Nov/Dec 2002

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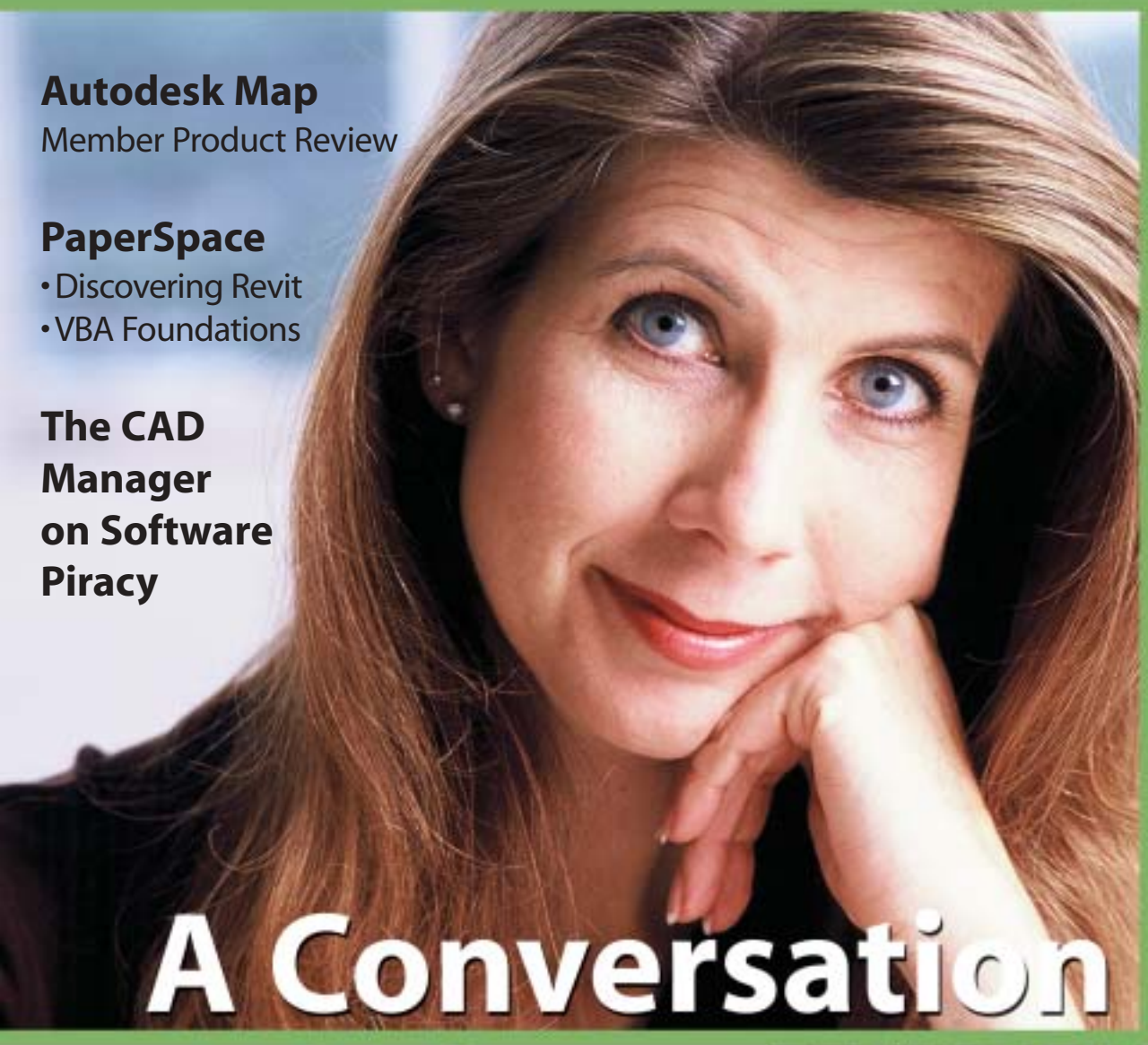
The Official Publication of Autodesk User Group International



Autodesk Map
Member Product Review

PaperSpace
- Discovering Revit
- VBA Foundations

The CAD Manager on Software Piracy

A Conversation With Lynn Allen

Autodesk's Technical Evangelist and a friend to end users everywhere, Lynn Allen prepares for one of her favorite gigs: Autodesk University

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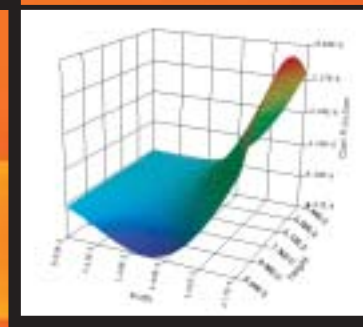

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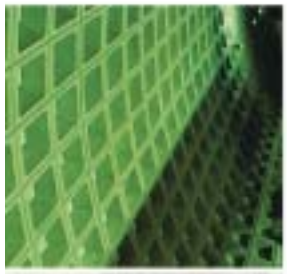

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augiworld

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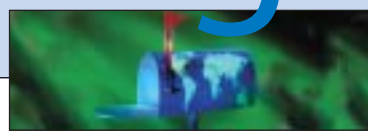

Who'll Be Top DAUG?

The Top DAUG* competition, a challenge of users' knowledge and skills in AutoCAD, is open to AUGI members at Autodesk University. The competition consists of two stages, with only the top 25 contestants allowed into the final stage. The first stage is a multiple-choice test of general AutoCAD knowledge. Contestants with the top 25 scores will enter the second stage, which is a drawing exam. The most correct drawing solution with the best time will become the "TOP DAUG of 2002."

Contest participants must be AUGI members and, obviously, must be attending this year's Autodesk University. To register, go to http://www.autodesk.com/au.

**DAUG = Do Anything for your User Group*

AUGI Annual Meeting

Come one, come all to AUGI's annual meeting in Las Vegas on Tuesday, December 3. Autodesk's Lynn Allen serves as Master of Ceremonies at this official kickoff to Autodesk University.

Meet the AUGI Board of Directors, get the latest news about AUGI programs, be among the first to discover the top 10 items on the AUGI Wish List, and be on the receiving end of loads of great giveaways. Immediately following the Annual Meeting is the AUGI Beer Bust, held in the exhibit hall.

Coming in January CAD Salary Survey

Augiworld is gathering information for a salary survey that will be presented in the January/February 2003 issue. Please take a moment to complete the survey: http://www.augi.com/educate/surveys.

AUGI EVENTS CALENDAR

Autodesk University
December 3-6, 2002
Las Vegas, NV
http://www.autodesk.com/augiau

AUGI Board of Directors Election
December 5-20
http://www.augi.com/enhance/membership/voting.asp

ATP, Spring Semester Faculty Registration
now through 1/31/03
http://www.augi.com/educate/atp/index.asp

ATP, Spring Semester Student Registration
February 4-28, 2003
http://www.augi.com/educate/atp/index.asp

Join the Augiworld Team

Do you enjoy helping your peers by sharing your experiences (good and bad) and your advice? Welcome to *Augiworld* magazine, a new forum designed to foster peer-to-peer communication among CAD users worldwide.

Augiworld will thrive only with help from its readership. We welcome all editorial contributions. Maybe you have an interesting user story to share. Did you oversee an intricate technology implementation that others would benefit from hearing about? Technical tips & tricks and product reviews are always helpful. In short, *Augiworld* welcomes any information that will be beneficial to your fellow CAD users.

Contact Marilyn Law, managing editor, at marilyn.law@augiworld.com with ideas or submissions. PaperSpace content should be directed to John Clauson, technical editor, at john.clauson@augi.com.

Correction

The email address for Alireza Parsai, a PaperSpace contributing editor, was incorrect in the September/October issue. The correct email is: alireza@khawarizmi.com. Look for his latest article in this issue of *Augiworld*.

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The Cad Manager

John Clauson

Who Me, a Pirate?

"I have it on all our computers, but I'll never buy more than one copy," he boasted about 10 years ago. A few months later, I heard that he had lost his job. He was a CAD manager who got caught using illegal copies of the one AutoCAD license that his company owned. A family man with many professional accomplishments, he probably didn't consider himself to be a criminal, but he was guilty of theft nonetheless.

His attitude was very common then, and has since only partially been changed by the education efforts of the software industry. He surely would have called the police if a customer had purchased one unit of his company's product but took a dozen from the warehouse. Like many people, though, he looked at intellectual property in a different light. After all, how can software developers charge thousands of dollars for a handful of floppy disks (at that time) and a book? It was just too easy to copy the software over and over.

The Internet has had a dramatic impact on piracy, not only on software but all kinds of intellectual property. Consider how many music files have been copied from one computer to another since you began reading this article. Much of the software on web auction sites is pirated. Our society almost seems to be condoning piracy in certain forms.

What's the big deal? The $11 billion lost to software piracy worldwide in 2001 was a pretty big deal. Nearly 20 percent of that was lost in the U.S. alone. That's in a single year. How many failed companies could that $2 billion have saved? What about the billion dollars in tax revenues and 100,000 jobs lost each year through piracy? Let's be honest here, too: we software users scream about product improvements and yet look the other way while the funding for those improvements is depleted by piracy. We cluck out tongues when hearing the stories about rampant software piracy overseas, but often turn our heads when it occurs in the next cubicle.

So what can you, the CAD manager, do? You probably want to help protect your company. You certainly want to protect yourself and your job. How should you handle various situations? Before answering those questions, let's find out what software piracy actually is and what's being done about it.

What is piracy?

You pirate software any time you make copies of the original media or install the software on more than one computer. You don't have to sell the copies to be illegal; giving or receiving illegal software copies is piracy, too. Twenty-five percent of all software in the U.S. is pirated, and the worldwide estimate is 40 percent and rising. The majority of pirates are not hardened criminals, but usually are well-intentioned folks like you and me.

In a piracy white paper, Autodesk notes that there are two primary forms of piracy: civil and criminal. Civil piracy, the majority portion in the U.S., is conducted by businesses and individuals who are not legal with their software installations. They have more installations of the software than the number of licenses they purchased. Criminal pirates have no interest in the software itself; they simply make and sell counterfeit copies of media and manuals.

It's not surprising that some otherwise law-abiding people become digital pirates. Software is a less tangible product than a car, for example. We use it in a virtual world rather than the physical, and thus have a different perception of it. Its value is realized through using it, not seeing it.

Our software licenses, the industry insists, give us the right to use the product according to certain terms. We own the license, not the software. This is an entirely different concept from that of traditional ownership of objects. Michael Jordan would understand it, though; he successfully sued to protect his control over the use of his own image in public media.

What's being done about it?

In a two-pronged approach, the software industry focuses on education and prosecution. Several giant software developers, including Microsoft, Autodesk, Adobe, Apple, and others, formed the Business Software Alliance. BSA's main website at http://www.bsa.org has links to dozens of regional and country sites around the globe.

In addition to fighting software piracy, the BSA mission is to educate users and influence public policies regarding copyrights, security, privacy, trade/e-commerce, and broadband.

