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Journal of the ISTE Special Interest Group for Logo-Using Educators

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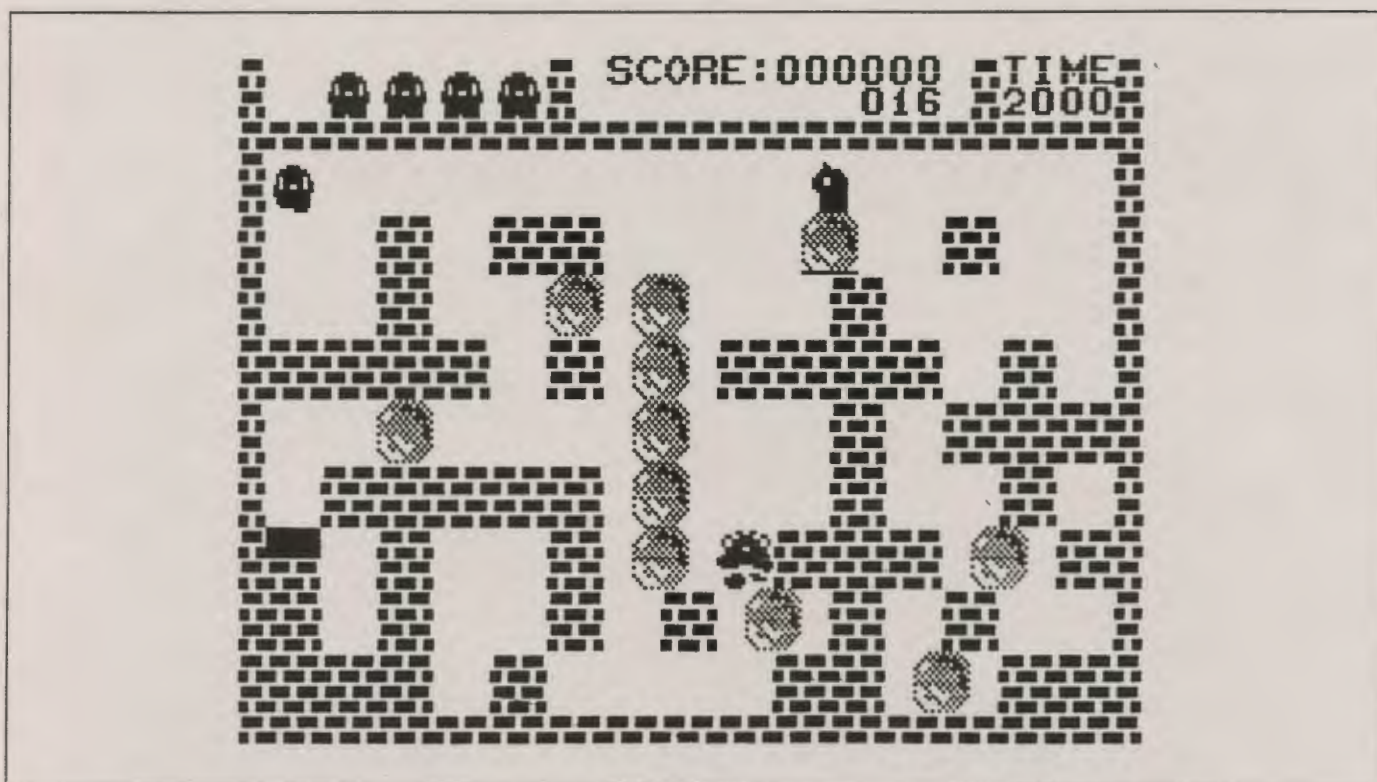
# LOGO EXCHANGE

