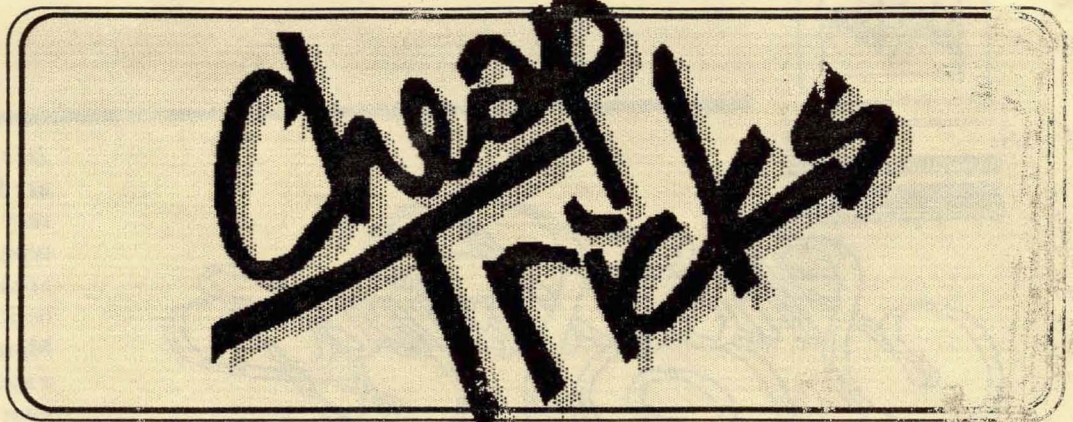
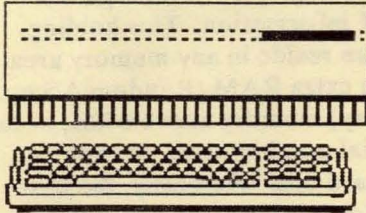
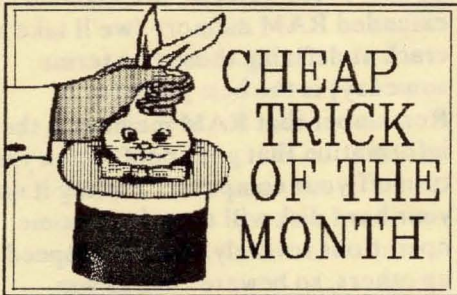


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### Who Needs a Digitizer or a Scanner?

You don't and I don't --- unless of course, you like spending lots of your money on expensive hardware! But unfortunately, we feel like we do need something special when we come up against certain drawing tasks which seem too difficult to do on CADD (Computer Assisted Design and Drafting).

In this "difficult" category are such things as site plans with contours, vicinity maps and parcel plans, logos with freehand curves, and existing building plans with lots of funny angles. You have probably sweated a couple of these through more hours than you care to count via the matching grids or "measure and hope" methods. You figure that expensive digitizer pads, or costly scanner services are the only answer. It would be just so easy if you could simply *trace* a drawing on your computer screen, right? Well, why not? Welcome to the Cheap Trick of the Month, *Tracing on Your Monitor*.

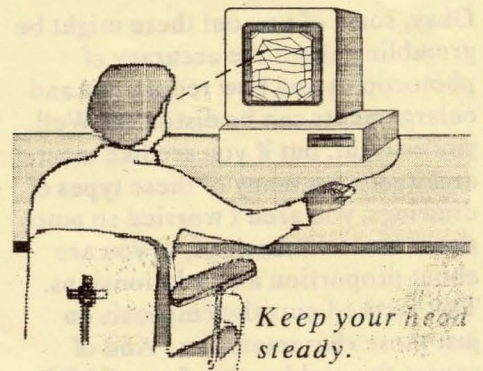
In principle, you simply take your site plan drawing, vicinity map or whatever and photocopy it onto a transparency like the ones you use for overhead projectors. (Transparency sheets for photocopiers are available at any good office supply store.) Reduce it to fit if you like, and don't worry about the scale. Then simply tape the transparency to your screen and *trace* it on your CADD screen, by looking through the transparency to your cursor below.

Now a few tips on how to refine this technique. First of all, it is important to adjust the *aspect ratio* of your screen, so that it is perfectly square (most are not). In DataCAD, simply measure any square grid in any file, by holding a ruler up to the screen (any units will do.) Then go in to your configuration program, and under Display Device, and then Aspect Ratio, you will be directed to type in your measurements for the "x" and "y" sides of your square. DataCAD will then adjust its proportions, so that your monitor will display a real square, when one is drawn. This step is fairly important, as we want the physical proportions of our visual display to match what is in our computer data file (and what then gets plotted or printed.)

