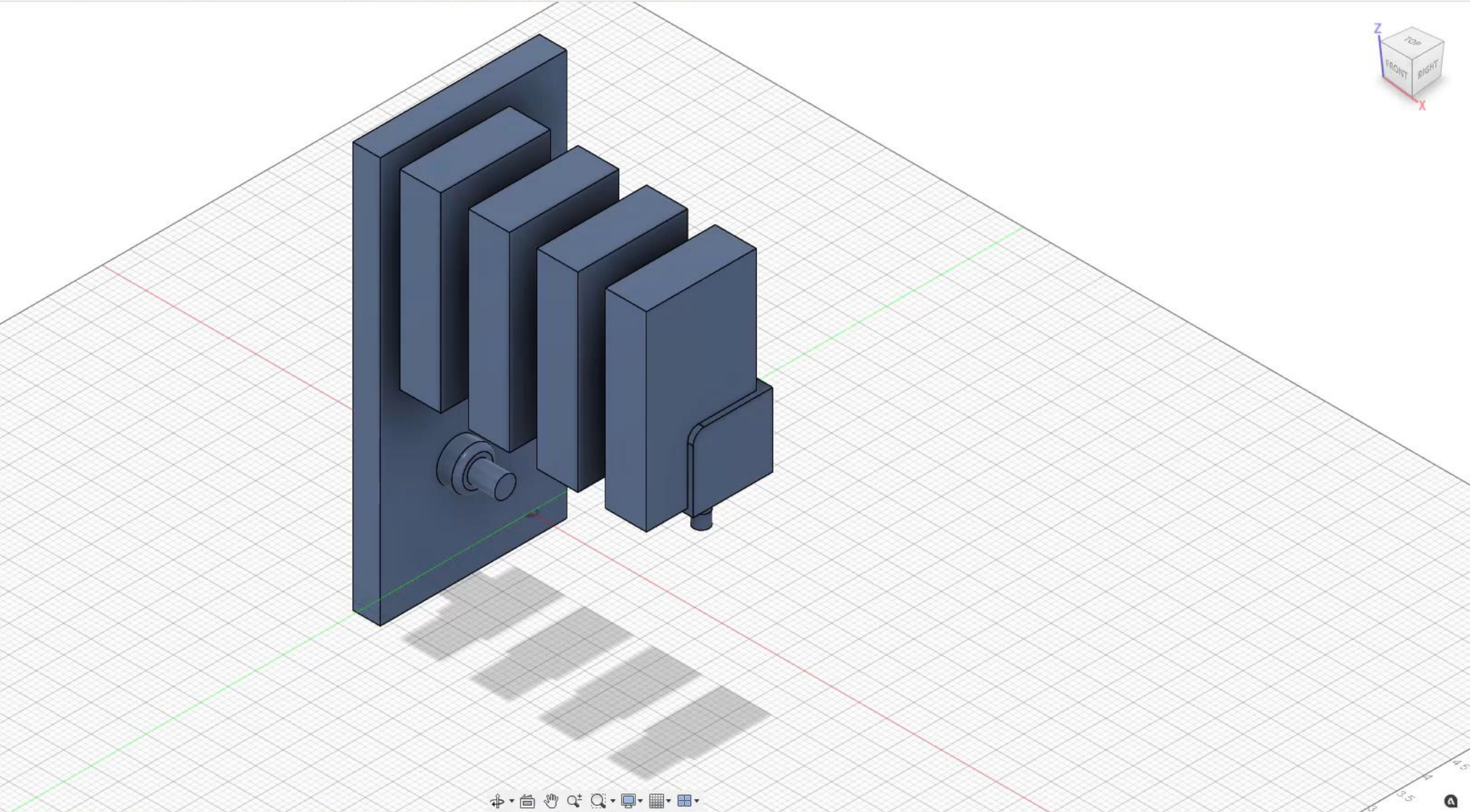




Generative Design Process

BROWSER

- Shelf Bracket_Gen-Des-...
- Document Settings
- Named Views
- Origin
- Bodies
 - Bracket
- Generative Design Geometry:1



Working with the Explorer

EXPLORE

GENERATIVE DESIGN

DISPLAY

EXPORT

FINISH EXPLORE





Outcome filters

Sort by Processing status

- Processing status
 - Converged (6)
 - Completed (5)
- Study
 - Structural Study 6
- Visual similarity
 - Group 1 (3)
 - Group 2 (3)
 - Group 3 (4)
 - Unique (1)
- Design file
- Manufacturing method
 - Unrestricted
 - Additive
 - 3 axis milling
- Materials
 - Aluminum 6061
 - Aluminum AlSi10...
 - PET Plastic
 - PLA Plastic
- Objective ranges

Recommended outcomes


Compare

 Structural Study 6 - Outcome 1 Converged	 Structural Study 6 - Outcome 7 Converged	 Structural Study 6 - Outcome 10 Converged	 Structural Study 6 - Outcome 5 Completed
--	---	---	--