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September 1989

Volume 8 Number 1

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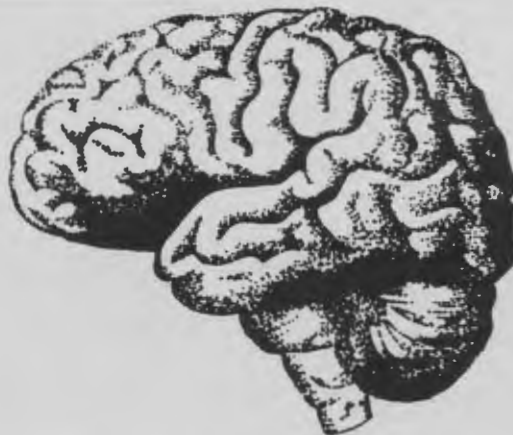
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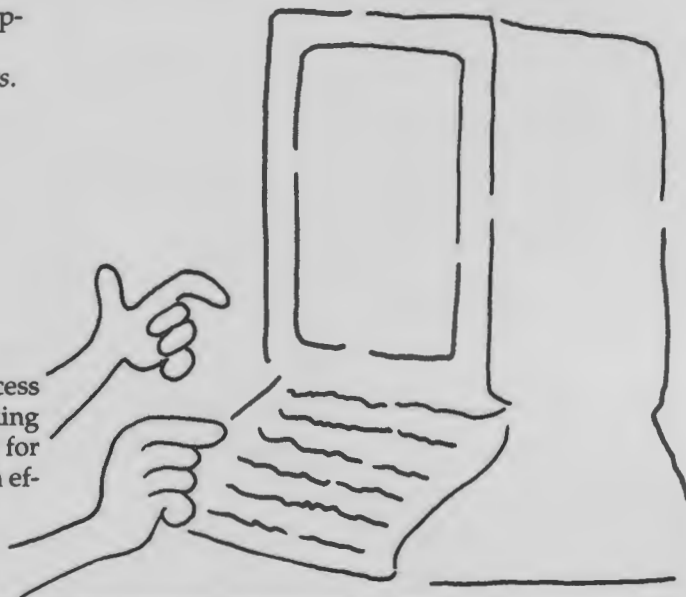
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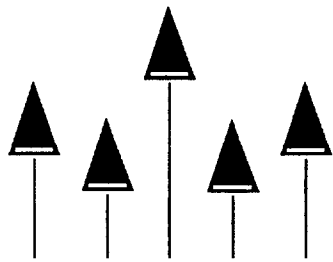
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# LOGO EXCHANGE

Volume 8 Number 1

Journal of the ISTE Special Interest Group for Logo-Using Educators

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## From the Editor

### Welcome Back!

Has your summer been as busy — and short — as mine? Does your list of summer plans still have as many unfinished tasks as mine? Back in May, September seemed so far away and yet, before we know what has happened, the school year is upon us. The pleasant summer days are behind us, but the new challenges of a school year are before us.

It's been a busy summer for us here in Oregon. At the National Educational Computer Conference (NECC) in Boston, the finishing touches were made on the merger between the International Association for Computers in Education (IACE) and the International Council for Computers in Education (ICCE). The new merged organization, the International Society for Technology in Education (ISTE) is now a larger, stronger organization to serve as a support base for those of us in the Logo community who are members of SIGLogo. Take a look at the cover of your first *LX* and you will see indication of the change.

During the months between the time I completed the May issue and began work on September, I have heard from quite a number of you. It's been delightful receiving article ideas, art work for covers, and just friendly notes from readers. In spite of these many varied contacts during the last few months, as I began to think about the September issue, I realized that I missed hearing from our loyal columnists every month. Their cheery notes and delightful writing brightens my day as each new deadline rolls around. Perhaps you too missed the monthly dose of new ideas and challenges.

As we begin the new year, I want to take a moment to welcome two new columnists to the pages of *LX*. First, we are very excited to have Dorothy Fitch of Terrapin, Inc. writing a beginner's column for us. You may know Dorothy for her *Kinderlogo* or her *Logo Data Toolkit*. As you'll see from this month's column, Dorothy is going to provide you with simple ideas useable by Logo novices. However, I think the more experienced among you will find many things that you can use in Dorothy's work.

Although our other new column won't begin until October, I'm sure you will be pleased by the addition of Eric Brown's work to the pages of *LX*. Eric, who formerly was with Logo Computer Systems, Inc., will be writing a column to help you with technical problems. Eric has been a great help to me in the past — as he may have been to a number of you! His column will address common difficulties, but you should feel free to send questions about any version of Logo to Eric at the ISTE address below and he will include answers in

future columns when possible. We hope that providing some technical help to you through the pages of *LX* will make your use of Logo even easier.