BSA offers a new software asset management tool as well as a host of piracy news and survey resources. They even have an elementary school site at http://www.playitcybersafe.com, where teachers and students can download curriculum that was developed in conjunction with the *Weekly Reader*.

Autodesk pursues the educational and enforcement strategies with equal zeal. At www.autodesk.com/piracy, Autodesk offers a large selection of resources such as its Piracy Prevention Toolkit, educational articles, FAQs, press releases, and white papers. Like other BSA partners, Autodesk aggressively goes after pirates in court when negotiations don't work, recovering six-figure fines and strong compliance agreements. They emphasize that it can be far more expensive to pirate than to legally purchase all of its software.

What can my company do to protect itself?

Sandy Boulton, director of Piracy Prevention at Autodesk, says that most companies get caught for piracy because of calls to their piracy hotline (1-800 NO COPIES) from disgruntled current or former employ-

ees and some from competitors. She says a pirating firm might be safe if they've never displeased anyone — a rather daunting task in itself. Her department contacts the offender and offers a settlement that includes purchasing the appropriate number of seats well above list price and paying the legal fees.

According to an Autodesk FAQ, "The majority of software piracy is committed by small and medium-sized businesses with no clear policy about proper software use… Some 80 percent of Autodesk's piracy losses are attributable to corporate copying by people who could afford to pay for the software but have poor software management policies and fail to budget for additional software resources."

How does that happen? Those companies often have no clear policies regarding software acquisition and control, and often no mechanism for recording and monitoring installations.

To help its customers become legal, Autodesk has included a number of tools in its Piracy Prevention Toolkit. "After all," Boulton says," we want more legal seats, not more lawsuits." The toolkit contains boilerplate documents for a company software usage policy statement, a software code of ethics, and a memorandum to employees. There are also a software register for documenting installations and a user profile form.

Boulton also encourages customers who find themselves in noncompliance to work with an Autodesk reseller. "We want to work with our customers. We have partners that will assess their needs and give them affordable solutions to their situation. Then they can go on with their business without having to look over their shoulders."

What can I do to protect myself?

Before going any further, let's once again answer the age-old question, "Can I install my company's copy at home so I can work there? "Yes," says Boulton. "Autodesk's license agreement allows for a second installation of the software to the same registered user as long as there is no simultaneous use."

It seems prudent to ensure that employees don't get the wrong idea about your practice of allowing them to install copies of your company's software at home. I have employees sign an agreement before letting them install the software at home. It states that:

- They alone will use the software.
- They will use the software exclusively to produce documents pertaining to their employee duties.
- They will not install, copy, loan, rent, or sell copies of the software to any person for any reason.
- They will not allow anyone to copy or in any way duplicate the software.
- They will immediately remove all traces of the software from their computer upon the company's request.

As a well-intentioned CAD manager, you may find yourself working for a company that is legal but has just landed a huge short-term job. You have to hire four temporary employees for a few months, but management won't buy four more seats of software for them. Autodesk's rental option will accommodate just such a situation.

What if management simply won't spend the money? You might remind them of the situational ethics message that they are sending to their employees. "We steal from this software developer, but don't you steal from us." They would be enabling and encouraging an attitude they would not tolerate if directed toward them.

The best way to protect yourself professionally is to get and stay legal. Autodesk's piracy kit and BSA's Software Management Guide offers tools to help you do just that. You can download them at http://usa.autodesk.com/adsk/files/557941_Autodesk_Piracy_Prevention_Toolkit1.pdf and http://www.bsa.org/usa/freetools/business/gsmus.pdf, respectively. For a large selection of information on the subject, visit their main sites at http://www.autodesk.com/piracy and http://www.bsa.org, respectively.

If you find yourself in the very tough position of wanting to be legal but working for a reluctant employer, you can take some steps to keep yourself covered.

- Do everything you can to inform your upper management about piracy issues and encourage them to become legal. Be vocal about your position and document it.
- Present the basic piracy issues in an educational format to as many employees as possible.
- Conduct informal software inventories if your company does not formally endorse that activity and retain the results for your private records.
- Save copies of all your correspondence regarding piracy issues.

Piracy in the movies can be swashbuckling and romantic, but at work it can be as serious as the unemployment line. Get legal and relax.

John Clauson is CAD Manager at Indak Manufacturing and Junior Vice President on the AUGI Board of Directors.

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A Conversation with Lynn Allen

Autodesk's Lynn Allen speaks frankly about her most rewarding professional experience, what Autodesk does to please users, and the importance of mastering foreign words and phrases

AW: When did you first begin teaching AutoCAD?

Allen: Well, I've been *using* AutoCAD for eighteen years. Before I joined Autodesk, I did training for twelve or so years with an Autodesk Training Center. I taught at a junior college for a while. And I taught at my son's high school for a two-week stint just to help out.

AW: And at one point your job became the management of Autodesk's user groups?

Allen: Yes, and I'm still very passionate about it. It's no longer part of my job description, if you will, but I'm still very involved with AUGI and I speak at a lot of local user groups to try to get them to boost attendance. It's one of those things that once you get involved with it, you can't just walk away. Even if they fired me tomorrow, I would still want to be involved with the user groups. There is so much passion there. These people love our product. There are people who donate countless hours of their time. There's just no way that once you become involved with that you can walk away.

AW: Do you think this sense of camaraderie, this shared passion, is unique to your industry or does is it apply to software users across the board?

Allen: One of the things about people that use our products is that they use them eight hours a day. It's their livelihood. How well do they know all the intricacies of Autodesk Inventor or AutoCAD or Architectural Desktop or whatever? The more knowledge they gain, the better they can do their jobs and the further they can go in their companies. It's such an intricate part of their lives, it's what they spend their "nine-to-five" doing.

Plus, these are very robust programs. They have a lot in them; there's always something else to learn. I've spent eighteen years using AutoCAD and there are still things I don't know about it. So anytime they can go and learn one more tip & trick that shaves one step off a command they use all the time, it's a beautiful thing for them.

AW: One thing that strikes me about people in this industry is their willingness to help their peers. There isn't a sense that they keep productivity "secrets" to themselves lest they lose a competitive edge.

Allen: Yes, it's very much like a community you'd want to live in. That's one of the reasons you can't just leave this after you've been involved with it. It's such a do-gooder group, if you will. But it isn't fake — it's the real thing. And I would say that most user groups are not like that. It's just that our users spend a lot of time on these products and they become very passionate.

If you make changes to a product that someone uses all day long and it's a negative change, that's a bad thing. Our customers take that to heart. In some cases Autodesk has to take great care in what they add to new products. They have to make sure they're helping rather than hindering our customers.

AW: You're immensely popular among Autodesk product users, who I often think see you as a "pal" and a fighter for their interests, if you will. Do you ever feel like you need to champion the cause of the user or to act as a mediator of sorts between Autodesk and its users?

Allen: Oh definitely. And to Autodesk's credit, they come to me often for input. There are many people at Autodesk who've spent a lot of time with the software and still spend a lot of time with users and customers.

Autodesk isn't stupid — they want to make products that make their customers happy. I think they definitely listen. Well, just look at the job I have. How many companies would pay someone like me to go out and do tips & tricks and work with customers and try to make their lives better? Autodesk realizes that if they don't listen to the customers, the product isn't going to be any good. I think they try really hard to do that.

There is even a Director of Customer Experience at Autodesk whose goal in life is making sure customers are having a "good experience" with the program. It's just unheard of in the industry. Once in a while Autodesk will come out with a new release of a product and they'll show it to me first. I'll show them where they might want to tweak something that could cause problems or leave in a feature that customers really like.

AW: Okay, what about approaching it from the other way. Have you had to convince users that they'll like a certain feature they're initially reluctant to accept?

Allen: Oh, absolutely. Sometimes it's just education — making people understand. I'll use Digital Signatures as an example. When that feature first came out I thought, "No way is anyone ever going to use that." You see, I'm just like some of our customers when it comes to trying something new — I'm very resistant to change.

But after listening to a couple of presentations about Digital Signatures, I thought it was kind of interesting. Then I got a little further into it and definitely began to see how it could benefit our customers. So I went from thinking "Who's going to use that?" to "This is great!" and I realized that if I have to go through that metamorphosis, the customer probably does, too. So I approached it from the angle of education — explaining to them how I think that feature will take hold.

There have been a few more instances where I felt I had to explain to customers in terms they could relate to. I knew that right off the bat if they saw a particular feature they might not see any use in it. But once they used it, they would think, "How did I get by without this?" Some features are really easy to sell. Others that are totally new concepts take a little bit more work, but if the education is behind it the customer will embrace it.

Autodesk realizes that if they don't listen to the customers, the product isn't going to be any good.

AW: Your resume is impressive — speaker, teacher, author, just to name a few. Which role, or activity, do you enjoy the most and why?

Allen: I love my job now. I love speaking. I'm able to reach a lot of people quickly. In an hour or two I can show them all of this cool stuff and then get out of their way.

Teaching is very hard — especially hands-on training. I have a huge respect for people who do training because it's really a difficult thing. I did it for twelve years, but I'm not sure I could do it again because it requires so much patience.

Ironically, the most rewarding experience of my life was when I taught at a junior college ten years ago. That was by far my most rewarding experience ever. It was at Rio Hondo College in Whittier (California). It was sort of a low-income area and a lot of the kids couldn't afford to go anywhere else. It was a lot of work, but the payback was amazing. These students want so desperately to learn. They're like sponges — they're young, their brains are completely wide open and they are so appreciative of anything you can teach them. Believe it or not, I still hear from some of those students. I hated to say goodbye to that. I'll never forget it.

AW: When you're speaking, what audience mix do you prefer — brand-new users, seasoned veterans, somewhere in between?

Allen: For me, it's people who have been using the product for a while. It's because I can relate to them more. I'm doing Tips & Tricks, so obviously I can't do that for brand new users because they don't know the product well enough yet.

AW: Drawing from your many public speaking experiences, can you tell me what's the burning question (or questions) from the Autodesk user community — that single question or two that you get over and over again from your various audiences?

Allen: There's a lot of love for the Express Tools and I get a lot of questions about what happened to them and how can (people) get them. We actually had a sample of the Express Tools in one of our releases, and we didn't continue to put that sampling in (subsequent releases). We expected people to either buy them or to go on the Subscription program where they could get them for free. Boy, once we gave out a sample of these awesome tools, it was a shock when they weren't there anymore. They were near and dear to users' hearts.

And of course, I get technical questions. I won't bore you with the details.