Next, in photocopying your drawing, take into account your computer screen size. Those of you with the larger 19" and 20" monitors have a nice large area in the middle without too much curvature. Those of you

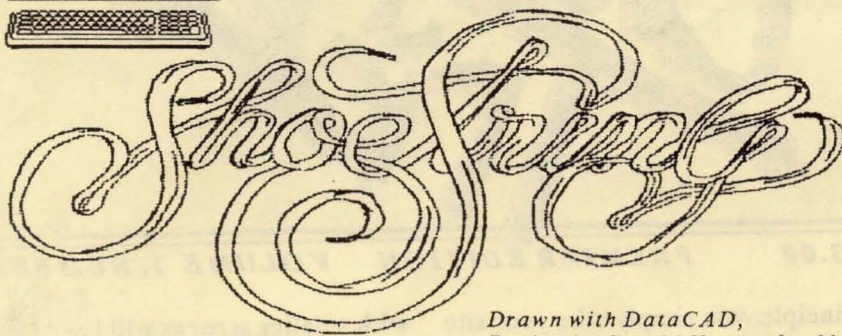
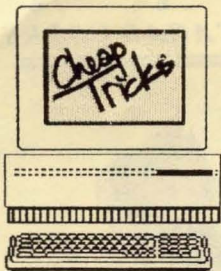
with smaller screens will have less free flat area. You may wish to reduce your drawing a bit smaller, so that it fits more comfortably within your prime drawing area.

After taping the transparency to your screen, the next trick is to keep your head fairly steady and level so that you are always looking through the screen from the same vantage point. Set your chair height, so that you are looking eye level at your screen. You should try to do the outer bounds of your drawing first, so that you can "reference" your head position later.



When you are finished drawing, measure any part of your drawing and match it with what the true dimension should be. You can make this step easier by drawing an "X" scale and a "Y" scale on your photocopy beforehand and tracing that also into your CADD drawing. Then simply use your percentage enlargement feature to enlarge or reduce your CADD drawing to its proper size.





Drawn with DataCAD,  
Design by Gerald Huerta for McCall's

If you saw the above "Shoestring" Logo and wanted to put it into your CADD drawings for signage or for your titlesheet, would you even attempt it? Yesterday, the answer was probably "No Way!" but with this technique, the answer is, "Why not?". We "traced" this logo using first Polylines to get the quick outlines in place, and then on another layer using 3D Contours to get more free flowing curves. It took about 45 minutes to get it just right.

Okay, some of you out there might be grumbling about the accuracy of photocopies and how reductions and enlargements can be distorted. Well, you're right, but if you are like most architects, for many of these types of drawings, you aren't worried so much about exact dimensions, as you are about proportion and relationships. This method puts the emphasis on just those characteristics. And of course the real beauty of any CADD drawing is that it can be refined and corrected, so that you can adjust your drawing quite easily as more detailed information is available or else as it needs to be incorporated into the drawing.

This technique can also be used quite effectively with freehand sketches for schematic presentations or for drawing entourage into your CADD file.

*CHEAP TRICK OF THE MONTH will be the regular lead article of the Cheap Tricks newsletter. Those of you who would like to share your own cheap tricks, we would be happy to consider it for future publications, acknowledging your contribution of course!*

## COMPUTEREASE

### "DISPLAY LIST"

This term is used a lot these days, particularly now that DataCAD 4.0 incorporates *Display List* processing as a way to speed up the program when you move from one part of your drawing to another, or move up or down in scale.

*Display List* is simply a list of all the graphic elements of a drawing, or simply, what you see on your screen. It doesn't include all of the other attributes which may be associated with each entity. All these other attributes still safely reside in your main computer file, but for simply moving about the drawing, it is much faster for the program to simply get the visual information from the *display list*, rather than going back into the main file and looking up the graphic attributes of each element.

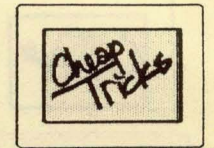
*Display List* is like a "cache", if you are familiar with that term, a temporary holding area for this specific type of information. This holding area can reside in any memory area, be it in extra RAM (Random Access Memory) memory above 640K, or on a special graphics card, or even on your hard disk. Naturally, the best place for it is where the computer can access it very quickly, so expanded or extended RAM memory (we'll take a crack at defining those two terms someday) is the best place for it.

