

# 99-353 SolidWorks and Laser Cutting

## Making 3D Models

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# Cardboard

- Ambiguous term avoided by professionals because it covers a wide range of materials.
- For our purposes: brown corrugated paper around 1/8 inch thick.
- Lighter and cheaper (and weaker) than wood.
- Foldable! Laser cut parameters:
  - 20 mm/sec at 45% power to cut
  - 50 mm/sec at 25% power to fold
- Unlike paper origami, with laser cut cardboard all folds must be in the same direction.

# Laser Cut 3D Plate Models



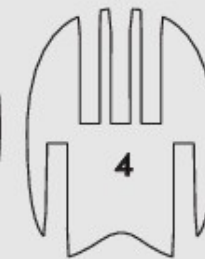
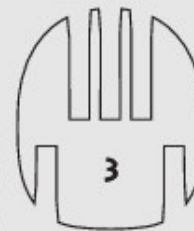
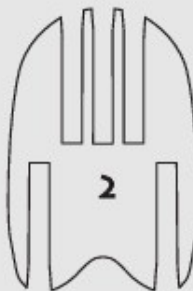
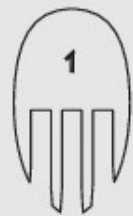
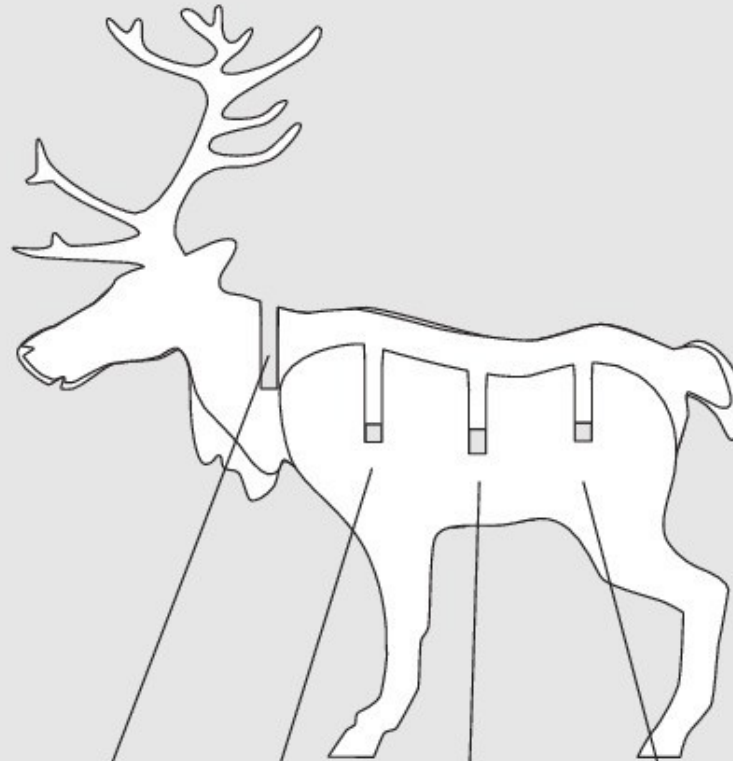
# Dinosaurs Are Always Popular