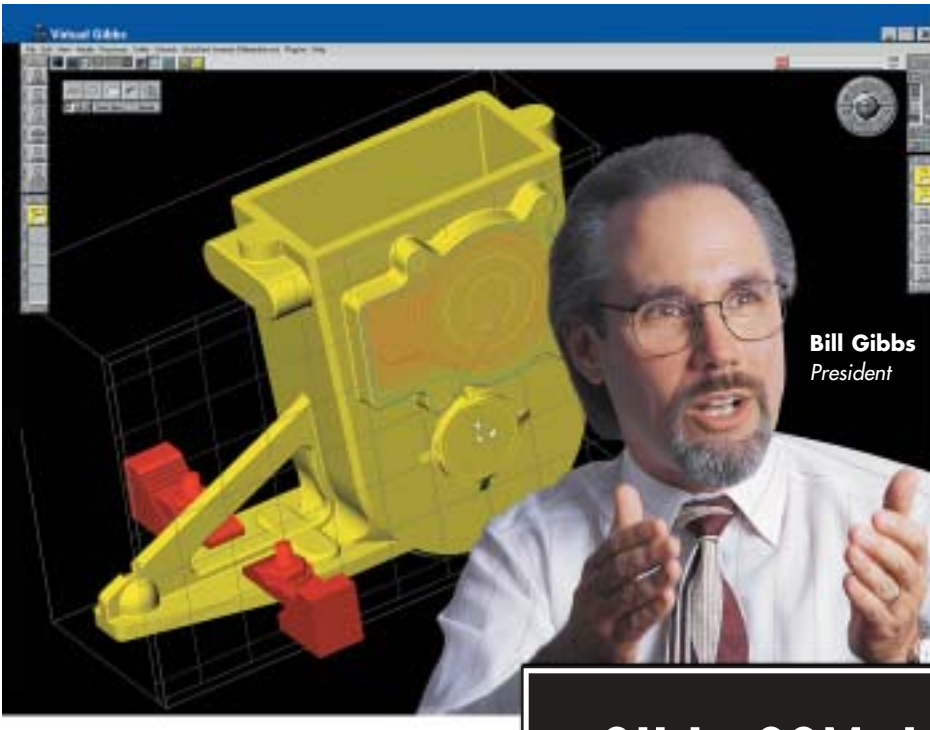
AW: What's the brightest moment or incident you can recall from your public speaking engagements?

Allen: There have been a couple…I've been the emcee for Autodesk University for the last three or four years, which is very different from what I normally do. I'm very comfortable in the technical environment and demonstrating things that have to do with the software. But being an emcee is altogether different. The audience is large, for one thing. So one of the most rewarding things, even though I was extremely nervous, was successfully doing that first emcee job at AU in front of my peers and in front of Autodesk. That was rewarding.

On a similar note, but very different, was that after I was finished speaking, a gentleman came up to me and said, "About three months ago I sent you an email and I was about to lose my job because I couldn't get this project out. I couldn't figure out how to do this one thing. I sent you this email and you answered me back right away." He said, "You saved my job." I was stunned — I had no idea.

I'll never forget that guy. He reminded me that we're all in the same boat. I get a lot of emails and, really, there's physically no way for me to answer all of them. But after I talked to him, I began thinking about the other people in that boat that I couldn't answer. Since meeting him, I do try a little harder to help as many people as I can.

AW: Now, what about the incident you would rather forget?



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About Lynn Allen

Allen joined Autodesk in 1994 as a software trainer, eventually moving up to management of the training department. A segue to worldwide management of Autodesk's user groups kicked off Allen's admiration and affection for Autodesk product users, which continues to this day.

For the past three years, Allen has held the title Technical Evangelist. Asked about the title (and, yes, it's her official title), Allen admits that the term, coined by Guy Kawasaki in his book *Selling the Dream*, is better known in Northern California than elsewhere. "It's a very Silicon Valley type of phrase," she says.

Yet the title fits Allen and her mission. She's frequently on the road — nationally and internationally — in tireless promotion of Autodesk and its products. Speaker, trainer, author, and teacher, Lynn Allen is, for countless Autodesk product users, the face of Autodesk.

Allen: I'm klutzy, so I've tripped on stage, run into tables, things like that. Once I was asked to talk at a user group meeting in a small Midwestern town, and the person setting it up didn't think about getting a microphone or a projector. So I showed up with my computer and there was no way to project anything. I actually had to talk through my presentation for an hour and a half. And in my presentation, if you can't show the software it gets really boring really quickly. I said things like: "*If* you could see the screen, you would see that…" So that was frustrating.

But by far this next story is the worst thing that ever happened to me on stage. I travel all over the world and early on I traveled a lot in Latin America. I couldn't speak very good Spanish, but I tried to learn how to say "very cool" in every language. Now even when you're speaking Spanish, the dialect is different depending on where you go. I was in Argentina — Buenos Aires — and when I said the phrase that I thought meant "very cool," I used the wrong vowel sound at the end. And what I actually said is something you can't print in your magazine. The phrase, as I said it, is basically an invitation to physical intimacy. The audience went crazy.

AW: Well, did they laugh or were they shocked?

Allen: They were cheering! And I was thrilled, thinking, "Oh, they love me!" So of course I kept saying it. The local Autodesk people in the back of the room were freaking out. They don't know whether to pull me off the stage or what. Nobody stopped me. And I actually didn't find out until I got off the stage and then I was so mortified that I didn't want to do any more presentations ever again.

AW: That's a classic story.

Allen: Yes. But it was one of the most embarrassing times ever. Of course, I can laugh about it now. And, by the way, that group never invited me back.

AW: What are the significant differences, if any, between the users you speak to or write for today and those you taught at the beginning of your career?

Allen: When I first started public speaking, lots of people weren't even familiar with computers. There were two things going on at that time. First, people were not convinced that it was better to draw on a computer than on a drawing board. So you didn't just spend your time showing the software, you spent a lot of time convincing people to buy it and use it. There were the people who said, "I can draw faster on a drawing board than on a stupid computer," which was true. The only place it really helped you was when it came to editing.

Then, as I said, there were the people who weren't familiar with computers. You'd say, "Hit F1," and they'd hit the F key, then hit the 1 key. So trying to teach them the basics of computers while you're trying to teach them CAD was very frustrating.

Also, in the early days I would say there was a woman in one of about every ten classes. There were very few women in this industry, which kind of made me an anomaly because I was a female and I was teaching CAD. In fact, I majored in math so I was used to being the only female. It was very clear back then that it was more of a man's field. Now I'd say that it's still male-dominated, but there are a lot more women in this industry who have, over time, become very proficient. The proportions have gone up dramatically. I can see that all around…I was in Taiwan last year and the audience was more women than men.

AW: And you don't know how much you've paved the way for women in this industry. People like you, Carol Bartz also — it is possible that you've been a role model for women.

Allen: Well, that would be great. I don't know if that's the case for me, but I would definitely say that's true for Carol. She's done a great job of leading this company in a male-dominated industry.

AW: What in your opinion are the most important things Autodesk has done in the recent past to benefit its users? I'm not talking so much about technical innovation in its products, but more about customer service efforts that have really made a difference in users' lives.

Allen: Autodesk's support of user groups and its assistance to AUGI — both financially and helping with AUGI's big annual meeting at Autodesk University — have been good things. I mentioned earlier the Director of Customer Experience. I really like that position. That guy gets involved in online discussion groups and spends a lot of time with customers, making sure Autodesk isn't missing the mark on things.

There's the Wish List. I love the Wish List. Autodesk always tries to make sure as many of the items as possible get added to the next release of the product. It always

thrills me to know that Autodesk is listening to its users.

AW: Autodesk University 2002 is coming up. Are you emceeing again?

Allen: Yes. As emcee, I serve as the "glue" between the keynote and other speakers.

I'm also responsible for the content of Autodesk University. This year we have 260 classes. To select classes, I work with the market groups and I also work with dave espinosa-aguilar — one of my heroes in life. He has a good sense of what users want, so we go through all the submitted proposals and try to select the best slate of classes…just try to do what we can to make everyone happy.

It's up to me to make sure the classes/teachers are good. If a student has a bad experience they should tell me, or at least fill out their class evaluations, which I pore over each year to make sure the next year will be better.

And I'm involved with other events along the way — I'll attend the AUGI meeting and help there if I can. I try to make myself available for people to talk to. I just like to be the "friendly face"… how's

that? I'm very passionate about AU, and I try to keep my fingers in as much as I can.

AW: What Autodesk University classes are you teaching?

Allen: I'm teaching an Autodesk Inventor class — taking people from AutoCAD to Autodesk Inventor. I've been learning Autodesk Inventor. I'm not an expert yet, but it's really such a fun product. I'm also doing Menu Madness, which is how to customize AutoCAD menus. And I'm doing Getting Up to Speed on AutoCAD 2002.

AW: Final question: If you were limited to offering just one bit of advice to brand new AutoCAD users, what would it be?

Allen: Go get hands-on training. Maybe that's because I was in that industry for so long, but I'm convinced there's no better way to learn the product than to sit at a computer and have an instructor available to help you out. And I would further qualify that they should probably take it from an Authorized Autodesk Training Center (ATC), because those facilities are monitored to make sure the training is good.

That's the best advice I can offer and I follow it myself. Whenever a new release comes out, I insist on sitting in a class. To learn Autodesk Inventor, I took two different classes from resellers who were ATCs. So new users need to save their pennies, bite the bullet, and go get training. It's worth every dime they will spend, and will save them a lot of headaches.

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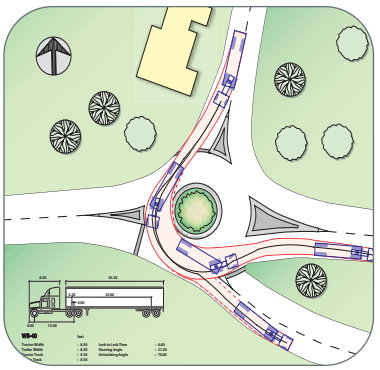

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The Best of the Guilds

Excerpts from the Guilds, AUGI's online support forums

AutoCAD: MatchProp Gone

Q: I lost my MatchProp. How do I get it back?

A: Check your DEMANDLOAD setting; if it's 0 (zero), that's your problem. I recommend you set it to 3.

VBA: Where's the Data?

Q: How can you test an array to see if it has any data? If it is empty, the test varArray = Empty works, but causes an error if there is any data in the array.

A: Use the following function to test if an array has any elements. It will return True if the variant has any data, False if it is empty.

```
Function HasElements(ByVal
ArrayToCheck As Variant) As Boolean
  On Error Resume Next
  HasElements =
(LBound(ArrayToCheck) <=
UBound(ArrayToCheck))
  Err.Clear
End Function
```

AutoCAD: Double Clicking No More

Q: Before, when I double click a text, ddedit or ddatte dialog box pops out automatically. It's not that way anymore. What happened? I am using AutoCAD 2000.

A: Command line: dblclkedit
Enter double-click editing mode [ON/OFF] <ON>:
DBLCLICKEDIT controls whether double-clicking an object results in the display of a dialog box. If double-click editing is turned on, one of several dialog boxes may be displayed, depending on the object type that is double clicked.

ADT: Losing My Grip

Q: I can get my running snaps to work with walls, windows, doors, etc., but lose the ability to snap to the corner or mid point of something like a table or drinking fountain. Am I just missing a setting for this or is the option to work like this gone?

A: You will find that the Help file states that the GRIPBLOCK system variable....
Type: Integer
Saved in: Registry
Initial value: 0
Controls the assignment of grips in blocks.
0 Assigns a grip only to the insertion point of the block
1 Assigns grips to objects within the block

ACAD: Toolbars Disappearing Act

Q: How do you get back toolbars that disappear? Sometimes they show up in the right spot, sometimes they don't show at all. A right click on toolbars shows that they are on. Turning them off, then back on, has no effect. Help!!

