

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.

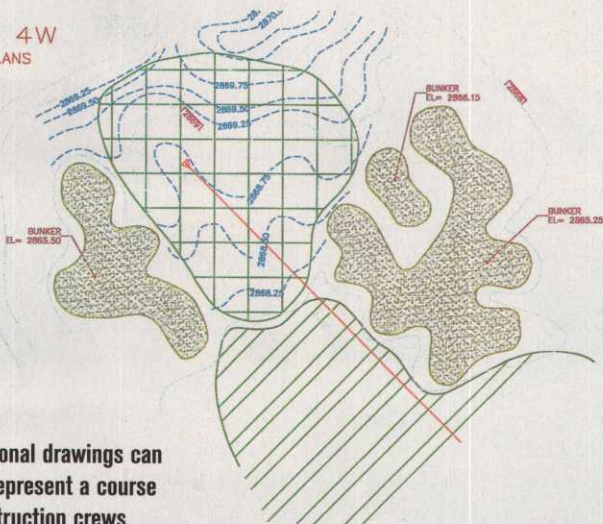
Golf course architecture combines both philosophies in an uneasy balance. At its core, golf course design is an art, but there's science involved as well. While it's necessary for architects to visit the land where their courses will be built, architects still return to their offices to craft construction 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.-

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

3-D Models Marry Science and Art

BY FRANK H. ANDORKA JR.



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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DAVE EDSALL GOLF DESIGN

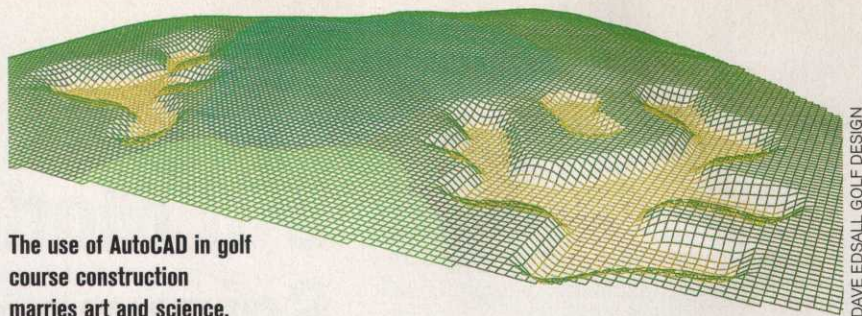
Talking Tech

Continued from page 61

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



DAVE EDSALL GOLF DESIGN

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

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-drawn 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 to work with one."

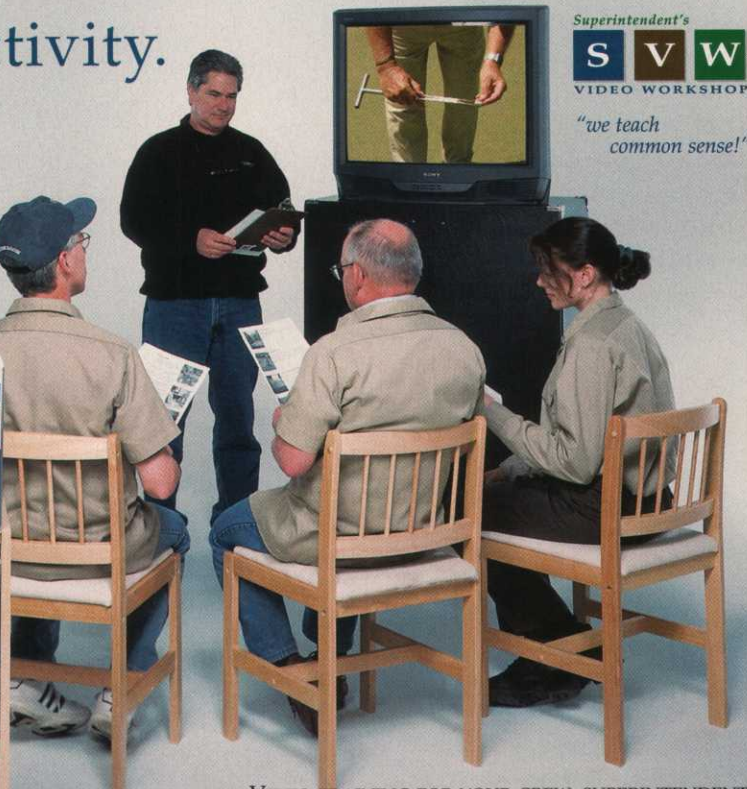
Once they start to learn, however, Edsall believes it will become standard for architects to use computers in their designs and present them with unlimited opportunities. In fact, they might even find their way into the history books.

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?

