

# Computer Graphics

## A Broader Perspective

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# Aims of this session

- Provide a broader perspective on comp. graphics
- Highlight the relevance of the practical exercises
- Consider some higher-level graphics applications
- Signpost some possible assignment extensions

# Approach

- We'll consider a range of previous projects
  - Some of which I've been involved with
  - Other projects I just happen to like
  - It's a bit like my own personal guest lecture :o)
- 
- I've focused on non-game, non-movie examples
  - Just to provide a bit of contrast and variety !

Let's consider a specific example...



Video for "Star Guitar" by  
Chemical Brothers  
Director Michel Gondry  
2002

# Previous Experience

Co-Director BigDog interactive (2002-2011)

Technical producer at Institute of Digital Art & Tech  
(2011-2017)

What kind of thing ?

- Interactive gallery installations
- Data visualisations
- Animation and still imagery
- Gamification and edutainment



# Tate Modern: "This is where we are"

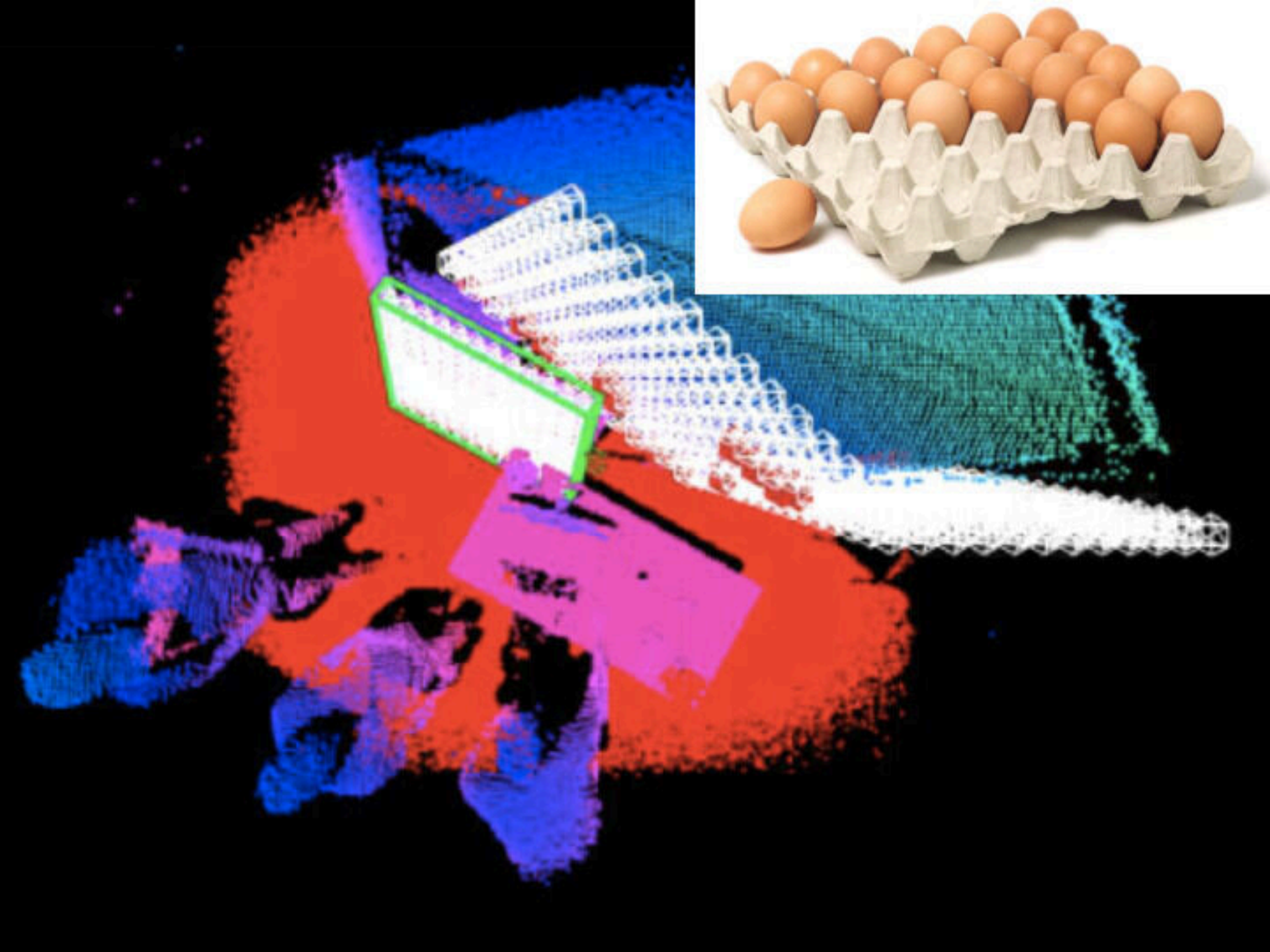


Single 3D model, 42 Camera views





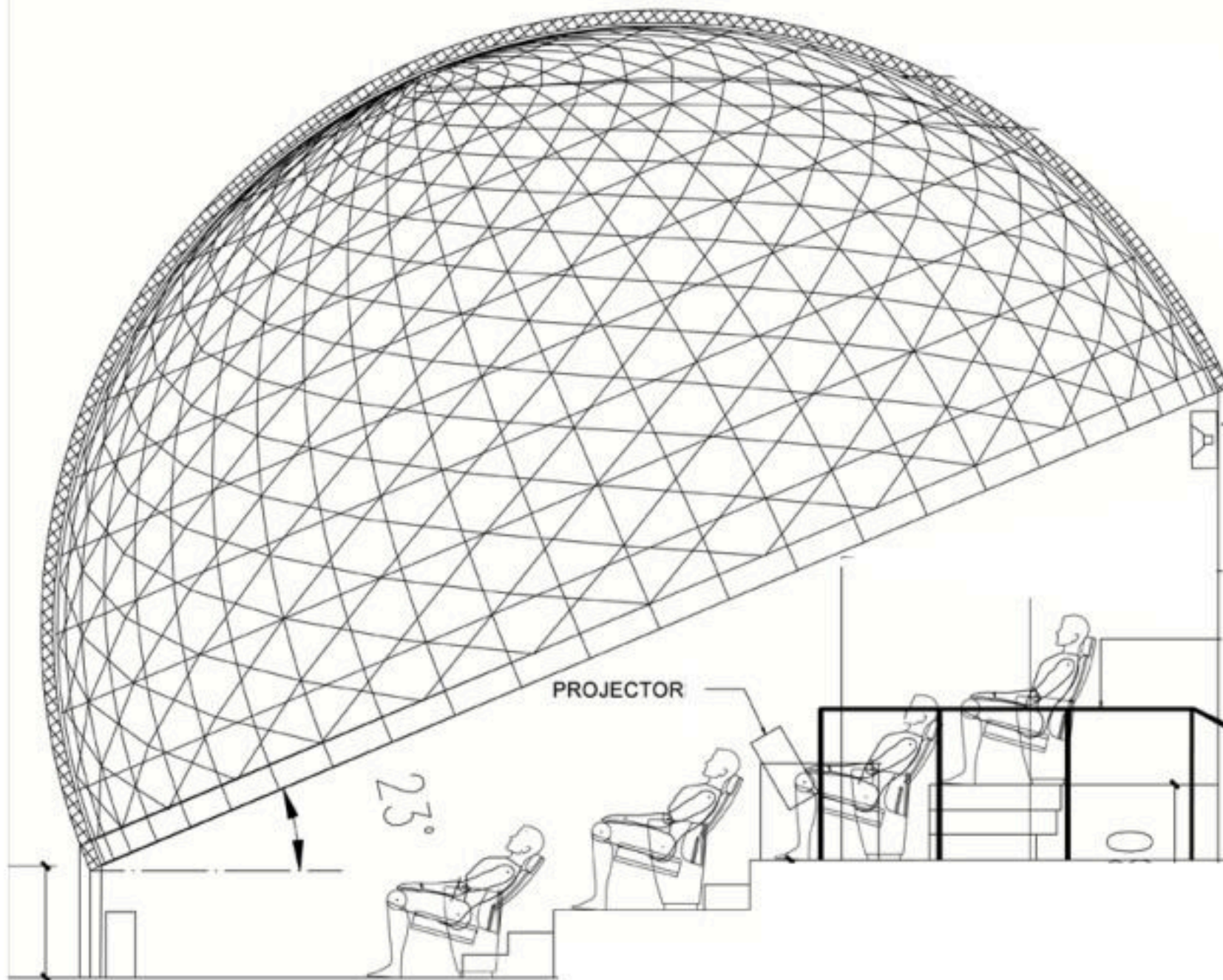




# Immersive Media



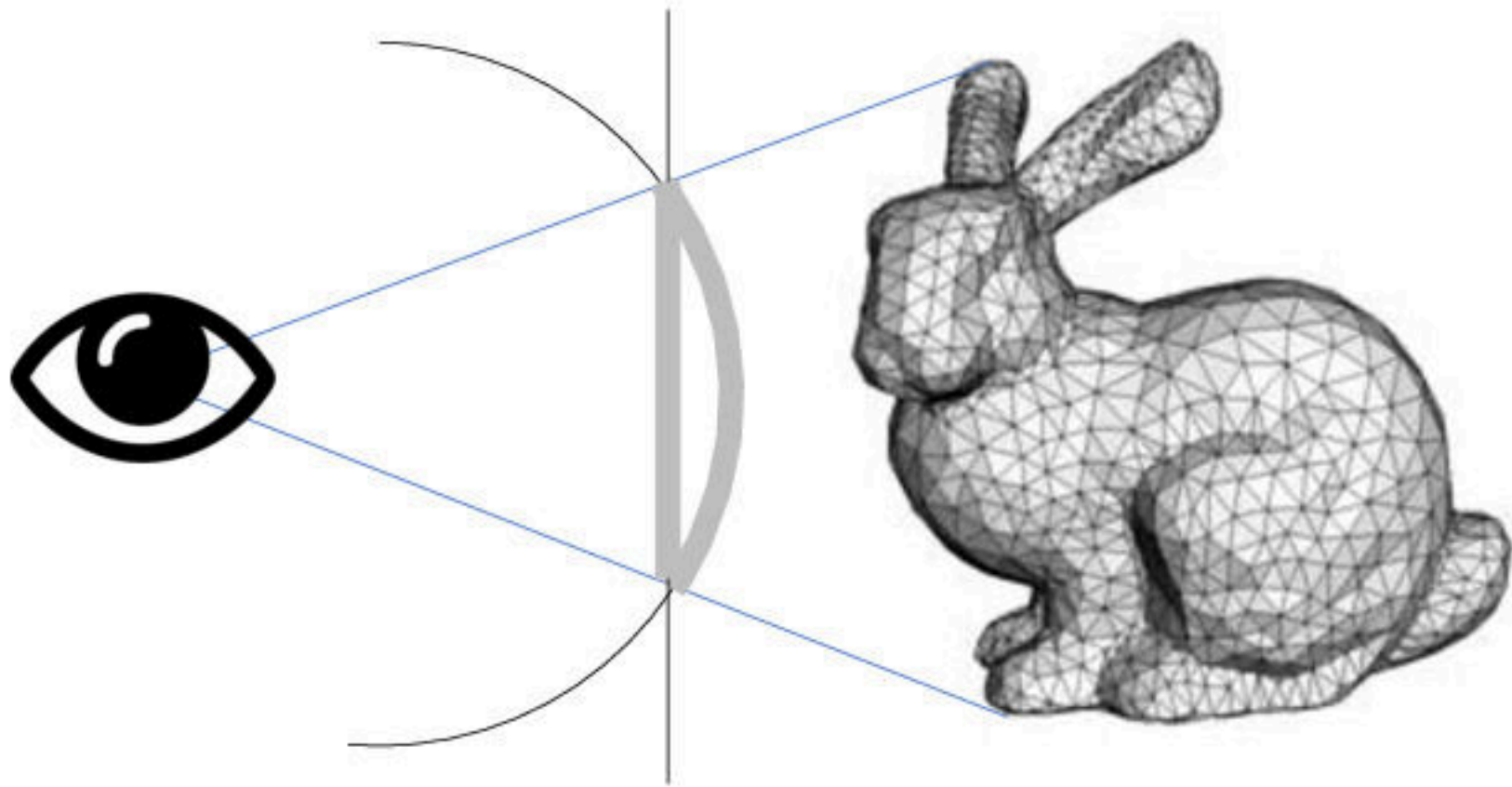
- VR has been around for many years
- It has currently seen a resurgence
- Partly due to cheap, high-res, light-weight screens
- Many brands of VR headset (Oculus, HTC Vive...)
- But what if we wanted something more social ?
- Some kind of shared group experience ?
- Not isolated in separate headsets
- But together in the same room...