Remember that RAM memory is the information that goes poof! when you turn off your computer. Putting it on your hard disk will slow down some operations severely, as well as speed up others, so beware. When you configure DataCAD 4.0, you will be asked whether you want a display list or not, where it will be, and how big it should be. It should be big enough to hold your typical drawing file.

In using *Display List* with DataCAD 4.0, there are now two different types of "refreshes". In loading up your file, you will have your computer file on your hard disk, and your *display list*, probably in expanded memory. Now when you hit <escape> or <page up> or <page down>, the computer will usually go get the information it needs from your *display list*. But when you hit <U>, you "regenerate" the information, namely the program goes back to your primary computer file on your hard disk for the graphic information. It also takes the time to restock your *display file*. So regenerating will be much slower than refreshing. But simple refreshing will be much faster than it used to be with DataCAD 3.6.

Occasionally, certain operations and normal refreshes ask for information which is not in the current *Display List* and will cause a forced regeneration. You should turn on the warning beep in your Display menu





until you get used to when this happens.

In summary, remember that *DISPLAY LIST* is a form of the old "WYSWYG" (What You See is What You Get) principle. What you see on your screen is what is in your *display list*. But if you happened to have stopped your regeneration of your *display list* before it was done, you may find that What You See is NOT necessarily what is in your main file. So as Sargent Esterhaus used to say, "Be careful out there!"

*Computerese will be a regular monthly feature discussing various computer lingo terms, and relating them to common usage and tasks.*



### HALLOWEEN LESSON

A wonderful feature of DataCAD that is not immediately apparent is something called **MASK**. If you use color, line weight, or line type in any kind of systematic way, you can use *Mask* to get you out of a lot of jams.

First a word about *Selection Sets*. Basically, this feature allows you to make a grouping or "set" out of any number of items that you choose. For example, say you want a certain group of partitions made into a selection set, so that you can move them to a new layer, and then back again for a different plotting. By adding these partitions to a particular Selection Set, and then making that set "active", you can then perform many of the editing functions in the same way that you would use Entity,

Group, Area, or Fence.

Now imagine you are working along and you suddenly realize that by mistake you have been drawing all your doors on the wrong layer, and to move them all one by one to the right layer would take forever. What do you do? Well, luckily you did draw all the doors in the same color, say cyan, and all the other stuff on that layer is in a different color. So, you can use the **MASK** feature to move all the doors over in one step.

Go to *Edit Sets*. Then hit Add To and pick a Selection Set #. Next you select **MASK**, and then **COLOR**. Go to the bottom of the menu and select **ALL OFF**. Then go back up to **CYAN** and turn that back on (puts on a little asterisk). Hit your third button on your mouse twice to get back to the Entity, Group, Area menu of Edit Sets. Now select area, and draw a box around all of your doors.

One by one, everything in the color cyan will be highlighted. When it is done, hit your third button once to back out to the Edit Sets menu. Now go down to **SetActiv** and select the Selection Set # that you picked earlier.

Now if you go to the Move menu and choose **To Layer**, select the layer you want to move all the doors to, and then instead of using Entity, Group, Area, or Fence, hit Selection Set instead. Your masked selection set of cyan doors will now all move to the new layer.

You can use this mask feature with color, line weight, or line type and it will work in the same way.

Once you get to know this feature, you may want to use it on a more frequent basis. Setting up a keyboard macro can make life a lot easier.

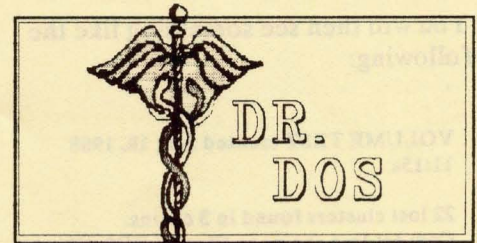
Those of you who do not know how to do this timesaver, we will discuss the procedure in an upcoming issue. But for those of you who do, our macro goes like this:

```
G (substitute desired key)
^,^S2^F4^F8^F5^F0^F8^S0^F2^F8^F3^F0^F2^S9.
(Note menu off and on characters have been deleted for simplicity.)
```

Now when we hit *ALT-G*, our program automatically clears Selection Set 8 and makes it active, then goes to **Mask** and turns off all the colors, so it is ready to receive our color choice. By the length of the keyboard macro, you can see how many keystrokes are saved. You might note however that if you use this macro twice in succession, it *de-activates* Selection Set 8.

