Logo*Update* The Logo Foundation Newsletter ▲ Volume 6, Number 1 – Winter 1998

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The main articles in this issue of *Logo Update* are about last summer's Logo conferences. Iliana Nikolova reports on EUROLOGO '97, which was held in Budapest, Hungary. The conference highlighted the recent work and achievements of the European Logo community, but there were representatives from the Americas and Australia as well.

EUROLOGO is a biennial event. EUROLOGO '99 will be in Sofia, Bulgaria where there has long been an active group of Logo enthusiasts.

"The State of the Turtle" is based on the keynote address I gave at Logosium '97 last June in Seattle, Washington just prior to the annual National Educational Computing Conference. Logo has been around for 30 years. I reflected on where we've been and where we might be going.

Last summer was again a time for Logo Summer Institutes. These intensive workshops were held in several locations across the United States. We're doing it again in 1998. The third annual *Summer at Spence* will be in New York City from June 29 through July 2. Following a wonderfully successful Institute last year at Mesa State College in Colorado, the *Colorado Logo Institutes* are expanding to two weeks this year. There will be a *Logo Immersion* from July 20 to 24. *Logo Robotics* will be held the following week from July 27 to 31.

There is a brief announcement about these workshops on the back cover of this issue of *Logo Update*. More detailed information is on the Logo Foundation Web site at http://el.www.media.mit.edu/logo-foundation/ and in flyers that you may have received in the mail. (If not, contact us an we'll send them to you.)

Also take a look at "Internet Update" on page 10, for an overview of

continues on the next page

EUROLOGO '97

by Iliana Nikolova

EUROLOGO'97 was held from August 20 to 23, 1997 in Budapest, Hungary. It was organized by John von Neumann Computer Society, Eotvos Lorand University, and Marta Turcsanyi, the "mother of EUROLOGO'97." The conference gathered more than 80 participants from many countries including some from outside Europe. It was a busy and interesting event, which enriched the experiences of the Logo community.

The major conference themes were:

- Methodology of curriculum content areas
- Learning by developing
- Software design
- Cultural and cross-cultural aspects of Logo
- Home learning
- Children with special needs
- Teacher training

In his opening address Wallace Feurzeig (USA) spoke about the birth of Logo, the initial Logo-ideas, and their further development. Later in the conference, in his talk *Programming in Two Dimensions,* Wally described Function Machines, a visual programming language that is a powerful instrument for helping students develop mathematical thinking.

The plenary lectures included:

Clashing Cultures by Richard Noss and Celia Hoyles (UK);

20 Reasons Why You Should Use Boxer (Instead of Logo) by Andrea diSessa (USA);

Tuning a Logo-like Environment to a Knowledge Domain by Bojidar Sendov and Evgenia Sendova (Bulgaria);

I Beg Your Pardon, Turtles: Don't Forget About Data Structures by Ivan Kalas (Slovakia);

Reasoning with Computers by Brian Harvey (USA);

Contextualizing Continuous Education in Logo via Internet by José Armando Valente (Brazil).

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Brian Harvey, Iliana Nikolova, Evegenia Sendova, Bojidar Sendov, and Andrea diSessa at EUROLOGO '97

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current Logo activities and resources including Web sites and discussion groups. The article may be out of date by the time you read it. Just check the Logo Foundation Web site for the most recent information. Lately I've been updating it almost every week.

Finally, look at the advertisements in these pages for some interesting new product releases. By supporting our advertisers you help us to continue sending you *Logo Update* for free. You may order their products at discount from the Logo Foundation. Look at pages 14 and 15 for pricing information and the order form.

Michael Tempel

EUROLOGO '97

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There was a presentation of *MATCh, Multimedia Authoring Tool for Children*, a project currently being developed by an international team from Greece, Holland, England, Slovakia, Hungary, and Bulgaria under the auspices of the INCO-Copernicus European Community Program.

Besides these, more than 30 papers were presented in three parallel streams, and many workshops, poster sessions, and demonstrations were held. There was an exhibition about the history of Logo in Hungary and a Logo cartoon competition.

EUROLOGO'97 marked a renaissance of Logo in Europe and, according to Richard Noss, showed that "the Logo center of gravity is moving more to the East." After a period of growing popularity and dissemination of Logo in Western Europe during the early 1990s, Logo seemed to be slowing down slightly. EUROLOGO'95 was not well attended. (One of the participants even said it was "a good time for EUROLOGO to die.") Fortunately, EUROLOGO'97 demonstrated a new wave of interest in Logo along with many current developments and applications. Most of these were reported by participants from Central and Eastern European countries including Slovakia, Yugoslavia, Bulgaria, Greece, and Russia.

We asked some of the participants the following questions for our summary of EUROLOGO'97 for *Logo Update*:

- What new ideas, paradigms, or trends are evident at EUROLOGO'97?
- What is distinctive about this EUROLOGO as compared to previous ones?
- What are the most impressive contributions at this conference?

Here are some of the impressions shared:

New Ideas and Trends

Celia Hoyles thought that a significant new trend was the development of Web tools for collaboration within the Logo society. Projects in this area include the work presented by José Valente of Brazil, and VALUE, a *Virtual Almanac for Logo Users and Educators* presented by Iliana Nikolova from Bulgaria.