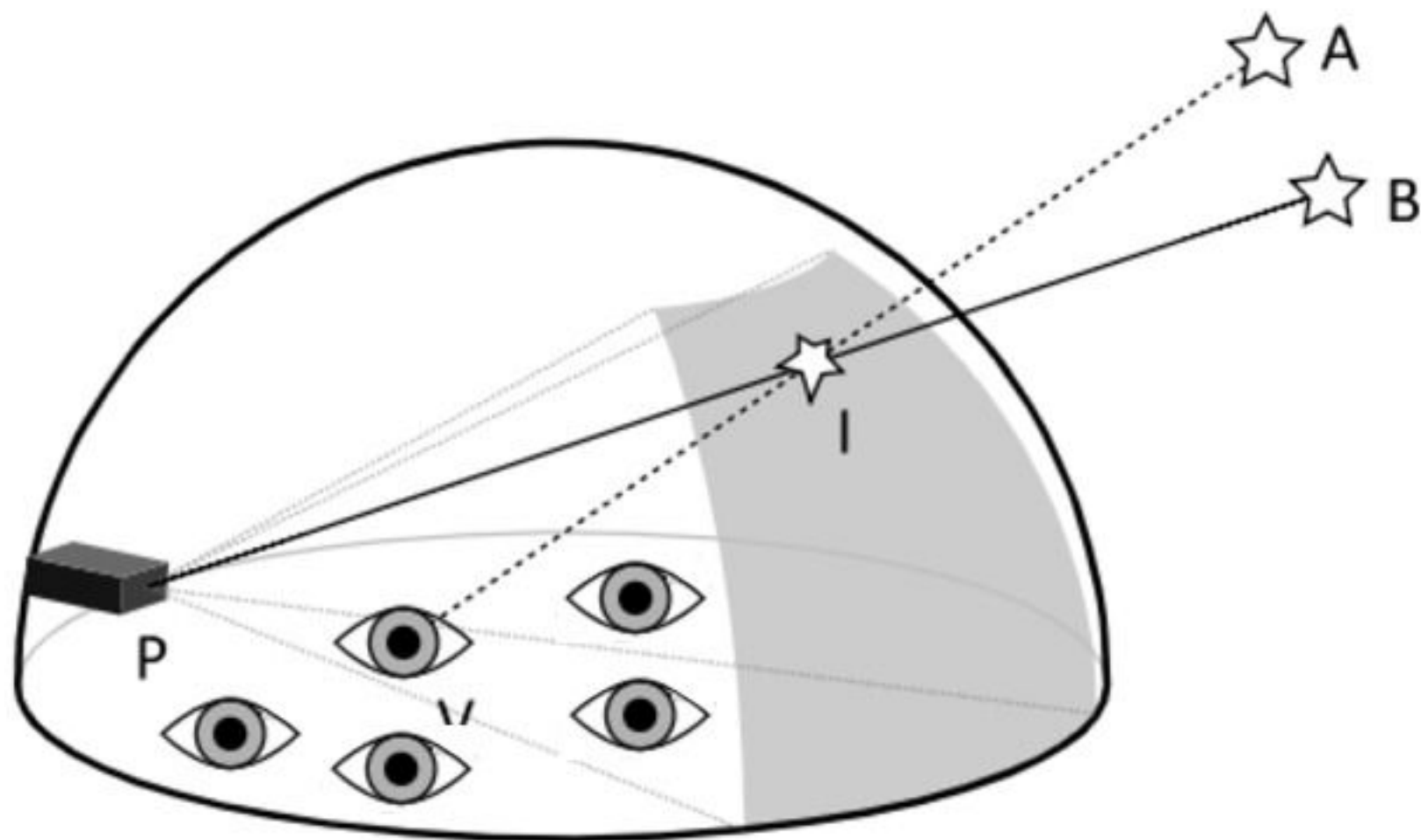
# Custom Ray Tracers & Rasterisers



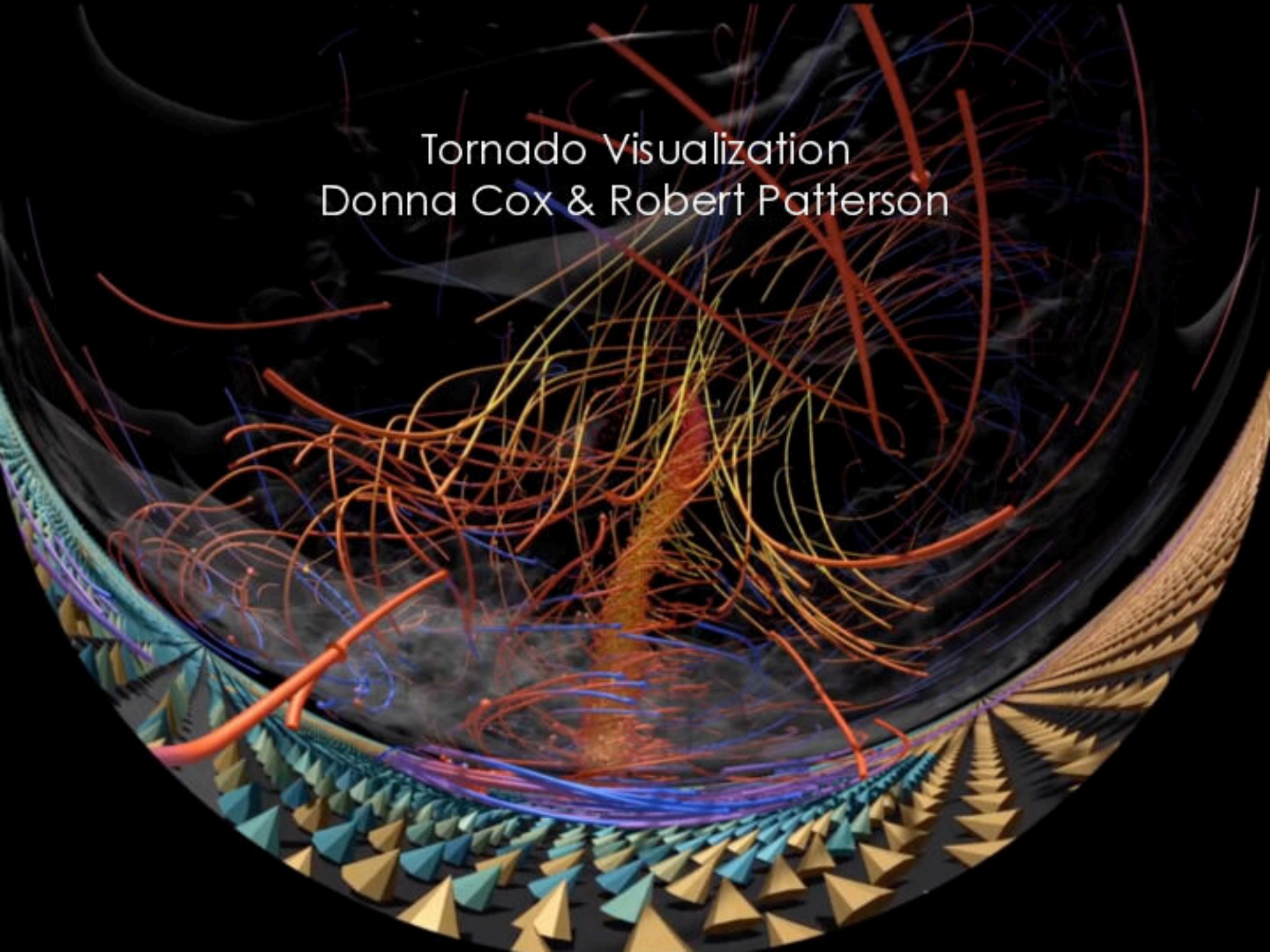
"Photographic Plate" is no longer 2D !!!