Get to know **MASK**, it will rescue you from many *frightful* situations.

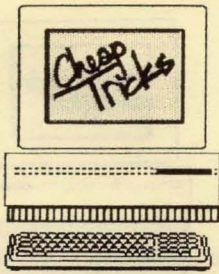
*DataCAD Tutor is a monthly feature column which will offer lessons on different basic features of the DataCAD program.*



### THE INCREDIBLE SHRINKING HARD DISK

DOS love it or hate it, you still need to know about it and that's what this column is all about. We will discuss various less known DOS commands that are important all the same. Even if you have a shell program that insulates you from most DOS com-





mands, you still need to perform certain management tasks that only DOS will be able to perform for you.

Today we will take up the question of the shrinking hard disk. Have you found that as time goes on, you seem to have less and less hard disk space available to you, no matter how much you clean out your unused files?

Well, this shrinking is caused by the infamous *loss clusters*, which are usually created when you have a power outage or your program locks up on you or you otherwise abort out of a program. At first they may not amount to much, but as time goes on, they do add up until they can literally take up *hundreds* of kilobytes of space. Take it from someone who found that out the first time he became aware of these lost clusters.

The command you need to know is **CHKDSK** for *Check Disk*. At your prompt, you will type the following:

```
C> CHKDSK /F
(Note: the /F parameter allows you to "Fix" the lost clusters)
```

You will then see something like the following:

```
VOLUME TEST created Aug 18, 1988
11:15a
```

```
22 lost clusters found in 3 chains.
Convert lost chains to files (Y/N)? (Hit N)
45,056 bytes freed (Hallelujah!)
```

```
21,309,440 bytes in total disk space
45,056 bytes in 4 hidden files
229,376 bytes in 110 directories
16,865,280 bytes in 1561 user files
4,124,672 bytes available on disk
```

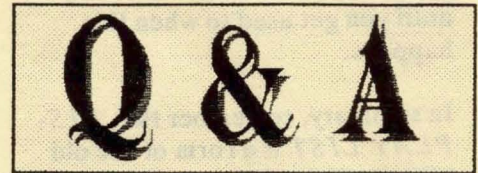
```
651,264 bytes total memory
580,112 bytes free
```

This command is also very impor-

tant for checking how much basic RAM memory you have available (the last number) as running DataCAD now requires a higher amount of the basic 640K then it used to.

Another good practice is to simply add this command to your **AUTOEXEC.BAT** file, which will then automatically perform this function every time you boot up your computer. Future issues will discuss how exactly to modify files like these.

Also in a later issue, we will talk about using some of the Disk Management Tools, such as Norton Utilities or PC Tools which will allow you to perform additional house-keeping on your disk to keep it running efficiently and to help prevent disk crashes.



**DATA CAD: How do I figure out what my Hatch Scale should be?**

Picking your scale is not quite as arbitrary as it seems at first. Scale units do have some meaning. Typically, in DataCAD the basic unit of measurement is equal to 1/32". This also works in any distance function, such that if you type in 3.6.12, this translates to 3 ft., 6 in., and 12/32". Hatch scale works in much the same way. Say you chose *NET*, and want the squares to be 6" by 6". You multiply 6 by 32 to get 192. Then in Hatch, pick scale, and enter 192, and

Advertisement

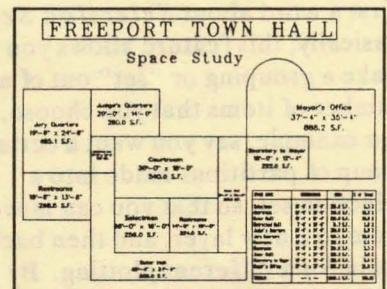
**Welcome, Cheap Tricks**

Casco Systems welcomes the *Cheap Tricks* newsletter into the world of third-party enhancements available to the DataCAD user. We wish Evan Shu well - his tips, techniques, and general views on the world of CAD from the small firm's perspective are always enlightening. To be able to get what you want out of CAD without wasting a lot of time and money requires doing your homework. Evan has done his homework, and you should find the fruits of his labor in this newsletter.

We feel that - in the same spirit as *Cheap Tricks* - our **BLOCKER** Space Diagramming and Reporting Macro provides innovative enhancements to the DataCAD user at a very reasonable price. We've done our homework, too.

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you should get the desired result. Note also that if you pick some of the hatches which are noted as a certain size, such as 24x48til, you should enter 1 as this hatch does not need any scaling.

