VOLKER COCCO: So hi. My name is Volker Cocco. Up there, spelled-- lost track of what I was trying to say. I'm the technical support specialist at Autodesk and I'm in the AutoCAD KDE, which basically means I'm a liaison between our technical support staff and our product group. So a lot of chit chat between us trying to get things fixed or bring up issues, feature requests, whatever.

I've worked in the industry since 1990, release 10. And have done drafting, CAD management, I've worked for resellers, I've done a lot of consulting, building applications for firms to make them a little more productive, to enforce CAD standards, and so forth. Done a lot of training, a lot of presenting. But the first thing you're going to notice is I'm not a professional presenter. I'm a CAD geek. I've always considered myself as such. I don't do a lot of drafting anymore but I do enjoy showing people how to use the tools in AutoCAD.

And that said, there are so many ways to do things in AutoCAD, numerous ways. What I show people is one way of doing things. There may be better ways out there, maybe more efficient or maybe tomorrow I would show you another way to do it. So a lot of different perspectives. Don't just look at mine or any other class you're in. There's always more stuff to learn about AutoCAD.

Yes, so I've been working with Autodesk, for Autodesk I should say, for the last five years now. And I do love my job and I do enjoy being here at AU. So how many people are first time attendees here? Oh, quite a few. How many are, let's go with the two to five years? Wow. OK, great. I'm not going to go further than that because some of you probably have been here since AU first started. OK.

I've been attending and instructing at AU for over a decade. Having lived up in Alaska for 38 years, it was kind of hard to always get to AU, to justify that. But I live down here in the States now and makes it a lot easier.

So how many people here use AutoCAD LT? OK, a few. AutoCAD, just vanilla AutoCAD users? And then of course we have the verticals. So I'm just encompassing all the verticals. How many of you us like civil 3D architecture, MEP, Map? OK.

So when I put this class together, my intent was to show people how to customize AutoCAD without having to do any programming. So I know a little bit of AutoLISP. I know I actually have more auto lisp when I'm speaking. But I know a little bit of VBA and .NET and so forth. And

those are all great ways to customize. But working with macros, it's probably the most basic way of customizing. It's fairly easy, especially if you've done it. Like anything else, it's a learning curve.

But I think if you want to be more productive and not be so repetitive in what you're doing, automate those things. Then you'll enjoy working with macros. They're fairly simple once you get an understanding of how they work. All right, so before we begin, if this isn't what you're expecting, you're not going to hurt my feelings by leaving, OK? There are other classes here that may suit your needs. I mean, I want you all to stay, I don't want you to leave, but it won't hurt my feelings, OK?

And then of course you've heard a lot of this preamble in the previous classes you've attended. Send out that survey and let the staff know how you felt about this class, other classes. And what you like about AU or don't like about it. And as far as what we're going to do in this class, well, we're going to show you how to automate again, repetitive tasks, without using things like AutoLISP or VBA or any of the other programming languages in AutoCAD, which do require programming skills. So that's quite the learning curve in itself. So with macros, we don't need to be a programmer, we just need to know the AutoCAD commands. And macros, menus, and tool palettes, they're all great ways to customize AutoCAD with minimal effort.

All right, so you signed up for this class, you've seen the objectives. All right, but I'm going to go over them anyway. So you'll understand what the macros are. Basically a sequence or string of commands, system variables, functions treated as one command. That's all a macro is.

You're going to learn about the macro syntax. There isn't much to this, really. There's just-- You just need to know when to apply a stop for user input or where to use the space or not use the space. And we'll cover all of that in a moment. So know how to build a macro. And then we're also going to-- So you can ding me on the survey on this. I'd said in the outline for the class that we're going to build the macros and then apply them to toolbar. We're going to do a little more than that. So if you don't like that, go ahead and ding me. But we're going to touch a little bit on the CUI, the customize user interface editor briefly. As well as working with the tool palettes.

And that's said because the script that I put together applies primarily to macros. I did put

steps in there for working with the tool palettes and the CUI but I taught a class, it was for AU 2013, on customizing the user interface. How to add things to the ribbon, to add partial menus and so forth, which you should at least for review because just customizing the menu, you could cause problems. And if you have a CAD manager, you may want to touch base with them so you don't screw anything up. If you're working on your own workstation, that's fine.

The cool thing about macros and working with tool palettes is you can tailor those for your individual needs. You don't need to worry about messing up a office environment's CAD standards or how things are set up. Yeah, it's all good stuff. All right, so what are macros? Well, like I said, a sequence of commands and options. Basically, a string of text.

So we do have a programming language that also works with LT called Diesel. It's also available in AutoCAD and the vertical applications, but we're not going to touch on that. But this will probably give you some incentive to look at that macro language. And it is a macro language but it's a lot more enhanced because it lets you dig a little deeper into what AutoCAD can do.

You've used fields. Anybody use fields? OK. Diesel is used in a field to tell the field what we want AutoCAD to do. Plot stamp or show a system variable or a viewport scale and so forth. We are going to be using special characters. I'll talk about that next. Macros can be very simple. They can be something that just does one command or I could have it encompass four or five functions at one time. And as we go through the class, I'm starting off with a very simple macro and building up to something a little more complex, which I certainly hope you're going to enjoy.

Why use macros? Well first of all, you don't have to, but I would encourage it. Any time you repeat a task more than three times, in my opinion, automate that thing. Why do the same thing over and over when you can automate it?