It gets worse !



Tornado Visualization  
Donna Cox & Robert Patterson



# Projection Mapping

Has become a popular arts event in recent years


- Large public building
- Complex animated 3D model
- Multiple high-powered projectors
- Custom software to map model to “nonflat” views
- Large crowd of people standing in cold & dark

Often involving long manual mapping/calibration  
Some companies specialise in this kind of work

# Limelight Building Projection Mapping





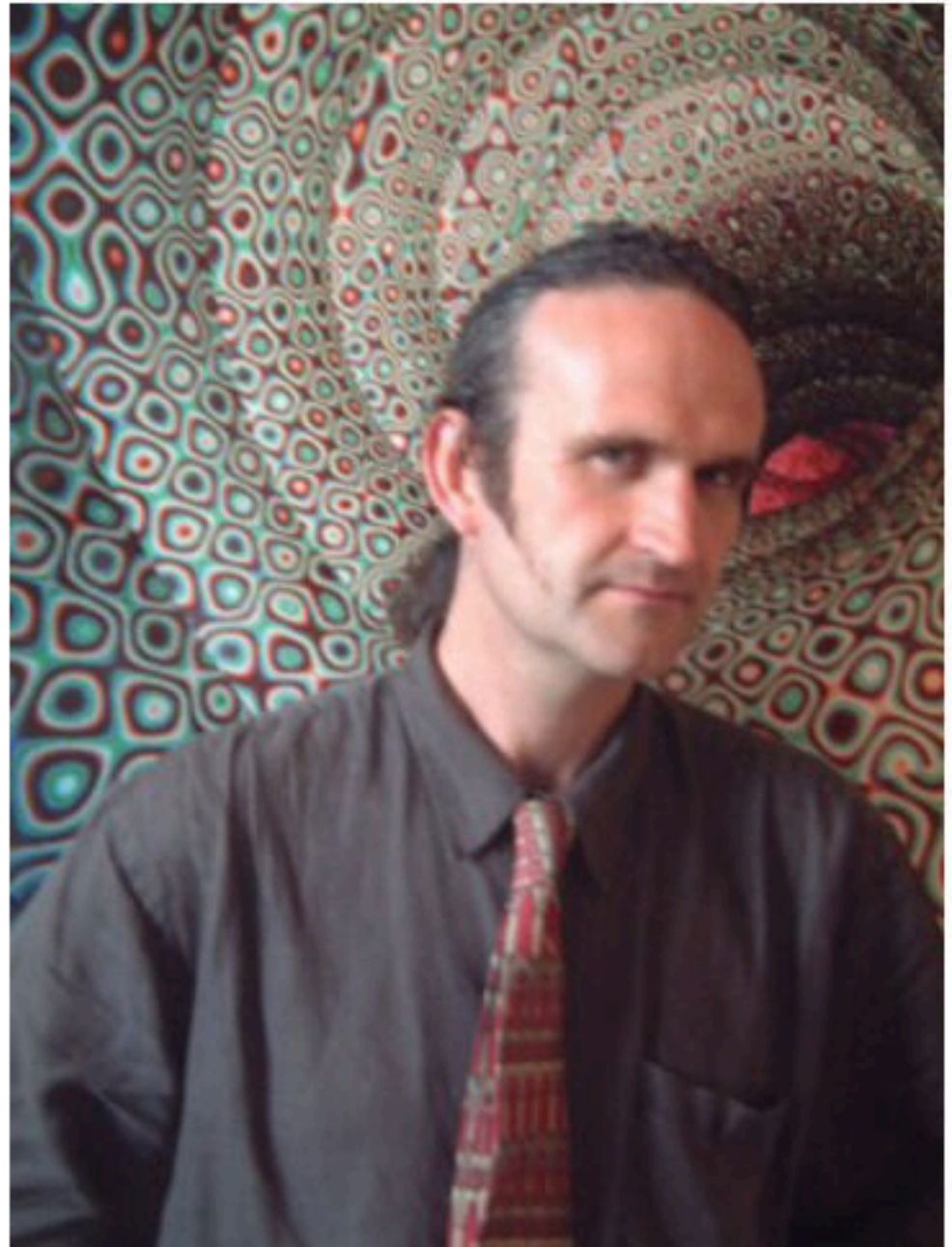
A woman with long dark hair and closed eyes is shown from the chest up. A semi-transparent digital face is overlaid on her face, with glowing white dots at key facial landmarks like the eyes, nose, mouth, and jawline. Thin white lines connect these dots, forming a wireframe-like structure. The background is a plain, light-colored wall.

