Logo Update

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In this issue of Logo Update we look at two small countries that may very well have the highest per capita levels of Logo use in the world. In "Logo Down Under" Jeff Richardson reports on the history of Logo in Australia, where a grass-roots Logo culture has emerged in a way not unlike that in the United States, but with some unique twists.

In Costa Rica, Logo has followed a different path, reaching thousands of teachers and students through the organized efforts of the Programa Informática Educativa. In “Logo: An Excuse to Learn” Andrea Anfossi briefly discusses the philosophy and goals of the PIE and then offers us a glimpse of three Costa Rican students who made presentations to the hundreds of people attending the Seventh International Logo Congress in Brazil last November.

Logosium, the annual North American Logo congress, will be held in St. Paul, Minnesota on June 14. Come to Logosium and stay for the Logo Summer Institute the following week.

There's an unusually high level of Logo activity coming up this summer, with Logo Summer Institutes scheduled in Maine, New York, and California as well as in Minnesota. Information about these events may be found throughout this issue of Logo Update.

Finally, the Logo Foundation is now on the World Wide Web with articles from past issues of Logo Update; free papers about Logo related topics; information about software, books, video, and materials; and pointers to other Logo sites on the Web. Come visit at: http://el.www.media.mit.edu/groups/logo-foundation/

by Jeff Richardson

The history of Logo in Australia begins in 1974. Scott Brownell, a teacher from the island state of Tasmania brought a magnetic tape copy of Logo from MIT to Hobart, to run on a PDP-11 at the Tasmanian Education Department's computer center. He then recruited another Tasmanian teacher, Sandra Wills, and secured a rare and expensive robot turtle from The General Turtle Co. The ensuing project saw every school in Tasmania connected, with a teletype terminal, to the PDP-11. Sandra would load the turtle into the boot of her car and travel all over the island, moving from school to school. At each school children would hook up the turtle to their terminal and use their remote Logo to control it. It's quite astonishing to think that some of these children are now in their 30s!

This work led to two technical breakthroughs in global Logo history. With the arrival of the Apple, personal computers came to rule the earth and distributed computing went into hiding for 15 years. Richard Miller, of the University of Wollongong in New South Wales, wrote the first version of Logo to run on the Apple, specifically to drive the robot turtles in the Tasmanian project. In addition to collaborating with Richard, Sandra Wills had overseen the engineering of a small and relatively inexpensive floor turtle, the Tassie Turtle. The Tassie Turtle achieved a degree of accuracy and precision that had eluded similar research and development efforts in Edinburgh and elsewhere. And it could be run from a 5.25" floppy disk on an Apple.

Once Terrapin and LCSI Apple Logos became commercially available, Tony Adams of the Royal Melbourne Institute of Technology in Melbourne, Victoria, was quick to provide low level code procedures to enable both these versions of Logo to control the Tassie Turtle. When Seymour Papert visited Australia to speak at the Victorian Computer Education Conference in Melbourne in 1981 he was moved to tears when he found himself in a room surrounded by a swarm of buzzing, beeping robot turtles.

Seymour's visit built on the pioneering work of the Tasmanians to inspire a generation of Australian Logoists. Logo veterans still remember Seymour's dazzling demos using TI Sprite Logo, a version capable of degrees of parallel-

continues on the next page

The Tassie Turtle and friends
The next big leap forward for Logo in Australia did not come for another five years. During this time LogoWriter and LEGO TC Logo were previewed, then commercially released, to critical acclaim. Though successful, this success was limited, not by any limitation in these products themselves. On the contrary, they were too good. Here was the Logo idea so plainly expressed—an all-encompassing curriculum, the now ubiquitous "pages" years ahead of time—that to really use these Logos was only possible with an educational revolution. It was not forthcoming and it seemed that Logo had reached a high water mark. Also during this time, Peter Carter of the University of Adelaide, South Australia, kept the Logo community nourished and entertained with his quarterly newsletter POALL and his brilliant book Thinking Logo. Back issues of both are much sought after even today and are still well worth hunting down.

