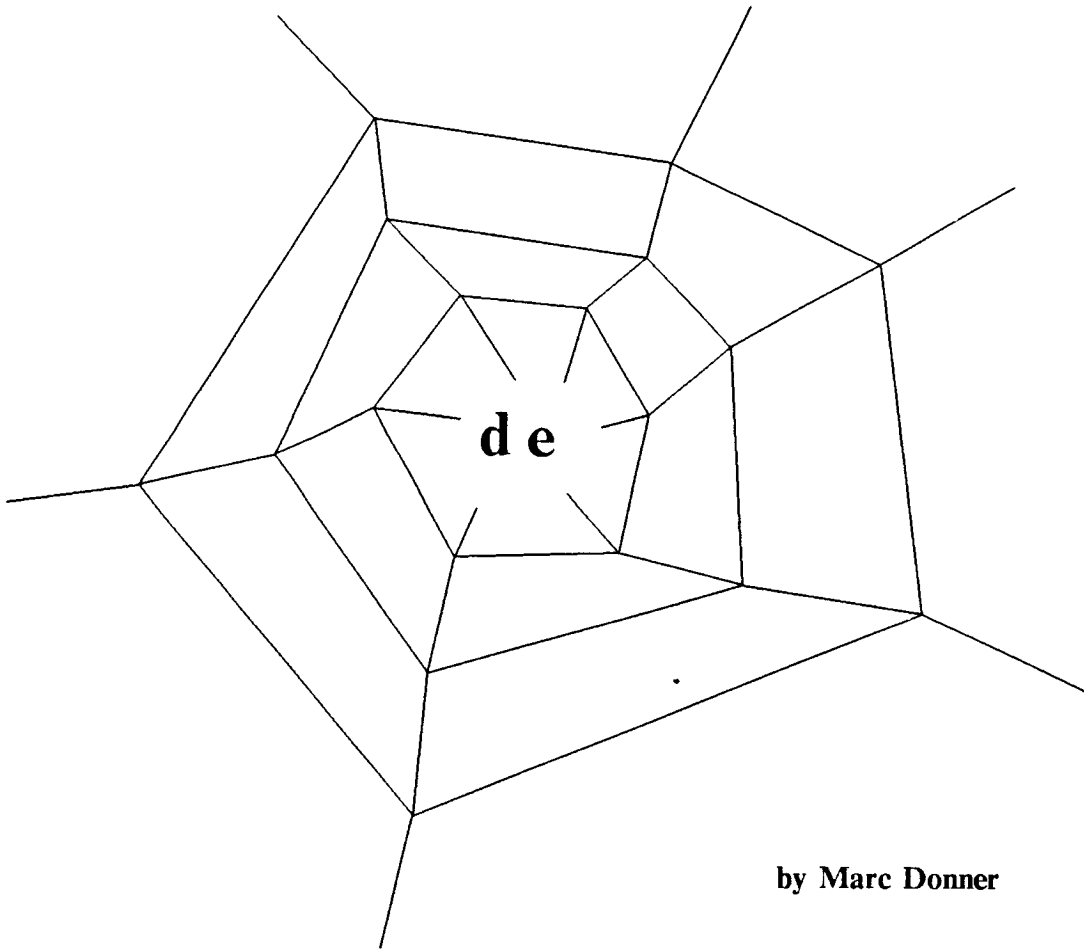# d e U ser's Guide

Come into my parlor ...

by Marc Donner

Vertices

In de you make objects by first making some vertices and then telling de what to convert them to. You can make a vertex by putting the cursor controlled by the mouse where you want the vertex to appear and then pressing and releasing the right mouse button. A small hollow dot will appear where you pressed the button. If you don't like its location, you can delete it by putting the cursor on it and pressing and releasing the right button again.

Moving things

You can move an object by putting the mouse cursor on or near the object and pressing down and holding the left button. The cursor will change to a circle with a crosshair in it, indicating that you have touched something. The object that you have touched will be highlighted. You can now move the mouse, keeping the left button down, until you have the cursor where you want the object moved to. Releasing the left button will make the object move.

Gravity

Vertices and lines and other object are small and thin and it is not reasonable to expect you to put the mouse exactly on one in order to move it. The solution to that problem provide by de is to make each object have 'gravity', a property that makes the cursor that is sufficiently near an object fall exactly on the object.

