# 3-D Models Marry Science and Art

### BY FRANK H. ANDORKA JR.

Since at least the Enlightenment of the 19th century, there's been an ongoing tension in Western civilization between art and science. Scientists often dismiss artists as ephemeral. Artists often see scientists as stuffed-shirt rationalists who wouldn't recognize innate beauty if it were placed squarely before their eyes.
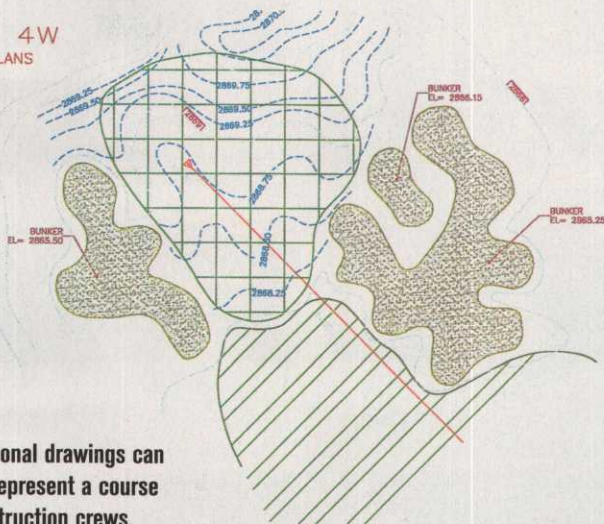
Golf course architecture combines both philosophies in an uneasy balance. At its core, golf course design is an art, but there's science involved as well. While it's necessary for architects to visit the land where their courses will be built, architects still return to their offices to craft construction plans according to the scientific principles of blueprint drawings.

Two dimensional drawings, however, can never fully represent a course for the construction crews, so it's inevitable that unexpected changes will arise. Those changes often unintentionally drive up costs with change orders and extra earth moving.

A tool exists, however, that melds the art and science of golf course design, allowing architects to create interesting, challenging courses with greater accuracy. It allows them to plan courses with scientific precision that minimizes unexpected changes to the overall plan. Architects across the country are slowly waking up to the power of 3-D Automatic Computer Aided Design (AutoCAD) and its utility in reducing overall construction costs.

Dave Edsall, president of Annapolis, Md.-

**AUTOCAD PROGRAMS ALLOW ARCHITECTS TO PLAN GOLF COURSES DOWN TO THE LAST SQUARE FOOT**

based Dave Edsall Design Group, has used the tool to design at least five replica courses. He says using a computer to speed the design and construction of golf courses is the wave of the future.

"It's a lot easier to make the course fit the land precisely when you use computers to help you," Edsall says. "As architects, we're always looking to move less dirt. With computers, you can calculate exactly how much earth you'll have to move to create certain features. It ends up saving money in the long run."

Edsall first discovered CAD in 1987 when he worked in the civil engineering department in Maryland. Back then, drafting drawings of buildings was a slow process. The drawings ping-ponged between the drafter and the architect for two weeks or more before they could be shown to a client, who would then correct the drawings.

Then the changed renderings would come back to the architect and drafter, who would ponder the changes and redraw the plans again. Edsall says the back and forth slowed down projects and cost a lot of money.

"It was a slow process and lengthened the amount of time necessary for planning considerably," Edsall says. "Now you can cut the time from architect to construction considerably. It streamlines the whole process and makes it more affordable."

Before the architecture purists start denouncing Edsall and others like him as defiling their profession with technology, Edsall isn't reducing golf course architecture to binary numbers. He understands you can't create a dynamic, interesting course sitting in front of a computer.

