Too Many Questions, Not Enough Me

by
Leslie Thyberg

Instead of the more traditional hand raising or calling for "Help!" my students raise help flags as teacher call signals. During our Logo classes, help flags used to be up all over the place! I felt like a flight attendant answering call buttons!

Even though I have a team partner and other assistants, it was frustrating. There I was, trying to create a truly individualized child centered learning environment as a demonstration for a program of instruction called the Adaptive Learning Environments Model (ALEM). The learning environment was supposed to enable K-3 children to acquire basic academic skills while becoming more confident of their abilities to learn and cope with the social and academic demands of the classroom. Then Logo came to my classroom, and the forest of help flags sprang up.

More often than not, when I responded to a signal, the student would say, "I don't know what to do." My response, "What do the directions say to do?" typically resulted in "I don't know. I didn't read them." So much for idealism!

I had to come up with a mechanism to protect my sanity and still promote the independence in children I believe to be so important.

WHAT TO DO?

The solution to my dilemma came at the end of a particularly frustrating day. I was seated at my desk at home late in the evening, head in my hands, thinking about the "three* I's," things I had been trying to

provide to my 65 students: Individualization, Interaction, and Integration. How could I help them with their questions and still encourage independence?

The words seemed to come from nowhere. But, as soon as I thought of them, I knew they were right.
"Ask three before me!"
I went dashing in to share the news with my husband!
The next day, the children learned the new rules! Before anyone asks me a question about Logo (or anything else), he or she must ask at least three other classmates. If no satisfactory answer is found, then the help flag can be used.

BLESSED RELIEF

How do you spell relief? T.H.R.E.E. It was fascinating to observe the effect of this rule on the children. To be sure, the noise level went up a bit. But now one could hear things like, "Did you ask Ellyn? She knows a lot about math." and "Yeah. I got stuck on that last week. Here's what I did..."
Children were automatically recognizing and promoting peer expertise and diminishing the stigma of making mistakes and failing when taking risks. And not a one of them had read Mindstorms!
There is something delightful about a five year old asking a third grader for assistance (and vice versa!). Affirmation, approval, and cooperative learning combined to make the classroom "our room." From trying a program, answering a question, asking for more details, the feedback made the peers coaches for each other.
As for me, I tried to be a model for this type of behavior, too. I encouraged students to plunge right in, and not be afraid to make mistakes. Pay attention to feedback, and try again. I do not know all the answers, but I am eager to help them discover a workable solution, if they are willing to use all the resources available to them.

Questions continued

A SPECIAL VISITOR

Our demonstration classroom has visitors in it all the time. It is the ultimate fishbowl! One day last spring, Prof. Seymour Papert was among the observers! He seemed quite interested as I described our "Ask three before me" rule to him.

Little did I know that he would cite it publicly at the Logo 84 conference at MIT later that summer! Since that time, I have received numerous requests for more information. How is it possible to create such a microworld?

My understanding of Papert's vision is that learning ought to be personal. The three I's allow for such personalization, especially when coupled with the "three before me" rule.

First, I arrange for students to select and sequence their own activities and materials, so their work is completely individualized. Next, I encourage interactions in which students teach each other and focus on each other's work. Third, I try to create an overall learning environment in which all subjects are integrated so thoroughly that students can effectively synthesize knowledge structures in their own minds. And it seems to work.

MORE THAN SURVIVAL

My aim is to continue providing opportunities for individualization, interaction, and integration in my classroom. My continuing challenge is to create and support an environment in which children, parents, and teachers can work with Logo cooperatively and creatively.

In that regard, "three before me" is more than a survival tool. It has become a methodology through which I have become a coach, counselor, consultant, collaborator, and friend to my student colleagues.

Teaching has become more challenging, more rewarding, and more exciting than ever as a result.

Just ask any three of my students!

Leslie Thyberg is a demonstration teacher / lecturer for the demonstration classroom of the Learning Research and Development Center at the University of Pittsburgh.

From the Editor

See More, Say More

As our columnists turned in their articles for this issue, they all echoed the same thoughts. "Is this really the last issue until September? I can't believe how the time has gone by!"

The passage of time causes change in us all. Logo can help make those changes positive ones, not just in programming, or how we solve problems, but in how we deal with others, and how we think about ourselves.

A few weeks ago, I received a brochure for an educational computing conference. In the section for Logo presentations, it mentioned "Seymore" Papert.

Not too long ago, my typical reaction would have been, "Hmmph. Doesn't anyone know how to spell? How could anyone make such a ridiculous mistake?" However, through Logo, I am learning the importance of accepting others and their work. I have made enough mistakes of my own to realize that none of us is anywhere near perfect.

When I saw "Seymore," it occurred to me that Seymour Papert has helped me to "see more" of the exciting world of learning and teaching than I had ever imagined possible.

Through Mindstorms and Logo, I can "see more" of myself, my students, and the work before us.

Indeed, I found that I rather like the spelling of Seymore.

Posy commented that it reminded her of "say more." Well, why not? Papert has always encouraged each of us to say more about the work we do with Logo, and about what we perceive to be the most effective methods of using this powerful learning tool.

See more. Say more. Sounds like two-thirds of some sort of a slogan. Do more? Sure. Let's resolve to do more for our students, for Logo, for ourselves. This summer, set aside some time to observe and to meditate, to argue and to mediate, to work and to cogitate.

See more. Say more. Do more. An agenda for summer Logo action.

To the many readers who are seeing the NLX for the first time, a hearty welcome! We hope you enjoy this issue. To our regular subscribers, see you in September! Thank you for your letters and your support this past year. I hope our paths cross at Logo 85 or WCCE 85.

FD 100!
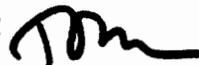
Tipps for Teachers

by Steve Tipps

Survey Sense III

Information from surveys and other data collection can be reported in many ways. People talk about which answers were the most frequent or least frequent. Numbers or per-centages are used for reporting how many people preferred different flavors of ice cream.

435 of 1000 people surveyed preferred vanilla ice cream.
43.5 percent preferred vanilla ice cream.

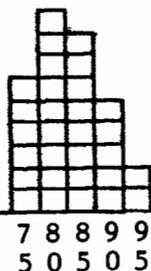Only 10 of 1000 people liked licorice-strawberry bubblegum.
Only one percent liked licorice-strawberry bubblegum.

In February and March, methods of col-lecting and reporting information were dis-cussed. In April, another way of reporting was developed with Logo. Calculating averages is useful when the data has numerical values, such as grades and money. Averages summarize a lot of information in a single number.

The average grade in spelling was 83.
The average allowance of third graders in Mr. Craig's room was $4.53.

Every grade is not 83 and all of the allowances are not really $4.53. The numbers state how much an imaginary "average" person made in spelling and how much he or she got for an allowance. Averages are very handy summaries, but they can mislead. Look at these two charts of grades.

Mr. Field's Class

```
7 8 8 9 9
5 0 5 0 5
```


Ms. Brugh's Class

```
6 6 7 7 8 8 9 9 1
0 5 0 5 0 5 0 5 0
                0
```
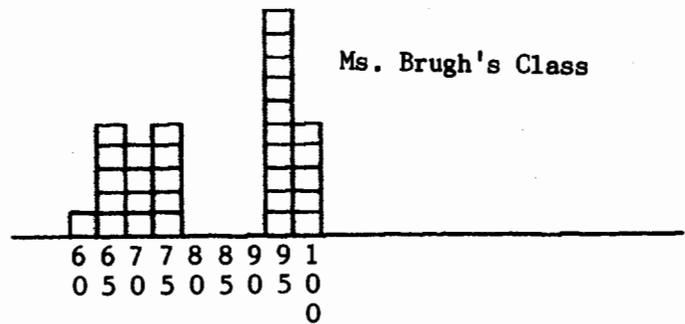
Here are the two sets of grades.