Even though we have added two columnists, we actually have fewer "regulars" than we did last year. We hope to fill those extra pages with material from you, dear reader. We want to know what you are doing in your classrooms. Send an article. Send some material for the cover. Send a brief description of a project with some pictures. Become a part of SIGLogo and *LX*. Only by sharing can we continue to grow together.

I'm looking forward to an exciting new year. With your help, it can be the best ever for *LX*!

P. S. For those of you following this (sad) story, I finally found an agate all by myself! Here is a scanned image of the real thing. There's hope. I may become an Oregonian yet!



Sharon Yoder is beginning her third year as editor of the *Logo Exchange*. A member of the faculty at the University of Oregon, she teaches a variety of computer education courses. In addition to her teaching and editing responsibilities, she is currently developing an order entry system for ISTE in Foxbase (DBASE), serving as coeditor for the "Logo Center" column for *The Computing Teacher*, and working on a book on telecommunications to be published by ISTE. Before moving to Oregon, she taught computing and computer science at the middle and high school level as well as serving as a district wide computer coordinator in Ohio.

Sharon K. Yoder  
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## Monthly Musings

### FD Ever FD by Tom Lough

Judi Harris is one of my all-time favorite people. Those of you who know her personally have a similar opinion, I'm sure. The license plate on her car is the inspiration for this month's musing. It reads:

FD :AMT

For me, this simple statement holds a lot of meaning. Perhaps the first thing that comes to mind is FD 100! From the beginning of this publication in September 1982, FD 100! has been a kind of motto. I remember writing quite a number of September back-to-school editorials based upon it. I suggested (and suggest even more today) that FORWARD is the direction of progress, improvement, growth. One hundred percent of the LX supports you, the teachers using Logo. The exclamation mark represents the excitement Logo brings to learning.

But :AMT can have values other than 100! Over the years, I have received many letters from teachers telling about their trials, tribulations, and triumphs using Logo with their students. It was not particularly easy for them to learn the more challenging aspects of Logo and to figure out how to apply them effectively in their classrooms. Most of them had to struggle just to stay up with their students. Many times, they would include in their letters a statement similar to, "I usually feel like I am going FD 5 BK 2 instead of FD 100!"

Such a statement always made quite an impression on me. First, I marvelled that they would select Logo commands to provide a description of their feelings. I was also pleased that they were able to communicate their feelings so effectively. Life really is more like FD 5 BK 2 than FD 100! So often, we measure progress in small steps instead of large leaps. And, with success, we sometimes experience minor setbacks, often as a result of trying something else based on our recent success. There is nothing wrong with this sequence. In fact, it is a classic sequence of natural learning. We often fail our way to success in small steps. As always, we must caution ourselves that this is so with our students, too. How difficult it is to be properly patient with them! There is certainly nothing wrong with the value of :AMT being small.

In fact, one of the smallest values of :AMT was key in a major "discovery" for me and thousands of others. When FD 1 RT 1 is REPEATED, things really get interesting! Of all the "classic" Logo problems and procedures, I must have given the ones dealing with circles and arcs the most thought and analysis. For me, it was a consuming challenge to figure out

the most straightforward way to draw a circle so that the center was not offset by a little bit.

With a little more thought, we can consider even "smaller" values for :AMT. Think about the classic real number line, with numbers getting larger as you go further to the right along the line from zero. If you go the other way [to the left], the numbers get smaller. If you continue going left through zero, the number values still get smaller, but the numbers themselves begin to get larger again. You are in the realm of the negative numbers! If you and your students have not yet explored commands such as FD -50, you are in for a treat! After I had some experience with this idea, the concept of signed number operations seemed somehow much easier to understand. I associated the addition operation with FD and the subtraction operation with BK. Then I could see that a line such as FD 50 BK -30 FD -60 would correspond to  $(+50) - (-30) + (-60)$ .