A: You need to use a command line type command to find these. Putting a dash in front of a dialog box driven command will allow you to bring up a command without its dialog box if possible. Use the "-TOOLBAR" command.
Command: -TOOLBAR Enter toolbar name or [ALL]: modify
Enter an option [Show/Hide/Left/Right/Top/Bottom/Float] <Show>: f
Enter new position (screen coordinates) <0,0>: (enter)
Enter number of rows for toolbar <1>: (enter)

LDDT: Rotating My View

Q: Does anyone recall the command for rotating an image within a viewport? I do not wish to rotate the plan in model space.

A1: I sometimes rotate the UCS on the Z axis and do a "plan" command accepting the default "current UCS" option.

A2: I use a command you type in at the command line. Click to model space, Type MVsetup. Select the option "A" for align, then "R" for rotate. Input the angle you need to rotate the plan. This only rotates your view and not the real-world drawing. I know many of you have other ways to do this, but it works for me.

ADT: Flattening for Consultants

Q: I have a building drawn entirely with AEC objects in desktop2.0. I need to send plans to our consultants, and they need traditional 2D drawings. Is there a way to convert this desktop drawing into a 2d dwg file for them?

A: Desktop > Utilities > Explode AEC Objects
That ought to do it for you… it'll even bind Xrefs if you so desire

CAD Management: Formatted Word Documents

Q: I would like to know if there is a way to import formatted Word documents into AutoCAD. I have a very long general notes list, which I would like to import into AutoCAD. If I were to change the document into a txt file, I would lose all my indentations and spaces.

A: First, convert your Word doc to a non-proportional font such as Courier. Check how the spaces and tabs look while in Word. Next you would print the Word doc as an ASCII file on disk. (You may have to set up 'print to disk' as a Windows printer first. Note that tabs, tables, and indentations will get converted to spaces.) Open new ASCII file. Cut and paste into AutoCAD's MTEXT.

LISP: Annoying Close All

Q: Does someone have something that will allow you to use the CloseAll command and save all open drawings without having to stop for each annoying idiot question about saving first coming up?

A: Try this:

```
(defun C:CLOSEALL ()
 (vl-load-com)
 (vlax-for FOR-ITEM
```

```
(vla-get-documents
 (vlax-get-acad-object)
)
(vl-catch-all-apply
 '(lambda (X)(vla-close X))
 (list FOR-ITEM)
)
)
(command "qsave" "close")
(princ)
```

CAD Management: Hatch Back

Q: Is there a way to make sure that when you plot, all the hatch patterns move to the back of the Draw Order?

A:
```
(defun c:hatchback ( / hss cmd)
        (setq cmd (getvar "cmdecho"))
        (setvar "cmdecho" 0)
        (setq hss (ssget "X" (list (cons 0
"hatch"))))
        (command "_.draworder" "P" ""
"back")
        (setvar "cmdecho" cmd)
        (princ)
)
```

CAD Management: Layer States

Q: Is there is a way to have layer states be available from a menu button?

A: This program could be a button like
^c^c(lstate "mylayerstate")
Here is the code.

```
(defun LSTATE (STATENAM / STA-
TEOBJ)
 (vl-load-com)
 (setq STATEOBJ (vla-getinterfaceob-
ject
            (vlax-get-acad-object)
            "autocad.acadlayerstateman-
ager"
           )
 )
 (vla-SetDataBase STATEOBJ
           (vla-get-database
            (vla-get-ActiveDocument
             (vlax-get-acad-object)
            )
           )
 )
 (vla-restore STATEOBJ STATENAM)
 (princ)
)
```

AutoCAD: Groups Galore

Q: How can I purge my groups when I have erased them?

A: Here is LISP routine that should do just that.

```
(defun C:PURGE_GROUPS ()
 (vl-load-com)
 (vlax-for FOR-ITEM
        (vla-get-groups
         (vla-get-activedocument
          (vlax-get-acad-object)
         )
        )
  (if (= (vla-get-count FOR-ITEM) 0)
   (vla-delete FOR-ITEM)
  )
 )
 (princ)
)
```

One person asked if there was a program to add up the lengths of a group of dimensions.

```
(defun c:ADDDIMS (/ CNT ENAM
EOBJ SSET SUM)
 (vl-load-com)
 (setq SSET (ssget (list (cons 0
"DIMENSION")))
       CNT  0
       SUM  0
 )
 (repeat (sslength SSET)
  (setq ENAM (ssname SSET CNT)
        CNT (1+ CNT)
        EOBJ (vlax-ename->vla-object
ENAM)
  )
  (vl-catch-all-apply
   '(lambda (X) (setq SUM (+ SUM
(vla-get-measurement X))))
   (list EOBJ)
  )
 )
 (princ (strcat "\n" (rtos SUM 4)))
 (princ)
)
```

The material for this article was compiled and submitted by Donnia Tabor-Hanson, AUGI Logistic Liaison, and the AUGI Product and Industry Chairpersons who volunteer their time to assist AUGI. Multiple responses to a question are labeled A1, A2, and so on.

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Autodesk Map

Autodesk Map brought geographic information systems (GIS) to the average AutoCAD user. It was the product that made GIS look familiar to us. Prior to Map, there were many products available for use in a GIS, but generally people did not look to Autodesk for GIS solutions. When the topic of a GIS came up, most of us thought of companies such as ESRI and Intergraph.

Autodesk Map is a powerful product that can be useful to virtually anyone from the first day it is loaded onto the user's machine. It can be used for tasks that range from importing different file types into AutoCAD to creating a complete GIS.

Data Conversion

Autodesk Map gives AutoCAD users the ability to import files from many different formats including ARCINFO, ARCView, MapInfo, and MicroStation files. There are several settings that can be used during the import process. The user is able to:

- specify the layers to be used in Map
- import data from the incoming file to object data tables
- import points as points or blocks
- perform a coordinate conversion

Any combination of these settings can be used during the import process, depending on your needs. After creating your settings, you can save and reload them to be used later. If you are not concerned about the settings, the import process is as simple as opening a normal DWG file.

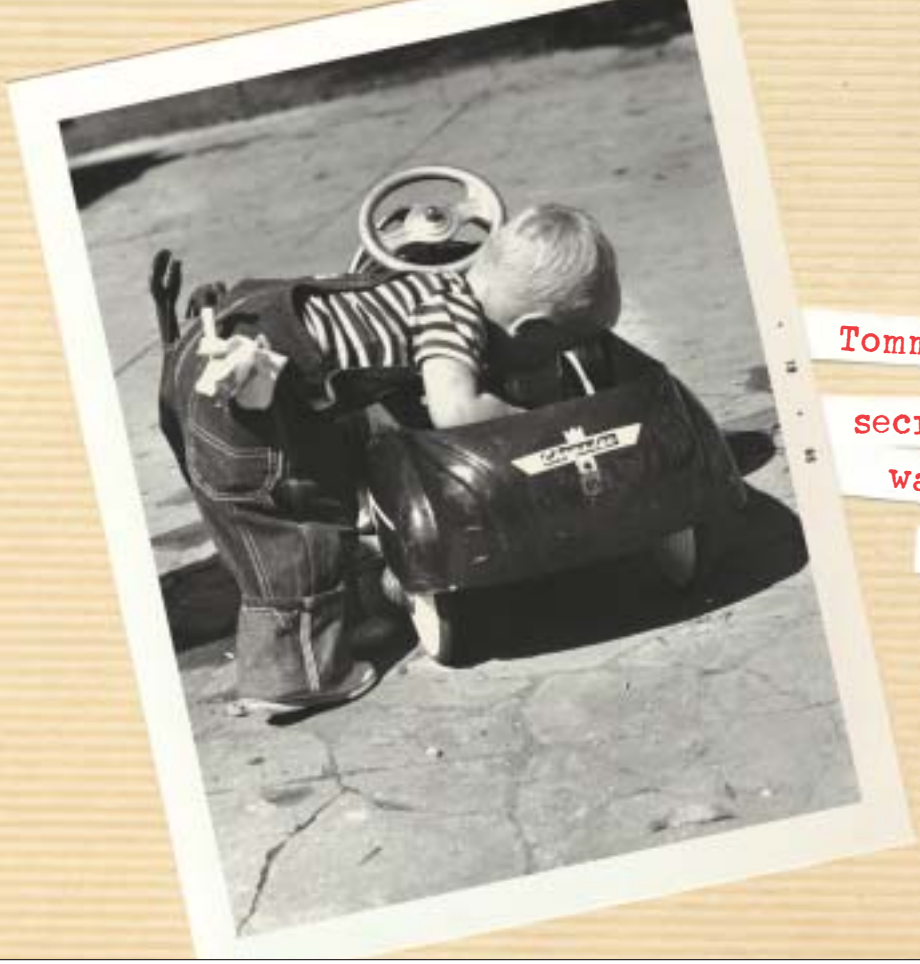
The export command allows you to take AutoCAD files and create ARCINFO, ARCView, MapInfo, and MicroStation files. You are able to export the entire drawing or pick specific objects. As with the import command, you can customize your settings and save them for future use.

The import/export options in Map are powerful tools. These options eliminate the problem of not being able to view and use data just because it is in a different file format.

Cleanup

Cleaning up data is not the most glamorous task, but it is a necessary step in the process of creating a GIS. Scanned and digitized drawings generally need the most cleanup. Undershoots and overshoots are two of the most common problems, but there are also many others such as open polygons and double digitized lines. No matter how careful somebody is, there usually is some cleanup to perform.

Autodesk Map automates the cleanup and even lets users decide how automated they want the system to be. The most labor-intensive method is to have Map mark all of the errors, but not fix them. This method gives the user the most control, but also results in the most work. The other end of the spectrum is the method whereby Map automatically finds



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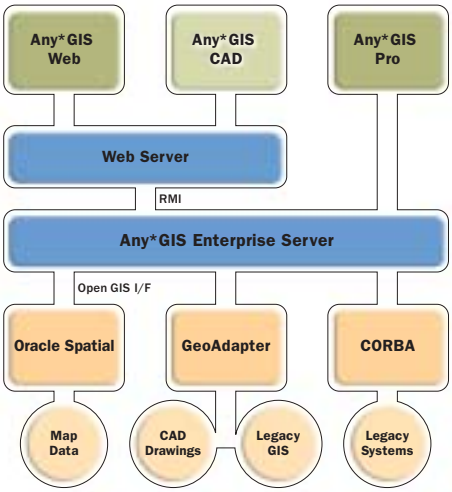

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and fixes all of the errors. Between these two lies a method that gives the user some control over what errors are being corrected. The method you use depends on the type of data you are correcting.