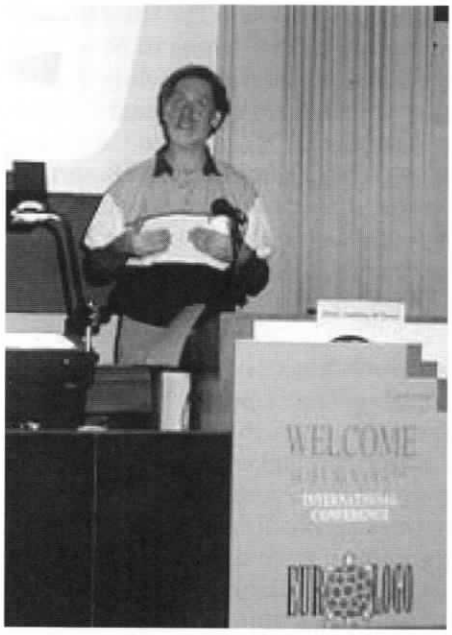
Chronis Kynigos referred to Logo's use as a means for culture building and development. This is apparent in Central and Eastern Europe where Logo is not being used so much to serve a particular, predefined learning goal, but as a "horizons opener" – a tool, which can serve broader purposes, sometimes reaching unintended goals related to a child's overall development.

In the case of Comenius Logo especially, we see a tool that has been translated into many spoken languages and is used by many nationalities. This facilitates cross-national communication and exchange and allows views and projects from different cultures to be shared within this international community.

Distinctive Features

EUROLOGO'97 had quite enough contributions on using Logo in computer science and informatics. Brian Harvey referred to a recurring conflict between Logo as a tool for learning mathematics and Logo as a vehicle for informatics and information technology courses.

There were many plenary lecturers from the USA and South America. Are the Americans taking over EUROLOGO?



Andy diSessa offering 20 reasons to use Boxer instead of Logo

Impressive Contributions

Most prominent at EUROLOGO'97 was Comenius Logo and the "learning by developing" approach strongly promoted by it. The development team, led by Ivan Kalas, Andrej Blaho, and Peter Tomcsanyi includes people with both informatics and education backgrounds. There have already been many microworlds developed with Comenius Logo including *Tomash The Clown* from Slovakia and others from Holland and Greece. The rich and friendly environment permits comparatively easy development of Logo projects and microworlds, and enables teachers to tune the environment to their needs. The international cooperation around Comenius Logo is encouraged by the fact that it is localized into many national versions and is supported by a World Wide Web site, which gives a good idea of the tool itself and the work being done with it.

Boxer is not new, but it is powerful. Andy diSessa presented convincing reasons for using it. A very impressive application concerned a meta-representational course in which students learn about representations of movement. They build and use transparent and modifiable tools for digital data analysis based on color representation and transformation. In this way as much information as possible is taken out of the digital data. The concrete example concerned Astronomy.

Andy made a larger point about software and its context: It is important to build tools that are appropriate to cultures and work in rich and constant interaction with these cultures. Software development should involve not only software developers, but also teachers and students, working in an organic, continuous, extended community.

One notable presentation was *I Beg Your Pardon, Turtles: Don't Forget About Data Structures* by Ivan Kalas of Slovakia, in which he focused on the role of data structures in Logo. He offered an approach that makes this topic a natural component of mid-level Logo activities and bridges the gap between turtle geometry and Logo data structures. The author's appeal is that Logo data structures are an important, natural, and inevitable part of many Logo creative activities and they have been, and can be made more accessible to Logo learners.

In *Contextualizing Continuous Education in Logo via Internet* José Valente of Brazil presented an Internet-based alternative to the traditional Logo courses for teachers. He describes an experiment using a contextualized constructionist approach to Logo teachers' education done via Internet. This has created an ongoing education process by which the teachers are able to debug and improve the process of integrating Logo in their classroom activities.

Celia Hoyles and Richard Noss presented their plenary lecture, *Clashing Cultures,* very attractively via role-playing. It was built on a real story of Logo in a school and traced the evolution of the school's original goals for Logo work as it became

continues on page 4

Seymour Papert's latest book is available here!

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EUROLOGO '97

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integrated into the school's practices. One of the morals of this story is that one should not expect to see only the school changing when Logo becomes part of its practices, but Logo itself is a subject to change. The story was viewed as a clash of cultures between Logo and the school.

The culmination of EUROLOGO'97 was the final panel discussion centered on the question: "What is Logo special case of?" It pictured the general and multifaceted nature of Logo. Opinions varied:

- **Logo is a special case of itself.**
- Logo is a special case of a nice playground.
- Logo is a special case of the Bulgarian spirit.
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- Logo is situated in the larger field of epistemology.
- Logo is a tool for expression.
- Logo illustrates the progressive vision of education.
- Logo is part of knowing about the things and knowing what the things are.
- Logo has a unique feature of being a means for something – a general thing.
- **It's sort of too late for Logo to be a case of itself...**

Thanks to the effort of the organizers it was a wonderful conference. Bulgaria was chosen as the site for EUROLOGO'99 and Austria for EUROLOGO'2001. ▲

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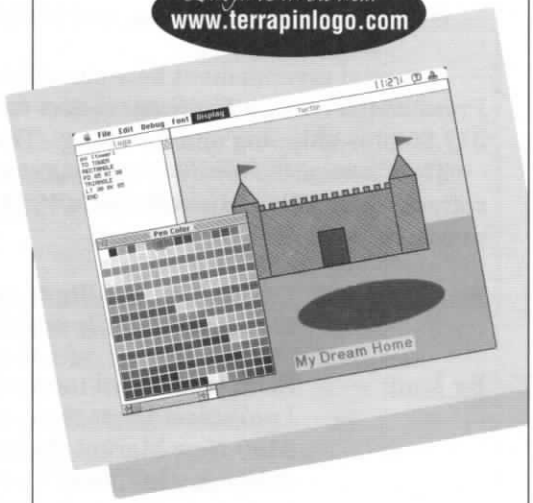

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The State of the Turtle

by Michael Tempel

This article is based on the keynote speech I gave at Logosium '97 in Seattle on June 29, 1997. Since I edited my notes somewhat later, I have included additional thoughts and information.