So when I first started working with AutoCAD, pretty much right out of school, so there is a learning curve right, and I didn't know about what layer this line work goes on, what layer the text goes on. I'd copy stuff to modify it, to reuse it. Or I'd have to list it, find out what layer it was on. Am I using a line or polyline, et cetera. What text style am I using? What layer does that text get placed on? Those are all things, you know we have to go up to maybe the layer drop down control. What layers are available? Oh, that one is for annotation. But there are three of them right, so which one does this piece of annotation belong on?

Well, with macros we can quickly build a tool that will do just that for us. We have to tell it one time what we need to do, and then click a button after that. So it leads to a bit of automation.

It also provides consistency in the drawing. You're not going to have that annotated text on the correct layer in one spot, and then having placed it on the dimension layer the next time you use it. You notice that kind of stuff when you turn off specific layers. All of a sudden half your text is missing because you've turned off the dimensional layer. Also, if you have new users in the organization, you have these tools that they don't have to learn the entire CAD standards of your company.

Again, these are macros. At some stage you'll probably want to get into more Diesel or AutoLISP or something to make the automation a little more seamless. But this is a good way to start with everything. So again, layering and styles, these are all tasks that you'll be able to apply some consistency toward, and also incorporate your CAD standards. It's a great introduction to customization. The CUI, tool palettes, maybe even getting into additional or more advanced programming.

All right, so let's take a look at what makes up a macro. So we use standard commands, and basically a macro starts off with whatever command you wish to use. So we all know about aliases, right? I mean we type the letter L and we get the line command. On some systems, I can type F for fillet or fillet, depending on how hungry I am. On other systems, F could stand for something completely different, depending on the end user who worked with that system. They are going to be able to tailor those aliases.

So, when you're writing a macro, you always want to use the full command name. You don't want to use an alias because if someone decides change that, the macro is going to bomb out on you. And really, that's the same way it is with most programming interfaces in AutoCAD.

Oh, I should backtrack a moment. We use the full command, but when you are in that command, you're going to have options. Like pline, has a width option. You can just use the first letter, or the capitalized letters that are being used in that option in your macro. And we'll reinforce this as we're working through this so you don't have to remember all this right away. And it is in the handout.

So, we have active commands. And you'll see we have the control C, the caret and the C. That is the same as hitting the Escape key. That will cancel you out of any command. So, that said, if you were to look at the AutoCAD CUI, and look at any command, you will never see just one

control C. You're going to see at least two because the majority of commands in AutoCAD, they need to-- you will need to escape out of that command at least twice. You're in a command that's done from a dialog box. So you escape out of that command, then you have to hit escape again to close the dialogue.

If you have the menu bar enabled, you may have a cascading menu that goes several levels. If you were to hit the Escape key, in some cases you have to put in three escapes to get out of that menu. And I believe pline and dimension, the dimension commands, those are some of the commands they would need at least three. In other tutorials that you might find, you'll see people using maybe two control Cs, it doesn't take that much more to add a third. So everything you see in my document is going to have three cancels.

You may also want to use commands interactively. In the example I use we're going to be changing osnaps. But things like zooming in or out while in the line command, you don't want to cancel out of that command, so we make it interactive by adding a apostrophe to the beginning of the string. A space, well, when you hit a space, what's it do, unless you're in text, it repeats. It ends the command. It's treated the same way in a macro. It's going to repeat the last command or it's going to enter after a prompt. It will also end a command. I hope I didn't just repeat myself.

Yeah, the only time the space is not going to work well for you is in the text, if you're using text. So international support. You know, it's a global thing, AutoCAD. So whether you're working with macros or in Lisp or anything else, using commands, you would want to add the underscore in front of the command. This tells AutoCAD you're translating this from English. This is an English command. And that allows any customization you have to work on German AutoCAD, Japanese, whatever language. It's a built in translation tool.

Are you familiar with [? undefining ?] a command? I always think back to session Lynn Allen had, I don't know, years and years ago, where what you can do is you can undefine a command so it no longer functions. In fact, there are several commands in AutoCAD right now I could redefine that are considered obsolete. And she would always talk about how one user had undefined the Escape key, and redefined it as the undo key. Yeah, that's kind of cruel if you ask me. So you don't necessarily have to use that. I rarely use the period. I've used it in this session because you need to know about it. But basically it says, look, I'm using the Escape key, so don't undo this, OK? That key is exactly what it's supposed to be. All right.

We can also repeat macros. So let's say you need to insert a block, it's going to be inserted on the same layer, you can just apply that asterisk to the beginning of the string, and until you hit Cancel or hit the Escape key, it'll repeat that macro. So it's pretty cool. I've used that quite a bit in customization for plopping objects in the drawing.

All right, so ending a command. Oh, the hyphen there, I probably shouldn't have even put that there. You can use the Space key, as I said earlier, as an enter command, which of course ends the command if the function is over. Or you hit it twice. However, the Space key isn't that visible in a text editor, in most text editors like Notepad. You may miss it. I prefer to actually put a semicolon in there. In fact, when I was copying and pasting stuff into the text file that you have in the data set, I copied that into my tool palette, and all of a sudden it was repeating the first example I'm going to show you. I know this works, this is simple. And I looked at it again, and sure enough, it had a blank space after my semicolon. Once I backtracked on that one step, it worked as expected.

Let's see. We also want to give the user the ability to give some input. We don't want to just plop something in the drawing when the user needs to start a line, or something, at a specific point. We don't know where that object is going to need to be placed or started or whatever, so the backslash is a way of telling the macro pause, wait until the user does something, and then continue.