Now let's consider values in the other extreme. Surely every LX reader has has a student who has typed in FD 10000 or something similar, just to see what would happen. (And, I'm confident that all LX readers have done so themselves!) If the turtle was facing vertically or horizontally, it seemed to undergo some sort of weird but fundamentally uninteresting displacement. But if the turtle was facing any other direction, oh my! For some reason, the behavior of the wrapping turtle going bananas with FD was intriguing to students of all ages. Patterns, plaids, all kinds of graphic designs were produced in enormous quantities. Some teachers refused to let their students play with this wrapping, while others encouraged it. Nevertheless, it seems clear that the combination of FD and a large number offers a peculiar fascination.

In our own lives, I hope that the spirit of the FD command is a central one. Only by going FD do we make progress. The input to FD is certainly best expressed as a variable, such as Judi's :AMT on her Virginia license plate. Sometimes, the input is small; at other times it is larger. The longest journey is made up only of a series of steps. Whether you are trying to learn another programming concept, organize your interim report cards, or aiming for a higher degree, the process is likely to be one which is accomplished one step at a time.

As this school year begins, I wish for each of you and for your students persistent progress in a FD direction. And, as always,

**FD 100!**

Tom Lough  
Founding Editor  
Box 394  
Simsbury, CT 06070

## Logo Ideas

### Map Making: Many Variations on a Simple Theme

by Eadie Adamson

For young students or beginners of any age, it's fun to make a drawing program that is a version of the many single key-stroke INSTANT programs often used with small children and Logo. Give your students just the beginnings of such a program, then challenge them to follow the pattern and customize their program. You'll be surprised at the number of variations possible. While they work out the ideas they will also be reviewing for themselves the important Logo commands for moving the turtle about the screen. In addition, creating the program themselves will give them a sense of ownership.

First, show them this simple two-step program, draw:

```
to draw
drawit readchar
end

to drawit :key
if :key = "f [forward 5]
draw
end
```

**Readchar** is a Logo primitive which waits for a key to be pressed. In this case, the key pressed becomes the value of **:key**, the input to **drawit**. The **if** statement in **drawit** then checks to see if a task has been assigned to that key: **if :key = "x**, for instance. If so, Logo does what is assigned (the task in brackets which follows). Finally, procedure **draw** is called. Again, **readchar** waits for a key to be pressed, and the value of the key pressed is passed into the name **key**. If there is no command for that key, again **draw** waits for a key to be pressed. This process continues indefinitely.

I usually give students on a single command:

```
if :key = "f [forward 5]
```

Once students have entered this portion and try it out, they quickly perceive that a drawing program needs more than simply a key for forward in order to be effective. They can then follow the pattern and create their own set of commands. I ask them to think about what their program should do so that they can draw easily, pointing out that even procedures can be included, if they choose. It also helps to remind them that if the forward and back distances are the same, and likewise the right and left turns, it will be easier to move about and get back to a given place than if the numbers are different.

Finally, make a key to stop the program when it finished:

```
if :key = "s [stop]
```

### Integrating DRAW into Social Studies?

In the third grade at our school the students study the geography of the states. As a culminating unit, in computer class they create a drawing program similar to this one and use it to draw their own imaginary state. They make shapes to indicate topographical elements, stamp them in the appropriate places, and then use the LABEL keys to mark their maps, often including a key for reading their map. The project makes a wonderful connection to the classroom work, providing the students an opportunity to synthesize what they have learned and to apply it in a slightly different way.

Since we embark on this project near the end of the year, the students usually only have time to complete their "states." When there is time, the imaginary state unit should also include inventing a state flag, writing a state song (words and music), making a page with shapes illustrating the state bird, flower, tree, animal, and so on. There could even be a page of history of the state.

This kind of project could also fit into a larger project on the nations of the world, in which each student might choose a nation to research and then produce a series of pages about it. The pages could all be linked into a larger "data base" type of program (most feasible if you are fortunate enough to have 3.5" drives which can contain many more pages).