Connections

Each object has one or more vertices. Vertices in de have the property that they can be connected. Two vertices that are connected will stay connected ... this lets you connect two lines at their endpoints so that no matter how you move one line, the other will stay connected to it.

Making multiple objects

De remembers what kind of object you most recently made. If that object requires exactly two vertices, then you can make more of that object by pressing the right button down, moving the mouse with the button down, and releasing the button when you have the cursor where you want the other vertex to appear. De will immediately make an object there, thus relieving you of the need to use the Make submenu to create an object. Note that you can make objects in the normal way by putting down two dots, clicking and releasing the right button without moving the mouse for each one, and using the Make submenu to select the kind of object.

Summary of de menu items:

(1) Redraw
[Control-L]

While de is pretty clever about what is on the screen and can usually do a good job of redrawing the things that have moved, it sometimes makes mistakes in not redrawing the things that didn't move that had bits erased when other things moved. This can be fixed by pressing the Redraw menu item, which will cause the entire picture to be redrawn

(2) File

These items pertain to making hard copy of the picture you are drawing and to saving and restoring your pictures for later use.
(a) Write pic output
[Control-W]

This menu item causes a pic file to be written contain-

ing information   permitting hardcopy of the entire picture to be made. You will be prompted for the name of a file into which the output should be put. If the file name you type has a period (".") in it, the name will be used exactly as you typed. If there is no period, then the   extension ".pic" will be added at the end of the name. Thus if you tell it 'mystuff', the file that de writes will be

If you want to actually print a copy of the picture you should use the following command:

        pic < filename.pic > |troff |preview

or

        pic < filename.pic > |troff |dvisherpa

The first will show you what the picture will look like on the screen, you can then make hardcopy by picking the appropriate menu item. The second will make the hardcopy straightaway. It is also possible to include these .pic files in troff documents. If you enter the line in your troff file, the picture will be inserted into the document at the place that you specified.

(b) Pic output of group [Control-V]

This menu item results in the creation of a pic file for only the current group. If the picture you have created is too big for the printer, you can make it into several smaller pieces in this way. It is usually the case that the hard copy output of a de drawing will be almost exactly the same size as it appears on the screen of your Sun.

(c) Save picture [W]

This menu item causes a file to be written containing information that permits de to recreate the drawing for you at a later time. It will prompt you for a name for the picture. If you have already given it a name before, that name will be in the input string as if you had already typed it, so that if you want to leave the picture with the same name, you can do so by simply typing return. If you don't specify the file extension (a period and the following word) the default extension ".de" will be used. I suggest that you always permit the default extension to be used because other subsystems, like donz, understand them and can act accordingly.

(d) Read picture [R]

This menu item makes de read an already written de file in. Whatever is in the picture will be added to the current picture. The same rules about file names and extensions apply for all four file menu items.

(3) Group

Several operations in de require that you specify some special objects for them to work on. The menu items in this group pertain to designating the set of special objects (called the group) and to the operations on the group. De highlights all of the items in the group by drawing thin outlines around them.

(a) Item -> group

[s]
This menu item moves the currently picked item (the one that you have clicked the left mouse button down on) into the group. This can be achieved in several ways. If you aren't actually holding the left button down on an object, then de will pick the most recently touched or created object. This can be confusing at times, so I don't recommend it. The best way to add a single item to the group is to pick it with the left mouse button and, while holding the left button down, press the lower case "s" key. If the item under the cursor is *already* in the group, it will be removed from the group by this operation.

(b) Region -> group [G]
This menu item requires that you put two vertices down on the picture. It will take all of the objects completely contained in the rectangle delimited by those two vertices and add them to the current group.

(c) All -> group
[Control-E]
This menu item takes everything in the picture and adds it to the group.

(d) Delete group
[Control-D]
This deletes the group from the picture. De keeps a copy of the most recently deleted group in a special place where you can get it back by either typing [Control-Y] or by picking the Restore deletion menu item.