**DATA CAD: What makes my plotter sometimes stop in the middle of a plot?**

This odd bug happened a lot in earlier DataCAD versions and may be fixed by now, but as best as we could figure, it was a function of your autosave feature breaking into the plotting sequence. Try going back into that drawing and setting your autosave to a very high number and replot. Others have found that sometimes by ending the plot, and then doing a partial plot of an empty area, the plotter will pick up where it left off. Others have found that you must turn everything off, plotter and computer, reboot and start over fresh to get the plot to run through.

**DATA CAD: Why is it difficult to pick text as an entity sometimes?**

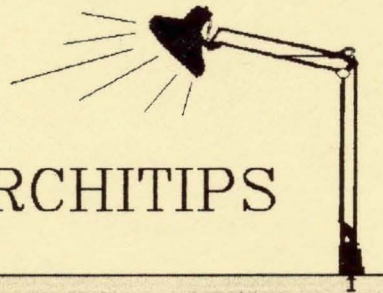
The pick point for any string of text is in the lower left corner of the first entry point. So if you are trying to pick it at the end or middle of the string, or else have started your string with some spaces, you may find your text hard to select. If you just can't find it, go to the display menu and turn text off. Your text string will now be displayed as a box and will be very easy to select.

**GENERAL: Should I get a Macintosh or a PC?**

Oh, pul-lease, why this eternal question? I firmly believe that you can get *either* and be very happy. But if you are starting from scratch, I suggest you first select the major program you will be using the most on your system. If you are like most

architects, you will want to select your CAD package first. Most of the readers of this newsletter will have picked DataCAD and so will need to buy PC hardware to match. However if you find that you really like CAD packages such as Architrion, or VersaCAD then MAC may be the best for you, particularly if you want to also do a lot of desktop publishing. But be aware that the computer industry is gradually coming together more and more, so that it becomes less likely that you will be painting yourself into a corner, whichever way you go.

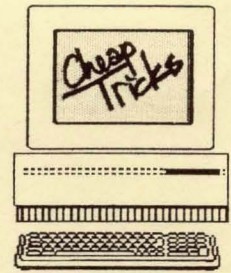
*Your questions are welcome and we will make every attempt to answer them in our future issues. Submit your questions to the Shu Associates, 10 Thacher St., Suite 114, Boston, MA 02113.*



**CHECK PLOTTING**

Someone once observed that looking at a drawing on the computer screen was like looking at it through a cardboard tube. It is very difficult to check a drawing adequately on the screen, and therefore checkplots should be made often.

There is a hesitancy to do checkplots as plotting can be slow as well as eat up a lot of paper. One good tip is to use the backs of old blue-line prints for check plots. It is a good surface on a slightly heavier paper, and it is a great way to recycle use of outdated prints and save on your plotting supplies bill. Reverse roll them, print side inside, around a large diameter cardboard tube for storage, so that when ready to plot, they will lie flat around your plotter carriage.



Also for those of you who use ink pens, give felt tip pens a try, particularly for checkplots. You can set the pen plotting speed as much as 4 times as fast and still get a quality plot. Check it out!

*Architips will be a regular feature giving advice on miscellaneous topics particular to an architectural practice and the use of CADD.*

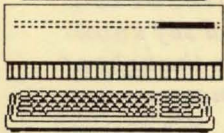
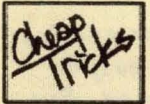
**Editor's Note**



*When a magician performs a feat of prestidigitation, we gasp in wonder at how it was done. But if the secret is revealed, we call it a "cheap trick" and say knowingly, "I should have thought of that!" So it is with many computer feats of magic. We assume that it must be done with a lot of fancy hardware and expensive equipment, when in fact, it simply is a "cheap trick". Our hope in editing this fledgling newsletter is that we can expose the mystery of a lot of the hocus-pocus and mumble-jumble that goes on out there. We would like to give you the tools you need to make CADD work and work well for you. Our hope is also that much of what you read here will whet your appetite for more in-depth study. When we serve up our hors d'oeuvres, we will also try to refer you to where you can get more in-depth, meaty discussions on those particular subjects. But our aim is to be both "Less Filling" and "Tastes Great". In reading our newsletter, we do not wish to impress you with awe-inspiring expertise or indecipherable technical treatises. We would rather have you say, "Hey, that makes a lot of sense. Why didn't I think of that?"*

**Evan H. Shu, AIA**





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