Here's a neat little chart, great reference if you're getting started with this. And it's pretty much all the syntax you really need to be aware of. The rest is all working with AutoCAD commands. So I think that's it. We can actually destroy the PowerPoint now. I hate PowerPoint personally.

Yeah, let's do something with AutoCAD here. I have tried to have this stuff shown on the screen, obviously not working. Shouldn't have killed PowerPoint, I guess. Thank you.

All right, so I just hit a backslash there to pause for user input. [LAUGHS] I think it was a year ago, maybe two years ago, I taught that customization class, so AutoCAD AU 2013, I taught that AutoCAD class for customization, as well as a class on working with attributes. Customization class worked great. And the next day, I go to hook everything up and I can either show the screen on my laptop, or on the display. Now I'm on this podium, so I can't really move out there. I'm like this the whole time. It was kind of annoying, but everybody was a good sport about it. I did not look at the surveys. [LAUGHS]

OK. Well, we WANT in on extend or duplicate? I had it on duplicate a minute ago. So let's do it. Well, that's kind of ugly. OK. It's on duplicate. Done with the PowerPoint, and PowerPoint worked great. Whatever works. What ever works, right? Do you guys care if it's HDMI or VGA? I don't think we're going to notice a difference. Unless we had one of those nice curved ultra HD monitors. Thanks, guys.

OK. So I'll talk about the data set that I uploaded. As I said, I put some material in there from my previous customization class. I'm hoping that will help. I also-- you'll see a tool palette. Actually, it's right there. Tall and skinny. So I've made that available. I've exported that, all right? I'm not an artist so I didn't add any bitmaps for the images. I'll let you create your own. There's a couple in there, but you can import that into your other tool palettes and work with that. What else? Text file, which has all the macros so you can easily copy and paste them.

OK, that's pretty small text. Can we-- Is it going to screw it up if I put it at a lower resolution on here? I have this set up really--

All right. I think we're kind of good. Is that everybody? Yeah? All right. I would like to applaud these guys. Thanks. Yeah, it actually was. Yeah. Yeah. OK, so-- Yeah. Apologies about that, although it wasn't my fault, so I'm just apologizing. I can do that easily.

All right so we do have some macros. And I'm just going to run through these, and then kind of explain what I've done. When getting started with macros, you don't have to learn this stuff.

You don't have to worry about really doing a lot of studying, what do I do, where. Let AutoCAD do a lot of the work for you. So typically when I create a macro, I will type in the steps that I want that macro to accomplish. I wanted it to set a layer current, insert this block. So I go through those steps, and then I hit F2 to see what that looks like on the command line, and you could actually copy and paste this out, which is actually a little tedious, but you can remove all the spaces, all the line work, and just keep the command functions that happened, and paste those into your macro. And you'll see here in a minute that as we go through this-- Minimize that.

Let's take a look first at the most simple of macros I've ever created, which really doesn't do much but plop a rectangle into the drawing at zero comma zero, and then four comma two for the upper right. OK, that's all it did. Nothing spectacular about that. But let's take a look. Here's the command prompt. Resolution was a little better earlier, so let me just change the size on

this so you can see the text more better. All right. Here we go.

So all we did was go into the rectangle command, told it I want my first start point to be zero comma zero, and four comma two for the second point. If we take a look at the macro here-- Can everybody see that OK, the text? I probably should have said can anybody not see the text, but I didn't do that. Anyway, you'll see what I've told AutoCAD, hey, in case I'm in a command right now, go ahead and cancel out that command, then go ahead and put that little English translation, let AutoCAD know we're talking English, rectangle command, and here's my Enter, which is that semi colon. And then I just gave it the coordinates for my start point, zero comma zero, four comma two, and then I hit Enter to finish the command. Pretty basic, not much to it.

We'll take a more in-depth look here. This is actually one of my favorite macros. It's the first thing I plop into my AutoCAD customization. What do we do after we start a drawing? We save it, right? I mean, we want to. We work with the drawing. We don't want to lose our work. We want to be able to save it. This one here, actually, I probably should have saved the drawing first for it to work as expected. But what it does, it zooms to extents, then it zooms out by [? point 9x, ?] and then saves the drawing, or goes into QSAVE command. Obviously, if the drawing is not saved, then it's going to prompt me to save it. But it's a very quick way-- I use trash a lot for drawing name. It's very-- I know what to delete later, OK? [LAUGHS]

So why would I want to do it this way? Well, we have the images that we can see in Windows Explorer. When we save a drawing, and if we have images showing in our file browser, we can see what's in the drawing. And it always annoyed me to have saved the drawing at zoomed way in or way out, and we had this big black area, and then this tiny drawing here, or we're zoomed way in to where we can't tell what the drawing is. So I like to always save it to where I have a full image of the drawing. Sometimes I may not want it that way, but I'd say 99% of the time I do. So that's all that does. And again, you go F2, zoom command, I tell it extents, repeat the zoom command [? point 9x, ?] QSAVE.

So let's take a look at the macro string for that. Cancel out of any command, underscore zoom. Again, the Enter, E for extents, so I can use that option, I don't have to type in the full command for that, Enter, and then I used Enter to repeat the command. Then point 9x, that's one of the options, the scaling options, zoom command, Enter to execute that function, and then an underscore QSAVE to save the file.