(e) Restyle group [Control-S]
This menu item makes de go through the group item by item and change the style of each item to the current default for that type of item. For example, if the group has a wide line in it and the default line style has been changed to thin, then restyle group will cause that line to become thin. Similarly if there is a piece of text in the group of one size and the default text size is now different, that piece of text will have its size changed. See the section on Defaults to see how the default styles are set. To get ahead of myself, if there is a group and you change the default style for any of the items in the group, those items will be restyled when you change the default. This permits you easily to try different styles and see how they will make the drawing look.

(f) Scale group [T]
This menu item requires that you place four vertices down. It measures the x and y distances between the first pair and between the second pair and then scales the x and y dimensions of the group by the ratios between the the respective pairs of dots. This permits you to change sizes, by putting the dots on a diagonal, and change orientation (mirror reflections in the x and y directions are possible).

(g) Copy group [C]

This menu item makes a copy of the group. The copy becomes the new group. The copy is offset a small amount from the original and it is disconnected from the neighboring objects.

(h) Cancel group [X]

Picking this menu item returns the items in the group to the drawing list.

(i) Tear group loose [Y]

This menu item causes all of the connections between the items in the group and any items outside of the group to be broken. Connections among objects in the group are not disturbed, as are connections among objects outside the group.

(j) Explode symbols [E]

All of the symbols in the group are reduced to their component objects. The new objects are added to the group.

(4) Restore deletion
[Control-Y]

De keeps a copy of the most recently deleted group. Picking this item or typing its equivalent (Control-Y) causes the deleted objects to be returned to the drawing.

(5) Symbol

Symbols are useful in de because they let you create a possibly complex object and then make one or more instances of it as primitive objects. A symbol may appear quite complex, but you may pick it up and move it around with impunity because you cannot disturb its internal structure. A complex object may be replicated as a group or as a symbol, depending on how you intend to use it.

(a) Group –> symbol [Q]

Picking this menu item causes the current group to be made into a symbol. The original objects are erased. De will prompt you for a name for the symbol. The default symbol will be set to this new symbol. If the name you give is the same as that of an already existing symbol, the old version is destroyed and replaced by the new. Note that this will cause all instances of the old symbol to change their appearance.

(b) Explode symbols [E]

This is the same item as the explode symbols item in the Group section.

(6) Zoom

The zoom functions let you control the apparant size of the picture that you are editing. Note that de tries to make the hardcopy output that it produces come out at the same size as the image on the screen. As a result, the Zoom function lets you change the output size. Zoom and scale are different because scale changes the size of the group relative to the rest of the picture, while zoom changes the size of the picture relative

to the screen.

(a) In [Z]

Zoom in moves you 'closer' to the picture. The visible portion of the image gets bigger. You may use zoom in in either of two ways:

(i)

If you put two dots on the screen, then de will try to expand the image so that the objects contained in the rectangle delimited by the two dots fill the screen.

(ii)

If you don't put any dots on the screen, de will make the image about 80% bigger.

(b) Out [z]

Zoom out moves you 'farther' from the picture. The visible portion of the image gets smaller. You may use zoom out in two ways that are quite similar to the uses for zoom in.

(i)

If you put two dots on the screen, de will endeavor to put the entire contents of the screen into the rectangle delimited by the dots.

(ii)

If you don't put any dots down, the image will become about 80% smaller.

(c) Fit [F]

Zoom fit will change the size of the display so that the picture fits exactly into the available window.

(7) Make

All of the items under the Make submenu require some number of vertices. If an insufficient number of vertices are available, de will flash the screen at you to indicate that it needs more vertices.

(a) Group [G]

This is the same as the region –> group item in the group submenu. It is here for convenience. It requires two dots.

(b) Dots [.]

Picking this item causes all of the uncomitted vertices in the drawing to be converted to dots of the current default dot style.

(c) Box [B]

This item requires two vertices. It converts the two oldest uncommitted vertices to a rectangle, with the two vertices defining two diagonally opposite corners of the rectangle.

(d) Circle [( ]

This item requires two vertices. It converts the two

oldest uncomitted vertices to a circle. The first vertex defines the center and the second defines the radius.

(e) Arc [ )]

This item requires two vertices. It converts the two oldest uncomitted vertices into an oval arc. The first vertex defines the horizontal part, the second vertex defines the vertical part. The arc is exactly one quarter of an oval. Note that the pic output for these arcs is quite different from their representation on the sun screen.