Converged

 Structural Study 6 - Outcome 1 Converged	 Structural Study 6 - Outcome 3 Converged	 Structural Study 6 - Outcome 6 Converged	 Structural Study 6 - Outcome 7 Converged	 Structural Study 6 - Outcome 9 Converged	 Structural Study 6 - Outcome 10 Converged
--	---	--	--	--	---

Completed

 Structural Study 6 - Outcome 2 Completed	 Structural Study 6 - Outcome 4 Completed	 Structural Study 6 - Outcome 5 Completed	 Structural Study 6 - Outcome 8 Completed	 Structural Study 6 - Outcome 11 Completed
--	---	--	--	---

Volume (in³)
3.65 17.25

Mass (lbmass)
0.173 1.681

Max von Mises stress (psi)
1,053.7 19,303.4

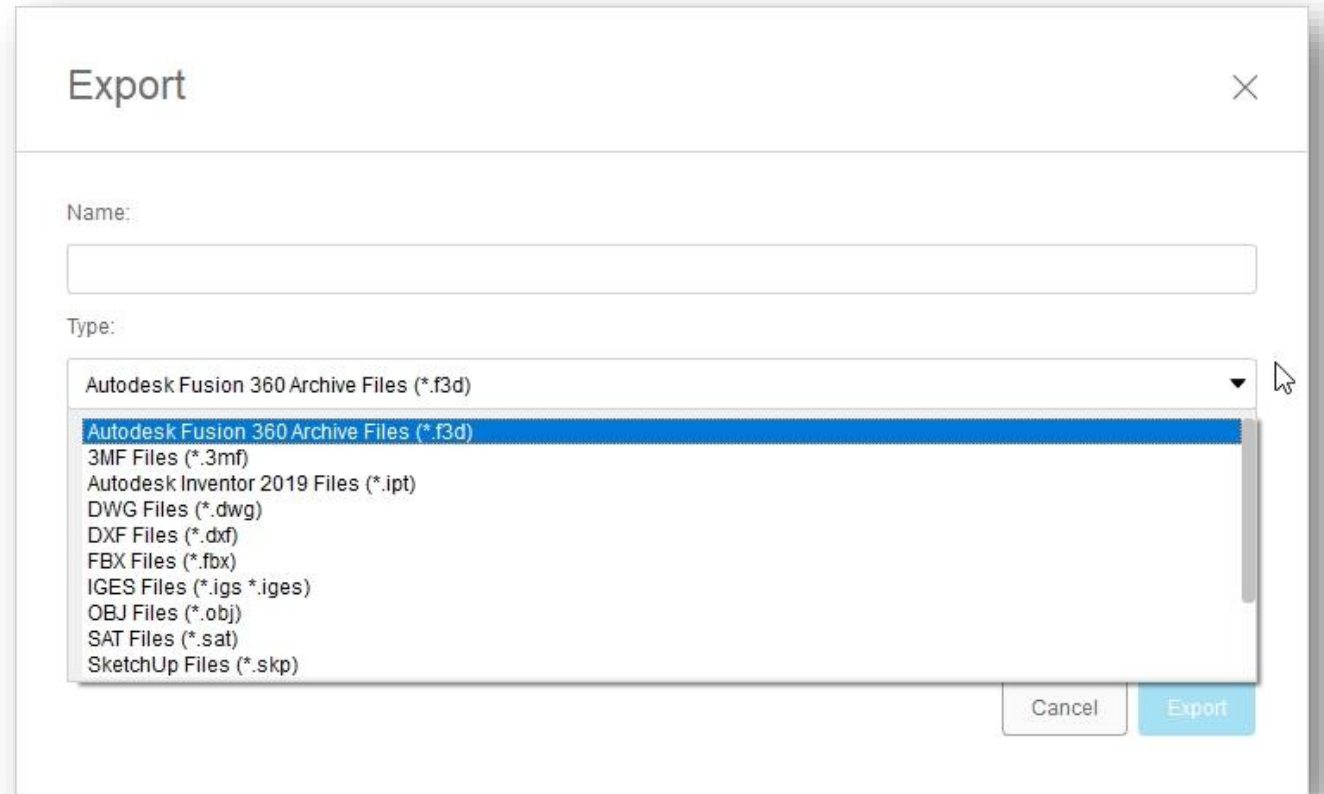
Min factor of safety
2 2.71



Fusion to 3ds Max Connection

Fusion to 3ds Max Connection

- Convert to Design
- Export from Fusion 360
- File formats available
 - Inventor
 - STEP
 - DWG
 - OBJ



OUTCOME VIEW

GENERATIVE DESIGN



DISPLAY ▾



SHOW ▾



COMPARE ▾



TAG ▾



CREATE ▾



FINISH OUTCOME VIEW ▾



Design ready: click to continue



You are viewing the Design Preview


Structural Study... - Outcome 10
 Iteration 33 (final)