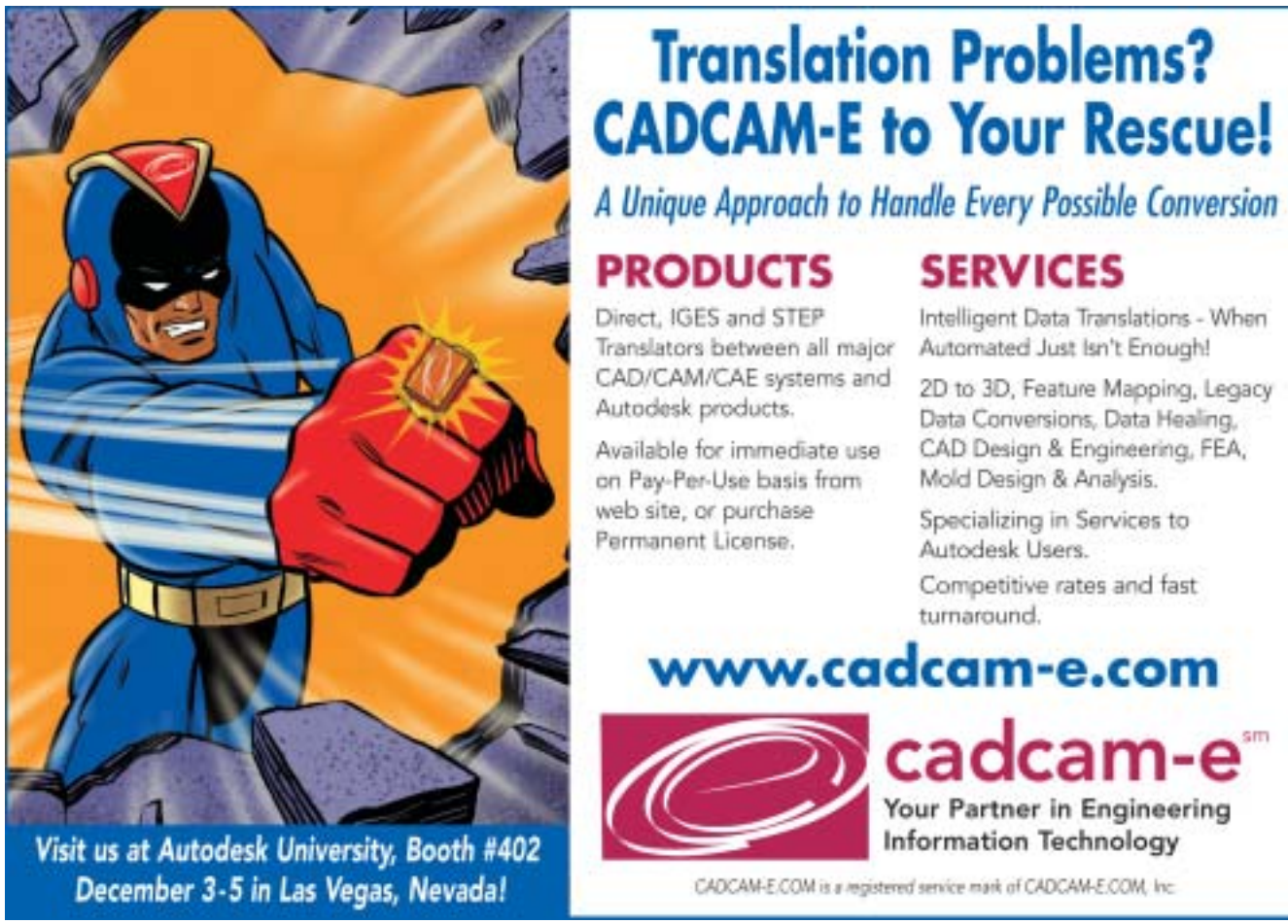
When weighing the pros and cons of Autodesk Map, I doubt that many people think about the cleanup and file conversion tools too much. But the more the product is used in everyday production work, you quickly find that these tools are invaluable.

Queries

Autodesk Map allows you to set parameters and see the results. In other words, ask Map a question and it will give you an answer. This is another command that can be used the day you start using the product. Say, for example, you have numerous drawings and want to create one drawing with only the fire hydrants from all of these drawings. With query commands, this becomes a simple process. Depending on the data, the queries you create can become very complex, but this is another example of Map being of use to everyone—from beginners to experienced users.

Object Data

Object data is a simple database stored within AutoCAD. This is another example of how Autodesk Map makes GIS a bit easier to use. Depending on your application, this may be the only database you need. One of the drawbacks of object data is that it does not recognize data from other applications.



Object data works just like a typical database: you define a data table with data fields and you define what kind of information will be stored in the fields. Next you attach the object data to the objects in your drawing. Editing the object data is similar to editing any database.

Having knowledge of how databases work is helpful in using object data, but even with limited knowledge of database creation and maintenance, you can use object data successfully.

External Databases

External databases are really what a GIS is all about. The ability to link drawing data to database records adds intelligence to your drawing. Now the drawing can help you make decisions. You can create queries to gather information that was never looked at in the past — that is the power of a GIS. No matter what software is used, we always need to remember these are tools to help us make more informed choices. Sometimes we get too caught up in formats and file types and forget the end goal of a GIS.

Autodesk Map can use data from many different database management systems (DBMS), ranging from an old Dbase file to the newest version of Microsoft Access. This is another example of how flexible Map can be.

Once you have attached a data source, you are able to view and edit the tables. Once your source is attached, you can link database records to your graphical objects.

Here is an example of how a water department might use Autodesk Map. The water department might attach model number and installation date to a valve, for example.

As most people involved in mapping and GIS know, the most labor-intensive part of the project is the data gathering. It may take a city years to update its information on all of the water valves in a particular area. But once this is complete, intelligent choices can be made with the use of this data.

With the datasets built, the water department can create a query to find out the location of all of the valves that were installed by a certain contractor. This information can then be given to the field crews in a very clean and concise document. Throughout the process, the GIS saves time and confusion.

This goal of this article is to illustrate the versatility of Autodesk Map software. Useful to many different types of people, Map can be used for tasks ranging from simple file conversions to creating a full-blown GIS. Autodesk Map doesn't live in a vacuum. It can import and export data from many of the most popular software programs used today. The more you use Autodesk Map, the more you'll see that it is a very robust tool to have working for you.

Scott Stevenson has worked in civil engineering for 12 years: five with a municipality and seven with private firms. He has been involved in surveying and inspection, but has devoted a large portion of his time to the design and drafting of civil projects.

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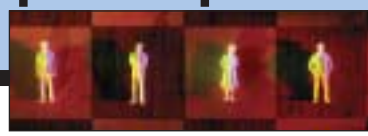
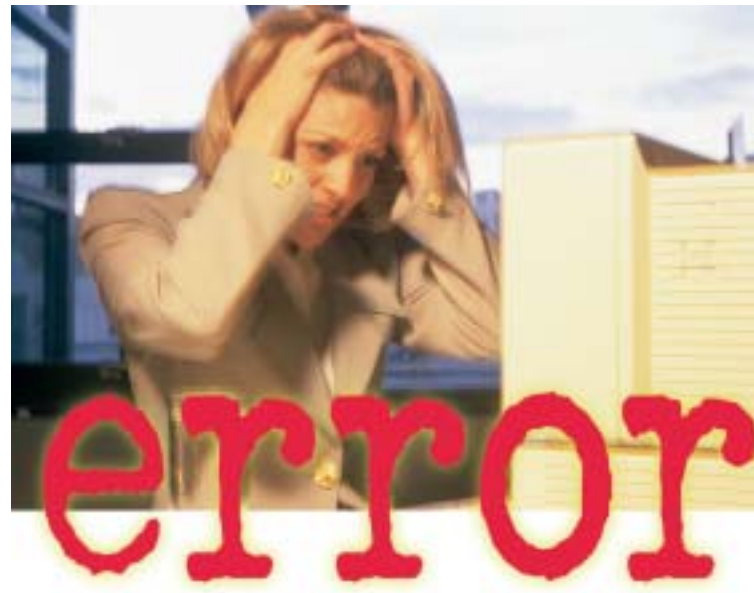


VBA Foundations

If only error messages were sensible! The sad truth is that by the time you are shown an error message, it is frequently too late to save your project. Don't worry too much about it, though. You will get another opportunity to type it in, and another, and another. But soon, the error messages will become less and less frequent, until they are but a distant memory. Then, at long last, your code might be ready for others to try. And the circle begins anew; only this time you don't see the message. This time you get a phone call from someone: who probably won't be able to adequately describe the message they are seeing, is not sure how far your routine got before the error message appeared, and is confident that they did nothing wrong — it must be bad programming! Perhaps Thomas Paine said it best: "These are the times that try men's souls."



"Too strong," you say? "Errors? Not me!" you say? Rest assured that it will happen and usually sooner than later, but take comfort in this issue's lessons. Today we will learn a little bit about errors, what types of errors can occur, why they occur, and how to apply some preventive medicine so that they are manageable when they occur. And occur they will, usually at the most inopportune of moments. This is the undeniable truth of programming. No matter how thoroughly you test your program, errors can still crash it during normal operation. So before you get carried away pressing that "shiny black right-facing triangle" in the middle of the screen, read this article to the end and hopefully you'll take a way a gem or two to guide you.

Scared? Don't be! It's not really that hard, if the truth be told. So, since you and your users won't be presented with the type of pithy Error Haiku presented at the beginning of this article, perhaps we should just get started.

This brings us to the first Law of Error Handling: use "Option Explicit." I mentioned this one in a previous article, but it is so important to your routines that I will repeat it here. Use Option Explicit because the first time you attempt to run your code, the editor will skim through it to look for each variable that is being used and to identify the "Type" of variable it is. It checks this by looking for the line where you declared the variable. If it cannot find the declaration (Dim, Public, Private, etc.), then it will halt the routine and highlight the variable where it is first used, so that you may properly declare it at the beginning of the highlighted procedure. This is usually the first hurdle and the one that could keep you up at night trying to figure out why the code that you so carefully thought out simply does not perform as intended.

Errors come in many forms and there is an entire family of error handling statements to help ensure that you produce "Good Code" (see previous articles for definition). In order to begin the process of writing error handlers, memorize the following statement: "On Error." Repeat it with me: "On Error." Two words with more innate ability were probably never typed. I am being a bit over the top, aren't I? Perhaps "never typed in the VBA editor window" is a more fitting form of that thought. In any case, those two words are very powerful and begin every error handling snippet or function you will probably ever write, so memorizing them is a good thing.

"On Error Resume Next' is probably the simplest of the error management family and is considered an in-line method of error handling. This handy phrase is completely self-contained and self-descriptive. When this phrase is placed in your code, any errors encountered after that phrase will simply be ignored and the program will proceed to the next available line of code.

Before I get too deep into this handy family of phrases, let me point out the fact that every sub, function, or procedure you write should ideally contain some error handling. Why? The On Error statement only turns on error trapping for the procedure (whether sub or function) in which the phrase is found. Therefore, you must use a type of On Error statement in every sub or function in which you want error trapping to occur. You won't go wrong if you remember this as the Second Law of Error Handling.