MAKE "FIELD [75 75 80 80 80 85 85 85 90 95 80 85 80 85 80 85 90 90 75 75 80 85 80 85 75 75 90 90 95 80]

MAKE "BRUGH [65 65 70 70 75 95 95 95 100 100 65 65 65 70 75 95 95 95 100 100 60 100 95 95 95 75 70 75 75 95]

Both class averages are 83; but you can see that the scores in the two classes are not the same. The distributions do not look alike. Mr. Field's class has grades which are bunched around 80 or 85. Ms. Brugh's class has many high grades and a many low grades, with few in between.

HOW CLOSE TO AVERAGE?

Another calculation describes what you see on the chart. How much the scores are actually spread out is called the standard deviation. Simply put, the standard deviation tells how close the scores are to averge. Not so simply put, the standard deviation is the average of the sum of squares of the differ-ence between each score and the average of all scores. You can get a full mathematical description of the standard deviation from any statistics textbook.

The Logo procedure S.D calculates the standard deviation. Since the AVERAGE is used as part of the calculation of the standard deviation, it is repeated from last month's column.

```
TO S.D :LIST
IF :LIST = [] OP SQRT :SUM.SQ / :NUMBER
MAKE "DIFF :AV - FIRST :LIST
MAKE "SUM.SQ :SUM.SQ + :DIFF * :DIFF
OP S.D BUTFIRST :LIST
END

TO AVERAGE :LIST
IF :LIST = [] OP :SUM/ :NUMBER
MAKE "SUM :SUM + FIRST :LIST
OP AVERAGE BUTFIRST :LIST
END
```

Tipps continued

Several variables need to be set up before using the procedures.

```
MAKE "SUM.SQ 0
MAKE "NUMBER COUNT :BRUGH
MAKE "SUM 0
MAKE "AV AVERAGE :BRUGH
PRINT :AV
83
PRINT S.D :BRUGH
14.1774
```

All of these steps can be put into one procedure to describe the list of scores.

```
TO DESCRIBE :LIST
MAKE "SUM
MAKE "SUM.SQ 0
MAKE "NUMBER COUNT :LIST
MAKE "AV AVERAGE :LIST
PRINT SE [THE AVERAGE IS] :AV
PRINT  SE  [ THE STANDARD DEVIATION IS ]
S.D :LIST
END
```

Now DESCRIBE the two lists of scores.

```
DESCRIBE :BRUGH
THE AVERAGE IS 83
THE STANDARD DEVIATION IS 14.1774

DESCRIBE :FIELD
THE AVERAGE IS 83
THE STANDARD DEVIATION IS 5.85946
```

The standard deviation for the narrow range of scores in Mr. Field's class is about 6, while the standard deviation for Ms. Brugh's class is much bigger. It is about 14 points.

In Mr. Field's class, most of the scores are within a range of 12 around the average. This is called plus or minus one standard deviation, or 83 + 6 and 83 - 6. The scores are much more spread out in Ms. Brugh's class. Most of the scores are within 14 above and below the average of 83.

In fact, the standard deviation states that about two-thirds of the scores are within the range described by the standard deviation. Count scores on the histogram to see if twenty of the scores in Mr. Field's class are above 79 and below 89. Then count to see if 20 of the scores in Ms. Brugh's class are between 69 and 97.

Your count is not perfect because we do not have bell-shaped, normal curves. However, you should be able to get a sense of how the

standard deviation works. The average is important in summarizing where the center of the data is. The standard deviation tells whether the scores are bunched around the average or spread out.

NEXT YEAR WITH TFT

For the last three years, Tipps for Teachers has featured columns on many Logo commands and related activities. The topics have ranged from ones suitable for kindergarten teachers to those for high school mathematics classes. The range, flexibility, and potential of Logo is the sermon which I have been preaching monthly. That broad range of possibilities is central to NLX. Next year, this column will concentrate on Logo activities for grades 2 through grade 7 where most of the Logo activity seems to be. The emphasis will still be on Logo as a tool for exploring and understanding ideas, because integration of school subjects into Logo microworlds is crucial. I appreciate the many letters, comments, and suggestions which readers send. I hope that you will continue to challenge me as you challenge yourself with Logo.

Have an enjoyable summer!

Steve Tipps is the West Professor of Education at Midwestern State University in Wichita Falls, TX. He presents Logo workshops for school systems throughout the United States.

Logo Disserts:

Dissertations Dealing with Logo
by Barbara Elias

What factors and conditions influence the successful use of microcomputers by pre-service and inservice teachers in a developing nation? This question was investigated by Dennis O. Harper in a computer laboratory set up at Kebangsaan University in Malaysia. Elementary and secondary teachers studied the Logo and PILOT languages in three pilot CAI courses. Randomly selected preservice secondary teachers who were already enrolled used PILOT to develop tests and tutorials in their subject area. Logo programming experiences for secondary volunteer teachers were designed to enhance basic math skills and problem solving abilities.

Disserts continued

Primary teachers who also volunteered for the study learned to use a special version of Atari Logo which permitted all of the programming to be done in their native language. These experiences emphasized programming and strategies for teaching and improving mathematics. Courses included instruction and laboratory time. The courses were conducted over a span of four months.

An analysis of pre- and posttest questionnaires and tests from two of the three groups indicated that Malaysian teachers:

(a) Expressed more positive attitudes toward computers and their use in education,

(b) Felt that computer use could be easily learned,

(c) Thought that computers were important for their country and would improve the quality of their lives, and

(d) Were more enthusiastic about computers than a group of American teachers who were given a similar attitude survey.

The results also suggest that English comprehension, mathematics skills and spatial abilities are significant predictive factors for success of the Malaysian primary teachers who use Logo. Harper feels that these results may well serve as a prerequisite for more serious study in computer assisted learning.

>>>Harper, Dennis O. (1984). Using Computer Assisted Learning for Teacher Training in Malaysia (Doctoral dissertation, University of California, Santa Barbara, 1984).

(Ed. note: Each month, Barbara Elias highlights a dissertation or thesis dealing with Logo. She is accepting copies of recent research results for the NLX Dissertation and Thesis Repository. Reports may be mailed to her in care of NLX, PO Box 5341, Charlottesville, VA 22905.)

Barbara Elias is an assistant professor in the Education Department of Virginia State University in Petersburg, VA, and is a doctoral candidate at the University of Virginia.

Interested in how to use Logo in your language arts classes? How about for science and math? Then come to Hawaii this summer for "Logo in the Classroom," taught by Glen Bull, Paula Cochran, and Tom Lough, July 8 - 19. A beginning Logo class will be taught by Elaine Blitman and Barbara Jamile. For more information, write Educational Spectrum, Inc., 21 East 40th Street, New York, NY 10016, or call (800) 223-2544. New York residents call (212) 686-5810 collect.

前 100   by
                                 Hillel
                               Weintraub

If you are attending the Logo 85 conference this summer, don't miss Mr. Takito Totsuka's presentation on the use of Logo as a tool for developing awareness of natural phenomena. Totsuka-sensei ("sensei" is an honorific title given to teachers in Japan) himself is a powerful argument for both the use of Logo and the unimportance of Logo. Let me explain.

After learning about Logo, many teachers in Japan hesitate, offering comments such as, "This is really great, but I have no computers." or "I have only one computer for every twenty children." or "The Ministry of Education has control of the curriculum, and there is no place for Logo."

THE REAL POINT

These comments are missing the real point about Logo. Part of the fault lies with those of us who have become the Logo "spokespeople." We use Logo, we write and speak about Logo, and constantly extol its virtues. The focus often remains with Logo and computers rather than that of empowering the student through the learning process. I believe that this is the real point of Logo.

Let me tell you now about Totsuka-sensei. He and his students talk about stars and distances and shapes. They measure around the class. They watch the stars at night making their celestial drawings. They become more careful observers as a result of all their activities, one of which is Logo. Totsuka-sensei is an outstanding teacher who encourages his students to think, to look carefully, to question, to search for answers. Logo is a powerful tool for doing this. But, if his students didn't use Logo, they would still learn.

Papert's Mindstorms knocked me out with its message that we had a chance to affect the way computers were used in education. In particular, we could promote syntonic education. Unfortunately, we sometimes get mixed up into thinking that only through computers and Logo can we teach syntonically.