Frank H. Andorka Jr., managing editor of Golfdom, can be reached at 440-891-2708 or fandorka@advanstar.com.

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Tips

Cutting-Unit Maintenance

The best tip we can offer has nothing to do with any gears or gadgets. It has everything to do with good communication

BY LARRY AYLWARD, EDITOR

We want to provide you with tips for cutting-unit maintenance from the golf course technician's point of view. After talking with a few technicians, however, we learned that the best tip has nothing to do with the tools or techniques for improving cutting-unit maintenance.

For a golf course's green department to function soundly, the superintendent and his crew of equipment operators must work in tandem with the course's technician. Too often, the two sides aren't in sync.

"A good working relationship between the green department and a technician is beneficial for both parties," says Brandon Gayle, technician at Cheviot Hills GC in Raleigh, N.C.

Technicians say the key to working together is not just strong communication with a course's superintendent and equipment operators. It's also about respect for each other's roles.

This philosophy pertains to topdressing, which can have a tremendous impact on cutting-unit maintenance. Gayle says the superintendent at Cheviot Hills, Ray Autry, informs him in advance when he and his crew will topdress greens. Because Gayle knows in advance, he has time to install an older set of lapped reels on the greens mowers. The mowers with the older reels are used to cut the greens for a few days after the topdressing. When most of the sand is off the greens, Gayle places the newer reels, which he ground

while the older reels were being used, back on the mowers.

Craig Cassaday, technician at Merion GC in Ardmore, Pa., jokes that he and his peers view topdressing as evil.

When there's frequent topdressing applications, a technician is always grinding reels, Cassaday says. "It's a never-ending battle and leaves you little time to do other things, especially if you're a one-man show."

But with the proper communication and planning between the technician and crew, topdressing is not so bad, Cassaday adds. Merion superintendent Matt Shaffer doesn't topdress the greens regularly, but he gives Cassaday plenty of notice to prepare when he schedules the greens for topdressing.

"If I know we're going to go through a heavy topdressing, I'll open the reel to bedknife gap a little to allow sand to pass through," Cassaday says. "We're not going to get a great quality of cut with sand on the grass anyway. By opening the gap a little, the reels won't get damaged too badly."

After a few days and the topdressing had dissipated, Cassaday tightens the reel to bedknife gap on each greens mower.

Because he has a good relationship with operators, Gayle knows when there are problems with equipment. The operators inform Gayle when a mower is streaking or there's an odd sound coming from the cutting unit. Then Gayle can examine the problems and make repairs. "Operators must have good knowledge of how equipment works so

One technician says he politely instructs operators to "stop, look and listen" while using equipment.

TEXTRON

they can relay information to us about what's going on," Gayle says.

While it sounds textbook-simple, this type of communication is not a given, Gayle and Cassaday say. Cassaday says some superintendents and equipment operators view technicians as ogres. Not surprisingly, they communicate poorly and don't respect each other.

Gayle says he once worked with a technician with a bad temper. If an operator reported he had accidentally damaged the cutting unit on a mower because he ran over a rock, the technician would yell at him.

"It got to the point where operators wouldn't tell him anything," Gayle says. "They were afraid to tell him things."

Gayle and Cassaday say they strive to be approachable and fair.

"I've never gone off on someone for damaging a piece of equipment," Cassaday says. "I don't want operators to be afraid to tell me of any problems."

Cassaday discovered that explaining to operators what he does has helped their relationship. "The better they know your job and how difficult it is, the more careful they'll be with equipment," he says.

Cassaday politely instructs operators to "stop, look and listen" while using equipment. He tells them to look for abnormalities in striping and any dark marks or streaks that might signify a cutting-unit problem. ■



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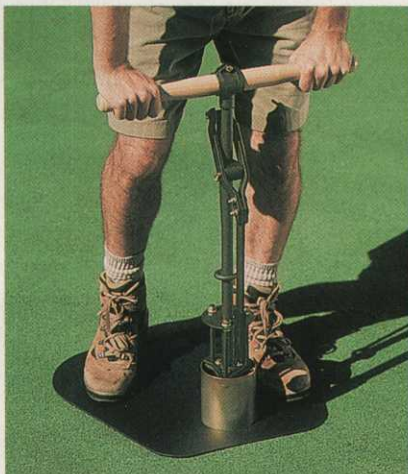
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STIHL's family of backpack blowers and sprayers recently received across-the-board upgrades. The product line, including the BR 340, BR 340L, BR 420, SR 340 and SR 420, now features the STIHL IntelliCarb compensating carburetor, an innovation which allows for longer running times at full power without the need for constant air-filter cleanings. In addition, all of the blowers and sprayers are equipped with a new filter system, which includes a vertical, pleated air filter that is almost self-cleaning.