Properties

Status	Converged
Material	Aluminum AISi10Mg
Orientation	-
Manufacturing method	Unrestricted
Visual similarity	Group 3
Production volume (pcs.)	-
Piece part cost	-
Range (USD)	-
Median (USD)	-
Fully burdened cost	-
Range (USD)	-
Median (USD)	-
Volume (in ³)	3.66
Mass (lbmass)	0.353
Max von Mises stress (psi)	1,741
Factor of safety limit	2
Min factor of safety	19.99
Max displacement global (in)	0

Cost estimates powered by **āPriori**

Job Status



Data

Generative Designs

Simulations

Name	Job	Status	Action
▾ Shelf Bracket_Gen-Des-FreeForm R02 - Generative M... Processing the outcome - Outcome 10 - 33	Create Design	Complete	Open Design
▸ Shelf Bracket_Gen-Des-FreeForm R02 - Generative M...	On Cloud	Complete	View Outcomes

Close



The background features a dark, almost black, 3D-rendered scene with several metallic, reflective surfaces. These surfaces are arranged in a complex, angular composition, with some elements appearing to be part of a larger structure or machinery. The lighting is dramatic, highlighting the sharp edges and creating bright, elongated reflections on the polished metal. The overall aesthetic is sleek and modern, typical of high-end 3D architectural or industrial visualization.