Logo has been around for 30 years. It has not taken the world by storm. It has not gone away. On the one hand, simply surviving for three decades in the fad-frenzied world of educational technology should be considered success. But those of us who had hopes that Logo would spearhead a major change in education are naturally disappointed.

Where are we and where are we going? Most people haven't even heard of Logo. Those people who know about it often have a view that is stuck back in the early 1980s. "Oh, it's that turtle thing, isn't it?" What can we tell those folks? What's new with Logo?

A New Home

If we use "that turtle thing" as a starting point, quite a bit is new. The turtle is alive and well, living in a modern Windows or Macintosh milieu. In early Logo environments everything was accomplished by typing instructions. In today's classic Logos this is still the case for the most part, but the mechanics of saving and editing may be accomplished by pointing and clicking.

Sprites and Parallelism

Some microcomputers of the early 1980s – Atari, TI99/4, MSX – had hardware that made them well suited for video games. Versions of Logo for those machines had "Sprites," turtles that could move around at high speed, assume a variety of shapes, and were ideal for creating animation and games. But this environment set up expectations that could not be met. With many turtles it is natural to create a story or a game with many characters, each doing something different. But there could be only one program running at a time. If you wanted the horse to gallop while the bird flew, you'd have to write a procedure that told the horse to take a step, then told the bird to move its wings up, then the horse to take another step, then the bird to move its wings down...

The more natural way to think about and program this scene is to write one procedure to make the horse gallop and another to make the bird fly. Each of these independent programs could run alone or both could run at the same time. This is now possible with MicroWorlds™. This parallelism, or multitasking, is arguably the most significant change in the Logo programming language since it was first implemented in 1967.

StarLogo carries multitasking much further. Where MicroWorlds can handle up to about 20 processes simultaneously, the "massively parallel" StarLogo can run thousands.

Impure Logo

Another important shift over the years has been the inclusion of non-Logo components in some Logo environments. This began in 1986 with LogoWriter™. Text could be typed directly on the screen without using a PRINT command. Turtles could be moved using arrow keys as well as with Logo instructions.

Some recent versions of Logo have gone much further. MicroWorlds, Comenius Logo™, and MultiLogo™ among others include drawing tools and shape editors. In LogoWriter all the text manipulations and turtle moves had direct Logo counterparts. While it is theoretically possible to use turtle graphics to do anything that can be done with drawing tools, it would be extremely difficult to duplicate most of the designs that people produce quickly and easily with those tools.

These "impure" Logo environments are controversial. Some people feel that drawing tools and multimedia features detract from Logo. They feel that learners won't want to program, and in particular, won't want to use turtle graphics. I don't find this to be the case. The new features in many modern Logo environments support a wider range of projects and accommodate people with many different interests and styles of working and learning. Students who were introduced to Logo through animation still approach turtle graphics with enthusiasm when they find out, to their surprise, that the turtle can also draw. The geometric patterns and recursive designs that have always been part of the Logo culture are still engaging. (But nobody draws a house anymore.)

Out of the Computer

For the most part interactions with Logo involve typing on a keyboard and looking at a screen. Over the years there have been other input and output devices – button boxes, switches, sensors, sound generators, and a variety of robotic interfaces. But it was the combination of LEGO and Logo, developed at MIT, that brought Logo out of the computer for a great number of people.

The first commercial LEGO Logo product was LEGO TC Logo™, a version of LogoWriter that could interact through wires with the motors, lights, and sensors that were part of machines built of LEGO elements. Control Lab™, the second-generation product from LEGO, is built on the same underlying software as MicroWorlds, therefore also including its multitasking features.

The current research takes Logo robotics another step further. Instead of wiring machines to the computer, computers are built into the machines. The Programmable Brick is small enough to hold in one's hand, yet contains batteries, a computer, and a small LCD display. It has connectors for sensors, motors, and lights, and may be incorporated into a larger device. It is connected to a larger computer in order to receive its program. But then it is disconnected and on its own. A more recent innovation is the even smaller Cricket, which is about the size of a deck of cards.

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The State of the Turtle

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Specialization

LEGO Logo is one example of a broader Logo trend toward specialization. In the early 1980s there were a few general-purpose versions of Logo. This is still true for the most part, but some versions are designed with specific uses in mind and are enhanced to support those uses. StarLogo was intended especially for the exploration of decentralized phenomena, such as the behavior of a traffic jam or a termite colony.

LogoGrafico is a general purpose Logo, but is especially well designed for simulations of motion. For example, there are built in features that cause turtles to rebound appropriately when they collide. These primitives could instead be written in Logo, but to do so would make the response unacceptably slow.

How Are We Doing?

If Logo has been growing and improving over the years, why don't we have a more prominent place in the world of educational technology? Why are there only 50 people at Logosium today out of 5,000 who are here in Seattle attending NECC?

In 1981 Seymour Papert's *Mindstorms*[1] was published. This book excited tens of thousands of teachers about the potential of Logo. Papert talks about learning, yet there is a noisy silence when it comes to schools. As an alternative model of a learning environment he describes the Brazilian Samba Schools, which are not schools at all. They are social clubs in which much time is spent preparing elaborate pageants for Carnival. These interdisciplinary events include story telling, dancing, singing, and costume design. In the preparation and rehearsals, people of all ages, novices and experts, work and learn together in an informal atmosphere.