# Reindeer from **Thingiverse**





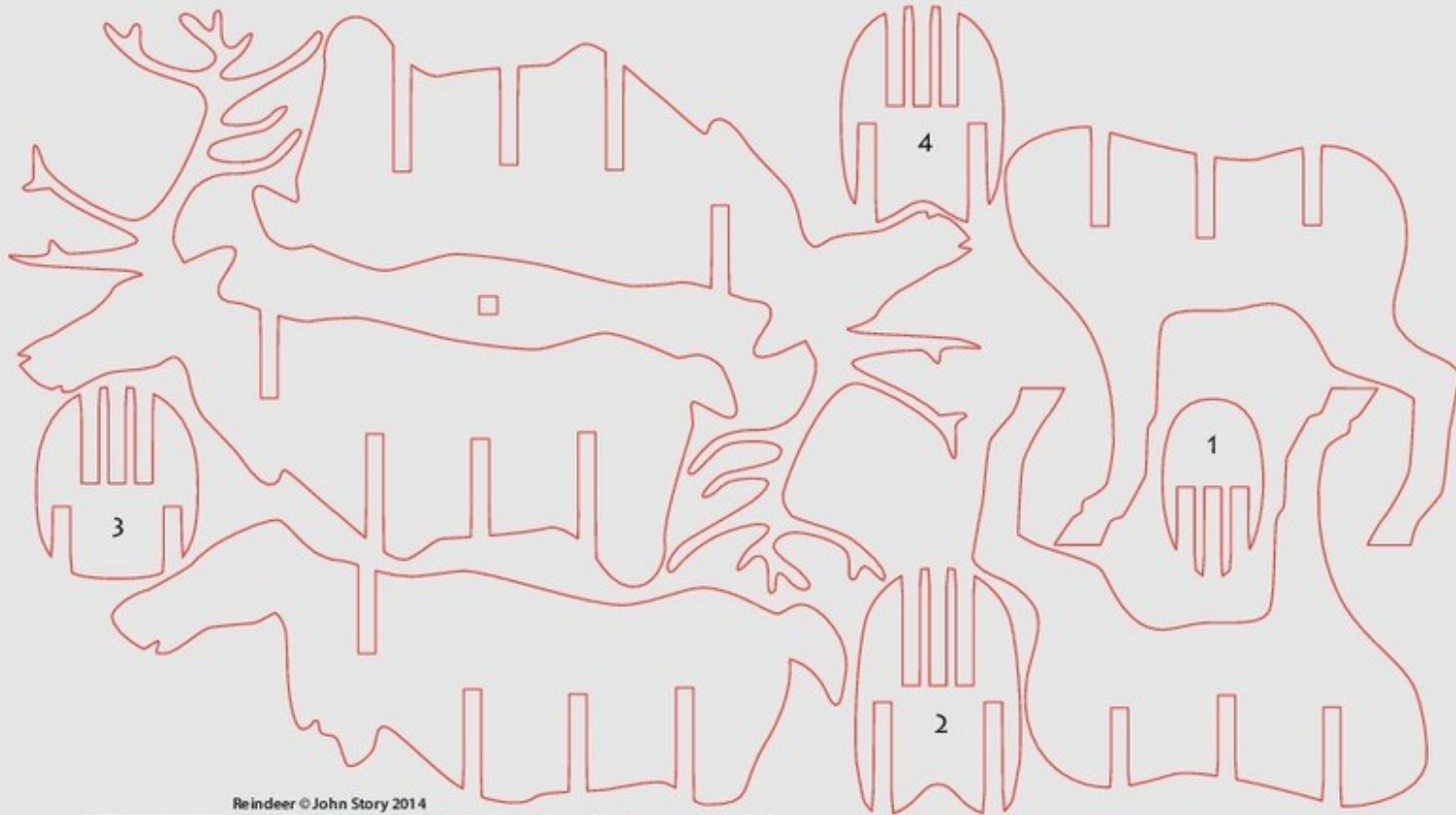
Reindeer © John Story 2014

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# Hand Bowl Sculpture



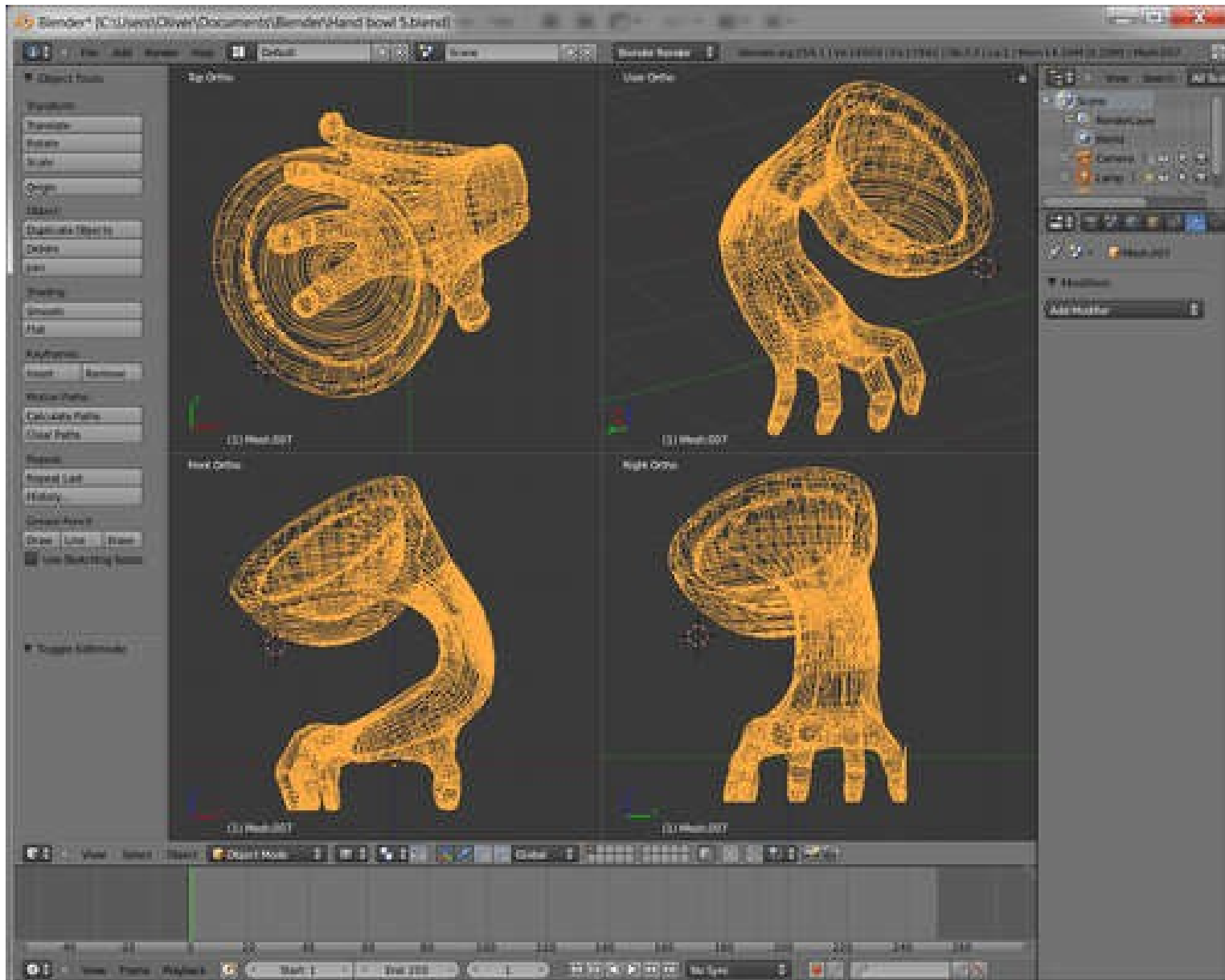


# Modeling the Hand

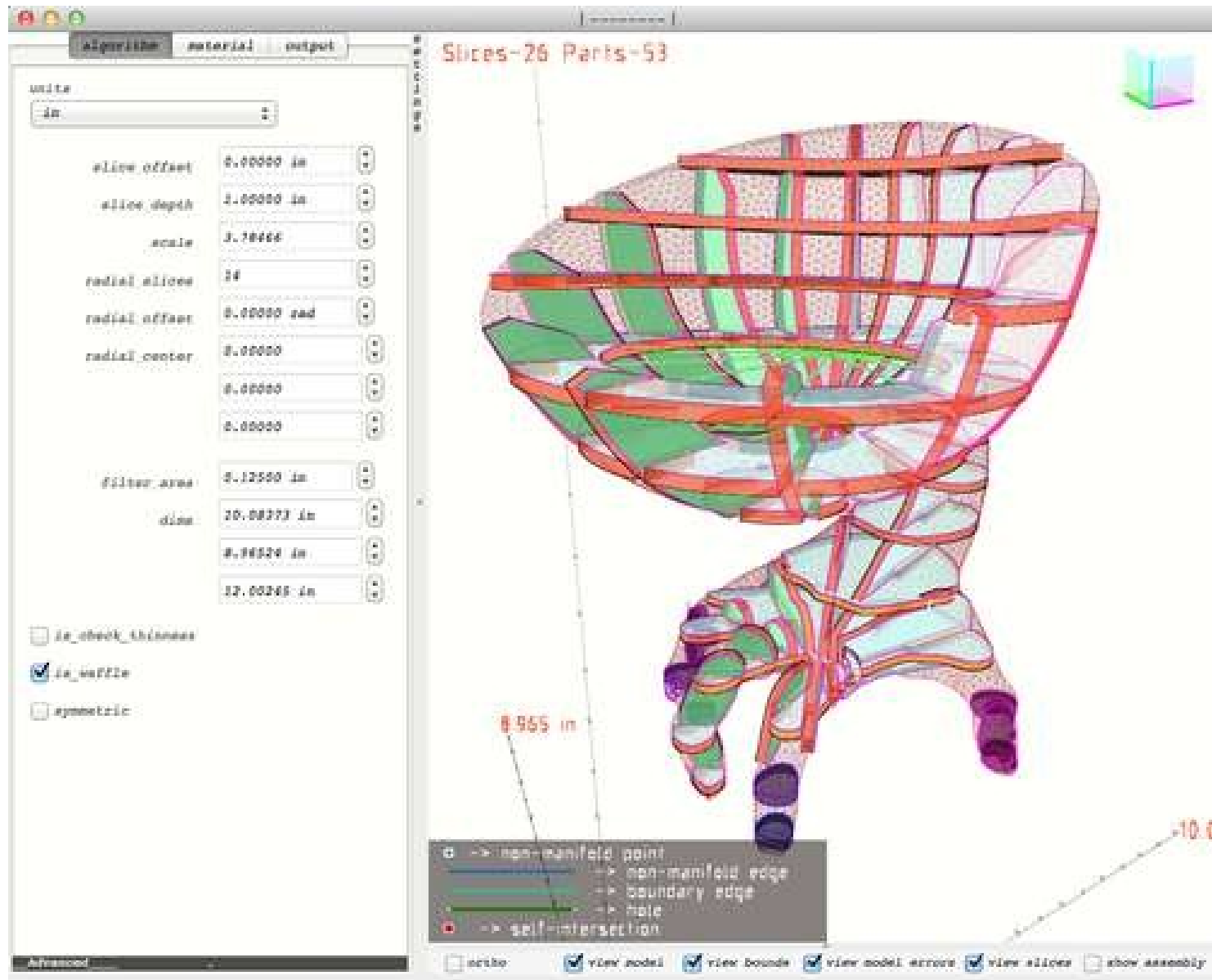


Images from  
Ponoko.com

# Adding the Bowl (Blender)

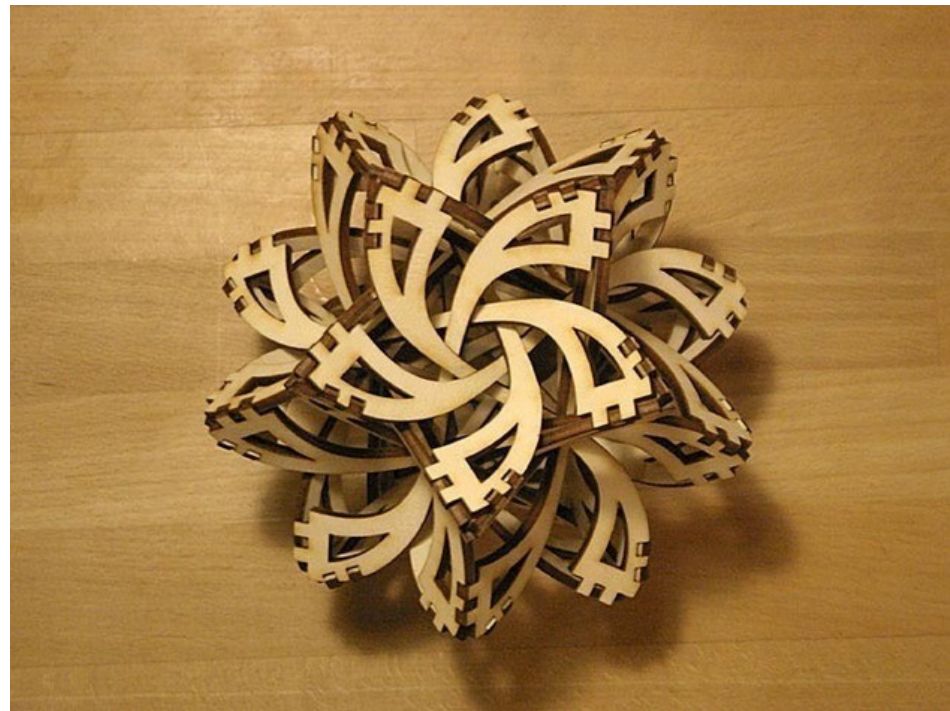


# 123DMake Slice Tool



# Thingiverse

- Site for exchanging designs of make-able things: artwork, puzzles, toys, tools, etc.
- Mostly 3D printing, but some laser cut stuff.
- [www.Thingiverse.com](http://www.Thingiverse.com) (owned by Makerbot)