In 1989 a curious and uniquely Australian development began which was to be the strongest vector yet for the spread of Logo in Australia. Liddy Nevile, in conjunction with RMIT and the Australian Council for Educational Research began the Sunrise Project. The key element of this project was laptop computers. In the pilot schools where it began, Coombabah on the Gold Coast in South East Queensland and Methodist Ladies College in Melbourne, entire cohorts of children between years 5 and 7 were given laptop computers, one per child. And each machine was loaded only with LogoWriter. The entire curriculum was conducted and expressed by the children as LogoWriter projects.

As anyone in the Logo community might guess, it couldn't not succeed. The children did everything, geography, ancient history, biology, music... in LogoWriter projects. The imaginary of children with their personal laptops captured the imagination of both lay people and educationists nationwide. This popular success was almost inescapably technocentric. But this factor had an interesting twist. Schools that wanted to emulate the project (there had been scores and the number is still growing rapidly) tended to swallow the thing whole. The laptops were the shiny baubles that attracted the interest, but as nobody really knows what to do with computers in education, LogoWriter, and now MicroWorlds, became the default software for laptop initiatives all over the country.

This narrative is not complete without mentioning two of the strangest and most challenging Logo books ever written: Turtle Confusion and Turtles Speak Mathematics by Barry Newell, Director of the Mount Stromlo Astronomical Observatory in Canberra. They evoke Lewis Carroll and are still plenty of life in the plain old turtle.

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Logo: An Excuse to Learn
by Andrea Anfossi

In November 1995 three elementary school students from Costa Rica presented their work to the 800 people who attended the Seventh International Logo Congress in Porto Alegre Brazil. These children are part of the Programa Informática Educativa, a joint project of the Ministry of Public Education and the Omar Dengo Foundation.

For the PIE, the students' active, creative, autonomous, and critical participation has been the central focus and the reason for proposing different learning alternatives to the traditional approaches. The children are the "reason for being" of this program and they are the best indicators of the quality of our work.

We now have evidence suggesting that the training process, aimed at learning how to use the computer's potential in an intelligent way, has begun to bear fruit. Today, thousands of children and teachers have developed cognitive potentials that have enabled them to make computers "do" what their imagination and creativity leads them to build, as they are immersed in the learning process of a new technological language.

In this learning process, all the participants are important. To be consistent with the notion of educational change, the PIE is promoting the participation of youngsters in settings in which there is an interaction between different generations. We believe that teachers have a lot to learn from children's experiences. For that reason, we must open spaces for dialogue with the children on an equal basis. For many years the PIE has organized national and regional Children's Logo Conferences in Costa Rica, where students share their projects with other children and with adults. Our participation in the Logo Congress in Brazil extends this experience.

Two boys and a girl from three different public elementary schools faced the challenge of sharing the fruits of a cooperative project between advisors, teachers, and students with the people attending the Congress. Kemly Jimenez, an advisor for the PIE, and I had the opportunity to participate in this magical moment, which only a few years ago would have seemed impossible.

For the first time, the PIE was presented to an international audience, not through electronic printouts as evidence of our efforts in educational computing, but directly by a small group of representatives of that new school generation. From that experience, the children, Ana Maria, Carlos Fernando, and Fidias Emilio have said:

The week that we participated in the Conference in Brazil, I was filled with pride because we were representing practically all children from our country. In my case, there are many schools of the country participating in the project which I represented, the Electronic Magazine. My dream was to present the work that all of us had done and to do so in the best possible way. Participation in this Logo Conference in Brazil was really a very special experience for all of us. The three of us who attended the Conference had not known each other before. Soon a friendship started to grow among us, which I think is going to last. Sharing, if only for a week, was for us a long time to learn from one another and from all the people with whom we talked in Brazil. About the project, I must tell you that when we began, we did not know the tools which we were going to use and they seemed very impressive to us. We did know Logo, but we did not know email. We did not know how to use it. But then when we discovered how to do it we saw that it was something very useful and which helped us a lot. We saw that in spite of distance we could exchange ideas with others. As I said during the Conference in Brazil, Logo is like the sea, not one with fish, but with ideas, and we are ships that navigate in that sea. Keep up working with Logo and email.