Omote  
Real-time tracking and mapping



# Case Study: William Latham

William Latham Timeline  
<http://latham-mutator.com>

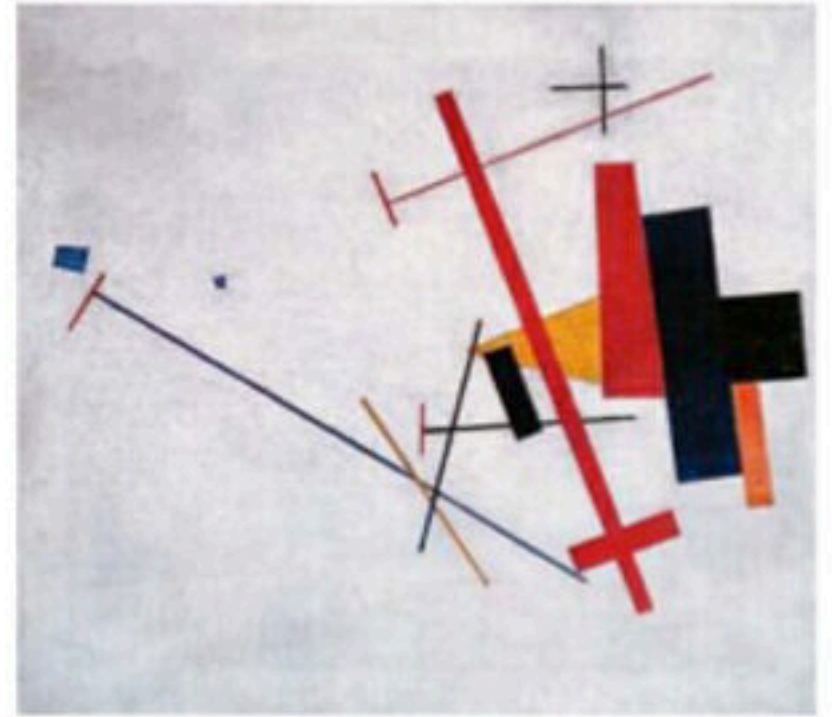
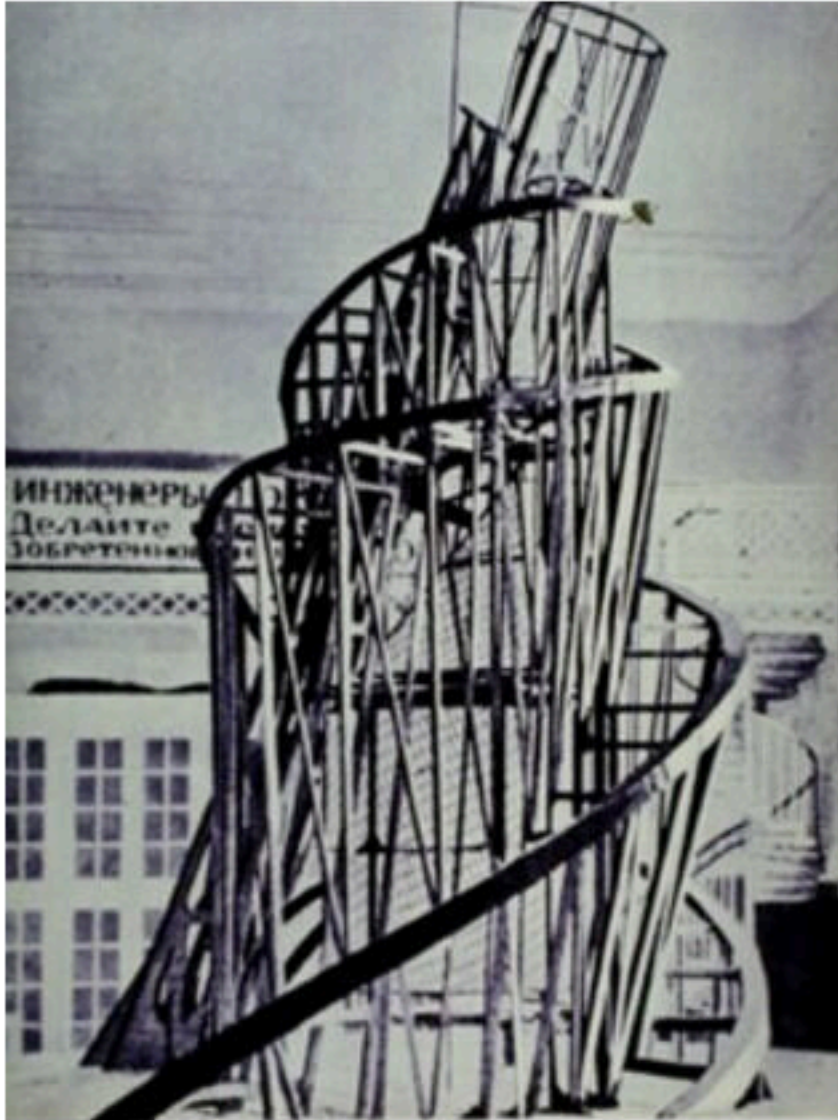


# Ruskin School of Art (1979-1982)

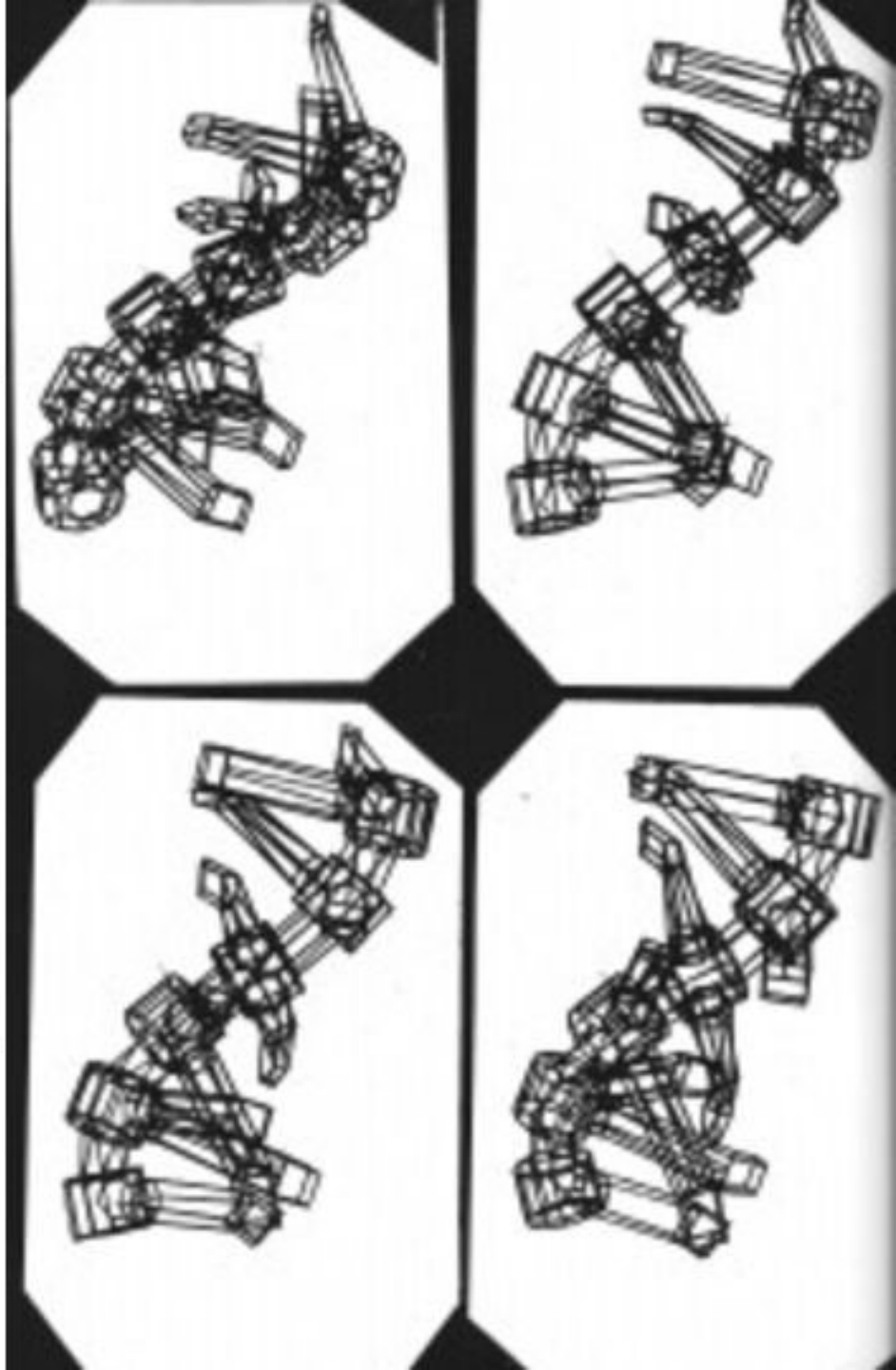
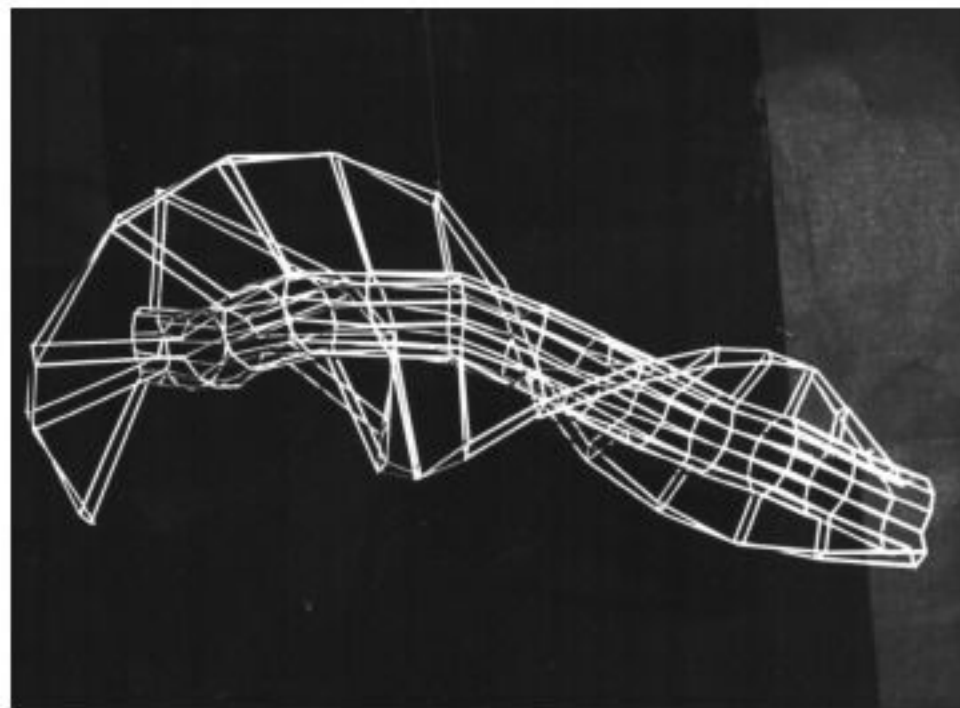