I'm trying to say that Logo on computers is powerful; discovery with or without computers is powerful; but, Logo and computers without discovery are just tools for enslavement instead of empowerment.

前 100 continued

VERY INTERESTING INDEED

This is an interesting time in the Japanese educational world. Some big changes are in the wind with the advent of computers into the classrooms. Committees of experts are already discussing things like what hardware will be used and who will develop software for students.

But I have not heard discussed the idea of students developing their own software, as is done in Logo explorations. That idea is as radical as having the students develop their own tests! Clearly a wider view of the future role of computers in education is needed.

I used to be worried that there wasn't enough use of computers in education in Japan. Now I'm frightened because the computers are coming, and the Logo idea (not the language) is an insufficient part of the plan.

I hope to see many NLX readers this summer at Logo 85 and WCCE 85. Until then, MAE 100!

Hillel Weintraub is a teacher at Doshisha International High School in Kyoto-fu. Japan, and is the president of the Society for Microcomputing in Life and Education (SMILE).

NLXionary

A Lectionary and Discussion of Logo Readings

by Griff Wigley

This month's readings are all in the January / February 1985 issue of the AEDS Monitor, published by the Association for Educational Data Systems. Enjoy.

"The Effects of a Logo Computer Programming Experience on Readiness for First Grade Creativity and Self Concept: A Pilot Study in Kindergarten," by Gordon Reimer.
>Pretests, twenty Logo sessions in twenty days, posttests, and voila! A treatment group of kindergarten students showed greater gains than a control group in ten of eleven basic skill readiness tests, two creativity measures, and in a self concept test. Statistically significant gains were made in the areas of visual discrimination, visual motor skills, visual memory, and number recognition. No mention is made of what the teacher actually did with either group of kids. The article includes a sizeable annotated summary of many of the positive claims made by Logo enthusiasts over the years.

"Four Instructor Roles in an Extended Logo Environment," by Andrew David.
>The author explores the notion of a microworld in the context of a question seldom asked, "What am I trying to do and how can Logo help me?" It is precisely the question not asked by Reimer in the research described above. (Instead, it was, "Let's do Logo because it has positive impact.") Educational research suggests all sorts of activities and strategies that a teacher can use day in and day out if the goal is to improve self concept, creativity, or basic skill readiness.
>Logo may not be the best choice. Given costs for teacher training and equipment, it may actually be a poor choice. David's final sentence is worth quoting here. "In seeking to redirect the educational process, we needn't look to any individual piece of software for the answers; rather, we must reflect on our lives, our experience, and our sense of what important work has to be done. Then we must decide what tools we need; we have added Logo to the many."

"The Implementation and Evaluation of a Logo Program for All Upper Elementary Teachers and Students in Three Schools," by Ann D. Thompson and Marilyn Blaustein.
>A description of a cooperative project between a university and a school district to implement Logo with 400 fourth, fifth, and sixth grade students in three schools. Again, no mention is made regarding the rationale behind the decision to implement Logo. No discussion on the delicate matter of deciding that all teachers would participate. No information on the reactions of the administration and school board to the original proposal, and their plans for ongoing support for the project. These are all extremely important details that the authors chose to ignore in their article, in favor of less helpful statistics such as what percent had attended previous workshops.
>The one almost helpful piece of information I received from the article is that the majority of participating teachers preferred to have the computer in their classrooms instead of in a central lab. But, alas, no information as to why is included.

NLXionary continued

"Haiku and Nim: Logo in the Language Arts," by Bates L. Hoffer and Pat Semmes.

>An interesting report of a project conducted in a university freshman writing course. The authors replicated a process similar to the NIM project that Abelson describes (see Apple Logo, p.103, or MIT Logo Memo 254). They began the project by giving the students Dan Watt's POET program, which generates a three line poem, and then instructed them to continually refine it until it generated realistic Japanese haiku. Some of the computer generated haiku were included in blind submissions to the university literary magazine and one was chosen for inclusion. This is a perfect example of using Logo as a tool to achieve a valid educational objective.

If you would like to comment on this NLXionary column or any of the previous ones, send your thoughts to me at 918 College Street, Northfield, MN 55057. Have a Logo summer!

Griff Wigley is a co-owner of Family Computing, Inc., a facilitator in the Faribault (MN) Public Schools, and a school board member of Prairie Creek Community School.

TurtleTips

by
Donna Lanyi
and Jane Toth

As the Logo season turns and another school year comes to a close, teachers and students look for ways to "show off" the work they have accomplished and the things they have learned.

TEACHER HINTS

A Logo computer fair is an excellent means of allowing students and teachers to "shine," keeping parents informed of Logo activities, and generating good public relations. Have students submit their procedures in various categories, including judged and non-judged.

At the fair, arrange for several computers to be on hand so students can demonstrate their skills directly. Have student helpers assigned to encourage parents to try Logo themselves, and to assist them. Perhaps

you could schedule mini-lessons for parents in advance.

At a recent ECCO (Educational Computer Consortium of Ohio) workshop we attended, we saw a new device you can use to make color displays of color graphics work, unless you are lucky enough to have a color printer or plotter. Kodak offers a special camera attachment called an Instagraphics CRT Slide Imager. This device and a CRT adapter combine together with a 35 millimeter single lens reflex camera to make instant color slides of color graphics on the computer screen. These slides can be projected in your display or used to produce color enlargements to give your fair a colorful accent.

The system is available through local Kodak dealers, but is rather expensive. The imager lists for around $340, the CRT adapter for about $40, and a special instagraphics color slide film pack with 10 exposures costs $12.95.

PROCEDURE OF THE MONTH

Spring has sprung! Enjoy our colorful flower garden to get you in the mood for the summer. Add stems and leaves, vary the patterns, and create bunches of bouquets for bulletin board displays or special gifts. Let the turtle become a honeybee, flitting from blossom to blossom.
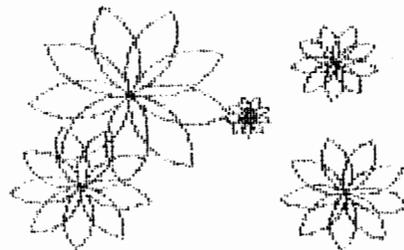
For a listing of the procedure to draw this picture, send us a self addressed stamped envelope. We invite all elementary teachers and students to send their procedures and ideas to be shared. Donna Lanyi and Jane Toth, Beall Avenue School, 716 Beall Avenue, Wooster, OH 44691.

We would like to wish each of our readers a healthful summer. We look forward to hearing about your great Logo ideas for next year.

Donna Lanyi and Jane Toth use Logo in their elementary classrooms in the Wooster (OH) City Schools.

Listful Thinking

by
Glen Bull and Paula Cochran

Suffix Busters

Textbooks often talk about "exploring language". This phrase appears in the titles and chapter headings of many English texts. What does it really mean to explore language?

The word "explore" implies that you can be surprised. Students exploring the grounds of the University of Virginia will find a statue of Lewis and Clark. If Lewis and Clark had known what they would find when Thomas Jefferson sent them on their expedition, their trip would not have been as exciting.

It is hard to capture the excitement of exploration if you already know what is going to happen. A few rare individuals can play chess with themselves. They make a move from one side of the board, and then turn the board around and take the other side. For most of us, this kind of chess is a rather boring game. We can already see what the next move is going to be.

Pencil-and-paper language activities are sometimes like this. Although you are supposed to be "exploring" language, you can already see the next move coming. Exploration should leave room for a surprise.

This is where computers can supplement traditional pencil-and-paper activities. With properly constructed Logo tools, it is possible to capture and capitalize on the delight that comes from an unexpected result.

ENTERING THE MACHINE SHOP

In our April NLX Column, "Word Machines," we mentioned four pieces of Logo equipment for constructing tools for tinkering with words:

1) Separators
2) Joiners
3) Omitters
4) Testers

Joiners put pieces of words together to form new words. "Quick" and "ly" can be put together to form an adverb. Separators take words apart. "Eagerly" can be separated into "eager" and "ly". Testers can be used to check endings. If a word ends in "ly", it is an adverb ... or is it? One piece of equipment was not described last month: omitters.