If the Samba School represents an idealized Logo-like learning environment, then we should not be surprised that Logo does not thrive in schools. It is like snow in Tahiti. School activities are not rooted in culture, but are curriculum driven. Time constraints and age segregation place enormous obstacles in the way of learning.

A dozen years after *Mindstorms*, in *The Children's Machine*[2], Papert chronicled schools' encounter with Logo and other innovative uses of computers. He likens the reaction to the body's immune response to an invading micro-organism. We should not have been surprised.

But the invaders have not been destroyed. Rather, we have established a firm parasitic, in some cases even symbiotic, presence in schools. In some classrooms and computer rooms Logo thrives. In some schools, districts, and even an entire country – Costa Rica – there is strong administrative support for Logo and for constructionist learning.

But these oases are the exception, not the rule, and Logo is more at home at the margins of school – in after-school and summer programs where there is more time and flexibility, and less curriculum.

Are we destined to always be on the periphery of educational systems that rest on ideas that are fundamentally different from ours? Not necessarily. Schools may change. New learning environments may become more important.

The alternative schools movement carries a disparate collection of educational ideas. While most of these schools are conservative, in diversity there is a place for progressive education. Like-minded teachers and parents can come together to form schools in which constructionism is a central theme. Parents who don't send their children to school form a similarly eclectic and largely traditional group, but there are a significant number of home-schoolers who embrace progressive ideas and use Logo.

Logo has also found its way into a variety of nonschool settings: an auto parts factory[3], a bank[4], a Job Corps Center[5], a number of children's museums and community centers. Like schools, most factories and banks are quite rigid, but we should plant seeds wherever we can. Some may grow in unlikely places.

Alliances

Last October I gave the keynote

address at the Congreso Internacional de Informatica Educativa in Buenos Aires. At the end I took questions from the audience: "What is like Logo?" I had no ready answer at that moment. There are a number of ways to think about it. The question is important because it helps us think about groups with which we can form alliances to further constructionist learning.

One approach is to think of other software that is like Logo. In some sense this includes all programming languages, but most are used for, and designed to facilitate, reaching well defined goals, not for open ended exploration or an emergent style of project development. Word processors, spreadsheets, KidPix™, Widget Workshop™, Hollywood™, My Make Believe Castle™, Hypercard™, and HyperStudio™ are all like Logo in that they are used to design and create something; the last two even include programming languages. This grouping may be too broad to be useful, but all of these applications, and Logo, are on one side of a major division in educational technology. On the other side we find the disintegrated learning systems of Jostens and CCC, and the miseducational games that clutter many school computer rooms and the shelves of consumer software outlets.

But let's look beyond software and computers. Logo is like LEGO. Now there's a case where a solid alliance has been formed! Logo is also like kindergarten blocks, open education, and whole language. Logo projects are like other interdisciplinary projects. We share evaluation methods with those who use portfolio assessment rather than tests and grades. For the most part we have not formed alliances with our fellow progressive educators. We need to give serious thought to why this has not happened and how we can move in that direction.

Let's also look at learning outside of school. Logo is like "kitchen math"[6] used every day by cooks who don't think of themselves as being good at math, or the "home science" of hunters, gardeners, and home aquarium keepers.[7]

How can we make connections with people who implicitly share our approach to learning? What does Logo have to do with cooking? So far these connections have not been made, but there are two trends that could set the stage for a major change. First, computers are becoming commonplace home appliances. Second, Logo has been coming out of the computer. Someone who carefully monitors and adjusts the water chemistry and temperature of an aquarium might find a programmable brick quite useful. And wouldn't it be an improvement to be able to program your microwave oven, not to mention your VCR, in Logo? These are just off-hand suggestions that will no doubt seem silly and primitive compared to what people will actually do as they bring programmable devices into their day to day lives.

The Internet

I have to say something about the Internet because these days you can't

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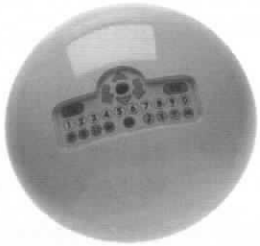

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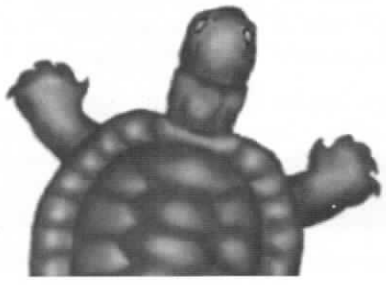

The State of the Turtle

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give a speech about educational technology without talking about how the Internet will change everything. As time goes on it may very well change education in fundamental ways, but so far it is changing the way we shop much more than the way we learn.

But for Logo people the Internet is very important right now. We are a small community, yet we are scattered all over the world. Logo learning, like all learning, occurs in a social context. If one is isolated it is hard to carry on. The Internet gives us a way to work together no matter where we are. Recently there were a number of people spread over five continents, who used Logo-L, the Logo listserve[8], to share recursive turtle graphics designs. They presented each other with challenges, showed off their creations, and helped each other debug programs, just as if they had been in the same room. Every day there are people sharing ideas and projects, seeking help and getting it. The StarLogo users group provides the same kind of community building for that group of Logo users.

What's Next?