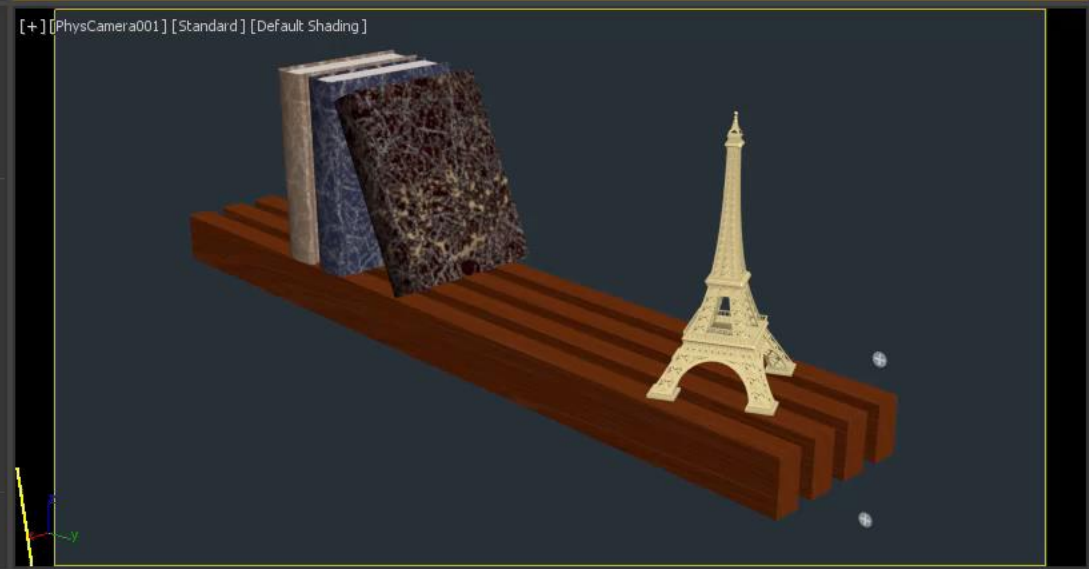
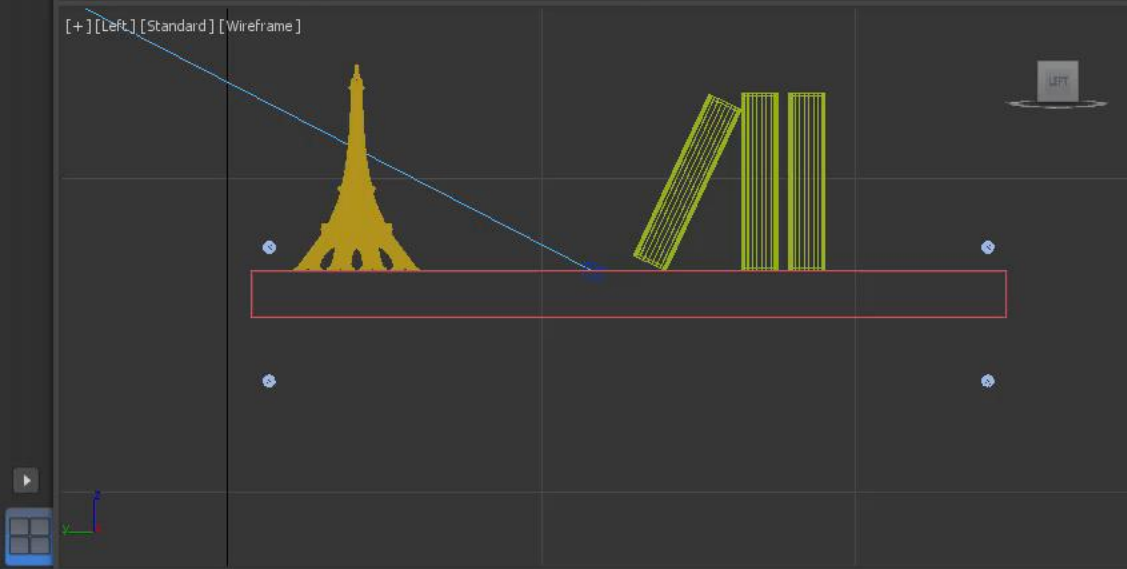
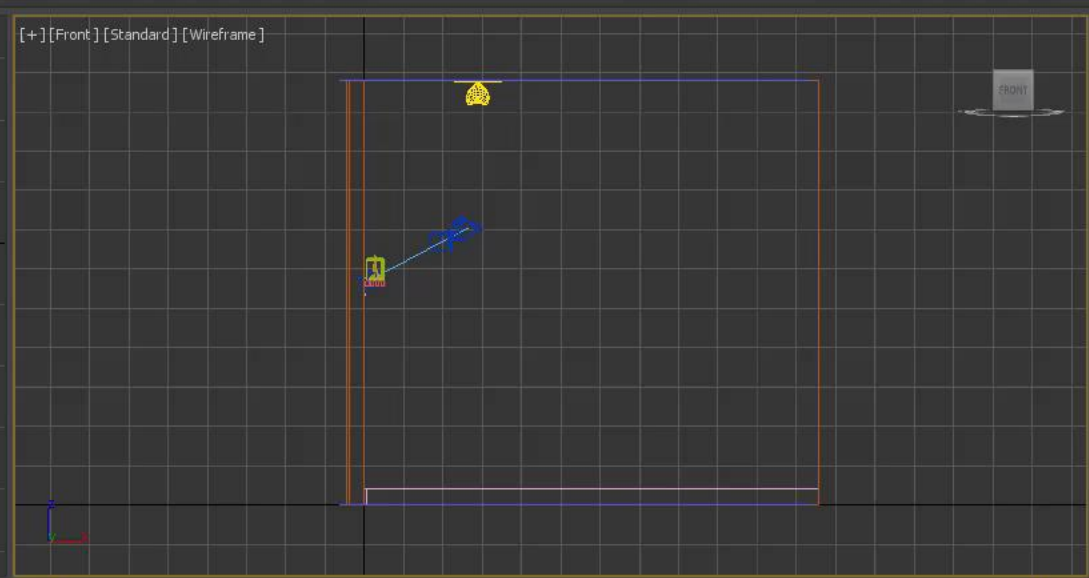
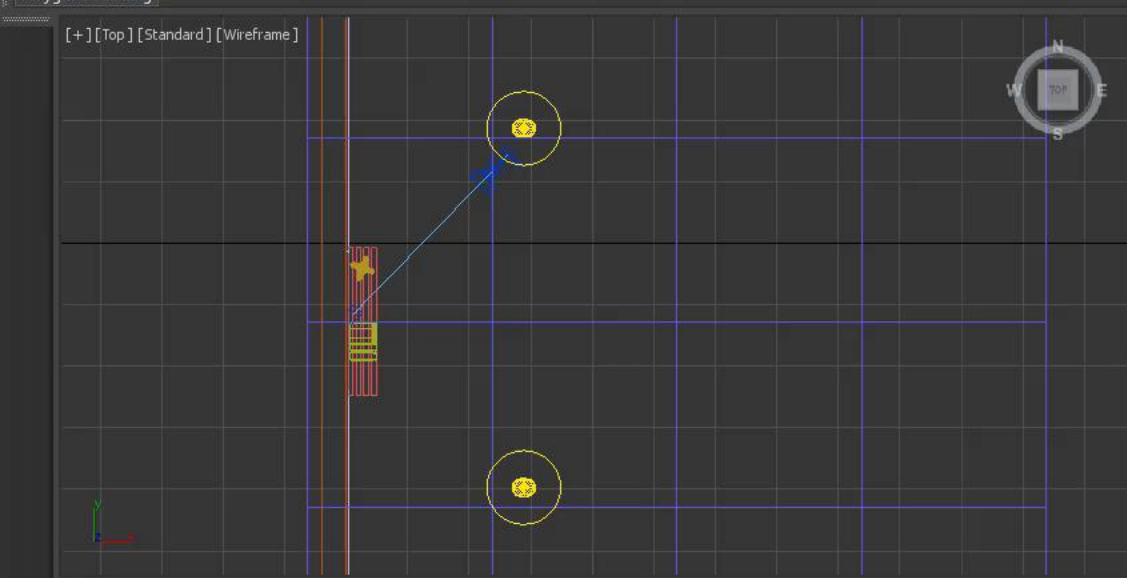
Importing into 3ds Max