(Was it coincidence that omitters that were omitted?) What do you think omitters can do?

An omitter removes part of a word. The BUTLAST command is one of the simplest omitters. If there are two trucks and you want to remove one, BUTLAST is the command for the job.

```
PRINT BUTLAST "TRUCKS
TRUCK
```

The BUTLAST command prints everything BUT the LAST letter in a word. If you want to remove two letters, use two BUTLAST commands. What is the difference between a ship's captain and a ship's mast? Two letters, that's all.

```
PRINT BUTLAST BUTLAST "MASTER
MAST
```

CHANGING THINGS A BIT

A simple omitter can be used to change the structure of a variety of types of words. Its exact use depends on the needs of your class. The procedure CHANGE is an omitter that changes words by removing the last two letters. Here is what CHANGE looks like:

```
TO CHANGE :ITEM
OUTPUT BUTLAST BUTLAST :ITEM
END
```

You can CHANGE adverbs to adjectives,

```
PRINT CHANGE "QUICKLY
QUICK
```

nouns to verbs,

```
PRINT CHANGE "TEACHER
TEACH
```

and plural nouns to singular nouns.

```
PRINT CHANGE "BUSHES
BUSH
```

You can modify CHANGE so it will omit three letters, or one, by changing the number of BUTLAST commands in the procedure.

In a classroom, you might use a word machine like this as a jumping off point in a general unit about word suffixes, or a specific lesson about -es plural forms, root words for adverbs, and the like. In each case, the use of the machine is determined by the kind of words provided as "raw materials" by the teacher.

Listful Thinking continued

The CHANGE machine may be too predictable for older students. If your lesson requires that only certain suffixes be omitted, or that suffixes of differing lengths be omitted, who're you gonna call?

SUFFIX BUSTERS!

In order to create a Suffix Buster, we must first make a Suffix Detector by defining a list of suffixes all the same length.

```
TO TWO.LETTER.SUFFIXES
OUTPUT [ED ER ES LY OR]
END
```

Attention Terrapin and Commodore Users!

All procedures which follow are for LCSI Logos. The equivalent versions of procedures for Terrapin and Commodore Logo are found at the end of the column.

The Suffix Detector checks whether the last two letters of an item are in the list of two letter suffixes. To make this two-letter suffix detector, you will need the LAST.2.LETTERS procedure from last month. If you do not have this procedure, you will find a copy of it at the end of the column.

```
TO TWO.LETTER.SUFFIX? :ITEM
OUTPUT MEMBERP LAST.2.LETTERS :ITEM
TWO.LETTER.SUFFIXES
END
```

Now we can detect whether a suffix is in the list of suffixes used by the two-letter Suffix Detector.

```
PRINT TWO.LETTER.SUFFIX? "QUICKLY
TRUE

PRINT TWO.LETTER.SUFFIX? "BASEBALL
FALSE
```

You can change the way the two-letter Suffix Detector works by changing the list of suffixes in the TWO.LETTER.SUFFIXES procedure. For example, a list of two-letter suffixes consisting only of adjective endings could be created. Then the class could use the Suffix Detector to detect what type of suffix endings the detector was looking for.

(For more suggestions on this sort of activity, see the All-Purpose Adjective Checker in last month's column.)

TO BUST

The Suffix Detector is the heart of a Suffix Buster. The abbreviation for BUTLAST is BL, and is used in the BUST procedure.

```
TO BUST :ITEM
IF THREE.LETTER.SUFFIX? :ITEM [OUTPUT BL
BL BL :ITEM]
IF TWO.LETTER.SUFFIX? :ITEM [OUTPUT BL
BL :ITEM]
IF ONE.LETTER.SUFFIX? :ITEM [OUTPUT BL
:ITEM]
END
```

The Suffix Buster works on the suffixes you or your students have included in ONE.LETTER.SUFFIXES, TWO.LETTER.SUFFIXES, and THREE.LETTER.SUFFIXES. (Examples of these procedures are found at the end of the column.) Depending on the contents of these lists, the Suffix Buster can be used to omit suffixes of varying lengths in adverbs, nouns, adjectives, and verbs.

```
PRINT BUST "HAUNTED
HAUNT
```

The Suffix Buster is a stronger tool than the CHANGE machine because you have more control. For students using the tool, the working of the machine holds more surprise. In fact, if your students are doing a mystery exercise to determine what this machine does to words, the procedure name may be disguised as MYSTERY or MAGIC.

```
TO MAGIC :ITEM
OUTPUT BUST :ITEM
END

PRINT MAGIC "PLAYER
PLAY

PRINT MAGIC "BORROWS
BORROW

PRINT MAGIC "WONDERFUL
WONDER
```

Older students could be assigned the task of putting suffixes in the lists which will make certain changes for their fellow students. For example, can you put suffixes in the lists that will "capture" (and convert) only adjectives?

Listful Thinking continued

A OU EA I

Omitters needn't be confined to Suffix Detectors. For examples, it's fairly easy to detect and omit vowels. First create a list of vowels.

```
TO VOWELS
OUTPUT [A E I O U]
END
```

Use the list to make a Vowel Detector.

```
TO VOWEL? :LETTER
OUTPUT MEMBERP :LETTER VOWELS
END
```

The Vowel Detector works like this:

```
PRINT VOWEL? "A
TRUE

PRINT VOWEL? "B
FALSE
```

A Consonant Detector is almost as easy to make. Anything that is not a vowel must be a consonant.

```
TO CONSONANT? :LETTER
OUTPUT NOT MEMBERP :LETTER VOWELS
END
```

If you are thinking, "The letter Y is sometimes a vowel," we reply, "What a wonderful idea for a project! Can you make a Vowel Detector that also detects when Y is a vowel?"

Use the Consonant Detector to make a Vowel Omitter.

```
TO OMIT.VOWELS :ITEM
IF EMPTYP :ITEM [PRINT [] STOP]
TEST CONSONANT? FIRST :ITEM
IFTRUE [TYPE FIRST :ITEM]
OMIT.VOWELS BUTFIRST :ITEM
END
```

The Vowel Omitter only prints consonants.

```
OMIT.VOWELS "BASEBALL
BSBLL
```

In some ancient languages, such as Latin, the vowels were often omitted from inscriptions engraved in stone. (You might leave out a few letters too, if you were engraving words in stone, instead of using a word processor.)

Which carry more information in language – vowels or consonants? Claude Shannon developed the science of information theory to answer that type of question at Bell Laboratories. You can examine the same type of questions in your class by building a Consonant Omitter to go with the Vowel Omitter we provided.

The cryptic letters for the subheading of this section of the column are the remnants of a sentence which had the consonants omitted. Compare the same sentence with only the vowels omitted.

```
a  ou ea  i      (consonants omitted)
Cn y   rd ths?   (vowels omitted)
```

THE YEAR IN REVIEW

In most schools, computers are still used primarily for science and mathematics. Although those are exciting uses, we think that computers should also be used for language arts. With Logo, almost everyone knows about graphics and pictures. List processing has the reputation of being an "advanced" use of the computer.

In schools across the land, teachers are being asked to use Logo in their classes. In many cases, teachers are teaching programming, because they don't know what else to do with Logo. We think that using Logo to teach may be even more important than teaching Logo.

This past year, we deliberately set out to create a column which would illustrate uses of Logo for playing with language. We hope that we have demonstrated that lists can be as much fun as turtling. We tried to describe ways of using Logo that allow the teacher to spend class time teaching English, not teaching Logo. If you found an activity that you could use with your class along the way, that was exactly what we intended.

One additional item: we now have an account on Special Net. If any of you would like to contact us, our identification is UVACOMDIS.

Glen Bull is a professor in the University of Virginia's School of Education, and teaches Logo courses at both the graduate and undergraduate level. Paula Cochran is a reformed English major who studied linguistics at the University of Cambridge. She is now a speech–language pathologist working with language–disabled children and Logo.