The last question I was asked at the conference in Argentina was: "In the future, what will replace Logo?" This one really took me by surprise. But the answer now seems obvious: Continuing the story of the past 30 years, a yet-to-be-imagined Logo will replace Logo. ▲

[1] Papert, Seymour, *Mindstorms,* Basic Books, New York, 1981
[2] Papert, Seymour, *The Children's Machine,* Basic Books, New York, 1993
[3] Valente, José Armando, "LEGO Logo in a Lean Factory," *Logo Update,* Vol. 5 No. 2, Winter 1997
[4] Hoyles, Celia and Noss, Richard, "Understanding the Mathematics of Banking," *Logo Update,* Vol. 5 No.1, Fall 1996
[5] Allen, Laura, "Constructionism Meets the Job Corps," *Logo Update,* Vol. 5 No. 3, Spring 1997
[6] Papert, Seymour, *The Children's Machine,* Basic Books, New York, 1993, pp. 113 - 116
[7] Gould , Stephen Jay, "Drink Deep, or Taste Not the Pierian Spring," *Natural History*, Vol. 106 No.8, September 1997
[8] Logo-L is a discussion group sponsored by the Logo Foundation and the Global SchoolNet Foundation. For more information look at page 10 of this issue of *Logo Update*.

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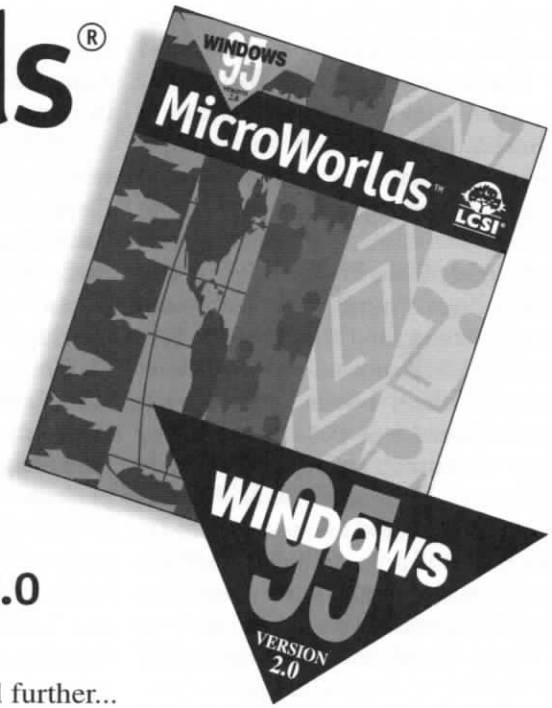

The best Logo product ever just got better!

Introducing MicroWorlds 2.0 for Windows 95

MicroWorlds pushes the power of Logo still further...

New Features	What your students can do now
New program "look and feel"	Improved interface and palette for easy top-level control
New, improved on-line help with hyper-links (WIN 95)	Comprehensive, easy-to-use help right at your fingertips
Display your projects on the Web	Save projects as HTML code for easy display on the Web
Access to digital movies	Integrate video clips into projects
Access to CD-based audio	Include a favorite song in their work
Access to digital photos and sound clips	Give extra depth to projects by adding digital pictures and sound
Full-screen presentation	Create more impactful projects

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Download a demo version from our web site today (http://www.lcsi.ca) or contact us directly for a free demo CD

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Our GUARANTEE: Your Student Will Love It! If not, return within 30 days for full refund.

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LCSI®

Internet Update

With the growth the Internet the Logo community has an expanded forum for exchange and collaboration. The number of World Wide Web sites with Logo resources and information has been growing rapidly over the past few months and Logo discussion groups are thriving.

The World Wide Web

The Logo Foundation Web site (http://el.www.media.mit.edu/logo-foundation/) includes information about software, books, and workshops. There are papers on Logo theory, research, and practice, and back issues of *Logo Update*, which may be downloaded for free. There is also a page of Links to more than 50 other Logo sites – the most complete listing of Logo sites on the Web.*

There are sources of commercial Logo software: Logo Computer Systems (LCSI), Terrapin Software, Softsparks, Logotron, and Logo Japan. Comenius Logo is represented by several sites for the various versions of this software that have been implemented in a number of spoken languages. There are also links to sources of free Logo software including UCBLogo, MSWLogo, and StarLogo.

The LCSI site includes a collection of MicroWorlds projects that may be downloaded or viewed interactively using a "Web Player" for your Internet browser. This Plug-in, currently only for Windows95, may be downloaded for free from LCSI's site.

The Epistemology and Learning Group at the MIT Media Lab is in the forefront of Logo research and development. At this site you'll find reports about current projects including the Programmable Brick and StarLogo. Other organizations carrying on Logo projects include the Omar Dengo Foundation in Costa Rica, and the University of Sofia in Bulgaria, home of VALUE, the Virtual Almanac for Logo Users and Educators. There is 'Ndahoo"ahh, a project for concurrently developing and linking the skills of traditional Navajo crafts and computer programming. It includes images and procedures for textile designs programmed in Logo.

Several Schools have Web sites where students present their work. Caulfield North Primary School and John Paul College in Australia share their MicroWorlds projects. The Blake School in Minnesota and Vina Danks Middle School in southern California show us their LEGO Logo creations.

Many personal Web pages contain Logo materials and sample projects that teachers will find useful as sources of ideas and practical classroom activities. Yehuda Katz has built a college course around recursive turtle graphics designs. Chuc Smith and his family have a Web site with plenty of ideas for teaching and learning Logo. John St. Clair offers us the Logo handouts he uses with his middle school students. Frank Caggiano has a collection of MicroWorlds projects that may be viewed interactively using LCSI's Web Player.