So again, still kind of basic, but it did a lot of work right there. Well, OK, nothing to work a sweat up over or anything, OK? But I mean, it was a simple way to just accomplish that task. I am very picky about my settings in AutoCAD. For one thing, the grid annoys the heck out of me. And a lot of drawings that I open up, especially architectural, electrical drawings will have the snap enabled. So every time I'm trying to do something my cursor jumps over. I also am not too fond of the nav bar. I don't need this. I have better tools available, as far as I'm concerned. Now, you guys may like all these tools, so everybody works their own way. But I create a macro to change my settings. So just kind of keep my eye out here.

So I click on the Settings, the grid is off, the nav bar is off. I'm also not a big fan of dynamic input. It's a great tool, it's powerful, but I'm very old school, and prefer to just do things from the command prompt. And so again, F2, we've gone into the grid command, we've turned that off. Snap is off. I actually should have talked about that first. Snap off, grid off. DYNMODE, which is the command for the dynamic input, set that to zero. I already had it off. And that's a cool thing, if it's already off, it doesn't care. I'm making sure. And then the nav bar command, off. So a quick way to save the settings. And again, let's take a look at the text file.

So I know it's going to get kind of redundant, just me showing you basic commands. But it is reinforcement of how we do these things. So where's my settings? Right here. This string right here. So Control C, Control C for the Cancel, snap, Enter off for the option. And in this case, I had to type off, because the other option is on. So I can't use the letter O. It's going to say, hey, on or off? Same for grid. Underscore DYNMODE, Enter, 0 for off, Enter, underscore nav bar, underscore-- Excuse me, semicolon off, and then Enter for semicolon. And again, I could put a space for those semicolons.

One of the cool things about working with macros, you get to learn what AutoCAD has available as far as commands go. And it also makes you dig a little deeper into what the system variables are, what the options are. And you're actually going to see that here in the next example. If we take a look at the OSNAP dialog, you'll see there's nothing set here. I forget what the default value is now. It's a bit code. At one time it was 4133, and it had X amount of OSNAPS set. They're not the ones I always want to work with, or at least not start out with. And I like to have different OSNAPS set for different scenarios. If I'm working with a drawing with a lot of circular or curved objects, arced circles, whatever, then I want to make sure centerpoint is on maybe, or tangent or something like that. So I don't want to have to go into this dialogue every time, and I could use an OSNAP override, but I need to be working

with a certain set of OSNAPS. So I create a macro for that as well.

In this case, there are none set in here. But if I click this puppy right here, which will set, it's going to set my OSNAPS to endpoint, midpoint, center and node. Those are my preferences when I begin a drawing, and I typically have more than one set of snaps available. So I'm going to go ahead and click that. And you'll see that it actually only changes one thing here, OSMODE. And that's a system variable. I think most of you are probably familiar with system variables, but for those who aren't, all a system variable is it's a switch. It's a toggle for a command or a function in AutoCAD.

So how do I know what value I want to have in this particular macro? One way is to just set your OSNAPS in the dialog, so I'll go ahead and do that, and actually make AutoCAD current here. I can go into the OSNAP dialog and set whatever values I want, close the dialog, and then we take a look at what the bit code is. And the bit code is, I'll show you that in a moment, actually. So let's go ahead and just add a couple here, just for grins. Don't know what the bit code is going to be for this. But I've set extension, nearest, and perpendicular, and parallel, as well as my defaults. And if I type in the system variable OSMODE, it now tells me that that bit code is 12943, 12,943. What the heck's it all mean?

Anybody here familiar with bit codes? OK, cool. But for those who aren't, because there weren't very many hands that came up, the easiest way to find out about this stuff is to use AutoCAD's help. All right, so I'm going to go ahead and oh, I'm not on the internet. Right. I said I don't need Wi-Fi. [LAUGHS] Darn it. I did put a link in there. So bit code-- Sorry about that. Typically, you'll see something. If you go into the Help, you'll see 0 for off. And then, and I'm just throwing, making this up, but it is how it works, all right? And then let's say endpoint would be a bit code of one. Midpoint would be two, center would be three. If I wanted endpoint and center as my OSMODE value, then I would add those two bit codes up. So three and one is four, so that's what I would type in there. If I just want midpoint, and endpoint, then I would do the value three. So you're not going to see a three value in there, but you're doing a bunch of math.

In the script there is a link where I talk about the OSMODE system variable. Click on that, it will take you to the online help, or hit F1 when you're in OSMODE. It's a great system variable, and you know, you don't even need a macro for it if you know your favorite values. Just type OSMODE. That's what I used to do all the time. That said, I think I want my OSNAPS. OK.

So that takes me back to 15. All right. Now let's take a look at the next one. The next one, I am-- There are many tools not AutoCAD that do what this one does, copy and rotate. So we have, what is it MOCORO? Yeah. We can use grips to copy and rotate, but it's just an example people, OK? There are always many ways to do stuff in AutoCAD. But that's what this does, copy and rotate. So the first thing it's doing, it's telling me to select objects on the command line. So I want to select the rectangle. And then it says base point. All right, so I'll just use that base point. Copy to my second point. And then, it actually took me out of the copy command and it goes into the rotate command, but it knows the base point of the rectangle. It's the same base point that I placed at. I hope you noticed that. I didn't pick again once I got placed. All right? So I'll explain what I did there. So now I just do my little rotation thing and there we go. All right.

But let's take a look at what happened here. Again, F2. It found one object after going in the copy, and I did my thing because it prompted me to select using the backslash. And then it went right into rotate. And I told it to select objects L, last. So L in all AutoCAD, if you type that in as a selection option, so whenever it says select objects, L will select the last object modified. You could type P for previous object created. I hope I didn't do that backwards. I use these all the time and for the last 25 years, I still get confused between P and L.