Listful Thinking Procedures

These procedures are the same for Apple, IBM, Terrapin, and Commodore Logo.

```
     TO ONE.LETTER.SUFFIXES
     OUTPUT [S]
     END

     TO TWO.LETTER.SUFFIXES
     OUTPUT [ED ER ES LY OR]
     END

     TO THREE.LETTER.SUFFIXES
     OUTPUT [IVE FUL ING]
     END

     TO LAST.2.LETTERS :ITEM
     OUTPUT   WORD NEXT.TO.LAST  :ITEM LAST
:ITEM
     END

     TO NEXT.TO.LAST :LETTER
     OUTPUT LAST BUTLAST :LETTER
     END

     TO LAST.3.LETTERS :ITEM
     OUTPUT  WORD  THIRD.FROM.LAST  :ITEM
LAST.2.LETTERS :ITEM
     END

     TO THIRD.FROM.LAST :LETTER
     OUTPUT LAST BUTLAST BUTLAST :LETTER
     END
```

The following procedures are for Apple and IBM Logo.

```
     TO BUST :ITEM
     IF THREE.LETTER.SUFFIX? :ITEM [OUTPUT BL
BL BL :ITEM]
     IF  TWO.LETTER.SUFFIX?  :ITEM [OUTPUT BL
BL :ITEM]
     IF ONE.LETTER.SUFFIX?  :ITEM [OUTPUT  BL
:ITEM]
     END

     TO ONE.LETTER.SUFFIX? :ITEM
     OUTPUT   MEMBERP   LAST   :ITEM
ONE.LETTER.SUFFIXES
     END

     TO TWO.LETTER.SUFFIX? :ITEM
     OUTPUT  MEMBERP  LAST.2.LETTERS  :ITEM
TWO.LETTER.SUFFIXES
     END

     TO THREE.LETTER.SUFFIX? :ITEM
     OUTPUT   MEMBERP  LAST.3.LETTERS  :ITEM
THREE.LETTER.SUFFIXES
     END
```

These procedures are for Terrapin Logo for the Apple and Commodore Logo.

```
     TO BUST :ITEM
     IF THREE.LETTER.SUFFIX?  :ITEM OUTPUT BL
BL BL :ITEM
     IF TWO.LETTER.SUFFIX? :ITEM OUTPUT BL BL
:ITEM
     IF  ONE.LETTER.SUFFIX?  :ITEM OUTPUT  BL
:ITEM
     END

     TO ONE.LETTER.SUFFIX? :ITEM
     OUTPUT   MEMBER?   LAST   :ITEM
ONE.LETTER.SUFFIXES
     END

     TO TWO.LETTER.SUFFIX? :ITEM
     OUTPUT  MEMBER?  LAST.2.LETTERS  :ITEM
TWO.LETTER.SUFFIXES
     END

     TO THREE.LETTER.SUFFIX? :ITEM
     OUTPUT  MEMBER?  LAST.3.LETTERS  :ITEM
THREE.LETTER.SUFFIXES
     END

     TO VOWELS
     OUTPUT [A E I O U]
     END

     TO VOWEL? :LETTER
     OUTPUT MEMBER? :LETTER VOWELS
     END

     TO CONSONANT? :LETTER
     OUTPUT NOT MEMBER? :LETTER VOWELS
     END

     TO OMIT.VOWELS :ITEM
     IF EMPTY? :ITEM PRINT [] STOP
     TEST CONSONANT? FIRST :ITEM
     IFTRUE PRINT1 FIRST :ITEM
     OMIT.VOWELS BUTFIRST :ITEM
     END
```

If you are using Version 1 of Terrapin Logo for the Apple, you will also need the MEMBER? and EMPTY? procedures below.

```
  TO MEMBER? :ITEM :LIST
  IF :LIST = [] OUTPUT "FALSE
  IF :LIST = " OUTPUT "FALSE
  TEST :ITEM = FIRST :LIST
  IFTRUE OUTPUT "TRUE
  OUTPUT MEMBER? :ITEM BUTFIRST :LIST
  END

  TO EMPTY? :ITEM
  OUTPUT ANYOF :ITEM = [] :ITEM = "
  END
```

Teacher to Teacher

A Guest Review by
Mark Lindsay
The New Teacher, Kids, and Logo

Teacher, Kids, and Logo and the new Turtle Trek Challenge Kits, by Carolyn Green and Christi Jaeger, make up a set of curriculum materials with a wide range of useful information for both beginning and experienced Logo teachers at the primary and elementary level.

Teacher, Kids, and Logo is a guidebook for a comprehensive Logo curriculum for kindergarten through sixth grade. I highly recommend it because it has an abundance of good Logo teaching ideas. Even the most dedicated advocate of discovery learning will find a wealth of information for use in the Logo classroom.

Turtle Trek Challenge Kits, a new feature, are now available for both the primary (K-3) and upper grade (4-6) levels. Each kit contains activity cards for 50 Logo projects.

The specific organization and contents of Teacher, Kids, and Logo were presented in an earlier review (NLX May 1984). One problem I found with the book was the authors' attempt to assign various Logo commands and concepts to specific grade levels. A nagging question haunts me. "What do I do when a child's explorations lead to a new concept or tool that may not be 'scheduled' for his or her grade level?"

The authors soften the guidelines by suggesting that "children's ability and creativity will take them in many directions and nothing precludes a command being introduced at any grade level." I feel this sentence should be highlighted and accompanied by examples of practice activities to lead children to a higher level of conceptualization.

WALK, DON'T RUN

Throughout the materials, the authors advise, "Walk, don't run through Logo!" This should be a command permanently programmed into every teaxcher's memory! Every time a teacher hurries a child, there is a price to pay.

This happened to me when I taught a group of fourth and fifth grade children in an after school class this past winter. The children were tested, using the authors' grade level objectives in the curriculum guidebook. All the children understood the concepts and commands through the fourth grade level. That was the successful part of the program.

The next step involved having the children choose project cards from the third and fourth grade selections of the Turtle Trek Challenge Kit. Based on the test scores, I assumed that they were ready for independent exploratory learning, with little introduction or discussion. WRONG!

I was running -- not walking -- the children through Logo! After fifteen minutes of chaos, I collected the project cards and selected just one, "Alien Music," to discuss.

We talked about how to set up a space scene with a UFO and how to integrate sounds and other space objects suggested in the example. Finally, we all began to relax. We spent the next four sessions setting up the project by using the suggestions on the activity cards and comparing our procedures to the "solutions" in the book. Because things did not turn out exactly like the model in the book, the children expressed feelings of inadequacy. So much for presenting models ... back to discovery learning!

A CLOSER LOOK

What happened? The wide range of activities on the cards is good and appear to be appropriately chosen for the two age levels. However, when implementing the activities with upper elementary children, I had difficulty understanding the directions on how to specifically reproduce the model.

For example, the "Alien Music" card suggested that a procedure could be written to draw a UFO, a star, or an asteroid. Perhaps some suggestions for simple models could be included. The student who needs more guidance could then build on the model and use more complex commands as they are learned. A "pure" discovery learning approach with few or no guidelines is frustrating for the novice. If guidelines are furnished, they could be ignored as sophistication in Logo is developed.

I feel the cards are an excellent addition to the classroom if they are used as an aid to learning Logo and not as THE way to teach Logo. They make great props to encourage problem solving, decision making, and creative thinking in elementary age children.

I found that it is helpful to jot comments on the backs of the cards after they have been used with the chidlren. These comments helped me remember what activities or specific directions caused difficulty and what the solutions were. Many successful future lessons could be built on the revisions suggested by these notes.

Teacher to Teacher continued

Teachers who use these materials need to define the concepts studied SLOWLY. We need to solve problems over a long period of time with children, and give them time to discover how to accomplish a task. The solutions book, included in the kit, should be kept on a high shelf, to reduce the temptation to use it as an "answer" book. This defeats the goal of the materials and the goal of Logo, too.

RUN, DON'T WALK

Run, don't walk, to get a copy of these excellent materials. Here is a listing of them all.