Edsall recognizes it's more important to walk the land and let the artist inside the architect run wild with hole possibilities. In fact, even in the
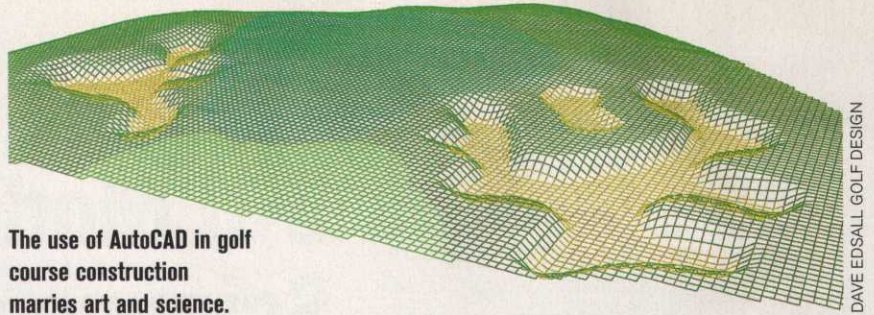
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GREEN 4W
GREEN PLANS



**Two dimensional drawings can never fully represent a course for the construction crews.**

DAVE EDSALL GOLF DESIGN

The use of AutoCAD in golf course construction marries art and science.

DAVE EDSALL GOLF DESIGN

world of CAD, you have to get an accurate lay of the land (through a global positioning system map) to do anything on the computer. Then you feed that information into a CAD program to create a 3-D layout of the course, modeled down to the last square foot.

"I understand you can't build golf courses like you build rockets," Edsall says. "Using computers just allows you to build courses much more precisely than in the past, which means fewer change orders and less-expensive construction. Everyone benefits from a more efficient, cost-effective process."

For an industry that spends entire conferences fretting about whether it's pricing new golfers out of the game by focusing on building expensive courses, lowering construction costs would be a godsend. According to the National Golf Foundation, owners must charge $10 in green fees for every $1 million in construction costs. If architects can save money on their end, it means the industry might be able to bring in new golfers on quality, inexpensive courses, which ensures the continued survival of the game.

So why isn't everyone using CAD in their design operations? For some, it's an understandable love affair with the artistic side of creating hand-inked drawings of their golf courses. But Edsall says he thinks there may be another reason as well.

"A lot of guys are still intimidated by computers," Edsall says. "I'm not sure they realize how easy it is o to work with one."
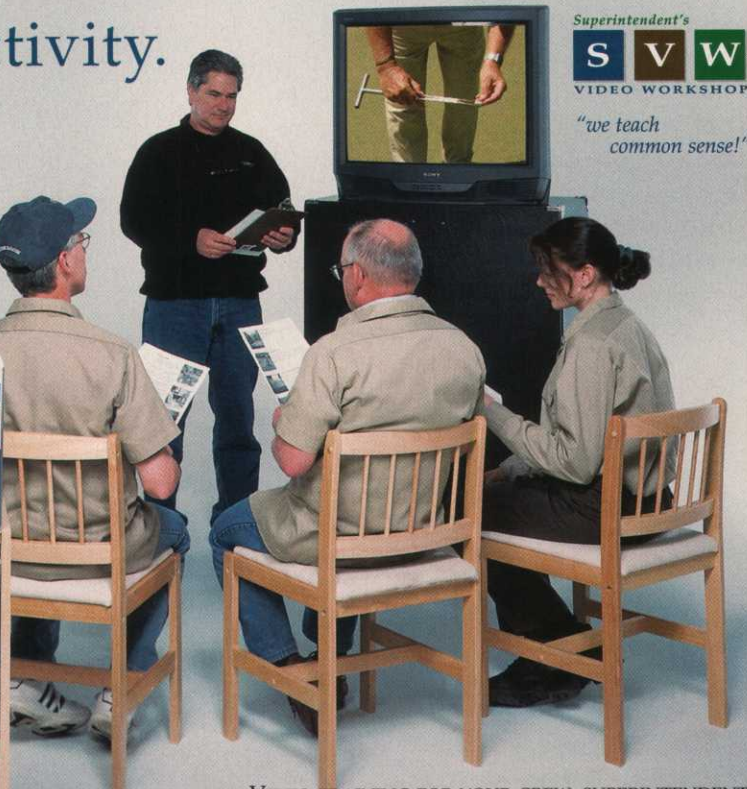
Once they start to learn, however, Edsall believes it will become standard for architects to use computers in their designs and present them with unlimited opportunities. In fact, they might even find their way into the history books.

After all, how often do you get the opportunity to resolve a centuries-old conflict about the marriage of art and science with the click of a computer mouse?

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