- Frabjous sculpture:





# Free STL Files At Thingiverse

The screenshot shows the Thingiverse interface for a 3D model named "Arlo the good Dinosaur". The model is a blue, stylized dinosaur standing on a grid floor. The page includes a navigation bar with "Thingiverse", "DASHBOARD", "EXPLORE", "EDUCATION", and "CREATE" buttons, along with a search bar and "SIGN IN / JOIN" link. The model's title is "Arlo the good Dinosaur" by "donegal3d", published on May 4, 2016. A "Thingview" button is visible above the model. To the right, there is a "DOWNLOAD ALL FILES" button and a list of interactions: Like (20), Collect (21), Comment (0), I Made One (0), Remix It (0), and Share. Below this is a "Thing Apps Enabled" section with "Order This Printed" and "View All Apps" options. A progress bar at the bottom shows "Thing Files" as the active tab, with other tabs for "Thing Details", "Apps", "Comments", "Made", "Collections", and "Remixes". A table lists the file "Arlo.stl" with 287 downloads and a size of 13mb, last updated on 05-04-16. A Creative Commons Attribution license icon is also present.

Thingiverse DASHBOARD EXPLORE EDUCATION CREATE  SIGN IN / JOIN

**Arlo the good Dinosaur**  
by donegal3d, published May 4, 2016

Thingview

DOWNLOAD ALL FILES

- Like 20
- Collect 21
- Comment 0
- I Made One 0
- Remix It 0
- Share

Thing Apps Enabled

- Order This Printed
- View All Apps

Thing Details **Thing Files** Apps 0 Comments 0 Made 21 Collections 0 Remixes

File Name	Downloads	Size
<b>Arlo.stl</b> Last updated: 05-04-16	287	13mb

Arlo the good Dinosaur by donegal3d is licensed under the Creative Commons - Attribution license.

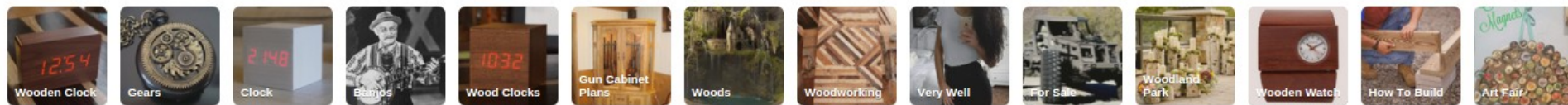
# Pinterest

- Pinterest has a huge collection of laser cut projects.
- Many are available for purchase via Etsy.
- Example: wooden gear clocks.
- Google “Pinterest laser cut”.