The list is always growing and changing, so check the Logo Foundation Links page frequently. We'll do our best to keep it up to date and complete.

Discussion Groups

There have been Logo discussion groups on the Internet for many years; Compuserve's Logo Forum and the UseNet group comp.lang.logo to mention two of the more prominent ones.

For the past three years, the Global SchoolNet Foundation and the Logo Foundation have sponsored a listserve called Logo-L, with John St. Clair and Michael Tempel as moderators. A listserve is essentially a mailing list. When you send mail to Logo-L@gsn.org you are sending the message to about 300 people from all over the world who subscribe to the group. They receive the messages as part of their regular email.

The exchanges are varied. Sometimes there will be a heated political debate or a discussion of educational theory that may go on for a few weeks. People share programs and present challenges. For several weeks there was a collaborative group project on recursive graphics designs.

Experienced Logo users as well as novices ask technical questions, and generally get many answers. Brian Harvey, the creator of UCBLogo, and MSWLogo author George Mills are members of the group. So are the technical support people at LCSI and Terrapin. Users of those versions of Logo have a direct lines to excellent sources of help and they are providing input that the developers may use when updating their Logo software.

All the Logo-L messages from August 1995 to the present are preserved in an archive at http://archives.gsn.org/logo-l/. This archive is open to anyone. You do not have to be member of the group to access it.

How To Join Logo-L

To join Logo-L send an email message to majordomo@gsn.org. The body of the message should have just one line:

subscribe logo-l

There is also a "digest" version of the list, which combines all the day's messages – sometimes numbering a dozen or more – into one daily composite message. Some people prefer this since it results in fewer messages and clearly separates the Logo-L message from the rest of their mail.

To receive the messages in digest form your email message to majordomo@gsn.org should be

subscribe logo-l-digest

All you need to join is an Internet email account. It's free.

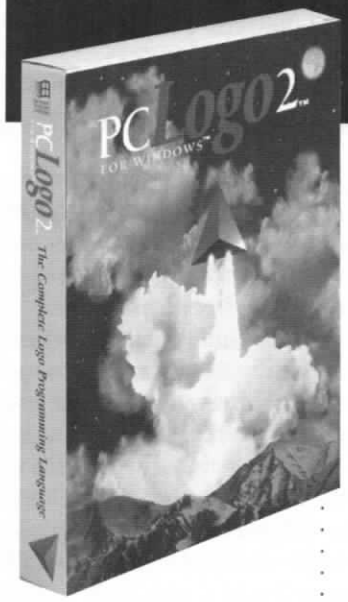
StarLogo

Another Logo listserve is for the growing community of StarLogo users. When you download StarLogo from the MIT Web site mentioned earlier in this article, you may also join the listserve starlogo-users@media.mit.edu. ▲

* Rather than clutter this article with URLs we've included just the address of the Logo Foundation site. From here you can get all the sites mentioned. From the home page click on "Links to other Logo Web Sites."

Announcing PC Logo 2 for Windows

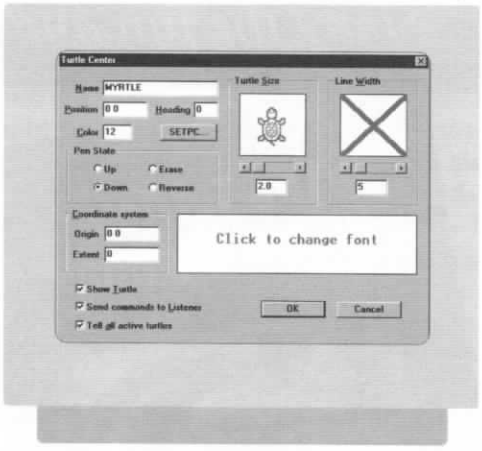
PC Logo 2 has lots of new features!



PC Logo for Windows version 2: requires Microsoft Windows 3.1 or Windows 95.

- Use the new turtle centers to set up one or more turtles with all the characteristics you want in one easy step.
- Design your own rotating turtle shape in the built-in shape editor or use one of the 124 ready-made turtle shapes.
- Use any .BMP file as a background or give it to a turtle to wear as a shell.
- Undo and redo graphics commands.
- Use up to 15 decimal places with new double-precision numbers.
- Add your favorite video clips and sound files using the multimedia commands.
- Try the dozens of new demos, games, and sample files.

Load in any background, including photographs



The new turtle center

- Control a robot turtle using the new built-in robotics commands.
- Learn about all the new features using the Upgrade Handbook, Quick Reference Guide, and updated on-line Help.

teacher certified NEA™

PC Logo has been endorsed by the National Education Association as "NEA Teacher-Certified."

Look for us on the web!
www.terrapinlogo.com

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Logo Users Groups

Logo users groups provide a way for teachers and others to share ideas, get solutions to technical problems and find out about the latest Logo software.

These groups meet on a regular, or irregular basis, generally once every month or two. Here are the groups we know about about. If you know of any others, tell us about them and we'll include the information in future issues of *Logo Update*.