Fusion to 3ds Max Connection

- Import into 3ds Max
- File formats available
 - Inventor
 - STEP
 - DWG
 - OBJ
- Position
- Add Materials

A screenshot of a software application's file format list. The list is titled "All Formats" and contains a variety of file types supported for import, including 3D models, CAD drawings, and animation files. The list is displayed in a dark-themed window with a blue header.

```
All Formats
Autodesk (*.fbx)
3D Studio Mesh (*.3ds,*.prj)
Alembic (*.abc)
Adobe Illustrator (*.ai)
Catia V5 (*.catpart,*.catproduct,*.cgr)
Autodesk Collada (*.dae)
LandXML / DEM / DDF (*.dem,*.xml,*.ddf)
AutoCAD Drawing (*.dwg,*.dxf)
Legacy AutoCAD (*.dwg)
Flight Studio OpenFlight (*.flt)
Motion Analysis HTR File (*.htr)
IGES (*.ige,*.igs,*.iges)
Autodesk Inventor (*.ipt,*.iam)
JT (*.jt)
Catia V4 (*.model,*.mdl,*.session,*.exp,*.dlv,*.dlv3,*.dlv4)
gw::OBJ-Importer (*.obj)
ProE (*.prt,*.prt.*,*.neu,*.g,*.asm)
UG-NX (*.prt)
Revit importer (*.rvt)
ACIS SAT: (*.sat)
3D Studio Shape (*.shp)
SketchUp (*.skp)
SketchUp (2015 & older) (May be Removed) (*.skp)
SolidWorks (*.sldprt,*.sldasm)
StereoLitho (*.stl)
STEP (*.stp,*.step)
Motion Analysis TRC File (*.trc)
Autodesk Alias (*.wire)
VRML (*.vrl,*.vrz)
```

Standard Primitives

Object Type

- AutoGrid
- Box
- Cone
- Sphere
- GeoSphere
- Cylinder
- Tube
- Torus
- Pyramid
- Teapot
- Plane
- TextPlus