# Wooden Gear Clocks

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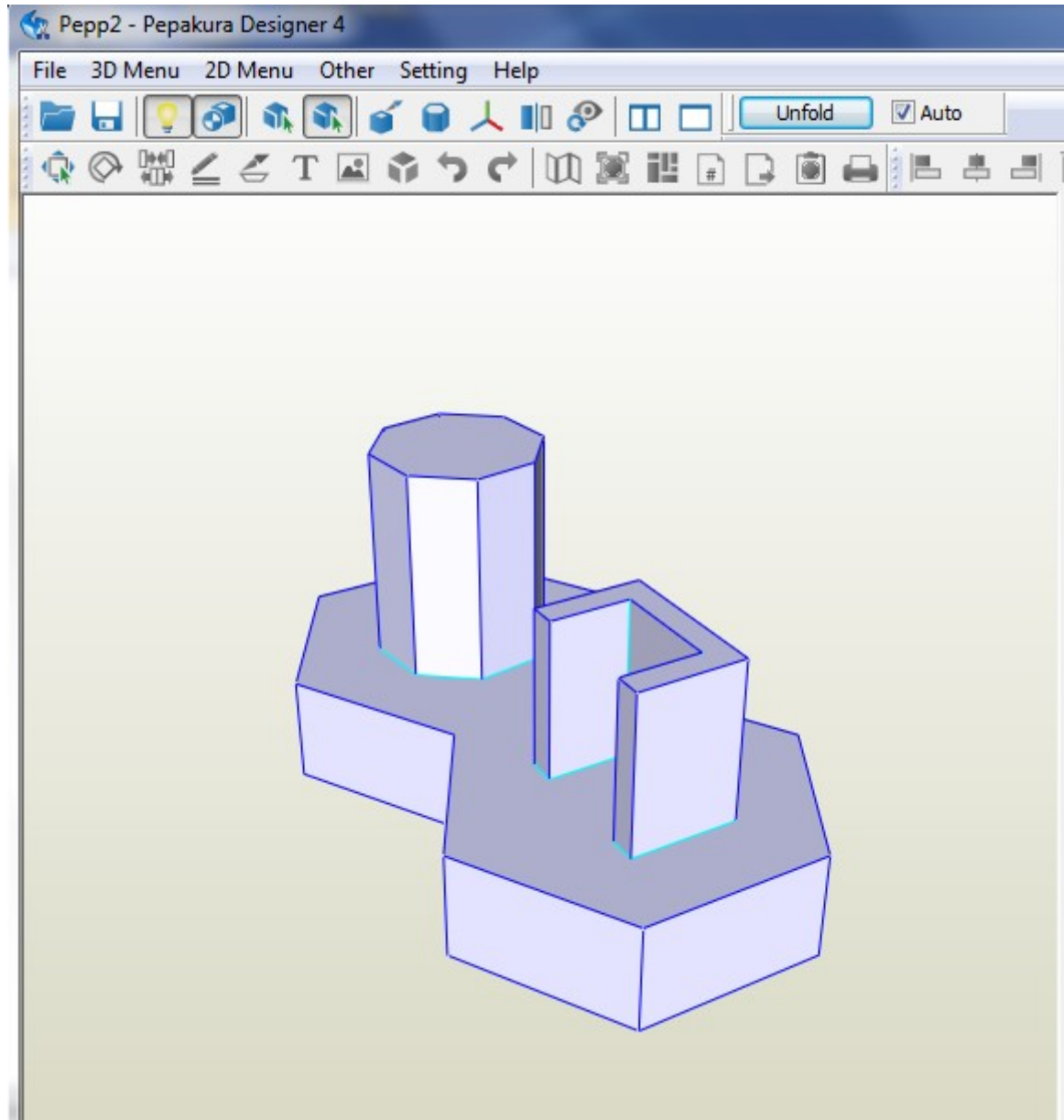
# Pepakura Designer

- Turn STL files into papercraft models.