The rest of the family involves more direct redirection. (Oxymoron or pun? You decide.) Though hardcore programmers may try to convince you that a truly well

written program, or language for that matter, would never have any GoTo statements in it, I disagree. One of the most compelling reasons people have adopted Visual Basic in such great numbers is its relative ease of use and the fact that it is mostly driven by reacting to events such as button clicks, mouse movements, and the like. This type of environment is ideally suited to the use of GoTo statements, although most VB programmers prefer to limit their use of GoTo statements to their Error Handling snippets. This I can agree with. Let me emphasize that the use of GoTo statements in other areas of your program can make your program hard to debug or understand, especially after it has been on the shelf a while. But please DO use GoTo statements in Error Handlers where they are almost always appropriate and usually the cleanest solution to the problem at hand.

So, on with the show. "On Error GoTo SomeOtherMeaningfulLabel" is used when you expect an error and wish to deal with that error prior to resuming your code. This is an important aspect of its use: you must eventually include the keyword "Resume" at a point after your program has jumped to the "SomeOtherMeaningfulLabel" line or you should clean up its objects and exit the sub or function in which it is contained. Therefore, you will usually use a GoTo keyword with one or more Labels. The first one attempts to handle the error and is the label immediately following the keyword. The second label can be used as an alternate avenue of completion for your code after the error condition is fixed, provided that your intention isn't to exit the sub on the first error encountered. So, your options with the GoTo keyword include Resume to immediately retry the same line of code that resulted in the error. Note: ensure that you've corrected the error, because if you use Resume by itself, without a label, your code will jump back directly to the same statement it came from originally. You could use Resume Next to skip to the line after the line that resulted in an error, or Resume SomeLabel to go to an alternate path of code completion as necessary.

This topic could not be completed without mentioning the built-in Err object so thoughtfully provided by the VBA language itself. The Err object has a number of properties and methods built in and is much too complex to cover adequately in this article. I'll leave it up to your own research. Of course, you could always download the "in-depth" version of this article made available at AUGI's website (http://www.augi.com) to continue this discussion and see examples of this and all the other Error Handlers discussed in this article.

Like every aspect of good programming, error-handling routines should be "invisible" to the user. If you have an idea of what kinds of errors to expect, you can troubleshoot potential problems without the user ever knowing something has gone wrong. On the other hand, if your error-handling routine can't figure out what to do, you can at least print out error messages in plain English, and give the user a chance to recover from the problem without a crash. In whatever situation you may find yourself, error trapping is an important and effective way to make your programs polished, professional, and easier to run.

I hope you have found this exploration of VBA error control both informative

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and useful. As always, make sure to search through the online help whenever you have a question related to this information. If you are really stumped, please send in your questions to the VBA Guild (at http://www.augi.com) or to me at rbinning@attbi.com. See you on the Guilds or in the next issue of *Augiworld* magazine, coming soon to every AUGI member.

Note: The full version of this installment, the eighth in the 12-part VBA series, is available for downloading at http://www.augi.com/educate/publications/paperspace/psdownload.asp

Richard L. Binning is the CADD Coordinator for the Haskell Company in Jacksonville, Florida, where he acts as a liaison between the Information Technology Department user groups and functional departments, and Upper Management. Richard also coordinates and conducts in-house training and manages large-scale, offsite training for CADD users. He oversees the automation and customization of AutoCAD for 120 CADD users at Haskell, and is also an adjunct faculty member at the Technology Institute of the South, his local ATC.

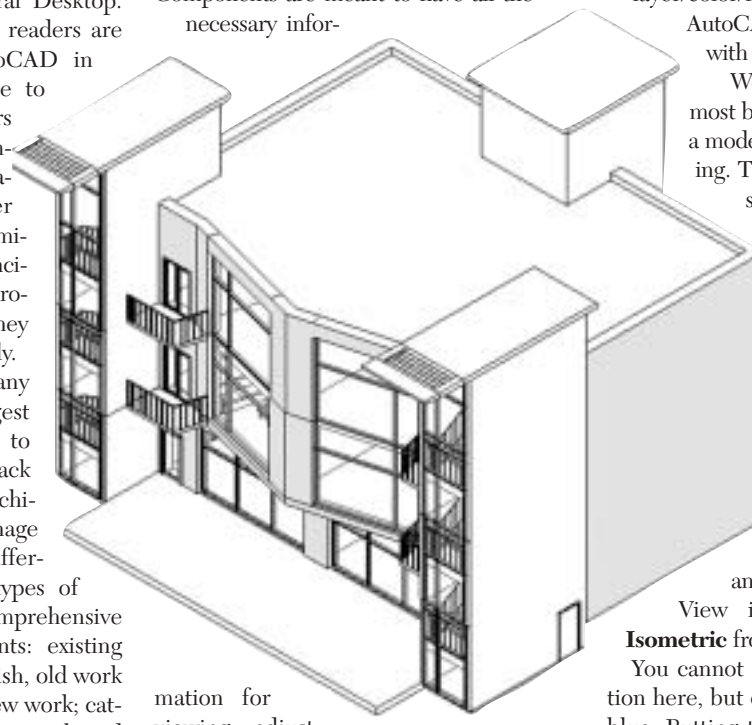
Discovering Revit

Viewing Tools

In my first column on Revit for the premier issue of *Augiworld*, I described many of the essential components and interface of the program, comparing it throughout to AutoCAD and Architectural Desktop. I'll keep the assumption that readers are coming to Revit from AutoCAD in some form, and I'll continue to refer to AutoCAD so that users attempting to familiarize themselves with this emerging parametric architectural modeler will be able (I hope) to see similarities between the design principles of Revit and existing programs or work techniques they already know and use efficiently.

For an AutoCAD user of any sophistication, one of the biggest changes to face when trying to work at speed in Revit is the lack of drawing layers. People in architectural design learn to manage dozens of layers in order to differentiate and collate all the types of information contained in a comprehensive set of construction documents: existing conditions, old work to demolish, old work to retain, various options of new work; categories of architectural, structural and mechanical objects and symbols; dimensions and text scaled correctly for overall views, enlarged views and details; the list goes on. The mental concept of a transparent layer—to draw on, whisk away, and bring back—to control visibility of certain information works well, and many systems have been built to arrange layers, up to and including the National CAD Standards of the AIA. Architectural Desktop uses layers to control visibility and plotting in ways that are so dense as to be opaque to a lot of users, and to my mind approaches the limits of usefulness in that regard.

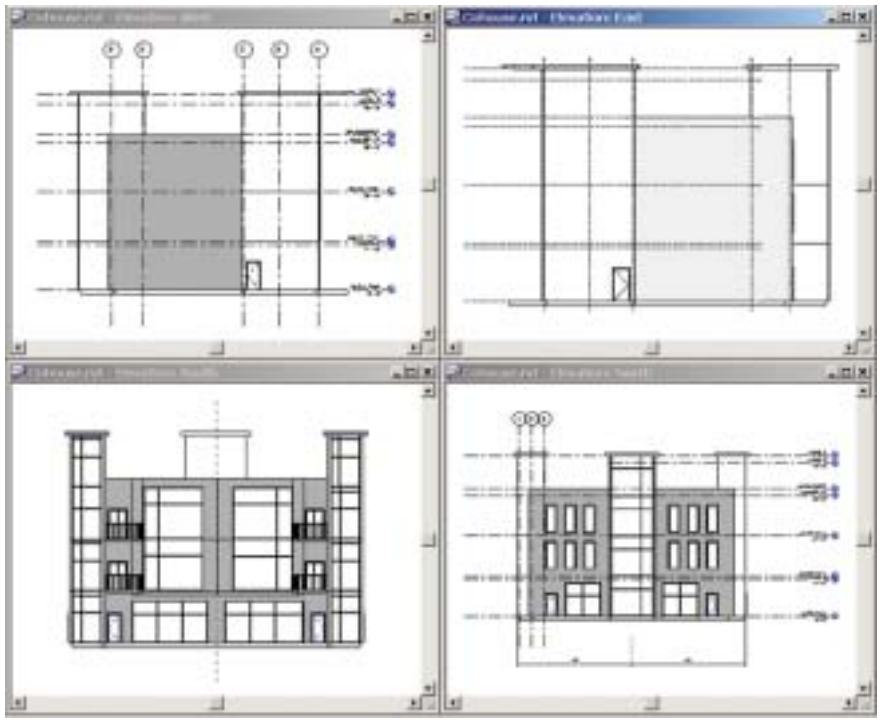
Revit is completely object-based. Components are meant to have all the necessary information for viewing, adjusting, and counting them built in. In theory, there is no need for a design component, be it wall, window, door, roof, or symbol, to refer to other non-modeled properties within the drawing file (such as layer that it was created on or color) for any of its essential controls. The View you use (plan, elevation, section, 3D) to see the components in your file defaults to certain modifiable visibility characteristics. In practice, rather than learning the ins and outs of a Layer Properties Manager, users will get into the guts of the View Properties and View Graphics dialogs, which if anything have more controls in them than the good old layer/color/linetype combination that AutoCAD users have been dealing with for years.



We will touch on some of the most basic controls for Views, using a model of a small apartment building. The model images in the next sections will be taken from the file **Cohouse.rvt**, found in the Training/Imperial folder that ships with Revit 4.5. (Disclaimer—as of this writing, release 5.0 has not appeared. Certain dialogs may now appear different from the illustrations.) The file opens to a 3D View, Southeast isometric orientation, and hidden line mode. The View itself has been renamed **Isometric** from the default **{3D}**.

You cannot see in the image reproduction here, but certain walls are tinted light blue. Putting the cursor over the walls to highlight them shows that the white walls are concrete and the tinted walls are Brick on CMU.

Zoom in close to a tinted wall (the Zoom icon is a familiar magnifying glass symbol with a drop down menu next to it; two picks defines a **Zoom Region**) and the wall displays with a brick pattern. To return to the previous view position you can pick **Zoom Previous** on the Zoom



menu or type **ZP**. Revit does not have a command line, but will accept typed shortcuts for certain commands. The shortcuts display on relevant menus.

To reach the 3D Orbit equivalent, pick the eyeball icon next to the Zoom, or hit the F8 key.

The Dynamic View control that then opens up will expand in 3D views to allow for view reorientation, provides Zoom and Scroll (Pan) buttons for those without wheel mice and has a Spin button that allows 3D Orbit type motion using the mouse with the Shift key depressed.

Typing VP brings up the **View Properties** Dialog for the current view, or a right click in the View Window will bring up a context menu with View Properties as a pick choice. You can also highlight any named view in the Project Browser, right click and go to Properties for that View.

In the case of the Isometric View, the Properties show the **View Name** and that the view has not been named on a drawing sheet. The default **View Scale** controls the size of text and annotations placed in the view and the scale of the view when placed on a sheet. Standard architectural scales are available, plus a **Custom** setting, which then activates the **Scale Value** field.

Placing a **Crop Region** in a view allows for view clipping in various ways. Once the view has been clipped, the Crop Region can be made invisible (similar to turning off paper space viewports). This applied crop controls how the view appears on sheets.

The **Edit Visibility** button opens an extensive dialog to control visibility of components by category—more on this later.