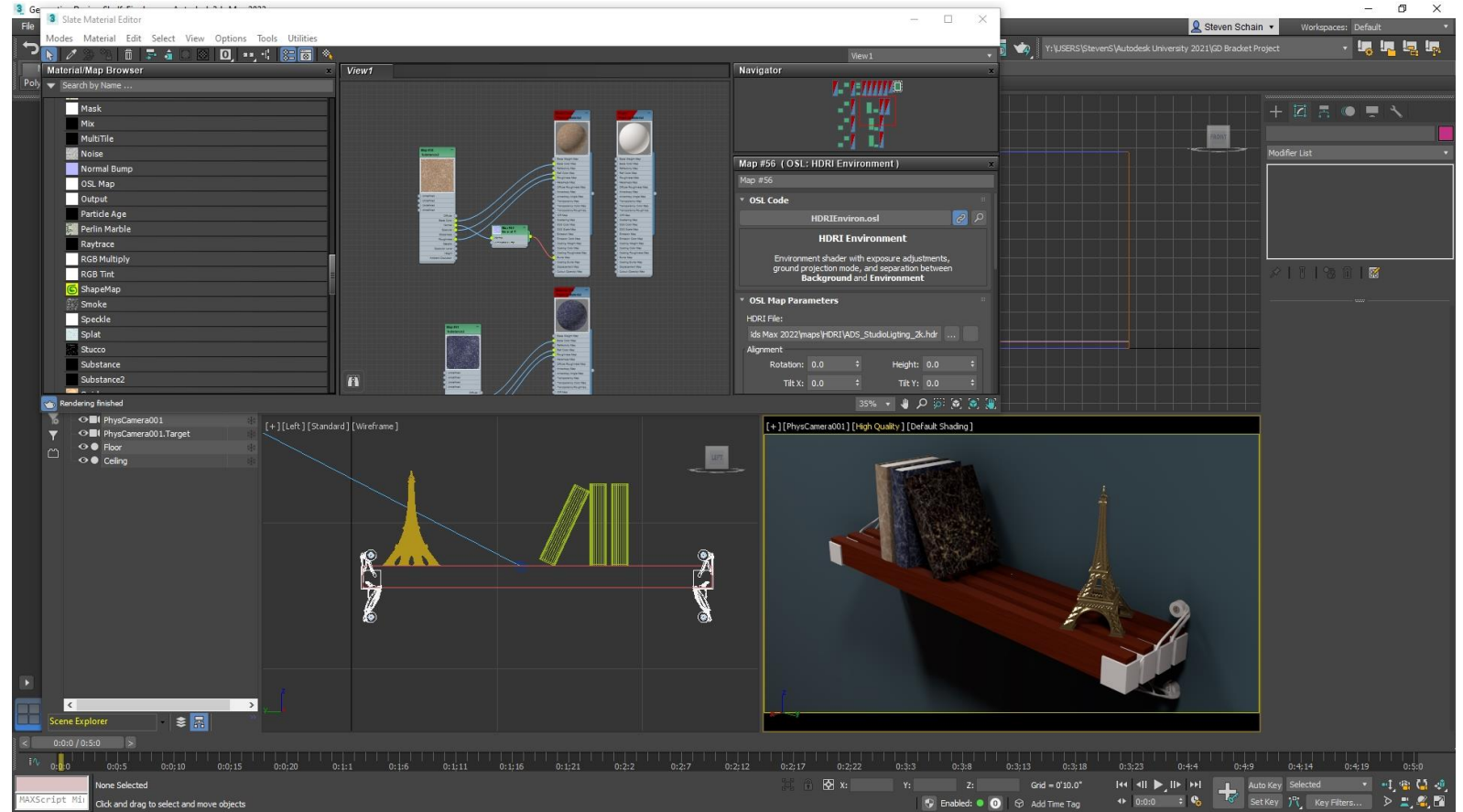
Name and Color

The background features several metallic, reflective geometric shapes in shades of grey and black. These shapes are rendered with high contrast, showing bright highlights and deep shadows, giving them a three-dimensional appearance. The shapes are angular and layered, creating a complex, abstract composition.

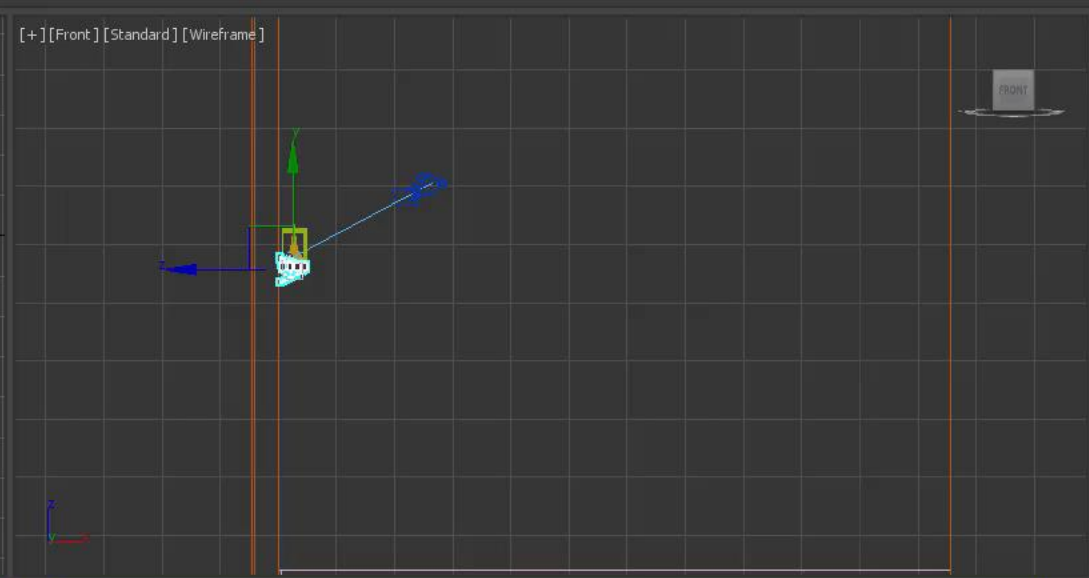
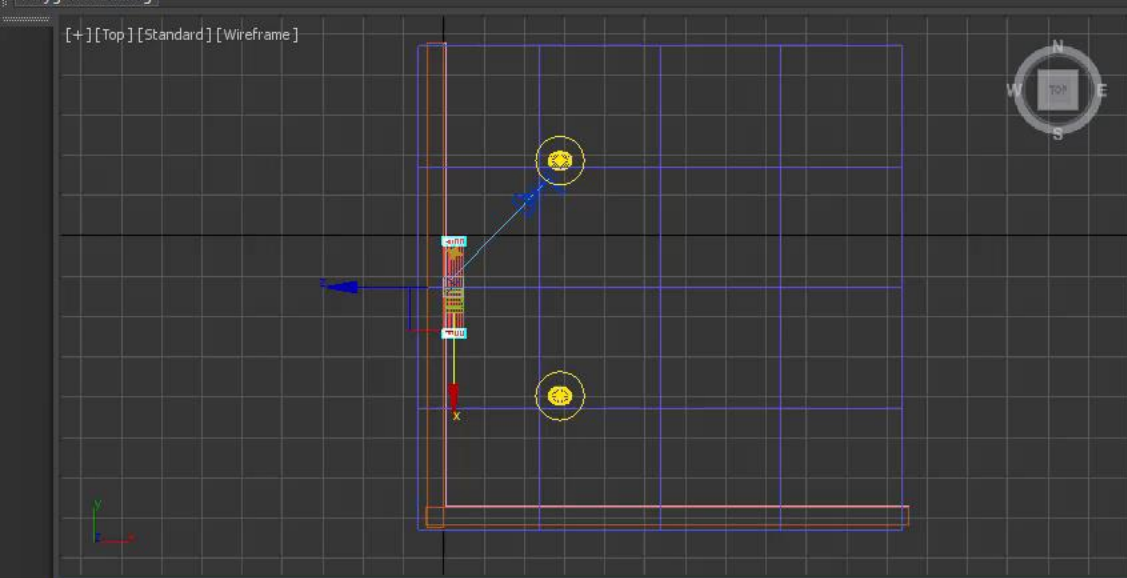
Render in 3ds Max