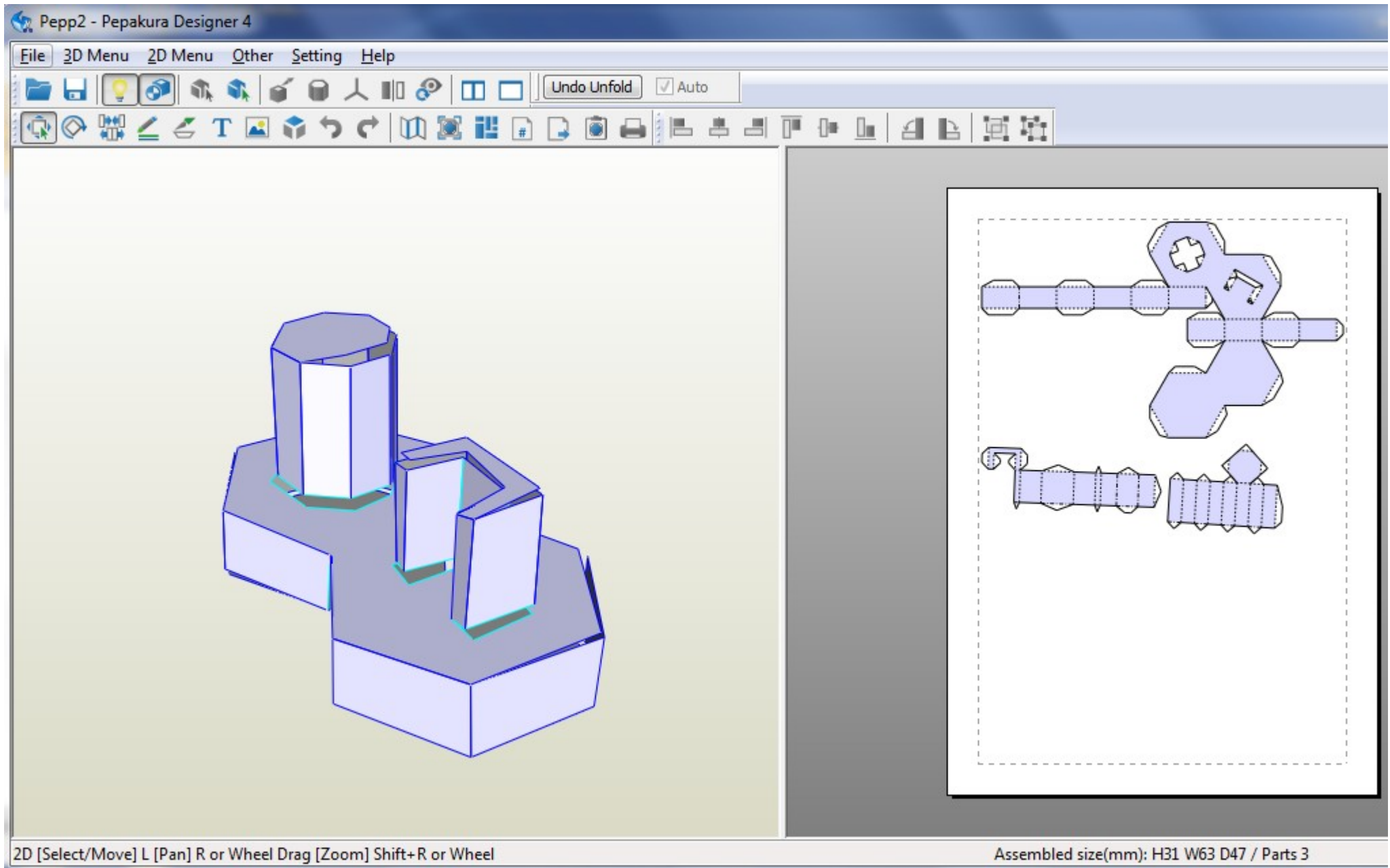




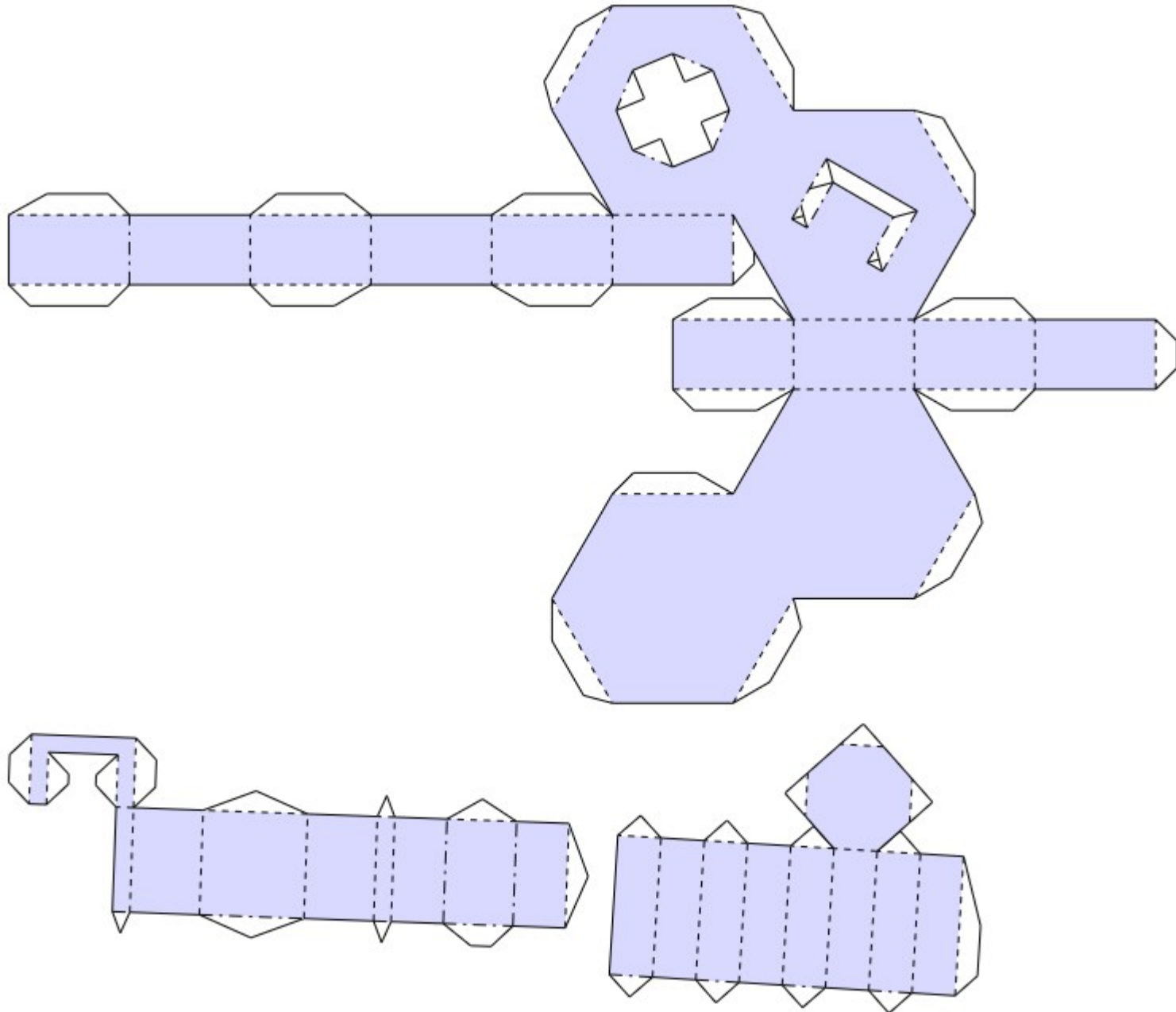
# Pepakura: STL File Input



# Pepakura: Unfolding



# Pepakura: Unfolded



# Types of Folds

**MOUNTAIN FOLD**

**VALLEY FOLD**

474

203 204 205 206 207 208

**VALLEY FOLD**

**MOUNTAIN FOLD**

Line Style	
Cut	_____
Mountain Fold	_____
Valley Fold	_____

Image from krsiak at Instructables.com