But either way, I used last here. Oh yeah, I used last as created object, not modified. Otherwise, it would have selected the original object. L for created. So when it created the rectangle, I said select the last object created, that rectangle. Then, once you've selected that, Enter, and specify a base point, the at symbol. The at symbol is actually considered a last reference point function. So wherever I pick in the drawing last, doesn't matter on an object or what, it will select that spot again. So it picked the same base point I used previously.

In the macro, just to show you here that I'm not making this up, there it is. Copy, Enter, and then here's our user input. It prompted me to select the object, Enter, and then it had me pick the first point, the destination point for the copy, and once you have that backslash at the end of a command, it actually finishes up the command. So either a space or a semi colon, a control character or a backslash, those will finish commands, If they are at the end of the string. And in this case they were. But it then went directly into rotate, Enter to execute the command, pick the last object created, which was the new copy of the rectangle, and pick, yeah. Last, Enter, so it selected that, and I'm losing myself. But then it's said pick the last point selected, so it does that with the at symbol. Enter and then prompt for user input for my

rotation angle.

I could have typed in values there. I didn't have to put user input, but that's kind of like with the rectangle initially where we just plopped it, and it's always going to go there. So you do want to give the user some flexibility. I'm just going to go ahead and click on this to save and zoom to extents. All right.

OK, so this one here, actually, these are the ones where we get a little more into it, where I've talked about CAD standards. I just kind of wanted to show you really the fundamentals of the macros. In this case here, here we have our layer drop down list, so we have layer zero in the drawing. I'm going to go ahead and click on this here. And what it's going to do, it is going to create a layer and assign a color to it, and then set that layer current.

So for most of the dialogues we have in AutoCAD, we actually have a command line version of that dialog. And in some cases, the command line actually has more functionality than the dialog. And the command line version for the layer command, we have an option here called make. And make and set, kind of two different things, but make will allow you to create a layer and then set it current. Set will just set it current. New will allow you to create multiple layers at a time. So these are all things you'll learn as you work with macros because it's forcing you to understand how AutoCAD works. But to suppress a dialogue, and so our palette for layers is a dialogue when you think about it, we put a hyphen in front of that command. So where is this, there it is.

Create and set layer current. So Control C, so cancel out of any command, then let's hey, let's go ahead and go into the layer command. Enter, execute that command. Make, execute that function. Make the layer called phones, Enter. Assign a color, C for color, Enter. I want that color to be red, Enter. And I want you to assign the color to the layer phones.

If you only have one layer in the drawing, layer zero, and you use this function, it is going to as soon as you hit Enter, apply the color to that layer. But if you have multiple layers, it's actually asking you to choose. Which layer do you want it on? So it's always best to be redundant with the name repeating it. Walk through that layer command once by yourself without doing a macro or anything, just type all the steps in, and you'll see how those prompts work and why you would have to do this.

All right, so now that I have a phone layer, let's take a look at this phone layer. I'll go and type it in here. It's still, well, it's set current, color red, it has a continuous line type. And if we take a

look in the line type dialog, you'll see that's all the line types we have in there. It has continuous, that one default line type.

So what I'm going to do now is backtrack because I jumped way ahead of myself here. All right. What I'm going to do now is insert a phone, actually. I have a phone layer, why not add some phones? All right. So again, just like with the layer command, I'm suppressing the insert dialog. I've typed in minus insert, and that's prompting me now for a rotation angle. And that's just the options that I used in whatever order. I'm going to go ahead and type in 45, and there's the phone, really large phone for the rectangle. And once I've done that, I'm going to go ahead and pick the spot. And this is one of those macros where I've added the asterisk to repeat it, so it's again prompting me for a rotation angle. Now I can just hit Enter to accept zero. And I can go on and on and just add more phones.

So take a look at this one. I'm just going to hit Escape, and go into that text file. So in this case here, if this layer had not been current, which we used earlier, I probably should have set it back to zero, I've told it here, and we don't know if that layer's can be current, right? We don't know what layer's going to be current. We have the capability of having 32,000 plus layers in an AutoCAD drawing, and I would encourage to use those layers. I've seen way too many drawings where everything's on layer zero. So I'd encourage you to use those layers.

And we repeat here cancel command, minus layer, which suppresses it, Enter, S for set. And I'm telling it to set this layer phones current. Enter and-- Oh, excuse me. Set. What am I doing, set. I'm thinking layer command. Layer, set current, Enter, phones. And once I've gone into the insert-- Yeah, OK. I'm back on track. Insert, Enter, my phone block. Enter and then go ahead and, S for scale-- I forget what I did there. I've got a written in the script. Oh, scale, Enter, one, Enter, R for rotation, and then it prompts for user input for that rotation. And you can do the scale or rotation in whatever order you want. Just like you would in the dialogue.

Now, one thing to note, the only reason this macro is working right now is because I've added the path for that block to my support path. AutoCAD knows to look there. So unless you have a block in the drawing or a path, if you don't have either one of those, the macro is going to fail. You've probably seen that happen, maybe not. A lot of people tend to keep blocks and stuff in the drawing.

So we've got two more macros, and then we'll get into the tool palette and CUI. This next one is a little more, I like this one. Yeah. It's my new favorite, not sure why. We're on the phones

layer. We saw earlier we only have layer zero in here. We saw that we had a line type of continuous, the default, correct? So, this macro, I've called it flow. And what it does, it's going to create a layer, another layer, yes. It's going to set that layer current, and then it's going to load a custom line type, and then execute the PLINE command.