# Constructivism (1910s)



## Early work (1981)



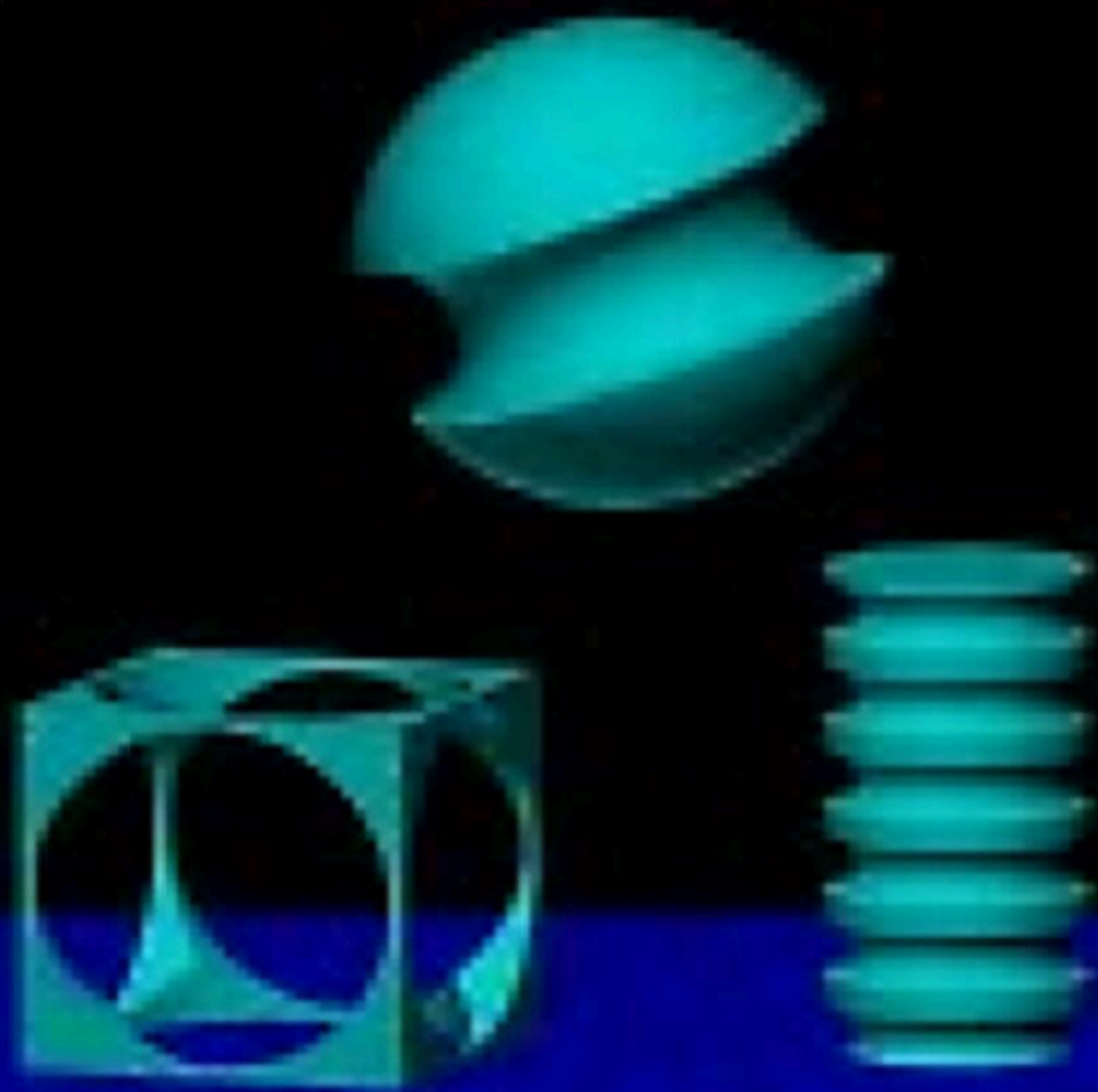
# FormSynth (1984)



