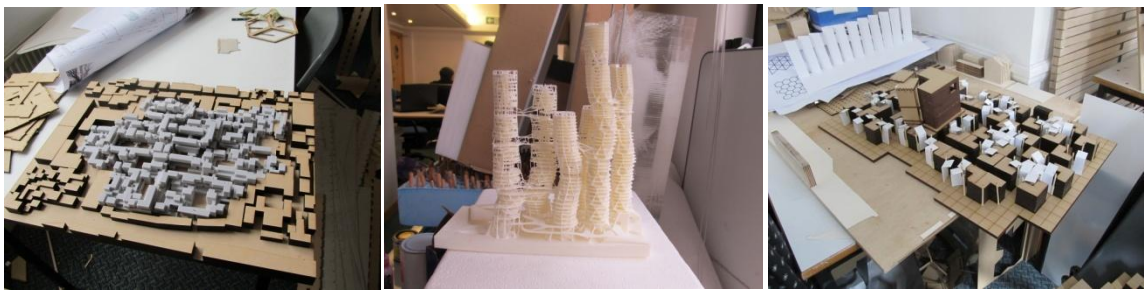
## Digital Prototyping Studios

Architects are constantly rethinking how to build the structures mankind live and work in – and that, in turn, is changing the way our cities look and feel. The design evolution process being adopted for pursuing unique built environments by renowned professional firms have always been in a state of exploration to provide adequate – appropriate – efficient solutions. However the aspect of generating prototypes as part of design realisation has been a consistent tool therefore models are an important part of the design process of any project.



Digital Prototype Models

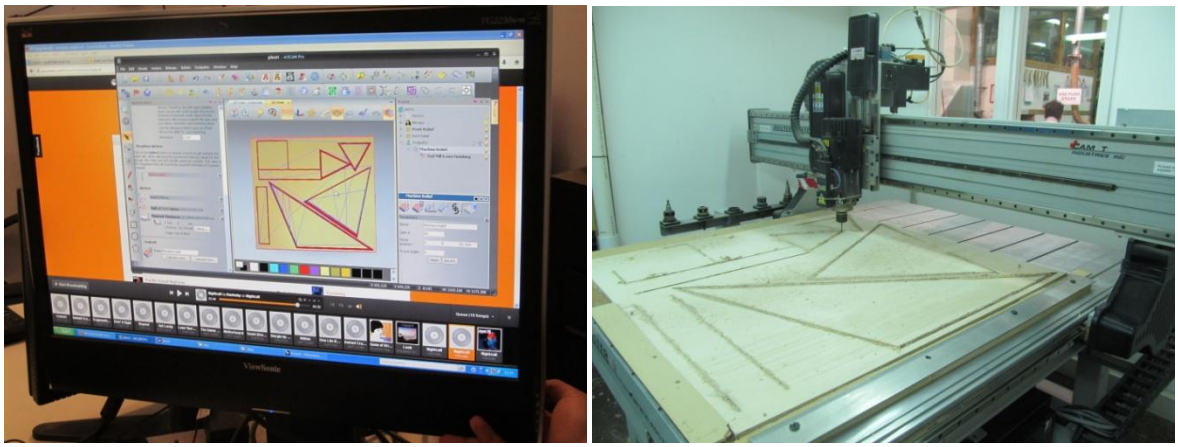
The creation of a scale model requires proper cognition of the three dimensional spatial arrangement and proposition of the design thought. All components of the building elements and materials have to be fully integrated with one another to form an interconnected whole. Models helps users appreciate how spaces are visualized by the designer as well as provides real time cognition of the proposed built environment.

Project Presentations

Most professional practices rely on a synchronized process which effectively binds CADD generated illustrations and physical generated models to effectively communicate their design propositions. This approach is most often considered as the most effective approach. Representational models and scale building components analysis play a crucial role in project presentations. Innovative shifts in software technologies have provided means and methods to generate 3D visual simulation prototypes, these advancements however haven't been able to replace objective models. However there has been a paradigm swing in the manner these models are being made, materials and techniques which require - utilize special machines and sophisticated tools have entered the fabrication realm.


AA School UK - Digital Prototype Studio

Digital Prototyping Studios have become an integral part of any modern architectural practice. CNC milling machines, high powered laser – cutting machines, 3D printing, 3D Scanners & robotic arms are relatively a common sight in multinational corporate architectural practices and in schools of architecture.

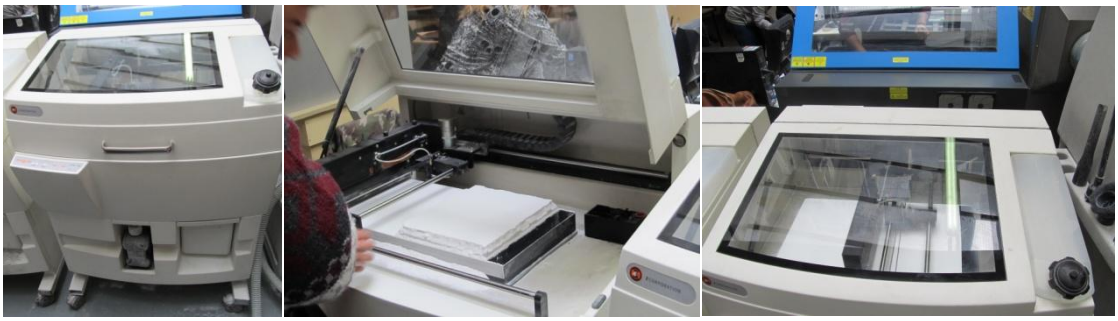


CNC Fabricator

CNC means Computer Numerical Control. In CNC machines, design generated in CAD is converted to numerical interface. This can be considered to be coordinates of a graph and they control the movement of the cutter. In this way the computer controls the cutting and shaping of the materials.


Laser Fabrication Sequence

Laser Cutting is a technology that uses a laser to cut materials. Laser cutting works by directing the o/p of a high – power laser, by computer, at the material to be cut.



3D Printing Progression

The new generation prototype generators accept all major 3D file formats, such as .stl, .wrl, .ply, and .sfx files, which leading 3D software packages can export. Software developers understanding the relevance of 3D technologies in this frontier have developed a large number of packages.

Innovative Design Platforms

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|---|---|---|---|
| SolidWorks | Maya | RapidForm | 3D Studio Viz |
| Pro/Engineer | SketchUp | Alias | Form Z |
| CATIA | RasMol | Raindrop GeoMagic | VectorWorks |
| 3D Studio Max | Rhino | Inventor | Mimics |

Software Packages

Prototypes serve different purposes and thus form different types. We can generally analyze prototypes and prototyping techniques along four dimensions namely Representation, Precision, Interactivity and Evolution.

Images – Courtesy Author: AA School of Architecture - UK, Visiting Teachers Program: 20th May – 7th June 2013