Teacher, Kids, and Logo book	18.95
Resource Disk and book	10.95
Turtle Trek Challenge Kit (K-3)	
—card set	16.95
—resource disk	10.95
Turtle Trek Challenge Kit (4-6)	
—card set	16.95
—resource disk	10.95
Poster and Command Chart Set	6.95
Edit Chart	3.50

These materials are available from Edu-Comp Publications, 14242 Wyeth Avenue, Irvine, Ca 92714.

YOUR TURN

Logo Information For Teachers (LIFT) is pleased to sponsor the Teacher to Teacher column in the NLX. We are interested in hearing from teachers who are integrating Logo materials effectively into curriculum areas. If you have the itch to author a Teacher to Teacher column as a guest reviewer, let us know. LIFT, PO Box 5396, Plymouth, MI 48170.

Mark Lindsay is a fifth grade teacher at Brietmeyer Elementary School in Detroit, MI, and an active LIFT member.

Logo 85, the Second International Logo Conference, is scheduled for July 22 – 25 at the Massachusetts Institute of Technology in Cambridge, MA. Themes announced for the conference include evaluation, teacher education, and the integration of Logo into the curriculum. Approximately 130 separate presentations are scheduled. Don't miss this exciting Logo event! For more information, write to the MIT Special Events Office, Room 7-111, Cambridge, MA 02139.

Q and A

by
Jim McCauley

Q. I have seen examples in Logo documentation of procedures that contain loops constructed with the primitives LABEL and GO. If loops can be created wtih tail recursion, why does Logo include these primitives?

<[-?-]>

A. The short answer is, "There is no useful reason to include LABEL and GO in a modern Logo that encourages good program design."

GO is directly analogous to GOTO in BASIC. LABEL is analogous to the line number used by GOTO. Here are parallel programs in BASIC and Logo that do the same thing.

```
100 REM **PRINT WORD N TIMES**
110 PRINT "WHAT WORD?"
120 INPUT WO$
130 PRINT "HOW MANY?"
140 INPUT HM
150 REM **BEGIN PRINT LOOP**
160 IF HM = 0 THEN GOTO 200
170 PRINT HM; " "; WO$
180 LET HM = HM - 1
190 GOTO 150
200 END
```

```
TO PRINT.N.TIMES
TYPE [WHAT WORD?]
MAKE "WORD FIRST READLIST
TYPE [HOW MANY?]
MAKE "HOW.MANY FIRST READLIST
LABEL "BEGIN
IF :HOW.MANY = 0 [STOP]
PRINT SE :HOW.MANY :WORD
MAKE "HOW.MANY :HOW.MANY - 1
GO "BEGIN
END
```

This ugly little exercise proves that it is perfectly possible to write BASIC programs in Logo. Here is a more elegant approach.

```
TO PRINT.N.TIMES
PRINT.LOOP GET.WORD [WHAT WORD?] GET.WORD
[HOW MANY?]
END
```

```
TO PRINT.LOOP :WORD :HOW.MANY
IF :HOW.MANY = 0 [STOP]
PRINT SE :HOW.MANY :WORD
PRINT.LOOP :WORD :HOW.MANY - 1
END
```

Q and A continued

```
TO GET.WORD :PROMPT
PRINT :PROMPT
OUTPUT FIRST READLIST
END
```

(There is no error checking, but it can be added easily, as we saw in the March Q and A column.)

LABEL and GO are Logo's very simple versions of PROG, an old fashioned construct in LISP (an artificial intelligence computer language after which Logo is modeled). Whe LISP was first created in the early 1960's, it was very restricted in its ability to handle iteration (looping). The early LISPs allowed simulation of loops through tail recursion, calling upon a function as the last step in that function's execution. While this produced something that resembled looping, it was enormously wasteful of computer resources, since the use of recursion created huge stacks of copied functions and data.

This was unsatisfactory, because looping is a very handy facility for many programming tasks, and most computer languages have good facilities for dealing with it. LISP developers added the PROG construct, the associated keyword GO and the SET or SETQ assignment statements (analogous to MAKE in Logo), all of which together made it easier to translate programming concepts from FORTRAN to LISP.

A significant number of LISP enthusiasts have always viewed this as a great leap backward for LISP, and they have been beavering away for years to eradicate this rather clumsy approach to iteration. There have been two alternatives.

1. Write a construct that is more elegant that PROG. A look at some microcomputer LISPs reflects some of the efforts of the larger LISP community. In muLISP, the LOOP construct simply places the entire iterative structure inside a list and executes it repeatedly until one or more conditions are satisfied. Other LISPs do similar things with the DO construct.

2. Teach people to define all loops as recursive structures, then make the LISP interpreter or compiler "smart" enough to figure out when a recursive call can be handled as though it were a loop. One of the LISPs that is cleverest in doing this is John Allen's TLC-Lisp. It can even handle some mutually recursive calls as if they were loops! This is a major accomplishment.

Although LABEL and GO are provided in most Logos, all Logos currently available for micros have some ability for handling tail recursion as iteration. See the November 1984 Q and A for more details.

I generally teach my students to build loops using tail recursion and give them names that include the word "LOOP", as I have shown above. In this way, the loop can be thought of as a "computing object" instead of being mixed in with a lot of other stuff in an overly long procedure. This makes life (and debugging) much easier.

(Ed. Note: If you have a question about Logo programming techniques or the thinking which leads to Logo programming, send it to NLX Q and A, PO Box 5341, Charlottesville, VA 22905. Each month, Jim McCauley answers selected questions in this column.)

Jim McCauley is a Coordinator of Computer Education for the Santa Clara (CA) County Office of Education, and has written Logo articles for many national publications.

YPLA Notes

The Young Peoples' Logo Association (YPLA) announces the Logo Liberty Challenge, an excellent class activity to encourage the use of Logo and help the Statue of Liberty at the same time. Have your students use Logo to show what Liberty means to them. Their procedures might draw pictures, print a poem, or tell a story. Send their procedures on a disk, along with a donation to the Statue of Liberty (a check or money order made out to "The Peoples' Campaign"), to the YPLA before October 15, 1985. You will be sent a disk of other Logo procedures in return. In addition, your donation and procedures will be forwarded to the Statue of Liberty project, and your procedures will be demonstrated at the West Coast Logo Conference, November 21 – 23, 1985, in Los Angeles.

The YPLA also announces their Logo Library II, a disk based update to their Logo Library. The disk is available for Apple II, Atari, Commodore 64, and IBM personal computers, and contains a wealth of Logo resource material. One especially helpful feature is a cross reference index of Logo commands and operations in a number of versions. Once you have purchased the disk, you may return it at any time for a free update. To order Logo Library II, send $29.95 ($24.00 for YPLA members) plus $1.05 shipping and handling ($31.00 total).

The YPLA has just published a 64-page book called Logo Off the Computer. It features stimulating and challenging activities which prepare students for Logo on the computer. Available now, the book costs $5.95 plus $1.25 shipping and handling.

For all offers above, send to YPLA, 1208 Hillsdale Drive, Richardson, TX 75081.

NLX Index
September 1984-May 1985

NLXual Challenges

by
Robs Muir

FORWARD, Ever FORWARD

The Logo turtle is a remarkably powerful object for creating elementary computer graphics. The power of Logo's turtle is especially obvious after coming from other programming environments -- or after trying to teach shape tables to fourth graders.

The simplicity of guiding a computational object such as the turtle around the screen with FORWARDs and RIGHTs obscures the underlying complexity of computer graphics. This is both good and bad. On one hand, the turtle frees us from the tedium of low level programming and allows us to explore larger areas, such as the Total Turtle Trip Theorem. This is what high level programming languages do best. The disadvantage with the turtle's simplicity is that it insulates us from some primary computer functions.

DOT'S ALL RIGHT

Using cartesian coordinates, we could create a DOT command that would require an input and draw a dot at a specified location, for example, DOT [50 50], or DOT 50 50. Indeed, some versions of Logo have DOT as a primitive. It might be clearer to think of "drawing a dot" as illuminating a "pixel" (picture element).