### Other extensions of this idea

Add a key to change the color of the turtle. Use a **changecolor** procedure like this:

```
to changecolor
cc
type [What color: 0 (black) 1 (white)
      2 (green) 3 (purple) 4 (orange) 5
      (blue): \ ]
setc readchar
cc
end
```

The line added to **drawit** might look like this, assuming you choose Z as the key to press for a color change:

```
if :key = "z [changecolor]
```

Think about using the label command as a flashing sign. Students could program a flashing sign or an arrow which would appear in response to a word typed in the Command Center. For instance:

```
to capital
ht
pu
setpos [-100 40]
repeat 10 [label [STAR CITY] wait 5]
end
```

Here's another, simply an arrow:

```
to park
ht
pu
setpos [-60 60]
repeat 10 [label [\-\-\-\>] wait 5]
end
```

The back slash in the last line above "quotes" the character following it. That is, the back slash causes the character following the \ to be printed "as is." Otherwise, LogoWriter interprets the dash as a minus sign and automatically puts a space before and after it. The same is true of the > sign.

This flashing sign idea provides a good opportunity for teaching how to use SHOW POS to get the location of the turtle. SHOW causes a list to appear in the Command Center. That list can be used as the input to SETPOS, which takes a list of two numbers. Start by showing a sample and perhaps giving a few simple challenges, such as: find out how to make the turtle jump to the upper right corner of the screen, then to the upper left.

Students might add a HELP procedure which tells which locations can be found:

```
to help
cc
type [You can ask for: CAPITAL, PARK,
      TRAINS, AIRPORT. Type your choice
      and press RETURN.\ ]
run parse first readlistcc
end
```

Readlistcc collects a list of information from the Command Center, reporting what has been typed as a list; first takes the first item of the list and, in this case, reports it as a word; parse makes the word into a list; run requires a list as input and so can now run the procedure name typed. Students may also adjust the turns in the drawing program and then use it to create mazes through which they can drive the turtle. One of my students created an interesting variation on this program. He simply set up a control key for each command and then used these keys to draw some marvelous mazes. His procedure was something like this:

```
to keys
when `z [seth 90]
when `x [seth 270]
when `n [forward 10]
when `o [back 10]
when `r [pu]
when `p [pd]
when `q [right 45]
end
```

To set up the controls keys, he simply typed the word "keys" in the Command Center and then pressed Return. That activates the keys and they remain active until the computer is turned off, or until the **clear** command is given. He needed no further programming to draw his maze.

#### Moving on...

When we begin to work with motion, it is a simple task to convert the drawing program to one which controls a moving turtle. If the students are still working with maps, they might want to "drive" the turtle around their state. Copy the draw procedure, then change the copy of draw to read like this:

```
to drive
forward 1
if key? [drawit readchar]
drive
end
```

The drawit procedure can stay the same (except that the stop command must be changed to stopall), or students may wish to make additions to it as well. If their maps have color spots, the turtle can also be programmed to detect the color and either flash a sign or have a location appear in the Command Center. Be sure to pick the turtle's pen up before you drive!

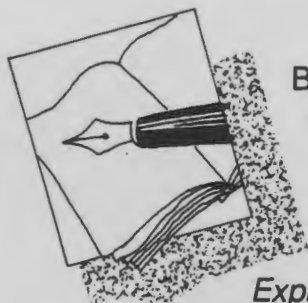
A number of my older students have used a drawing program to quickly add graphics to their hypertext projects. They have added keys to fill and to erase, as well as to change color. One of my students worked on replicating Delta Drawing, using a program like this with four turtles.

What other variations can you and your students dream up?

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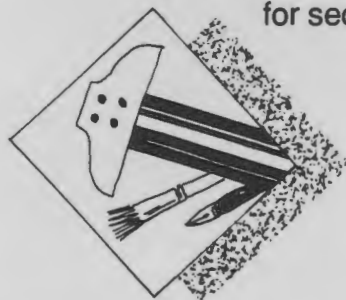
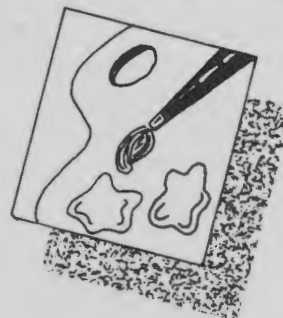


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