So let's go ahead and click on that, and let's go ahead and just pick a start point, and draw our line type. Just like that. And note the layer up there. So this one is a little different. Line types are all in a line type file. And if you've ever just loaded line types, you know that you always need to go into a dialogue. Line types are not stored in a drawing unless you've added them at one point or another. You can't just insert them by having the line type file in a path. Doesn't work.

So, in this particular macro, I've canceled all commands, I've said, hey, let's go into the line type dialog without using the dialogue. Let's go ahead and load the line type flow. But you need to know that that line type is in this path, pointing to that file. And that could have been the [? acad ?] LINE file but it's a custom line type, so I keep it in it's own file. Note also, anything peculiar about this path? Yeah, forward slashes. I'm using those because what does a backward slash do in a macro? It prompts for user input. So be aware of that.

But it's a great way to get that line type into a drawing without the user having to select it. Especially if you have custom line types. Anyway, at that point, I said go ahead and load that. Then go ahead and make a new layer called AU 2016, color red, and assign that to AU 2016. Then, let's go ahead and set the line type, L is the option in that line type, in the layer command to load a line type or set it current in the layer that we're working with. Go ahead and add the line type to that layer so that anything I draw on layer AU 2016 will use that line type.

A little more complex than the other ones. And there are probably other ways to do this. Better ways maybe, if you're using AutoLISP. But really, if I were to make, and I've done this in the past, create several buttons, whether it's on a menu or a palette or toolbar or whatever, I would just copy and paste this line, and change the verbiage where I need to. What line type needs to be loaded out of which file? So, it's a matter of copying and pasting. All right.

So, probably the one I would encourage you to at least use the most is this one right here, the clean up macro, or something similar. Our drawings pick up trash. And they also leave debris in the drawing database. So any time we insert something, we're inserting stuff from another

drawing, we may, after a while we may have what we call drawing bloat. We may also have, because of reuse of the drawing, their age, whatever, we may have errors in the drawing database. And you may notice things not working right or maybe the drawing seems abnormally large. So we use commands such as the purge command to clean up our drawing. And we use the audit command to fix the database.

Working in tech support, I can tell you right now, these things are rarely ever used by the average user, and you're getting drawings from these people. And hey, no fault of their own. If nobody shows them, they're not going to know. Or maybe you just want to make sure you do it. You take care and maintain your drawings. So, I've created this macro right here. Whoops, I did that again, F1. F2 is what I want. And what it does, it actually goes into the purge command. And this was a brand new drawing, right? So when I inserted the block, I actually brought in extra stuff.

So I purged the drawing, and I told it look, I don't want to be bothered with verifying each name, so I said no. And it deletes the text style, which yeah, it's part of the base AutoCAD drawing template, but it also deleted this text style, which I'm not using and I've never added. Something else added it. It also deleted a dimension style, which I never added. But it had to come from somewhere. It didn't find a bunch of other stuff. Deleted another leader style. And then a bunch of registered application objects.

And I've seen like 30,000 or more of these in a drawing, and it just bogs the file down. I'm not trying to get into the technical aspects of tech support. Sorry, that's just-- I'm just trying to explain this is a great reason to create macros. To do something like this, where you can quickly save the drawing or clean it up. And then it goes into audit. There were no errors in this, but I told it to fix any if it found them. And it's a real simple macro.

Cancel out of any command, use the command line version of the purge, go ahead and purge everything. Don't bother me with verification or anything like that, I don't have time for that. But I want you to purge everything. Yeah, here's the don't bother me. Then, repeat the command. I also need you to check for registered applications. That does not run with the all function [? reg ?] apps. And then again, don't bother me, and go into audit and fix everything. That's what the Y is. And again, you find out this stuff by looking at the command line to see what AutoCAD is doing.

Registered applications, while I get into my next part. It's debris left over by other applications.

There are hooks into the drawing database that any third party, even AutoCAD and other verticals will leave in the database, and they add up.

All right, so this is the good stuff. I mean this-- I hope I didn't bore you with this part. Redundancy is everything in AutoCAD, but let's put all this to work. I mean, how did I do this? Pretty easy, actually. Like I've said, if you've done it.

I'm just going to click over a palette here. And I'm going to go ahead and create a new palette, and I'm going to call it macros two, just because I can't think of anything better, and I've already used macros. So can't be redundant there. There's nothing on this palette. Yes.

AUDIENCE: So where's that macro text file located? Does it have to be in the same directory as the drawing?

VOLKER COCCO: So the text file that I gave you guys, that one?

AUDIENCE: That one right there.

VOLKER COCCO: This one.

AUDIENCE: Yeah.

VOLKER COCCO: Oh, OK. Well, no. I just-- So I've only got this up here for easy access for you guys, so you can copy and paste out of this. Basically, it's just part of the script, and these macros, I'm going to show you in a minute how I'm going to use these to customize the commands on the tool palette and how to customize the commands in the CUI. Yeah, this is not something you need in AutoCAD, this text file. Demo purposes only. But, thanks for asking.

So anyway, there's nothing here. If I had a command on here, I could easily copy it, and then modify it. Because I'm very lazy, I don't want to have to rebuild the wheel. One thing we do need to do right now because I don't have a command on here, is I'm going to type CUI, and this takes me into the CUI editor. And I'm just going to grab the first command I see here.

So this is your short, glossy overview to customizing the CUI and tool palettes, all right? One way you could do this, if you don't want to mess with creating commands for the [? ribbon ?] or anything, is just customize the tool palette. And I plopped this command on here. And that's all I need. I can close this.