Most current computers create a "dot" on the screen by "turning on" a memory location somewhere in computer memory. The Logo commands, PENDOWN FD 1 BK 1, will cause the computer's "bit-mapped graphics page" to change its state slightly. However, most computers con't use the coordinate scheme that Logo uses to locate positions on its "bit map." Instead, screen coordinates (Cartesian coordinates) are used.

Logo translates the Cartesian coordinates it uses into screen coordinates that the computer uses to display a pixel. You might find it worthwhile to write a Logo procedure that translates from one coordinate system to another.

HERE IT COMES

This month's challenge is for all you people who use the turtle. I hope that doesn't exclude anyone! Given the previous discussion of coordinates, write a procedure that duplicates Logo's FORWARD command without resorting to FD or BK. Of course, you can't use FORWARD (a primitive name) so let's call this new procedure(s) MY.FD. The new MY.FD should function exactly like FD, that is, RT 45 MY.FD 50 RT 34 MY.FD 12 should create the same pattern as RT 45 FD 50 RT 34 FD 12.

The entire problem can be coded in Logo, so don't spend too much time looking at the Technical Reference Manual for your computer. This is the real beauty of expressive high level languages like Logo; you can simulate lower level behaviors using simple elegant syntax.

Send your working solution (or even a valiant attempt) along with a self addressed stamped envelope to:

NLXual Challenges
Attn: Robs Muir
1688 Denver Avenue
Claremont, CA 91711

After compiling the contributed solutions, we will select the most interesting or unusual solutions and redistribute them to each contributor.
MY.FD 100!

Robs Muir is a teacher in the Claremont (CA) Unified School District and Claremont Graduate School.

Editor..Tom Lough

NLXTRA

More What If

by Michael Tempel

In the March NLX, Robs Muir presented our challenge to write a Logo procedure which does the same thing as the IF primitive. (See NLXual Challenges, NLX March 1985.) Last month, we shared a few of our "solutions." (See "What If," NLX April 1985.)

A number of readers sent in their versions in response to the challenge. We were unable to digest them all fully in time for this issue of the NLX, so we'll defer a full discussion until later. For now, here are some more things to think about if you're trying to recreate Logo primitives in Logo.

IT'S FUNDAMENTAL

The exercise brings into focus a fundamental aspect of Logo; it is extensible. If something you need is not available as a Logo primitive, you can write a procedure of your own. Your procedure works generally the same way as a primitive, but this is not true for all situations. We mentioned two differences in the April article.

One difference is in the number of inputs. While most versions of Logo provide an IF that takes an optional third input, user defined procedures must have a fixed number of inputs.

A second difference between user defined procedures and primitives came to light when people tried to use infix operations with their IFs. For example,

    IF 2 < 4 [PRINT "YES] [PRINT "NO]

works with the primitive IF, but not with IF procedures you and I might write in most versions of Logo. This is because parsing is not the same for user defined procedures as for primitives. In this example, Logo takes the 2 as the first input to an IF procedure and then runs into trouble. With the primitive IF, the expression 2 < 4 is first evaluated to be FALSE. This result is then used as the first input to IF.

Putting parentheses around the expression (2 < 4) solves the problem. (Ed. Note: Prefix notation with no parentheses worked with my Apple Logo. IF < 2 4 [PRINT etc.)

Another solution used by some people was to write procedures that expected the condition to be entered as a list. For example,

    TO .IF :COND :TRUE :FALSE
    RUN THING RUN :COND
    END

    .IF [2 < 4] [PRINT "YES][PRINT "NO]

The second RUN takes the :COND list as input and outputs the result of running it, in this case, the word FALSE.

Some newer Logos (Apple Logo II, Atari Logo, Coleco SmartLogo, and Logo for the Macintosh) are designed so that this problem does not arise. The user defined IF will accept inputs the same way as the primitive. In these Logos, the extensibility of the language is more fully realized because user defined procedures behave more like primitives.

THIRD WORD

There is a third, and probably more fundamental, discontinuity between user defined procedures and primitives in all versions of Logo. IF (and some other primitives, including RUN) may be either a command or an operation, depending on the input. User defined procedures must be one or the other, regardless of the input. Compare these two one line procedures:

    TO FLIP1
    IF EQUALP 1 RANDOM 2 [OUTPUT "HEADS][OUTPUT "TAILS]
    END

    TO FLIP2
    OUTPUT IF EQUALP 1 RANDOM 2 ["HEADS]["TAILS]
    END

In FLIP1, IF is a command, In FLIP2, IF is an operation. It is not possible to write a procedure which behaves like this. Or is there...?

Michael Tempel is the Director of Training for Logo Computer Systems Incorporated (LCSI).

Tail of a Turtle: the Valiant Effort

by
Glen Bull and Paula Cochran

In the beginning, there were turtles. Plexiglass hemispheres rolled across the floor, and delighted children of all ages as they drew elaborate designs with a pen in their belly. These floor turtles were the ancestors of modern screen turtles, triangles of light darting across the screen. Screen turtles soon left the laboratory, and can now be found in schools and homes everywhere. Their ancestors, the floor turtles, have been slower to evolve.

For primary and elementary children, a floor turtle may be more valuable than a printer. A floor turtle operates in the real world. When children play turtle, they can walk beside a real turtle. Combined with Tom Lough's NLX ABC's, the turtle can draw letters across a strip of paper to make a banner, for example.

A TURTLE, PRECISELY

Recently we received a Valiant floor turtle from Harvard Associates (260 Beacon Street, Somerville, MA 02143 (617) 492-0660). The Valiant floor turtle is made in England. The examination model we received appears to be a precision instrument. When it draws a closed figure on a piece of paper on the floor, it returns to its original starting position. The current price of the Valiant turtle is less than most printers (about $400). This is the best combination of price and performance we have found in a floor turtle.

CUT THE CORD

One of the most remarkable features about the Valiant is the absence of a cable connecting the turtle to the computer. Instead, the computer talks to the turtle with an infrared light beam. (According to the manual, the range of the light beam is about 18 feet.)

At first, we made use of this feature by sending the turtle out into the hall. It was fun to watch the stares of startled passers-by as the turtle scuttled under foot. However, there are more serious reasons for eliminating the cable. As young children use floor turtles connected to the computer, the cable gradually becomes tangled as the turtle turns round and round. Teachers are forced to devise ingenious strategies to deal with this problem. However, the best solution is the one used by Valiant: eliminate the cable altogether.

We were able to control the Valiant turtle with regular Logo commands for the versions we tested. (Some floor turtles require special commands instead of regular Logo commands, such as TFD in place of FD.) To make the Valiant turtle follow the same commands as the screen turtle, the user simply types: TURTLE ON. To turn the turtle off, the user types: TURTLE OFF. This is important because it allows a child to make use of procedures created before the turtle arrived.
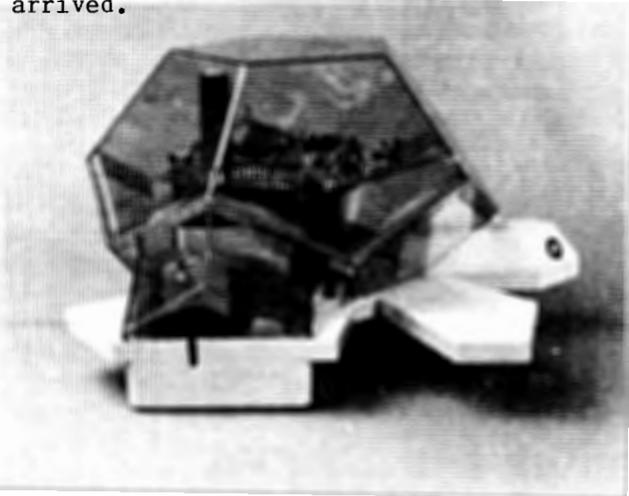
IS IT ALIVE?

The Valiant floor turtle looks like a turtle. It has a head and feet, and a shell shape. Children can easily tell in which direction the turtle is heading.