Ana María Durán, age 12
Republic of France School, Taras

For me it was a really unforgettable experience. Thanks to it I was able to get to know many people and places. I was able to show the work of my six classmates, although they were not able to be present. They told me: We know you are going to represent us very well because you have been chosen from among the seven of us and you will make known what we are all able to do with our work.

Carlos Fernando Morales, age 10
Eugenio Corrales School, Paraíso

Something very inspiring for me about the Conference in Brazil was a speech by Seymour Papert, who was talking about a transformation that must be

* Informes del Proceso de Evaluación Cualitativa del PIE MEP-PFO,
Fundación Omar Dengo, San José, Costa Rica, 1994-1995

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Logo: An Excuse to Learn
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carried out in all schools. The teacher must not teach, but the teacher must learn with the students. We should change and use Logo so that we children learn how to learn. That is what I was thinking: "I wish all schools in the country used Logo." We hope that that will be achieved, with God's help. We met many people who also inspired me and I want to send them letters, to communicate with them. I made a great friendship even if only for a week, but we got to know each other and now I know many people and many other countries. I wish to thank everybody for giving me the privilege of being able to represent Costa Rica. I think we put our country's name in a good standing at the Conference. We were among the few children who attended, almost all of them were Brazilian. People congratulated us and we made a good impression. I learned lots more, so many things, but I will only tell you this much for now. Thank you very much.

Fidias Emilio Castro, age 11
12 of March School, Pérez Zeledón

This learning process and experience lived by three Costa Rican children at the International Logo Conference transcends the school and the educational computing lab. We are finishing the 20th century with an ambitious project, which proposes a renewed concept of what we mean by learning and education in a small Central American country. From among the many expressions verbalized by these children during this past week outside of Costa Rica, I chose one as the name this article. It is a reflection of what many of us feel, after sharing the children's thoughts and ideas. ▲

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Roamer is the ideal way to introduce Logo commands in your classroom. It brings Logo to life in a friendly and tangible way. Since Roamer has Logo already on-board, it's like having a computer dedicated to your Logo lessons. Children can touch, feel, and follow the Logo turtle as it moves about.

Roamer is designed to be sturdy, with few moving parts and a simple and friendly shape. It's easy to use - with a brightly colored touchpad featuring single key-stroke commands. Roamer is lightweight and robust. Roamer is battery-powered and offers you hours of Logo adventures - exploring, discovering and building.

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More About Logo and Hypermedia

Brian Harvey comments on the articles about Logo and hypermedia that appeared in the winter 1996 issue of Logo Update.

To the editor:

The debate between the MicroWorlds and the HyperLogo approaches to combining Logo with multimedia may be less a matter of educational philosophy and more one of inadequate technology. Like many other hotly debated issues in user interface design, this one was correctly settled in the Smalltalk system developed on the Alto computer by Alan Kay's research group at Xerox in the 1970s, and then forgotten. The crucial point is that virtually all of the Smalltalk system, including its user interface, was written in Smalltalk itself, and available for inspection or modification by the user.

There seem to be two points of contention. One is that in HyperStudio many desired behaviors are provided as primitives, rather than programmed in Logo using more basic primitives. So, for example, instead of using a primitive \texttt{FadeToBlack} capability, Michael Tempel would like to write a Logo procedure using \texttt{SetColor} and \texttt{Color} primitives. Suppose these primitives represented colors as three-element lists of red, green, and blue values; the Logo procedure might then be something like:

\begin{verbatim}
to FadeToBlack
  repeat 40 [SetColor map [? * 0.9] Color]
  SetColor [0 0 0]
end
\end{verbatim}

(I am making this up because I'm not an expert in either MicroWorlds or HyperLogo! In practice the program might be more complicated because the window being faded would include more than one color, so the program would have to ask each color separately to fade itself to black.)

