Digital architecture with blob type forms will spin the industry on its ear. We will have to relearn how to determine loads, strengths and structure of 3 dimensional objects. Building designs can be based on mathematical computations instead of squares, rectangles and circles. Buildings can also be designed for flow and movement of the building structure. To create unique new buildings, architects will need to master calculus and software programming.

New processes are needed for designing buildings that are non static or animate. No software exists that designs buildings that move and evolve. Currently, cinematic animation techniques are used with limited success. Buildings are also being developed to reflect both time and motion.

Buildings are generally built for permanence, not as reusable components or temporary structures. When the program for a building changes, obsolescence is often the result. Why can’t we design flexible buildings? Is it limited by forethought, lack of vision, or just time and money restrictions? I live in an upscale neighborhood in a seven year old house. It is generally functional, but already outdated. The electrical, mechanical and wiring systems are inefficient or lacking. There was no thought put into the building design as how to accommodate changing needs of its occupants. To upgrade the outdated systems will require a major remodel of the residence.

Using computer to design buildings has helped the architecture industry and pointed out the many areas in which growth is possible. Computer software can create virtual environments that are fabulous but extremely cost prohibitive to build with current construction technologies. There is a wide gap between what can be designed on a computer versus built with existing technologies. There is an attempt to enhance construction methods and processes to make the realization of these buildings more probably.

Very few digitally designed buildings have been built to date. The economics in the U.S. have limited the investiture in new building technologies, as we are so used to immediate payback. European countries are more willing to invest in new technologies, as they see the long term benefits in energy efficiency.

The building trades industry has no incentive to develop new materials and process to increase efficiency. Local governments are often reluctant to approve and support the use of new technologies due to the overload of existing work, the cost to evaluate the new technologies and the training costs to train their personnel in understanding them. The construction companies are also resistant. The amount of investment to gain competency in these technologies and the amount of work creates a long payback
period. I think it was back in the mid to late 70’s that the federal government stirred the
interest in new building technologies by offering the home owner tax credits for
upgrading the energy efficiency of their homes. The credit was also given for
implementing solar solutions. After the government stopped the tax credit, the industry
lost much momentum that still has not been regained.

New advances need to be made for the digital production process of architectural
buildings. Coordination between digital design, digital production documents and
electronic dissemination to manufacturers that have digital production/construction
technologies is surely needed. There is not an industry wide standard file format that
contains all of the information needed by the different consumers. Until this occurs,
production costs for new technology will remain high. Most firms only think and plan
designs and construction processes in 2D.

In the commercial airplane industry, much money and man hours have been spent on
evaluating and improving production processes, materials and methods. Why can’t
there be an economic incentive for this to occur in the building industry? Can production
processes and building technologies be patented? Could this provide an income source
to offset the monetary investment required?

Still, more advancement is needed for architectural design creation. We currently
borrow methods created by digital movie production houses. Has anyone analyzed the
needs of architects of these free form building shapes? Several leading designers use
their own methods of 3D design creation with varying degrees of success and
applicability.