The **Model Graphics Style** control toggles between Wireframe, Hidden Line, Shading and Shading with Edges. Plans default to Wireframe, Sections, Elevations and 3D views to Hidden Line.

The **Detail Level** sets the default lineweight and controls the appearance of wall hatches and certain other components. For Floor Plans and Elevations the default is Coarse; for 3D views the default is Medium, and for Sections, Fine.

The **Discipline** control allows you to display or hide non-load-bearing walls. Its options are Architectural, Structural and Coordination.

Phase Filter and **Phase** work together. Revit recognizes the time element in construction projects and allows you to create and sequence as many named Phases as you need. You can apply a Phase to a view, and the Phase Filter controls the display in that view. Model components created in a certain view assume the Phase of that view.

The **Render** parameters are specific to 3D views; we will address Revit's built-in AccuRender module in a future column.

The Properties for Plan Views contain some slightly different Parameters. For

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instance, the **4th Flr. Const.** Floor Plan, placed at the level of the 3rd story roof, shows the parapet wall and stair well walls extending above the roof in standard lineweight. The walls of the story below are shown dimmed.

A look at the Properties for that view shows that the View Scale is 1/8" = 1'-0". If you have the view open, note the size of the annotation symbols.

Plans, Sections and Elevations have a **Display Model** Parameter that controls the model display in Detail Views—**Normal, As Underlay** (dimmed background), or **Do Not Display**.

The dimmed view of the 3rd story in this Plan View comes from the **Underlay** Parameter. In this case it is set to show the 3rd Flr. Const. View. The Floor Plans below the 4th do not show Underlays.

The **Wall Join Display** toggles between cleaning up all wall intersections or only like types.

The **View Range Edit** button on Floor and Ceiling Plans opens a setting dialog box that controls the top, cut plane location and bottom of the View.

Elevations and Sections replace this control with a **Far Clip Plane** toggle and distance value.

A look at the Elevations in this file allows us to check the effects of other View settings: the East elevation is set to 1" = 10' scale (1:120), so its annotations are smaller and there is no tinting applied. A close-in zoom shows that the brick pattern is still available.

The South Elevation shows no annotations. To study this View's Graphics, type VG or pick **Visibility Edit** from the View Properties.

The extensive **View Visibility/Graphics** dialog contains three tabs to control the display of **Model Categories, Annotation Categories,** and **Imported Categories**. Here is the equivalent of layer/color/linetype in Revit.

The Annotation Categories tab shows us that the Level markers have indeed been turned off in the South Elevation, for presentation purposes.

A full discussion of the defaults and overrides available in this dialog is beyond the scope of this article, but I encourage you to experiment with the settings in this file. There are also other component visibility controls, such as the nifty **Linework, Paint** and **Demolish** tools available on the Toolbar, and the **Fill Pattern/Fill Color** settings of individual Element Properties.

To sum up, Revit has done away with layers and provided a complete, coherent, streamlined, and deceptively simple black-on-white viewing system. The default settings work unobtrusively, but once you scratch the surface or start to customize the appearance of elements, there are controls upon controls available that provide all the options of AutoCAD plus some new ones.

And lastly, a shameless plug—if you are seeking instruction other than the tutorials supplied with Revit, look for ***Revit Basics – Modeling and Documentation for the 21st Century***, by Elise Moss, myself, and Scott Brown, published by Schroff Development Co.

Christopher Fox (lcfox@archimagecad.com) is a freelance architectural drafter, educator, author, and frequent contributor to PaperSpace. Fox is current president of the Rochester Area AutoCAD Users Group and an adjunct professor at Rochester Institute of Technology. Fox co-authored Architectural Desktop 3.3 Fundamentals: Building a Sound Foundation *with Elise Moss and the soon-to-be-published intermediate-level* ADT text, Architectural Desktop R3.3 Intermediate: Through the Roof.

AutoCAD Commands Favor the Hyphen

Do AutoCAD commands have feelings? How else can one explain their fondness for hyphens, one of the four command predecessors? And why do they surrender meekly to ActiveX methods and execute even when "undefined"?

This article explores the unexpected and surprising behavior of some AutoCAD commands when used with command predecessors. This knowledge may help you to use the various command predecessors more judiciously and effectively.

The Facts

Before we go into more details, here are the facts:

You can access the command line version of an undefined command by preceding it with only hyphen. The period is not essential. The hyphen renders the period redundant as a command predecessor. When you use hyphen, it does not matter if the command is undefined or not, alone or in conjunction with an underscore.

Are you a little surprised to discover this undocumented fact? The Help documentation on the "undefine" command mentions only the period. It says nothing about the hyphen.

If you use a combination of command predecessors with a hyphen being one of them, the hyphen must be placed closest to the command. Hyphens seem to be the hot favorite of the commands. A couple of Help topics that discuss the hyphen do not document this useful information.

If a command is undefined, the related ActiveX method just ignores it. When used in a Visual Lisp or VBA code, the method bulldozes ahead and completes the task. And the commands meekly surrender to them! This fact also does not seem to have been mentioned anywhere in the Help documentation, either.

Here is a summary of what happens when you use command predecessors.

The command line version is executed if you use the syntax, "_-Block, .-Block, _.-Block, ._-Block."

An associated dialog box is displayed if you use, "_.Block, ._Block."

All Other combinations will cause the "unknown command" error.

Note: To avoid unnecessary repetition and save space, the combinations involving an apostrophe are not included. It exhibits similar behavior.

Try it

The proof of the pudding is the eating, as they say. Do you want to see the proof of these facts for yourself?

Open an AutoCAD drawing.

'Undefine' a command that has an associated dialog box (e.g., block). Remember though, only built-in AutoCAD commands can be undefined. And we need one, I repeat, that has an associated dialog box.

Type the 'Block' command [or (command "Block")] at the command prompt. You will get an 'undefined command' error. Type '.Block' at the command prompt. The 'Block' dialog box will be displayed in spite of the command being undefined.

Alternatively, run code similar to ActiveDocument.Blocks.Add (InsertionPt,"BlockName") in VBA or (vla-add (vla-get-blocks (vla-get-activedocument (vlax-get-acad-object))) InsertionPt "BlockName") in Visual LISP. A block definition is created in spite of the Block command being undefined.

What are Command Predecessors?

For those not familiar with command predecessors, they are the characters that precede a command. Normally used in programming code and toolbar or menu macros, they modify the execution behavior of the command. This ensures that the toolbars and code work in varying AutoCAD environments, like different 'local' languages, without any hitches.

Information about these command predecessors is scattered throughout the online help documentation.

When and Why Are They Used?

AutoCAD has four command modifiers:

The apostrophe: This predecessor is used when a command has to be executed transparently. Not all commands, you might be aware, can be used transparently.

The hyphen: This predecessor is used when, for whatever reasons, you don't want the dialog box to be displayed. If it is used in conjunction with a command that does not have an associated dialog, it results in "unknown command" error.

AutoLISP programmers frequently use hyphens in the (command) function to programmatically input parameters to the command. This avoids interactive input because the associated dialog box is not displayed.

The underscore is a foreign language translation character that enables commands to work on international versions of

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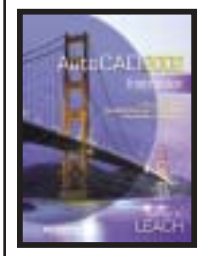

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AutoCAD. Underscores are very rarely needed at command prompt. Programmers use them in the (command) function to ensure that their programs work in any language version of AutoCAD. For example, the code (command "_-Block") will execute the command line version of the undefined "Block" command even in a French version of AutoCAD software.

As a command predecessor, the period allows users to access undefined commands without redefining them. You undefine a command when you don't want the operator to use that command in its original form. It's not a very secure method, though, because anybody can redefine commands at will.

In Summary

As we have seen, command predecessors help you modify the execution behavior of commands as required by your specific needs. The help documentation is rather casual about them and offers very little information, so the following guidelines may help.

When you use a hyphen, keep it nearest to the command.

Undefining a command does not protect it from being executed through code.

Sanjay Kulkarni is an AutoLISP programmer and AutoCAD trainer from India with a Bachelor's degree in Mechanical Engineering and more than 20 years of industrial experience. Sanjay can be reached at SanganakSakha@freelance-worker.com.

Status Bar Enhancement

New users might think that there are almost too many AutoCAD customization facilities. You can define new menus, toolbars, and shortcut keys or modify the current menus, menu options, toolbars, and so on. You can create new linetypes and hatch patterns. Even new text fonts can be created for AutoCAD.

One of the least-used customization tools is the MODEMACRO system variable. With the help of MODEMACRO, you can add information to the status bar. For instance, you can show the total editing time for a drawing, the current text style, thickness, or your name.

MODEMACRO System Variable

You can assign any text string to the MODEMACRO system variable. Type MODEMACRO at command prompt and press Enter, then type the text and press Enter again. The text will appear on the status bar. In the example below, "Hello World!" will be added to the left side of the status bar.

Try it.

Command: modemacro

Enter new value for MODEMACRO, or . for none <"">: Hello World!

DIESEL

To add more information such as current text style or text height to the status bar, you can enrich the input string with DIESEL expressions. DIESEL (Direct Interpretively Evaluated String Expression Language) is a special language that creates character strings. Such strings are used to enhance status bar contents and menu options. Each DIESEL statement starts with "$(" and ends with ")". For example $(*, 4, 6) multiplies 4 by 6 and returns a string (i.e., "24"). The function name (in the example: *) and arguments (inputs) are separated with commas. The DIESEL expressions syntax is somewhat similar to AutoLISP.

The number of DIESEL functions is limited to 28. You can refer to AutoCAD help (Customization Guide) for a complete list of functions. Here we present a few that are used most in status bar alteration.

$(getvar, var): Extracts the contents of input variable in the form of a string. For example: $(getvar, textsize) returns the current text height as a string.

$(fix, num): Truncates a real number and returns the string form of resulting integer number. For example: $(fix, 45.6) returns "45".

$(+, val1, [val2, …, val19]): Returns the sum of input numbers. For example: $(+, 10, 9, 3) returns "22".

$(*, val1, [val2, …, val19]): Returns the result of multiplying of input numbers. For example: $(*, 6, 4, 5) returns "120".

$(rtos, value [, mode, precision]): Returns the string form of the real number with the specified mode and precision. For example: $(rtos, 1.4356, 2, 3) returns "1.436". For more information about mode and precision refer to the AutoCAD help system. If you omit mode and precision, the current settings of the UNIT command are considered.

Complex Strings

Combine DIESEL expressions with normal texts to create a complex string for MODEMACRO variable. The following entry turns the status bar to the one shown in figure 1.

Command: modemacro

Enter new value for MODEMACRO, or . for none <"">: The current text height is: $(getvar, textsize).

Figure 1

The number of characters you can assign to MODEMACRO depends on your display settings. Increasing the number of characters within MODEMACRO can force status buttons or even the coordinate display out of screen.

