Architectural Models

Architecture, History and Design

Using RapMan

BITS FROM BYTES

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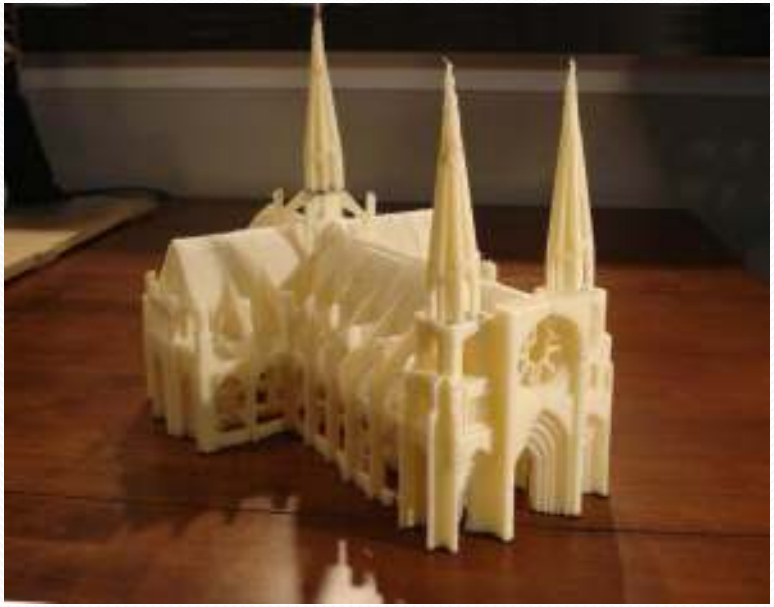
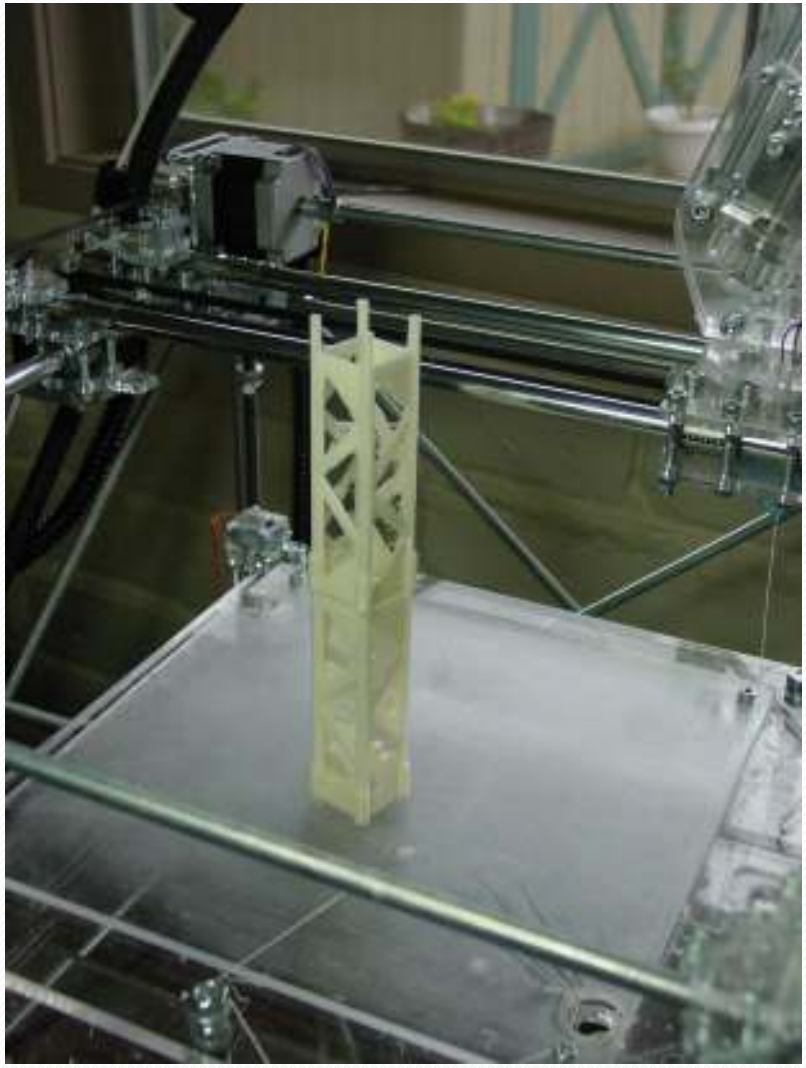
Architectural Models

- Architecture lends itself to printing in 3D. Buildings are rarely made in single parts so a similar strategy can be applied to printing architectural models. In this way “difficult” prints with hollow parts and overhangs can be avoided.



