

# Evaluation response

- Likes:
  - Recent datasets most interesting
  - Being able to explore by yourselves
- Dislikes:
  - Not much, maybe some more high-D objects (today!)

# Some ideas

- How to find data yourselves
- How to create data for GGobi or Mondrian

# Geometric objects

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# Outline

- Tools
- “Simple” objects
- Non-orientable surfaces
- Torus and tori

# Tools

- Projections - the tour
- Sections - linked brushing
- Each give a slightly different way of looking at the data. Especially powerful together

# Notes

- As you explore these objects, try and build up a mental model
- Think about how you could recognise this object if you saw it again

# Surfaces

- Two ways to specify:
  - $x^2 + y^2 = 1$
  - $x = \cos(u); y = \sin(u); u \in [-\pi, \pi]$
- More complicated in higher dimensions

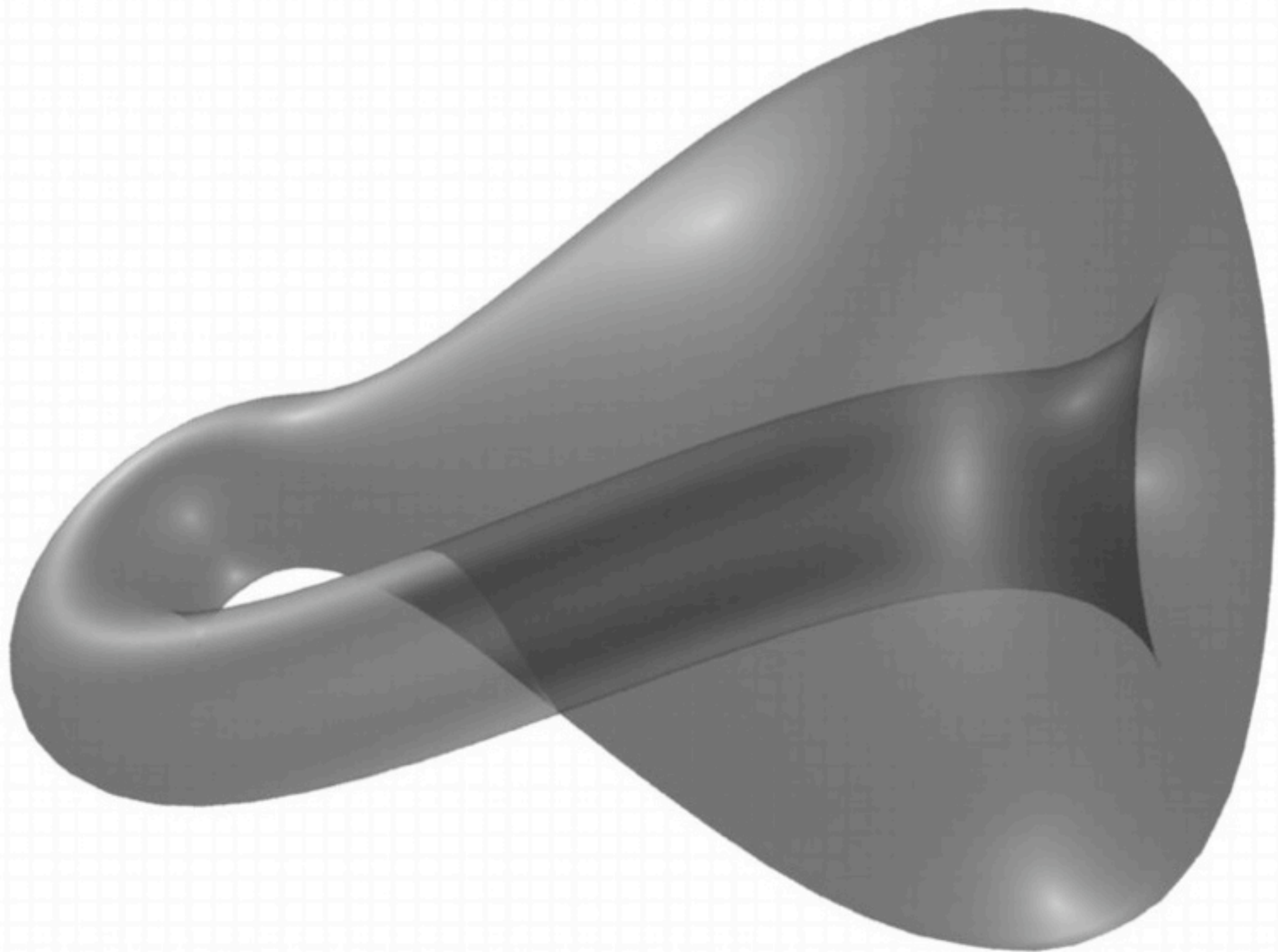
# Simple objects

- Spheres
- Cubes
- Nested spheres
  
- Start simple and increase the number of dimensions. How could you recognise the number of dimensions?



# Non-orientable surfaces

- Mobius strip: 2d embedded in 3d
- Klein bottle: 3d embedded in 4d
- Boy surface: sew Möbius strip to edge of disk
- Look up on [mathworld.com](http://mathworld.com) if you want to learn more





# Summer

- If you're interested in doing a larger project, please let me know
- We can (almost certainly) fund you over summer. Can probably tie in with an honours project
- Lots of options: making teaching movies, exploring other data, programming, ...  
Up to you!