Long Island Logo Users Group
Contact: Marilyn Tall
Munsey Park Elementary School
Hunt Lane
Manhasset NY 11030
516 333-4018 (evenings)
516 627-8110 (days)
Soemzt@vaxc.hofstra.edu

Los Angeles Logo Users Group
Contact: Carolina Goodman
Country School
5243 Laurel Canyon Blvd.
North Hollywood, CA 91607
818 769-2473
cgoodma@ctp.org

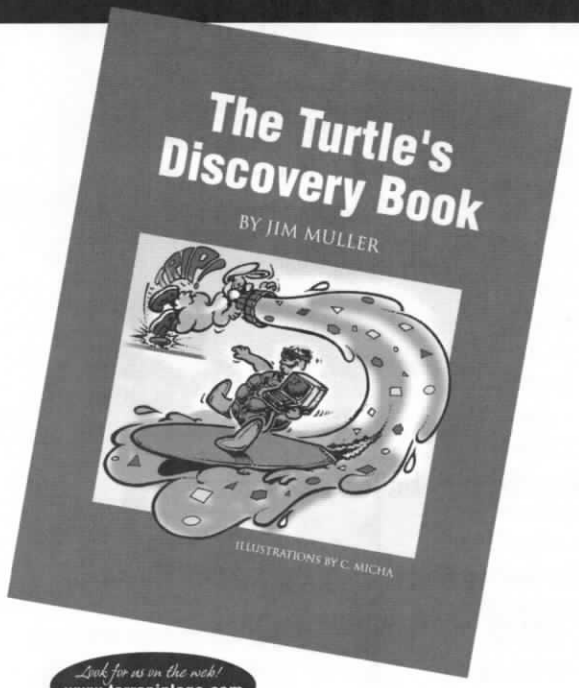
Logo Anonymous
Contact: Marian Rosen
Conway School
9900 Conway Road
St. Louis MO 63124
314 993-2878
mbrosen@icon-stl.net

New York Logo Users Group
Contact: Michael Tempel
The Logo Foundation
250 West 85th Street
New York NY 10024
212 579-8028
michaelt@media.mit.edu

Philadelphia Logo Users Group
Contact: Mel Levin
Prince Hall School
Godfrey and Gratz Avenues
Philadelphia PA 19141
215 276-5369

Shoreline Logo Users Guild
Contact: Jeff Sandys
1306 NW 201st Street
Shoreline, WA 98117-2146
206 294 6450

Share the fun and excitement of exploring Logo!



Look for us on the web!
www.terrapinlogo.com

Join our intrepid explorers, Logy, the Logo Turtle, and Morf, the irrepressible rabbit as they take on the challenges of Logo. *The Turtle's Discovery Book* by **Jim Muller** provides an easy-to-read tutorial for learning Logo.

The Turtle's Discovery Book is for people of all ages—anyone who wants to share the fun and excitement of exploring Logo on and off the computer. It is particularly designed to be used in a home learning environment where children and their parents can share computer activities.

- LOTS OF ACTIVITIES FOR YOUNG EXPLORERS
- CHALLENGES FOR THE ADVANCED ADVENTURER
- STRING AND WIRE ART
- GAME DESIGN
- LIST PROCESSING
- 2- AND 3-DIMENSIONAL DESIGN.
- BEHAVIOR STUDIES AND SIMULATIONS

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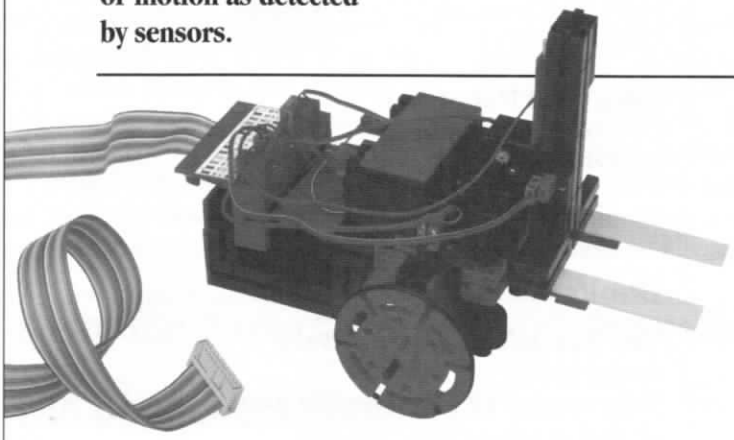
Take Logo into the Real World with Logo Robotics!

Bring your Logo experiences off the computer screen and out into the real world with Logo Robotics. Use Logo to control the motors, switches, and lights in your robot constructions. Program automatic responses to changes in light, temperature, or motion as detected by sensors.

Extending control of the turtle on the screen to actual robots enhances the Logo learning environment of problem solving, science, math, and logic. Construction and animation of robots provides concrete, hands-on experience with goal-setting and achievement, cause and effect, estimation and measurement, and logical reasoning.

Robots are exciting for students of all ages and stimulate interest in the sciences and engineering. Students learn to analyze feedback, explore friction and motion, and experiment with design. Young students can experiment with construction, measure distances, and solve problems concretely and visually. Advanced students can design and program their own robots!



Introduce robotics with Terrapin's Introduction to Robotics Kit.

Use Logo to journey into the exciting world of robotics! The Introduction to Robotics uses Logo to control a real "turtle Includes everything you need: an interface to attach to your computer's parallel or serial port, a Fischertechnik mobile "turtle" kit, and a power supply.

Build the turtle, following the simple illustrated instructions. Attach it to the interface and connect that to the computer. Load the special Logo files and you're ready to control the turtle with simple keyboard commands!

Continue The Robotics Adventure with The Advanced Robot Lab.

The Advanced Robot Lab combines Logo with the Fischertechnik Experimenta kit to provide a complete laboratory for experimenting with robot and control technology.

The Experimenta kit contains hundreds of construction pieces along with motors, switches, lights, and photo transistors. You can build fifteen different computer-controlled models based on real world robot applications, including a traffic light, motor winch, turtle, freight lift, fan, washing machine, sorting machine, automatic door, robot arm, and aerial rotor.