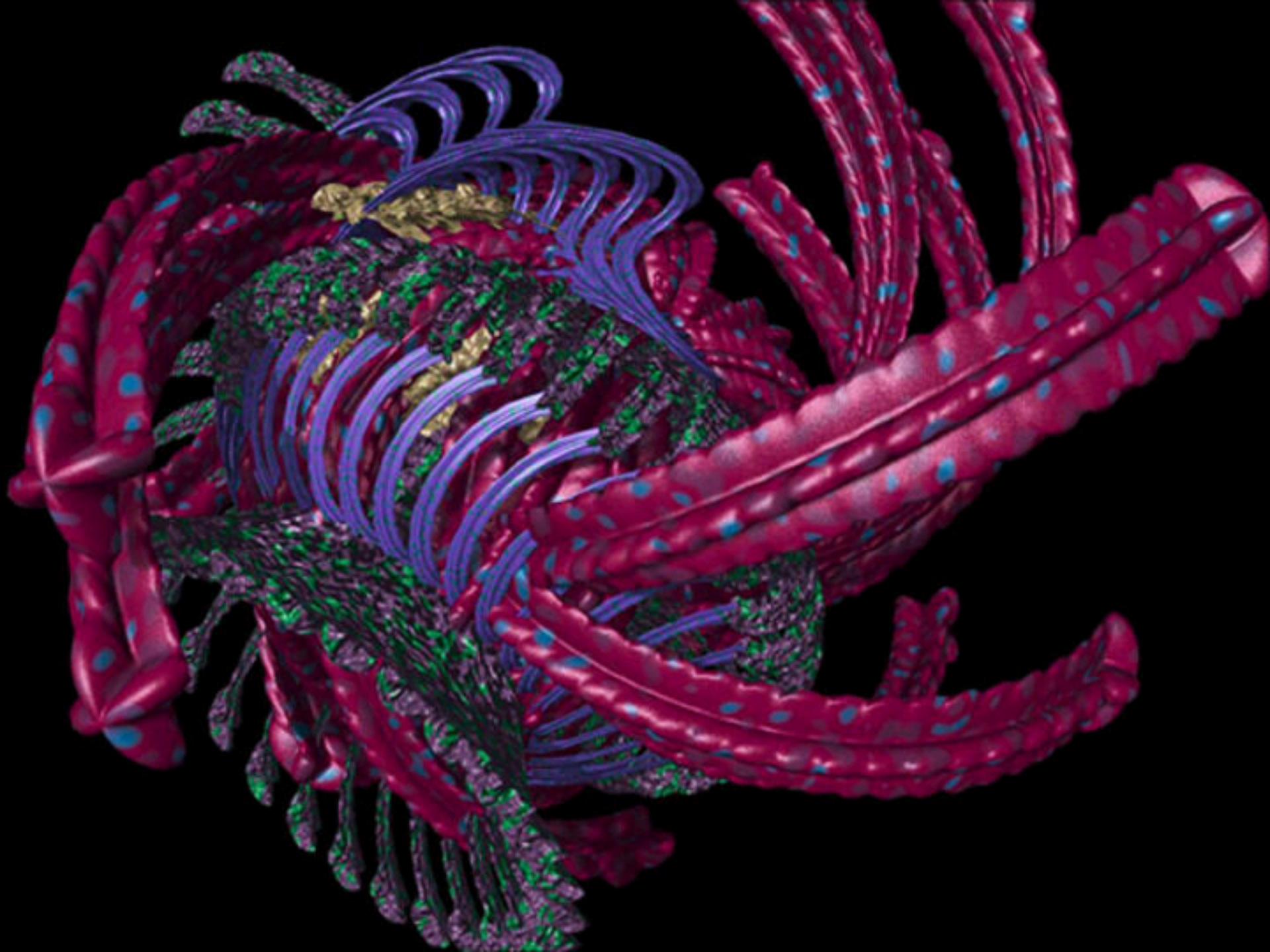


# First Computation ! (1985)

# WINchester SOLid Modeller (WINSOM) (1987)



Technology + Technical Ability + Creativity = ...