AUDIENCE: You drug it from the CUI [INAUDIBLE]?

VOLKER COCCO: Yeah. You just need to have it open. And you can also, here's an alternative. Up here where we have more commands for the quick access toolbar, you can go into what's called the quick CUI. Select more commands, and that opens up a smaller interface here. And again, I can grab any command. Pick, drag, and drop. Once you close that, you're not going to be able to grab any more commands, but I don't need to. I'm just going to go and right mouse click over this. I'm going to go into Properties.

I'm going to go ahead and do the QSAVE one on here. Let's go save, extents. I'm sure I gave it some kind of a cool name, or maybe I didn't. Doesn't matter. I've gone ahead and placed it here.

Now typically, you may not have a text file like this. You may be doing this on the fly. But I'm just going to go ahead and copy this. Makes sure-- This was my mistake earlier, I'd grabbed an extra space here at the end. You don't want to do that because you'll have two spaces, and it will just want you to QSAVE again. So I'm just going to make sure I don't select any extra spaces, and I'm going to just click in here. I know it looks like it's not, like you're not able to edit it, but you can. Just click in there, and then paste your macro. Very simple, really.

You just need that starting point, really. And then, of course, you want to also maybe add a good description so you remember what the heck it was used for. So maybe this is not your definition of a good description, but it works for me. And let's go ahead and do a Control A and a Control V.

Now you can make other changes here. I don't need to though because my macro does everything for me. I'm just going to click OK. I may have wanted to maybe change the bitmap image on it, obviously. But now if I click on it, it does exactly what I want it to do. So that's a great easy way to do it. My issue with that is I typically customize more than just tool palettes.

So we had to drag a command to the palette to modify it, right? Well, if we're going to drag it there, why not just create it in the CUI? And then, if I'm good enough or if I know how to do it or I get better later on, I can use that same command in my ribbon. I can create a shortcut key to run it from the keyboard. Or any other user interface element. So, let's do that. Well, let me do that. You guys can watch.

All right, so again, I'm going to go into the CUI. And this is where that supplement zip file that is within the zip file of the handout will come in handy. Although, there are screen captures of this

in the script as well.

Again, it's a glossy overview here. But I'm going to go ahead and click on here. There's a little star here with a red asterisk, I guess. And it allows me to create a new command. I'm not going to go over every element in the editor. That was another class. But if I click here, we now see that I have a command down here, command one. That's my new command. And we've had image panel appear now, as well as the properties panel on the lower right. This is where I want to do pretty much the same thing as I did in the tool palette.

Let's use a different command. Let's go ahead and-- I'm ad libbing here. Let's-- Just for grins I'll use OSMODE. All right. I'm going to go ahead and just plop that in here. Notice that two carets, Control C, Control C. Again, I like to use three. You don't have to. It's just a practice I've gotten into. I'm going to click on the ellipse, or I could just paste it here. But if I click on the ellipse button, then I get this little string editor. Paste it in there, my command. Click OK. Or I could have just pasted it here. If you have a long macro, then maybe it's best to go right into the string editor. Yes.

AUDIENCE: What's a long copy character? [INAUDIBLE]

VOLKO COCCO: I've not run into one. I imagine somewhere along the line there is. If I'm going to create a macro that long, then I would probably want to start looking at AutoLISP, just because somewhere along the line that's going to break on you. Because it is just an entry of commands. Whereas a list function can, if you have 100 characters on a macro, you can probably create that in about 10 characters in LISP.

So anyway, I probably want to give this a name. So let's see-- Which one, I used, yeah, OK. I'll do VC OSNAP just because I never thought of a name for this. I want to put in my description. I'm going to go ahead and do that just for demonstration purposes. So I'll do a Control C on that. Plagiarize the heck out of myself. Plop that in there.

Tags are great for-- Well, I'll do a display name right now, which also appears in the tool tip. But tags are great if you're searching for a command. AutoCAD for some reason here, if I were to type in something like DDATTE for attribute editing, it doesn't show that as a command. You have to type in something like attribute edit. It uses plain English I guess. So you can put tags that you can search by.

As far as the image goes, I plagiarized the heck out of those as well. So I may take something

like this, modify that. Let's just go ahead and modify it a little bit because I'm not very artistic, but I'll just do that just for grins. I mean, I'll probably take a little more time, but I'm trying not to bore you with that here. I'm going to go ahead and save this. And I'll call it my VC OSMODE image. Click OK. Click Close. And it, by default, creates a small and large image for me.

Now that I've done that, I'm going to click Apply here. That applies it to the CUI. Just clicking OK will not save. You need to click Apply, all right? So once I've done that, an easy way to look for all my custom commands is to change the filter here to custom commands. Wow, what a coincidence. It's also showing some of the commands in the partial menus that I have loaded. But here's my VC OSNAP. And the cool thing here is that I just want to deal with tool palettes today, so I'm going to go ahead and just drag and drop that to the tool palette. And close that, and it's going to work. So that's a quick way to customize.

I'm not going to go into adding a ribbon panel or anything, but the number one question I get when talking about macros is, I don't want to deal with the tool palette, I just want to run it from the command prompt. That's actually, for some reason, a very limited functionality with the CUI. I've actually been meaning to ask the developer about it because the only sure way to create a running command like that is to embed your macro, have it called by a LISP routine. But there is an alternative, and that is to create a two key or three key keystroke combination for your shortcut keys.

