

## THE UNIQUE CONTRIBUTION OF CAD TO DESIGN

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In architectural circles, there is a strenuous debate about the impact of CAD on the profession. The big question is "can one design using CAD?" Most architects think no. At best for them, CAD means computer-aided drafting.

One of the educational components of the Lunar Base Studio was to dispel this common thinking, or at least to give the students an intense experience with the tool for them to reach their own conclusions.

Not ignoring that the accurate expansion of the acronym CAD is computer-aided design, one must be very careful to define design. The designer is the person. The CAD system is the graphic processor that allows sets of physical information to be stored, edited, and combined. CAD does nothing more.

For the lunar base, there are particular CAD capabilities that are important:

1. High resolution precision is possible.
2. Information can readily be layered.
3. Modular coordination is facilitated.
4. Three-dimensional studies are possible.
5. Information can be shared by teams.
6. Color aids presentation.
7. Scale can be communicated readily.

8. Zoom allows working at a wide range of scales.

9. Every entity has a numeric database.

As you look at the graphic presentations in the design scenario section, you might wonder if there is any difference between the CAD process and hand-drawn design processes. Realize that each graphic image is a separate nameable file that has other sub-sets nested within it, and that all of these have been merged into a homogeneous master file complete with narration. While each student, in private and in small social groups, grumbled about the rigor and lack of speed of the CAD systems and procedure, the cumulative effect is quite different than most traditional architectural design scenarios.

Two qualities are apparent. One, the scenarios developed as a result of cooperative attitudes rather than competitive, and this is very appropriate for such a large project. Two, during the final month of the studio, the students became quite unaware of the fact that they were radically redesigning solely on CAD. This is facilitated because of CAD technology and is fundamental in any description of the design process. Good design requires redesign and convergence on what becomes a final design. Compared to any hand-drawn studio process, the volume of work and these essential qualities could not be achieved in any other way.

Any person in the area of the development of space knows that the computer is integral to existence off our planet. The unique series of lunar base designs that follows begins to suggest the same properties.