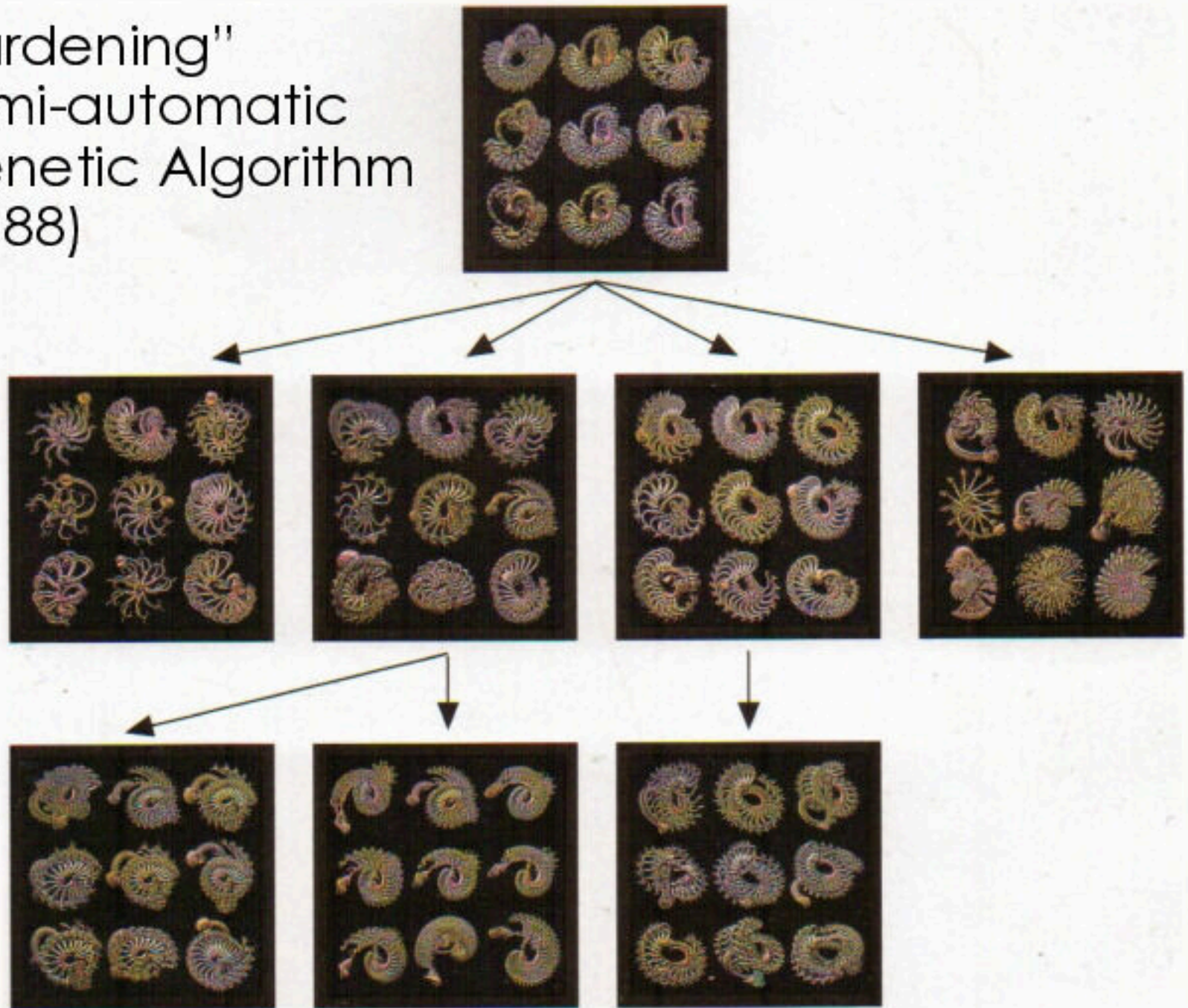




Zelda - 1988



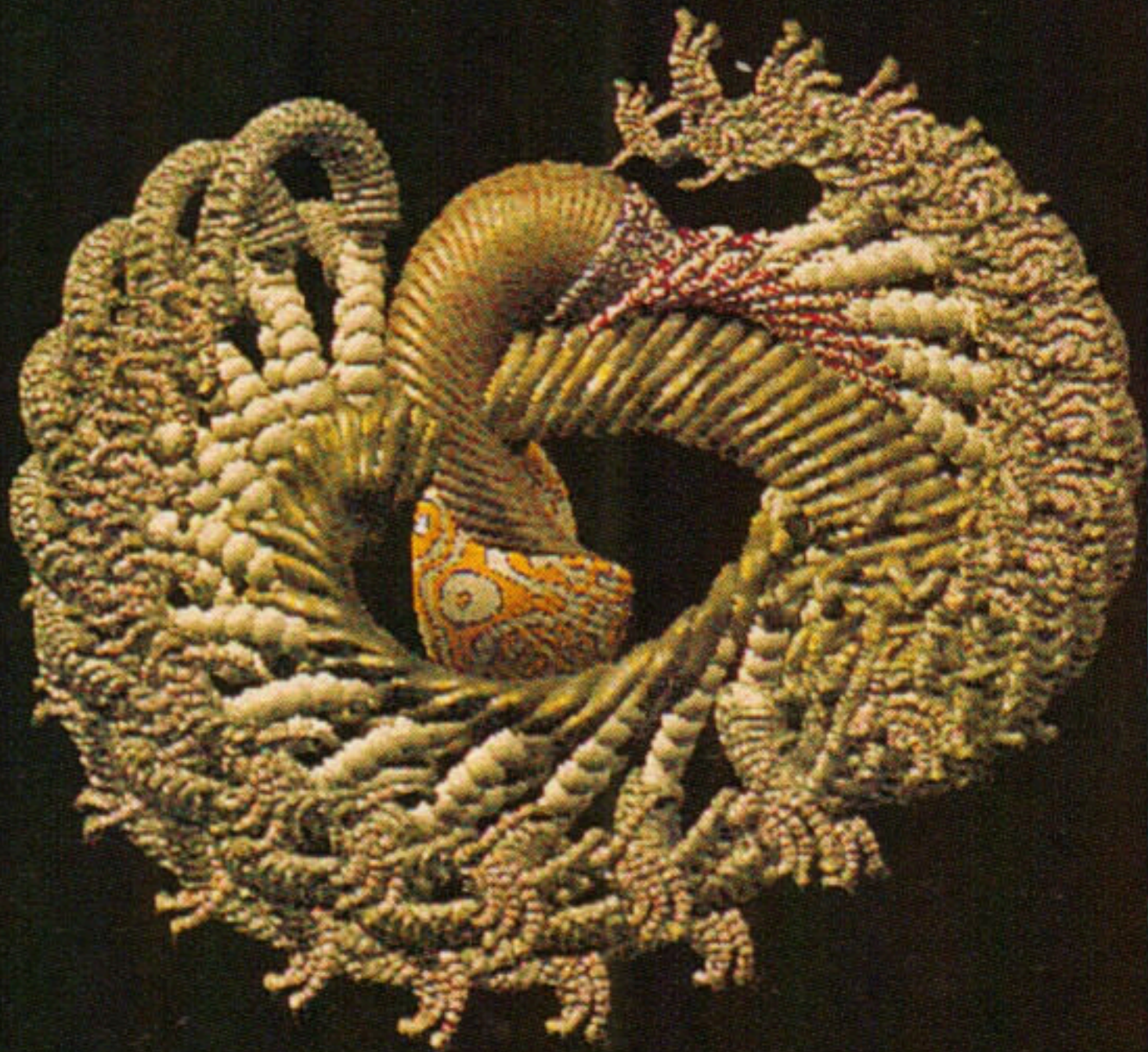
"Gardening"  
Semi-automatic  
Genetic Algorithm  
(1988)





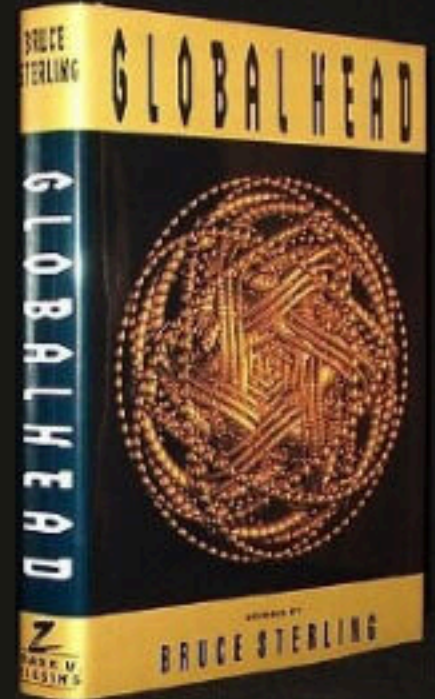
IBM  
(1988)







# Popular Culture





# My Remaining Contribution

- This lecture has tried to provide a broader context
- Show some examples, get people interested
- My other sessions, more directly applicable to C/W
- Highlight possible extensions to the assignment:
  - Generative models
  - Point clouds & Meshing
  - Model representation & optimisation
- Maybs a bit of animation along the way !