So again, I'll go ahead here and I'll select my custom commands. And what I'm going to do is select VC OSNAP, obviously. And I'm going to drag it up. And I would recommend dragging outside of the dialog, otherwise it will scroll all the way up real quick like. I should have done that first. This is still kind of kludgy. But see we have these shortcuts keys here. You'll see my cleanup tool, it's already been added. But I'm just going to drag this here and drag it right about there. And then plop. There it is.

Once I do that, this is where the limitation comes in because you only have a finite amount of two key functions available. A lot of those are in use. Now you can change these, the ones that are in use. You could probably get rid of them too. I haven't tried that, saw no reason to do that. I'm just kind of throwing that out there. So, I was actually trying to think of a-- Pardon.

AUDIENCE: [INAUDIBLE]

VOLKER COCCO: Yeah, right. But I was actually trying to think of a good two or three key combination, and it's like, Control, Shift, let's go Y. Well, it kind of sucks because I have to take my hand off the

mouse, right? But I'm going to do something like that. I'm going to go ahead and select my VC OSNAP, and then-- I didn't want to delete it. There we go. I'm going to go ahead and under access here-- This is how often I do this because it's just not worth my time. I actually had to look for the [? axis ?] part of the panel here a moment ago. Kind of awkward since I'm teaching a class.

But I'm going to click on the ellipse button. And then I'm going to use whatever unassigned two or three combination I wish to use to this. Let's do, just for grins I'm going to do Control, Alt-- I'm almost afraid to. Let's do Control, Alt, N. Hopefully that will work. Yeah. OK. It accepted it. So it wasn't in use. Again, it's kind of kludgy because I have to use two hands to get to this keystroke, but I'll go ahead and do this. I'll go ahead and do this. And Control, Alt, N. And it's gone into my macro down here. And again, a little limited, but it works. I've probably rambled on a little faster than I should have because we have 15 minutes left here. I don't mean to shortchange you on the money you spent coming to these classes.

I'm willing to answer some questions though. And that's really all I have. I mean, there's a lot of stuff. Let me get back here first.

AUDIENCE: Yeah, so the semicolon, is it different in a macro [INAUDIBLE] LISP file?

VOLKER COCCO: Yeah. In a LISP file, the semicolon is going to tell the LISP routine to ignore anything past that semicolon. So you would not use it there.

AUDIENCE: One other question I had was [INAUDIBLE]

VOLKER COCCO: Yeah, OK. So you actually-- Good question, actually. I probably should have pointed it out at some point. So The question was, how can I get rid of some of these dialogues like any of the select file dialogs, right? Well, just putting a hyphen in front of those doesn't work. There are a couple of commands. There's FILEDIA, which gets rid of the select dialog. So any Save As, Save, File Open and so forth. And then you have CMDIA. And that gets rid of dialogs for like plotting, and a couple other ones too, I'm not sure. But those are the two you'd want to focus on. And again, they're in the help.

So FILEDIA and CM, I think it's just CMDIA. I don't have the help file but I can certainly type it in. Yep. CMDDIA. Apologies on that. At least I remembered what it was, right? So CMDDIA. And both those, FILEDIA and CMDDIA, they have just a switch of just your regular zero, one, your basic on off switch. So good question.

AUDIENCE: Yeah, you mention that suppresses the dialogs. Does it suppress any kind of error trapping, or anything like that? [INAUDIBLE]

VOLKER COCCO: The macro ignores it. So like right now, you know I've got a lot of macros that will set a layer current, load a line type, and so on. If that layer's already current, the line type's already loaded, it just moves on to the next command.

AUDIENCE: Well, what if it doesn't exist?

VOLKER COCCO: Well, if it doesn't exist, you're going to get a command line error. No, there's really no error trapping. There is a function that will allow you to suppress a lot of the background work that happens with macros. It's an echo, echo, echo. I haven't used it in a long time. Echo, echo, echo, OK.

So I have one of those Amazon echoes right, Alexa. You've seen those, right? And I actually had it with the name Echo, and we have a house sitter watching my dogs, her name's Echo. So I had to change Echo to Alexa because every time I called her-- I'm sorry, I don't understand that question. So anyway, sorry, I digress.

All right. CMDECHO. OK. Yeah. Yeah. Good question. Any others? Folding, spindling, stapling. We all know what age group we're in, I guess. Yeah.

AUDIENCE: I know you touched base on Diesel. [INAUDIBLE] that kind of expands on that?

VOLKER COCCO: You know, it's a good idea. It would have been too much for this. I don't know if anybody is teaching it here or not. And if not, then I know what I'll be doing next year. Yeah.

AUDIENCE: I haven't found any literature online.

VOLKER COCCO: Really. Yeah. For some stuff, I mean there really isn't a lot, and Diesel is very powerful. But I wanted to really, I've done more advanced training, I just kind of wanted to go lower level on this. So that's a good idea. You may even want to put it in as a request because maybe there are other instructors here who also want to teach it. But maybe they don't realize there's a demand for it. But knowing that-- This was a-- And I know a few people walked out, but they've also got the handouts and stuff. So I'm not worried about it. They came here for a purpose and knowing that there was interest at this level, I now know that there is interest at the Diesel level. And if nobody has been teaching it, then I'm sorry you have to wait a year. Yeah, so

good thought on that one there. I don't know anybody who does teach it though. Go in to AutoCAD help.

I've run out of things. So I want to call it a wrap. Take a few moments of break. I'm sorry I ran out of stuff. Couple of minutes to spare. I hope you guys-- Did you guys get stuff? Did it help? Yeah. All right.

[APPLAUSE]

Well, thank you.