One feature the Valiant turtle does not have yet is touch sensors. A touch sensor would require a two-way infrared link between the turtle and the computer, adding to the expense and complexity of the turtle. We prefer an affordable turtle without touch sensors.

Interfaces for the Valiant turtle are currently available for Apple, IBM, and Commodore 64 computers. The turtle comes with an infared box for transmitting commands, and can be connected to the computer through a variety of serial and parallel ports. The task of supporting all versions of Logo with all brands of input/output (I/O) ports available for computers is a massive task. Harvard Associates is currently developing software for additional versions of Logo, and for different kinds of I/O ports.

Valiant continued

The Valiant turtle appears to be a remarkable instrument for the price. We hesitate to use the word "break-through" until we can do more extensive testing, and see whether all models are as precise as the one we received for review. If it lives up to its early promise, the Valiant turtle may be the advance that makes turtles practical for kindergarten.

At one time computers in the classroom were a revolutionary idea. Now it is routine to see toddlers playing with them. Some day soon, floor turtles may be as common a sight as printers. And the Valiant turtle is pointing the way.

Glen Bull and Paula Cochran are regular columnists for the NLX.

ExperLogo: Bunny Power For the Macintosh
by Steve Tipps

As soon as the Apple Macintosh computer was introduced, the vision of a Logo version began to form in the heads of Logo lovers everywhere. The first such version is now available -- ExperLogo by ExperTelligence. I have had a demonstration copy of it for the last month and have been sneaking time to play with it. The time has been too short to fathom all it can do.

BUNNY FUN

One feature apparent from the demonstration disk is the phenomemonal graphics display which ExperLogo and the Macintosh can make. In this version, the graphics are performed by a triangular "bunny" which obeys all of the familiar turtle commands. I was a little bemused by changing animals in mid-Logo, but had no real problems with SHOWBUNNY instead of SHOWTURTLE.

ExperLogo comes with a regular 2-dimensional bunny, and a 3-dimensional bunny which can YAW, ROLL, and PITCH. The results of 3-D drawings are still unpredictable, but I did not know LEFT from RIGHT before I started with "regular" Logo. This one may take awhile longer to master, but I am enjoying it.

ExperLogo takes advantage of the windowing in Macintosh for graphics areas and different edit screens. The Listener Window acts like the immediate mode, while all procedures are written in edit windows. My personal QWERTY makes me a little uncomfortable with multiple windows. I found myself wishing for the simplicity of what I already knew.

MOUSING ABOUT

The mouse is yet another animal to deal with in the Macintosh ExperLogo environment. Programs which are primarily mouse implemented (such as MacDraw and MusicWorks) seem easy to use. Other Macintosh software is keyboard intensive (such as MacWrite). Programs which depend equally on mouse and keyboard seem cumbersome. ExperLogo is in this category. At the same time, I really liked being able to scroll up and down the Listener Window and activate any of commands I had written.

Other Macintosh features incorporated in ExperLogo include the Macintosh text fonts and flood-fill capabilities.

Additionally, you have the option of seeing the results of all your procedures by choosing SHOW OUTPUT. This is especially handy when debugging programs. You can see the picture and the values at the same time.

NOT SO FAST

ExperLogo is a compiled version which should make it extremely fast. Since I was working on a 128K Macintosh, I didn't benefit from the speed of the program compilation. In fact, on the 128K, the Macintosh accessed the disk drive on almost every line of code. Although the graphics were fast, the time to access the disk slowed work down a lot. I often found myself waiting not-so-patiently for execution.

I am going to keep on working with ExperLogo, and learn more of its special capabilities. Right now, I'll say I enjoyed working with Logo on the Macintosh. I like ExperLogo, but I don't know whether I love it. I applaud the effort made by Exper-Telligence to bring Logo to a new audience. File handling, speed, and memory are all essential to moving Logo into other applications. ExperLogo has its heart in the right place, but my hands haven't quite mastered all its new and exciting possibilities.

ExperLogo has a list price of $149.95. For more information, write:

ExperTelligence
559 San Ysidro Road
Santa Barbara CA 93108
(805) 969-7874

Steve Tipps is a regular columnist for the National Logo Exchange newsletter.

If you are making presentations or conducting workshops on Logo, and would like some information flyers about the NLX for your attendees, send us the details, and we will be happy to provide you with a supply. NLX Flyers, Attn: Kaye Knight, PO Box 5341, Charlottesville, VA 22905.

Logo Computer Systems Inc. (LCSI) and Educational Spectrum announce "A Workshop for Experienced Logo People," to be held August 5 - 9 in New York City. Advanced Logo programming and applications in mathematics, science, language, and social studies will be guided by a distinguished faculty of experienced Logo instructors and lecturers. For more information, call Michael Tempel at (212) 765-4780.

Logo Information For Teachers (LIFT) offers memberships and a copy of their latest 30 page member directory for $10. For more information, write LIFT, PO Box 5396, Plymouth, MI 48170.

Radio Shack's Tandy Home Education System (THES) package includes a 64K Color Computer 2, two joysticks, a modem, a disk drive, and a copy of Color Logo. The new Super Logo will be available this summer with THES. Scheduled for release also are versions of Digital Research's DR Logo for the Radio Shack Model 4 computer, and the Tandy 2000 and 1000. For more information, contact Ron Moore, Director of Curriculum Sales, 1400 One Tandy Center, Ft. Worth, TX 76102.

The West Coast Logo Conference, scheduled for November 21 - 23, 1985, has extended the deadline of its call for research papers to June 15. Reports on completed Logo projects which address a specific educational topic or problem are invited. For more information, write to L. Polin, West Coast Logo Conference, Pepperdine University, 3415 Sepulveda Boulevard, Los Angeles, CA 90034.

McGraw-Hill announces the Second Annual Teacher Education Conference, to be held July 21-26 in Williamsburg, VA. The program includes lectures, small group discussions, and hands on activities in Logo as well as other topics. Graduate credit is available. For more information, write to Mary Jim Cunningham, Conference Coordinator, Webster Division, McGraw-Hill Book Company, 1221 Avenue of the Americas, New York, NY 10020, or call (800) 223-4180.

Have you been wondering if you can use your parallel printer with Apple Logo II? Thanks to Nicole Michaud of Logo Computer Systems Incorporated (LCSI), NLX readers can find out how.

Make sure your Apple Parallel Card is in slot # 1. Set the DIP switches. Most printers operate correctly with these settings.

Switch:	SW1	SW2	SW3	SW4	SW5	SW6	SW7
Setting:	OFF	OFF	OFF	ON	ON	OFF	OFF

Now boot Apple Logo II and type

EDITFILE "STARTUP

Now define the following procedures:

```
TO PARALLEL.CARD
.DEPOSIT 29694 96
PUTBYTES [234 234 234 234 234] 29656
PUTBYTES [44 193 193 48 251 141 144 192
96] 29736
END

TO PUTBYTES :LIST :ADDRESS
IF EMPTYP :LIST [STOP]
.DEPOSIT :ADDRESS FIRST :LIST
PUTBYTES BUTFIRST :LIST :ADDRESS + 1
END

MAKE "STARTUP [PARALLEL.CARD]
```

Press Open-Apple-A to save these procedures in the STARTUP disk file. The next time you boot Apple Logo II, it will be set up automatically to work with your Apple Parallel Card and your parallel printer.

Do you have a CompuServe account? If so, browse through the ERIC Logo Database! Type GO LGO and you will be able to search through files of article and report titles by various categories (grade level, subject, etc.). Information on how to order copies of the material is also available.

Additionally, the Young Peoples' Logo Association is scheduled to have services available on CompuServe soon. Be on the lookout for notices in early May.

"Using Logo to Teach Elementary and Middle School Geometry," a 3-semester hour graduate course, is scheduled for the Spartanburg campus of the University of South Carolina, June 10-25. The instructor is E. Carol Ellis. For more information, contact Dr. Judith Prince, Director of Graduate Regional Studies, USC-Spartanburg, Spartanburg, SC 29303.