This kit is especially designed to meet the needs of computer-supported technical education and combines the excitement of robotics with experience in how such machines work in the real world.

The Advanced Robot Lab includes everything you need to add this exciting and practical dimension to your Logo explorations plus 15 robots!.

Look for us on the web!
www.terrapinlogo.com

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Software and Books

Many of the items listed here are described elsewhere in this issue of Logo *Update*. Turn to the pages indicated for more information about these products.

Discount Prices

The Logo Foundation now offers commercial Logo software at below retail rates. The prices shown here reflect these discounts. Discounts are also available on lab packs and site licenses. Please contact us for current prices.

Even larger discounts apply when software is purchased by participants in Logo Foundation workshops and Summer Institutes, such as those described on the back page of this issue of Logo *Update*, and in conjunction with workshops we conduct in your school or district. Contact us for details.

Software:

MicroWorlds 2.0 (see page 9)

Macintosh	Windows95		
LSMWM	LSMWW95	Single Set	$ 89.00
LSLPMWM	LSLPMWW95	Lab pack of 6	$315.00
LSSLMWM	LSSLMWW95	Site License	$899.00

Logo PLUS for the Macintosh
(see page 4)

LSLP SingleCopy $89.00
Ask about discount prices for Site Licenses.

PC Logo 2 for Windows
(see page 11)

LSPCW2 SingleCopy $89.00
Ask about discount prices for Site Licenses.

Mach Turtles Logo 2.0
for Windows95 (see page 8)

LSMTW95 SingleCopy $45.00
Ask about discount prices for Lab Packs.

Roamer World
Windows only (see page 7)

LROAMW Single Copy $65.00

Robotics:

Roamer
Look at the description of this creature on page 7.
LROAM $279.00

Computer interface for use with Roamer World
LROAMI $45

Logo Robotics (see page 13)
for use with Logo PLUS on a Macintosh or PC Logo on a PC.

Introduction to Robotics
LIROBM (Macintosh) $339.00
LIROBPC (PC) $239.00

Advanced Robot Lab
LAROBM (Macintosh) $499.00
LAROBPC (PC) $399.00

Books:

The Turtle's Discovery Book
by Jim Muller
Turn to page 12 for a detailed description of this excellent Logo tutorial.

LB117 $29.95

Computer Science Logo Style *Second Edition*
by Brian Harvey
This classic has recently been rewritten and reorganized. It's a good companion to UCBLogo and MSWLogo.

Volume 1: Symbolic Computing
LB144 $35.00
Volume 2: Projects, Styles, and Techniques
LB145 $35.00
Volume 3: Beyond Programming
LB146 $35.00
The Complete Three Volume Set
LB143 $85.00

Visit the Logo Foundation Web site for the full list of available software and books.

http://el.www.media.mit.edu/logo-foundation/

Order Form

To place an order:

1. For each item you want, fill in the form below with:
   - the item code (it begins with L)
   - name or description of the item
   - the quantity you want
   - the price for the quantity you want
2. Add up the cost of all your stuff and enter it under sub-total.
3. Figure out the shipping and handling charge. Regular shipments are via UPS or US Postal Service.
   United States: 5% of the sub-total with a minimum charge of $5.00
   Canada and Mexico: 10% of the sub-total with a minimum charge of $10.00
   The rest of the World: Inquire before ordering, stating whether you want us to ship by air or by sea.
   Rush Orders: We can ship overnight or second day delivery. Inquire about costs before ordering.
4. Add the shipping and handling charge to the sub-total and enter that amount under TOTAL.
5. Please consider making a tax-deductible contribution to the Logo Foundation. Thanks.
6. In the "Send me" section below, check off the items that you want more information about.
7. Send this form with a check or school puchase order to:

Payment must be in US dollars.
Purchase orders and inquiries may be faxed.

Logo Foundation
250 West 85th Street
New York NY 10024
telephone: 212 579 8028
fax: 212 579 8013

http://el.www.media.mit.edu/logo-foundation/

Send me:

❑ Information about the 1998 Logo Summer Institutes.

❑ A free subscription to Logo *Update*

Place my order for:

item code	description	quantity	price
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		tax-deductible contribution to the Logo Foundation	
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The 1998 Logo Summer Institutes

Take some time this summer to focus on *your own learning*.

Summer at Spence

New York City, June 29 - July 2

The Spence School, an independent school for girls located in the heart of New York City just steps from Manhattan's Museum Mile, is a leader in educational technology. Join the Spence staff for four days of Logo exploration and creation.

Colorado Logo Institutes

Grand Junction, Colorado

Spend a relaxing week or two exploring and learning Logo in scenic western Colorado. The individualized approach of the Logo Summer Institute accommodates experienced Logo users as well as novices.

Logo Immersion **July 20 - 24**

Choose from among several strands including multimedia, turtle geometry, simulations, and game design. This year's theme is Logo on the Internet.

Logo Robotics **July 27 - 31**

Design and build cybernetic devices of all kinds and control them using Logo programs. Use the popular Control Lab™ from LEGO Dacta, the Programmable Brick, and PC Logo™ Robotics.

If you received this copy of *Logo Update* in the mail you probably have also received flyers with more detailed information about these Logo Summer Insitutes. If not, or if you need additional copies, contact us at:

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fax: 212 579 8013
email: michaelt@media.mit.edu

You will also find full information about the 1998 Logo Summer Institutes on the Logo Foundation Web site at:

`http://el.www.media.mit.edu/logo-foundation/`

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