(f) Oval [O]

This item requires two vertices. It converts the two oldest uncomitted vertices into an oval. It appears as a circle, but there are four vertices on the circumference that may be moved to change the eccentricity of the oval. Note that there are some difficulties caused by ovals. In particular, if connect an object to two or more of the oval's vertices and then move the object, de will be unable to figure out the 'right' solution. What de does is make the best move it can figure out and then disconnect any connections that are violated by the move you made.

(g) Line [l]

This item requires two vertices. It converts the two oldest uncomitted vertices into a line segment.

(h) Lines [L]

This item requires two or more vertices. It converts the entire list of new vertices into a linked chain of lines.

(i) Arrow [A]

This item requires two vertices. It converts the two oldest uncomitted vertices into an arrow. The arrow points from the first vertex to the second. Note that the appearance of the arrowhead is different on the display from that produced by the hard copy.

(j) Symbol [Q]

This item requires one vertex. It converts the oldest uncomitted vertex into an instance of the current symbol. The origin of the symbol goes where the vertex was.

(k) Text [']

This item requires one vertex. It takes the oldest uncomitted vertex and prompts you for some text. The result is a string of text that you may move around on the picture.

(8) Defaults

Each of the kinds, or types, of objects that may be created by Make has one or more optional styles. The defaults submenu permits you to change the default style for any type of object. New objects of each type are created with the default style for that type. This section will simply list most of the styles ... you should experiment with them to see what they are like.

It is important to remember that when you change the default

for some type, all of the objects of that type in the group are changed to the new style. This permits you to experiment with the styles, looking to see what style you like.

(a) **Dots**

There are four dot styles, large, standard, small, and hollow. All are square, but other styles are anticipated soon.

(b) **Box**

There are three box styles, bold, standard, and invisible. There should be more soon.

(c) **Circle**

Circles can be drawn thin and invisible.

(d) **Arc**

Arcs can be drawn thin and invisible. There are entries for bold and standard, but they actually appear thin. In the future there will be verious widths.

(e) **Oval**

Ovals also report themselves bold, standard, thin, and invisible. Only thin and invisible are implemented and bold and standard appear thin.

(f) **Line**

Standard, wide, thin, dotted, dashed, and invisible are provided. Dotted and dashed appear standard on the Sun display, but come out dotted and dashed on the hard copy output. Note that all lines appear 'thin' in the hard copy.

(g) **Arrow**

Arrows are available standard, thin, and wide. These appear properly on the sun display, but they only get printed thin.

(h) **Symbol**

The different available symbols appear here as different styles. Whatever you define is available to you.

(j) **Text**

There are a selection of fonts and sizes available. Look at the submenu for the current list. There are three justification choices: left, centered, and right justified.

(9) **Help**
[?]

Right now this simply types a list of all of the menu items on the typescript window from which you entered de. In the future it will invoke some more useful help system.

(10) **Guts**

Most of the features available under the guts submenu are only visible to the system maintainer and other wizards. They are debugging features that enable you to look at the internal state of the editor.

(a) **Animation**
[Control-A]

This turns on and off the 'rubber band' feature. This feature isn't too comfortable to use at present due to some properties of the Sun computers. In future implementations it will be better and may become the de-

fault.

(11) Grid

The grid is a way for you to deliberately reduce the resolution of the display. This permits you to make two things the same size and to get horizontal and vertical lines more easily. When the grid is on and you make a new vertex or put an old vertex down the vertex is placed on a grid point unless there is another vertex near enough for gravity to take over.

(a) on/off [Control-G]

This item turns the grid on and off. When the grid is on de will cover the screen with an array of very small dots. They are not part of your drawing, they are simply there to tell you that the grid is on and where dots that you put down will end up.

(b) double

This item causes the spacing between the grid points to be doubled.

(c) halve

This item halves the spacing between grid points.

(d) + 1

This item increases the grid spacing by one.

(e) -1

This item decreases the grid spacing by one.

(f) prompt

This item causes de to prompt you for the new grid spacing. It puts the current spacing into the input string ... you can get rid of it by backspacing over it or by typing Control-U.

(12) Exit
[Control-C]

This item terminates de. Be careful ... it does not yet check to see whether or not your picture was saved, so if you haven't saved it you can lose your work. That will be fixed soon.