Structures

- Structural elements of buildings can also be printed. Beams and columns are an obvious choice but these long shapes may prove difficult as warping could be experienced. Probably worth experimenting with PLA which warps much less than ABS (or maybe try to develop a heated print bed that also overcomes this problem)

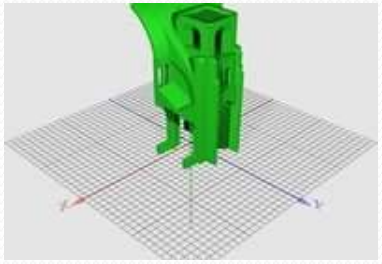


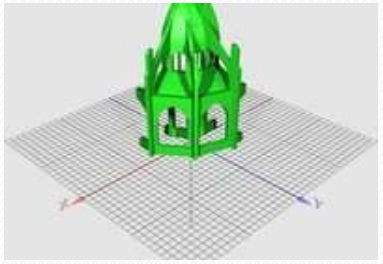
Print your own Greek Temple

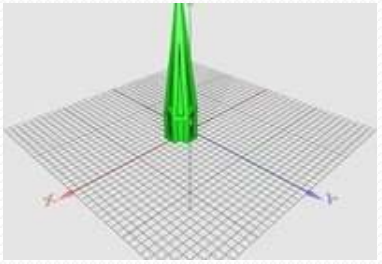
- Perhaps a good starter project.
- This temple is made up with a few simple repeated parts (columns, beams etc). These can be designed in a 3D CAD program such as Pro/ENGINEER or Solidworks and then exported as an stl file ready for printing.

Print your own Cathedral

- This very impressive Cathedral is made up of several parts that can be assembled in a variety of different ways.
- The parts can be downloaded from the Thingiverse website.

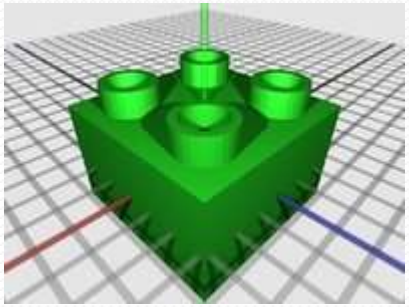






Duplo Mashups

- The Duplo system of building bricks can be adapted to making architectural models.
- The bricks have a simple and effective method for joining them together and the parts can be easily drawn in a CAD program.
- There are scripts available for designing your own bricks using the OpenSCAD software and stl files on the Thingiverse, but why stop with standard Duplo bricks? It is possible to mash together parts to create new architectural elements (note certain how long a duck has been used in architecture ☺)



Software

- Obviously a good starting point is a 3D software package such as Pro/ENGINEER, Solidworks or Autodesk Inventor.
- There are other “Free” programs that can be used such as CoCreate and Art of Illusion.
- Some programs offer scripting “languages” that can be used to create parametric parts. OpenSCAD has been used to create the parametric Duplo bricks.
- Google Sketchup is a free design program and there are many architectural models that could be modified/adapted on the Google 3D warehouse http://sketchup.google.com/3dwarehouse/
- Google Sketchup users may like to download the architectural tools from 1001 bit . com (free for education use) http://www.1001bit.com/products/products.shtml

Links and Acknowledgements

- Many thanks to the following (and apologies to anyone who I missed out or forgot)

- Cathedral parts by “Skimbal” aka Michael Curry (Kansas USA)
- http://www.thingiverse.com/thing:2030

- Greek Temple by Mike Hibbett ‘s daughter (UK) who printed this with a little help from Dad)for her school homework.

- Parametric Duplo by “Domonoky” (Germany)
- http://www.thingiverse.com/thing:1778

- Printing Beams by Forrest Higgs (Carmel Valley, California)
- http://technocraticanarchist.blogspot.com/2010/02/testing-envelope.html

- Duplo and Mashups By Daniel K. Schneider (Geneva)
- http://edutechwiki.unige.ch/en/RapMan

RapMan

- RapMan is a low cost 3D printer available from Bits from Bytes www.bitsfrombytes.com

- Further assistance can be found on the BfB forum and wiki.

Forum
http://www.bitsfrombytes.com/fora/user/index.php

Wiki http://www.bitsfrombytes.com/wiki