Also, the new BR/SR line is built with its gas tanks separate from the fan housing. This new construction not only reduces the machines' vibrations, but also makes them easier to service and more cost-efficient in the event that a replacement fuel tank is needed.

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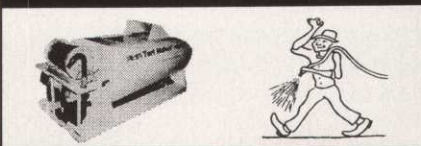
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Golfdom

MARCIE NAGY
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Tiger Woods and Stevie Wonder are in a restaurant having dinner. Woods turns to Wonder and says, "How's the singing career going?"

Stevie replies, "Not too bad. How's the golf?"

"Not too bad," says Tiger. "I've had some problems with my swing, but I think I've got that worked out, now."

Stevie says, "I always find that when my swing goes wrong, I need to stop playing for awhile and not think about it. Then, the next time I play, it seems to be all right"

Tiger says, "You play golf?"

"Oh, yes," Stevie says. "I've been playing for years."

Tiger says, "But you're blind! How can you play golf if you can't see?"

"I get my caddy to stand in the middle of the fairway and call to me," Stevie explains. "I listen for the sound of his voice and play the ball toward him. Then, when I get to where the ball lands, my caddy moves to the green or farther down the fairway and again I play the ball toward his voice."

"But how do you putt?" asks Tiger.

"Well," says Stevie, "I get my caddy to lean down in front of the hole and call to me with his head on the ground, and I just play the ball toward his voice."

Tiger asks, "What's your handicap?"

"I'm a scratch golfer," says Stevie.

Tiger is incredulous. "We've got to play a round sometime!" he exclaims.

Stevie replies, "Well, people don't take me seriously, so I only play for money, and never play for less than \$10,000 a hole."

Tiger thinks about it and says, "OK, I'm good with that. When would you like to play?"

Stevie says, "Pick a night."

Golfdom's



model airplanes



DAN BEEBY

If the pamphlet says, “Read and thoroughly follow the directions,” you should — especially if the instructions are telling you how to build a model airplane.

Flush with confidence and a child-like glee to start piecing together a model RAF Mustang III, I failed to follow said dictum. My wounded plane now dangles above my son’s crib. Should you choose to try this at home, know that the going is rough. But you can learn from my mistakes, which are chronicled below.

It’s been more than two decades since I’ve heard the names Snap-Tite, Revell and Tamiya, or put one of their products together. The hobby and specialty shops where the best models are sold still ooze generalized weirdness. Unlike chain stores, however, the workers at these stores will actually help you.

The mildly odd guy at my local hobby store gave me ample admonition: “I like to do all the painting before I start assembling. Otherwise, you can get yourself in a mess of trouble.”

Did I listen? Of course not. Instead, I nodded distractedly as I laid down my money and paid for the Mustang, acrylic paints and model cement. I went home, and didn’t

READ THE DIRECTIONS BEFORE YOU START THIS FUN, SOCIALLY HARMLESS PASTIME

BY MARK LUCE

read or follow the instructions closely.

That’s why my Mustang’s camouflage paint job has fingerprint smudges, the doors for the landing gear aren’t the right color, the landing gear isn’t sturdy and the left wing doesn’t stick together. I had to edit the version of what I screwed up because an unabridged list would require a miniseries.

A good model, such as Tamiya, will cost around \$20. You’ll need paints, too. Acrylics, while wet, will wash off with water if you make a mistake. Enamels won’t.

Nontoxic model cement doesn’t work nearly as well the toxic type. But the toxic cement is only harmful if you want to see how it tastes and/or pour it in your eyes.

You will also need some tweezers, a hole puncher, an Exacto knife, tooth-

picks and needle-nose pliers. Patience helps, as do small hands.

Now, *read* the directions. Read them again. Maybe read them one more time for good measure. Then begin, but use caution so you don’t do some of the things I did. Here are some of the bigger lessons I learned from my debacle:

- Don’t snap off the pieces from the hard plastic. Use the knife to cut them off cleanly. Failure to do so will yield improperly sized pieces, which will haunt you later and lead to cracking and breaking.
- Think about the paint scheme before dipping the brush. Inventory what you want to do, then execute your plan one step at a time.
- Dousing the pieces in cement before assembly does not mean the pieces will stick together better. Precision remains paramount.
- Guard the decals against wetness until ready to put them on your craft because spoiled decals leave inauthentic markings.
- Relax. Despite the obsession to detail that model making requires, it’s a socially harmless pastime.

Mark Luce, whose wife constantly hounds him to read directions, is a free-lance writer based in Kansas City, Mo.

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