AutoLISP and MODEMACRO

MODEMACRO is not saved. Therefore, by exiting AutoCAD you will lose its con-

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tents. To solve this problem you can either call MODEMACRO with S::STARTUP function within acad.lsp file or develop a separate AutoLISP program to govern the contents of this system variable permanently. Such a program can be added to startup suite of Load Application dialog box to be loaded automatically.

I have developed a program to make this task easy for you. The program adds a command called STABMAN to AutoCAD. By invoking this command the Status Bar Manager dialog box appears (See Figure 2).

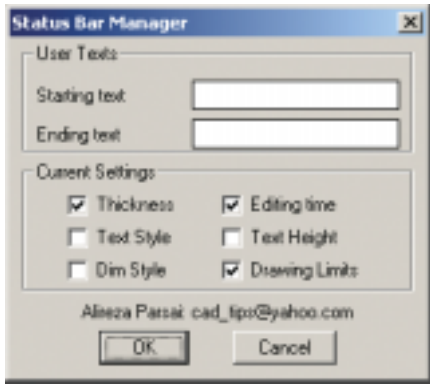

Figure 2

You can either type texts in existing boxes or select some of the options. If the information you want to appear at status bar is not available, type the DIESEL expression in one of the boxes. The command saves your settings even when you exit AutoCAD. To install the program, please follow the instructions below:

1. Download the zip file (stabman.zip) available at http://www.geocities.com/cad_tips/downloads.htm.
2. Extract the file to your AutoCAD search path (e.g., AutoCAD Support folder).
3. Invoke APPLOAD command.
4. Load STABMAN.VLX in startup suite.

Now you can use STABMAN command to control the contents of status bar. For more information, you can send me an email via alireza@khawarizmi.com.

Alireza Parsai (alireza@khawarizmi.com) is a mechanical engineer and AutoCAD instructor. His major interest is AutoCAD customization techniques and he has used and customized every version of AutoCAD software since 1991. Alireza has written several books and articles about AutoCAD in both Farsi and English. His English-language articles are published in PaperSpace, where he is a contributing editor.

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Back In The Day

David Kingsley

The History of CAD

Let's turn back the clock to 1982, when I first got my hands on a real CAD system. Autodesk was still gestating on a houseboat in Sausalito (really). The hot ticket that year was ComputerVision. I had taken a job at an aerospace company and received my first formal CAD training. I was 31 at the time and the CAD gurus had me on the "B" list because they thought I was too old. Early on it was widely recognized that some people just didn't get CAD no matter how much you worked with them. The problem was that "they" did not yet know exactly what factors made that so. One of the primary suspects was age. I had to make noise to get into the CAD class.

ComputerVision CADDS-4X (CV) was a sophisticated 3D wireframe modeler. In 1982 it had the equivalent of blocks, x-refs, surfacing, hierarchical assembly modeling, and paperspace. It was not until nine years later that AutoCAD Release 11 offered anything that approximated CV's power. Granted, the CV system cost $3.5 million for 12 seats, but the task of engineering is a constant and you had to get the job done with the tools you had.

The CV approach started from the top down. They applied massive computing power, which in those days was far less than the average shrink-wrapped box on the shelf today at SuperCompBuyBarnUSA. The CPU was a single 16 bit 32 Mhz (remember megahertz?) processor. It had 64 megabytes of "RAM," which in those days was called main or system memory. All 12 seats ran off that one CPU. The terminal was nothing but a send-and-receive unit. I remember the day we got our third 350 Mb hard drive. It was the size of a kitchen range and cost about $300k. We knew there was a term for 1,000 megabytes—we had to look up "gigabyte" in our Funk & Wagnall's.

CV was a turnkey system, meaning you bought the whole package from them, including hardware, software, tech support, and mandated upgrade subscriptions. Sometimes they would just show up and announce that you were getting a software update. It was kind of like flying on a commercial airline. Other people took care of the equipment and it needed regularly scheduled maintenance. The CAD jockeys would just wander around the terminal while it was being serviced.

AutoCAD started from the bottom up, and I don't mean that in a negative way. It was initially conceived as a consumer product for the personal computer user. The first PCs were far less powerful than today's graphics cards. Early on, Autodesk's uphill battle was to wring usable features from those '80s processors with the simian IQs. I'm sure some of you remember when things like "edit text" were major features in an AutoCAD release.

Standards? We don't need no stinking standards…

Sometimes it may seem like I'm rambling aimlessly in this column, but my intent is to always tie it together with a moral or a lesson, so stick with me here. In the last column, I said we'd be talking about things that people still don't get right, even after 20-plus years of CAD in the workplace. CAD standards are one of those things. I have learned that one good thing about standards is that there are so many of them to choose from ;-).

The first big project we dove into with CV was a large satellite to be entirely drawn on CAD. It weighed in at about 6,600 pounds and had hundreds of major components not counting fasteners, connectors, and the like. There were a dozen or so designers working on the project in three shifts. We had been taught how to draw lines and circles and stuff, but not how to structure a CAD database. This was my first exposure to the need for CAD standards. We had no idea what we were getting ourselves into. There was no history to fall back on—we were blazing new electronic trails. Sometimes when you called tech support they would say, "Huh…that's odd. Just don't do that any more."

With today's Windows OS, you organize your data by first creating folders in which to put your files. With a little thought, you can set up a tree structure that most people can figure out. With the old CV OS, you just typed in a file name with your folders separated by dots, and the OS would create directories on the fly structured on what you typed. Sounds sweet, eh?

Disk management was arcane by today's standards. Everything was backed up on nine-inch reel tape. Only CAD managers had the authority to delete files. We got a weekly printout of files currently on the disk and initialed the files we wanted to delete. When we needed to restore a file, we not only had to know the file name, but also the name of the tape it was on and the "stack number," which said where it was located on the tape.

Serious problems arose when people created file names with their initials in the first field so that they could easily find them on the weekly printout. There were no standards to follow. It was not uncommon for CAD cowboys to type in "myinitials dot racetrack dot oldgirlfriend dot filename." Nobody thought about how you would retrieve them in the future. There was a faction who claimed they had the right to name "their" files any way they wanted to if it helped them get the job done. Some said they would quit their jobs before being forced to use standards.

Years later it was a common occurrence to be unable to restore a valuable file from tape because no one knew who had created it. Many times the creator no longer worked at the company. CAD drawings were extremely expensive and to recreate a perfectly good design from a blueprint was throwing good money after bad.

A bigger problem was that when we tried to explain the problem to upper management, they couldn't grasp it. The company had developed drafting standards over the decades so why did we need anything else? Although he hadn't been born yet, it was very "Dilbertesque."

Does any of this sound familiar?

History repeats itself, often when you least want or expect it to. I have, as have many of you, been there and done that, so why are people still doing it? Twenty years later (2002) I consulted for a company with problems even worse than those. In the first hour I was shocked to learn that they had 16 seats in three buildings and no network or documented standards. They thought I was a psychic when I casually jotted a detailed list of their major problems on the white board.

If you are a CAD user or manager at a company that has no documented CAD standards or internal network, you are throwing away money at alarming rates. The economy is down right now and those wasted dollars could mean the difference between surviving and not.

David Kingsley is the creator of CADPlayer Streamed On Demand CAD Courseware (http://www.cadplayer.com) and currently serves on the AUGI Board of Directors. He can be reached at david.kingsley@augi.com.

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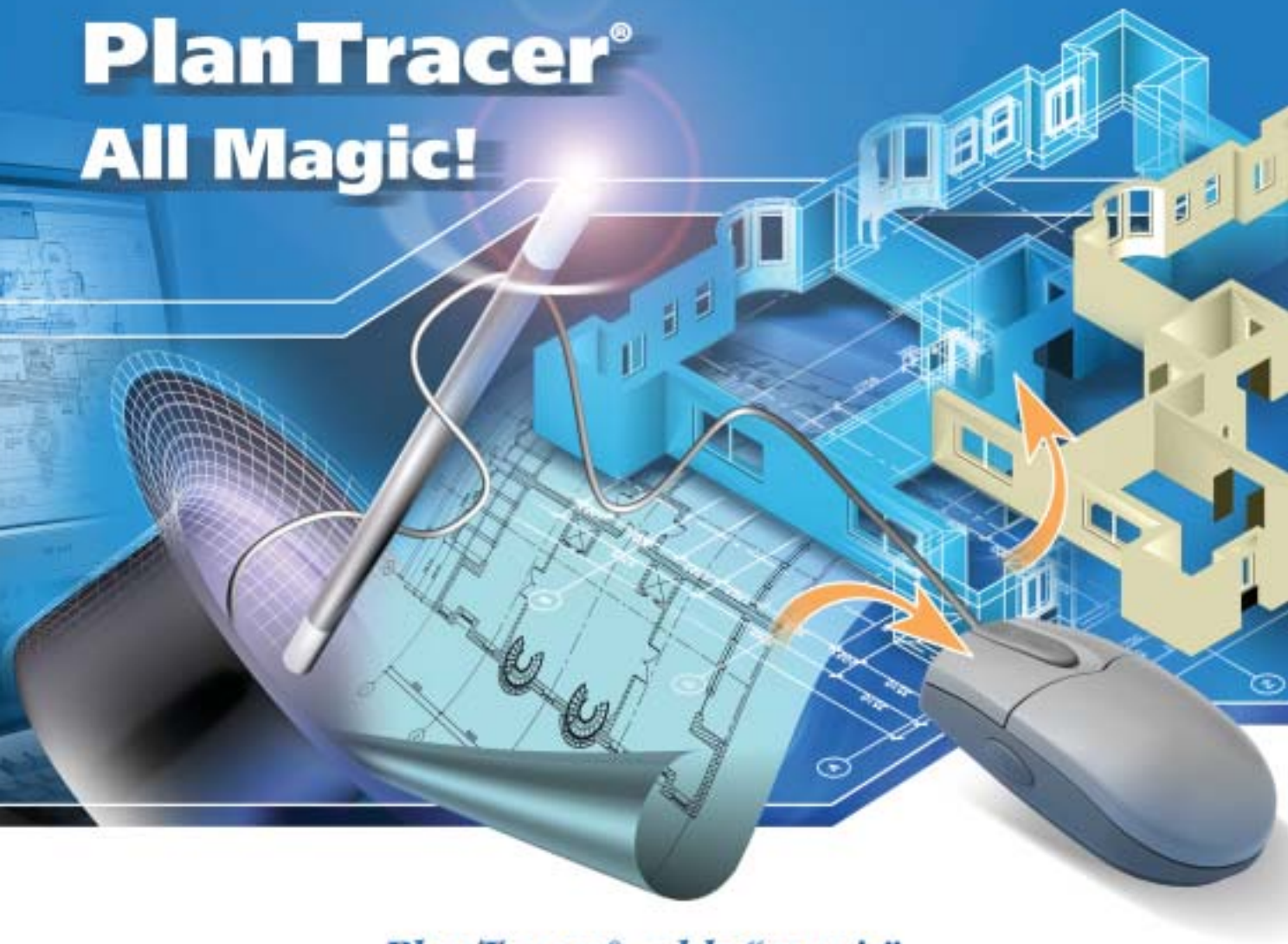

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