# Assignment 2: Model Research & Construction

To realize many of our goals in this class, we're going to need lots of different "models". We're inspired by existing structures and the effectiveness of the technology that was used to design them. For example, last year we lamented over the poor design of Kresge auditorium whose geometric rather than structural shape was chosen perhaps in part due to the lack of appropriate design tools. To analyze this geometry with our new software we first needed an appropriate digital model. A simple program was written to generate meshes at different resolutions:
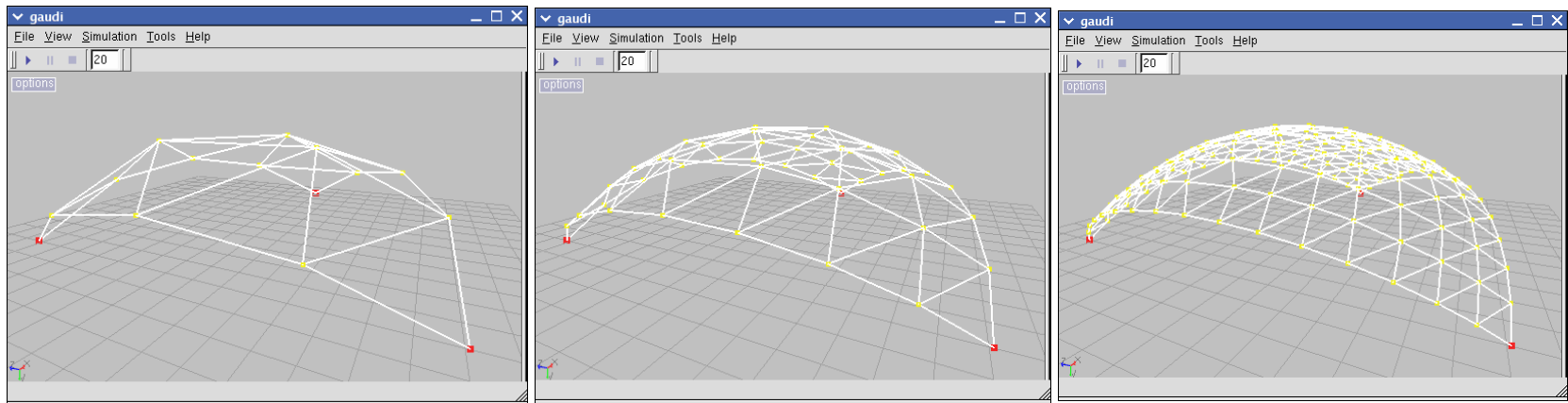
Similarly we'll need physical models to understand at a hands-on level the design technology used by Gaudi, Isler and others. Physical models allow us to compare and validate the digital design tools we create. Last year we explored different materials and components that could be used to create "construction kits" for structural design.
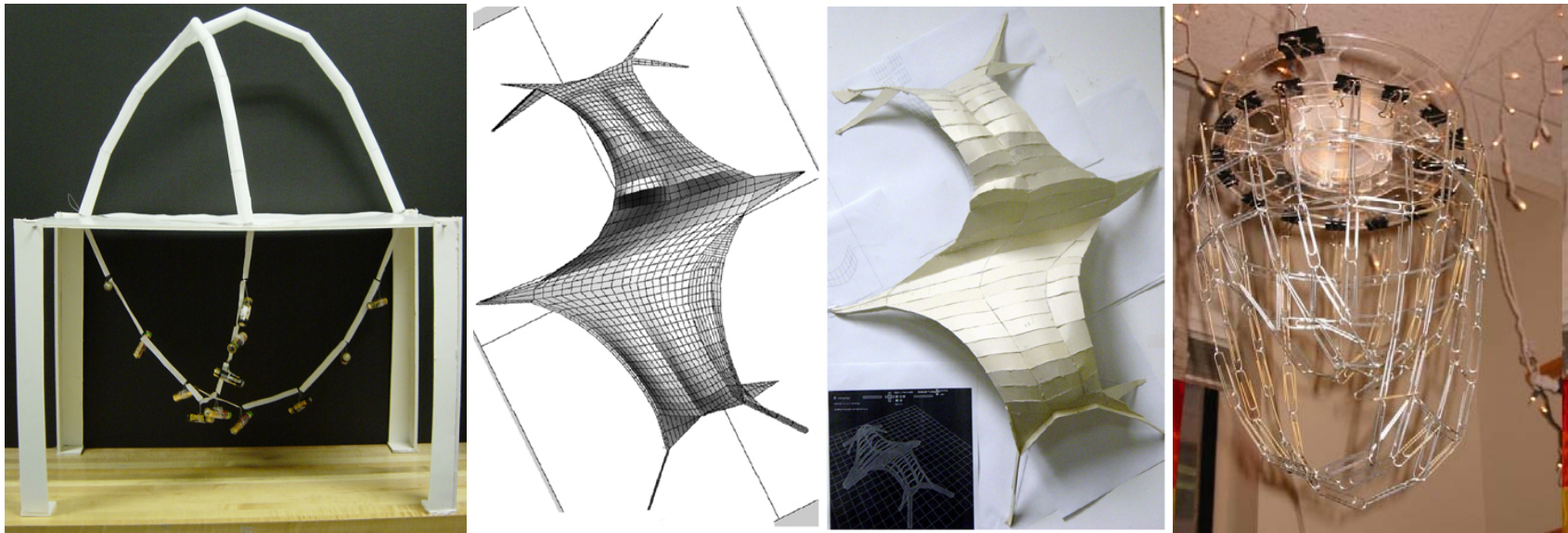
This is an individual assignment, but hopefully it will tie in closely to your group work. The assignment is relatively open, and you should choose a project which reflects your interests or strengths (such as programming, AutoCAD, physical models, etc.)

Sample ideas:

- Create a parameterized, digital model of a specific architectural structure that can be used in simulation. Or pick a generic class of structures and create a family of digital models (e.g., trusses, arches, domes, vaults, buttresses, etc.) Useful parameters might include the mesh resolution, topology, support placement, dimensions, etc.
- Alternatively, for a specific architectural structure (or class of structures) it may be more appropriate to create the model with a commercial modeling package (AutoCAD, Rhino, etc.) Or you may be able to gain access to an existing model of the structure and edit the geometry to select an interesting portion of the model, "cleanup" the connectivity, simplify unnecessary complexity, etc. Consider how your model could connect to other components (if appropriate).
- Explore physical modeling possibilities.

Week 1: Investigation, due Sunday October 24th @ midnight:

The first week you'll probably spend most of your time researching and selecting the specific structure or class of structures you want to model. Send us a brief email describing your progress. Depending on your project, your email might address these points:

- The history of the structure and the technology used in its design. Include pointers to any references you consulted to learn about the structure or class of structures.
- How you think the design and/or the design process would be different if new technology was available.
- How you see this model being used within the workshop.
- How we can help you (pointers to background material, programming help, etc.)

Week 2: Implementation, due Sunday October 31st @ midnight

Make your model available (as appropriate) to the class. Be ready to give a short presentation in class (< 5 minutes).