Render with 3ds Max

- Configure materials
- Add lighting
- Configure Arnold
- Render scene



Modeling Freeform Selection Object Paint Populate

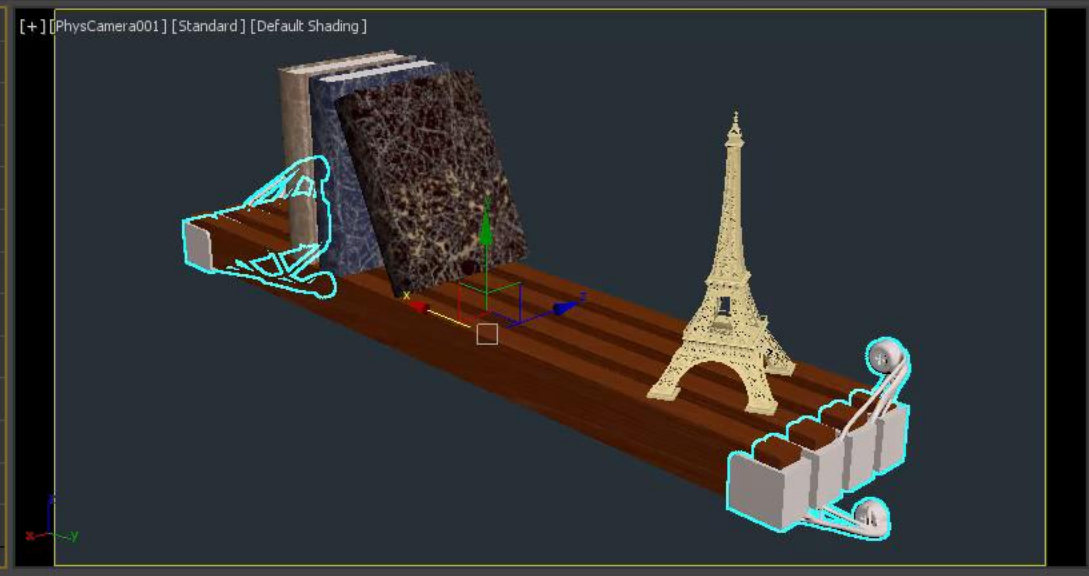
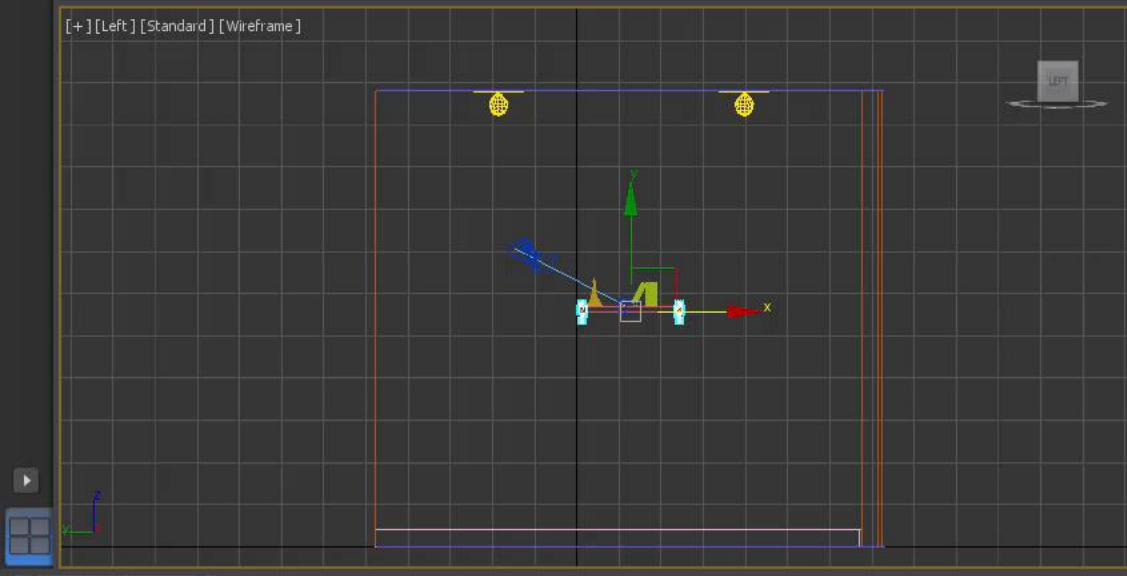


2 Objects Selected

Modifier List

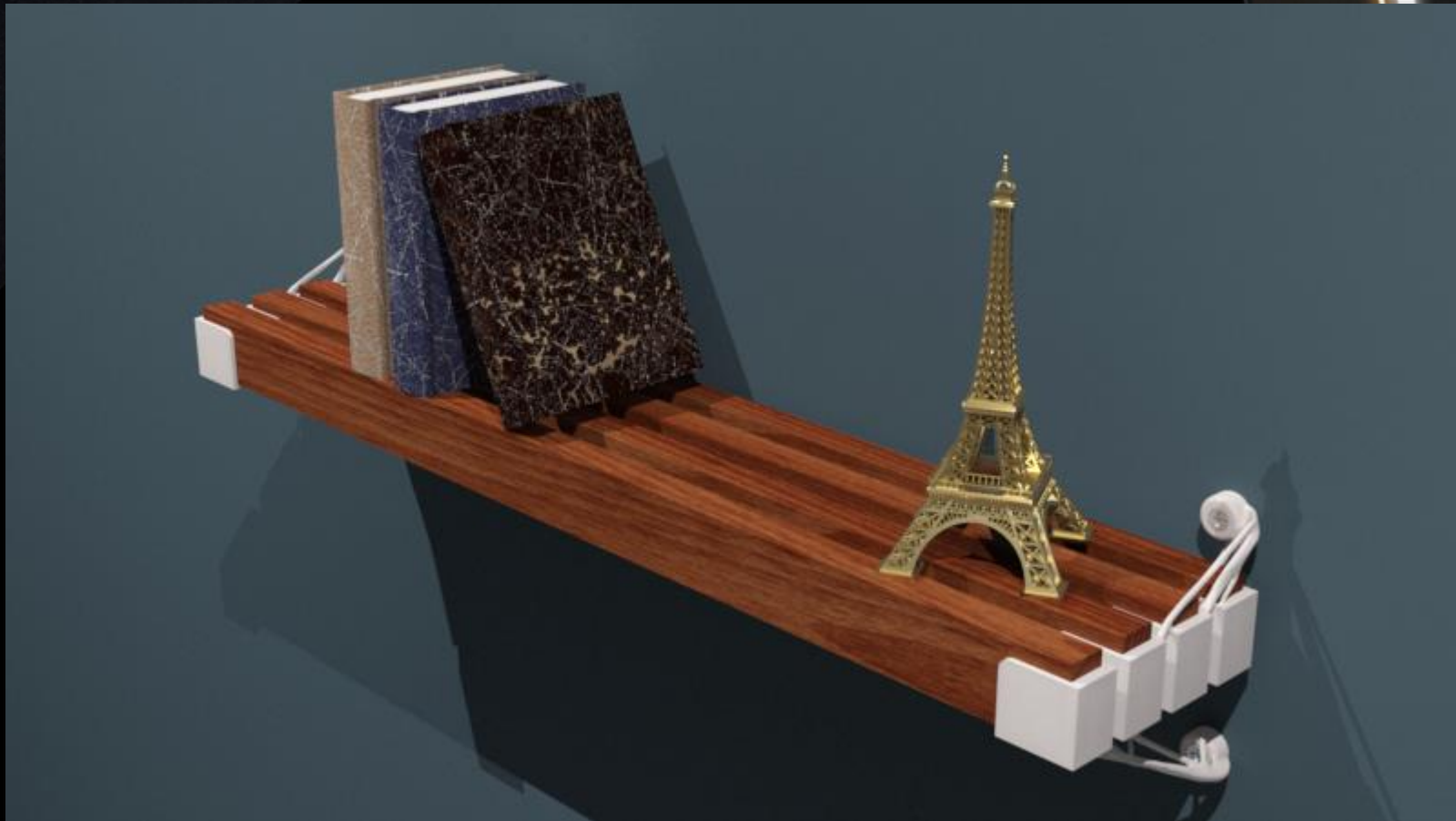
[Icons]

This panel shows the current selection status and the modifier list. It includes icons for selection, deletion, and other object manipulation tools.



Thank You

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The 3D Professor
steve@sli-3d.com



The background features a dark, metallic, geometric design with sharp angles and reflective surfaces, creating a futuristic and industrial aesthetic. The text is centered in a clean, white, sans-serif font.

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