The second point of contention is that in HyperStudio there is a menu of actions, whereas in MicroWorlds an action is chosen by typing a Logo instruction.

Both of these differences become negligible if the entire system is programmed in Logo. Imagine that the HyperStudio action menu is really a menu of names of Logo procedures, and that each such procedure can easily be inspected, perhaps by pushing some button while the mouse is on a menu item. Imagine further that MicroWorlds is supplied with a library of prewritten useful actions, such as \texttt{FadeToBlack}. The first point of contention is then eliminated; users can think of these actions as primitive, if one happens to fill the bill perfectly, or can modify them, if the default action isn't quite what's needed.

As for the second point, imagine that (in both systems) the program that displays the action choice window is itself written in Logo. Then MicroWorlds will come with a \texttt{ButtonActionChoiceWindow} procedure that provides a space for typing a Logo instruction, while HyperStudio will come with one that provides a large menu of canned choices. But a user of either product could modify this procedure to customize the system's behavior. Once the user isn't stuck with the system designer's choice, that choice isn't so important.

(I should add that I've chosen to describe the situation in Logo terms, but by this choice I'm somewhat misrepresenting the Smalltalk approach. Since Smalltalk is an object-oriented language, wherever I've used the word "modify" a Smalltalk programmer would actually not change the programs provided in the system, but would instead create a new variant that inherits most of its behavior from the system version, but has new procedures written for only those aspects of its behavior that the user wants to change. As a result, both the official system version and the user's modified version are available for anyone else to use.)

continues on page 8
The Logo Summer Institutes are intensive five-day workshops that provide for an immersion in Logo theory and practice. The individualized approach of the Logo Summer Institute accommodates experienced Logo users as well as novices. The three components of the Summer Institute are:

- **Logo lab**, where you have an opportunity to experiment and develop projects in one or more Logo-based computer learning environments. You learn skills and explore ideas while modeling activities that your students will do during the coming school year. Choose from among several strands including multimedia, turtle geometry, simulations, and game design.

- **Planning discussions**, organized by grade level and subject area, enable you to transfer your Summer Institute experience to the classroom.

- **Dialog groups** explore social, educational, and political issues raised by the technological transformation of school and the economy.

**Logo St. Paul**
Over the past 14 years the St. Paul Logo Project has provided a comprehensive professional development program for hundreds of elementary and secondary school teachers. A limited number of places are being set aside for people from outside the St. Paul Public Schools.

**Summer at Spence**
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  - personal use of a computer – one machine per participant;
  - use of a variety of Logo-based learning environments including MicroWorlds, Object Logo, StarLogo, Logo PLUS, UCBLogo, HyperStudio, PCLogo, and others;
  - follow-up workshops in November 1996 and March 1997, each a day and a half long.

- Big discounts on purchases of Logo software, books, and materials.

- St. Paul registrants may also receive three graduate quarter credits from Hamline University.

**Logo St. Paul**
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$126 for Hamline University credit

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When: June 24 - 28
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Tuition: $790 per person

Contact us for more information about Logo Summer Institutes and for registration materials. You may include your request on the order form on page 15. Also ask about organizing a Summer Institute at your school, and about other Logo workshop opportunities.

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If you are a teacher in the St. Paul Public Schools these registration procedures and fees do not apply to you. Instead, contact Ms. Geraldine Kozberg at 360 Colborne Street, 228-3631.

Attend Logosium '96 on June 14th and stay for Logo St. Paul the following week! (See page 16 for Logosium information.)
More About Logo and Hypermedia

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Why don't MicroWorlds and HyperStudio work like Smalltalk? Of course I can't speak for their designers, but I know two things that stand in the way of using the Smalltalk approach in software generally. First, the language compiler technology has to be very good to allow utility procedures written in Logo to be fast enough. Of all the current versions of Logo, probably only Object Logo has a good enough compiler. Second, corporate greed makes commercial software vendors reluctant to provide users with human-readable and human-modifiable versions of their programs; they want to keep their technology secret.

Brian Harvey
Department of Computer Science
University of California, Berkeley
bh@cs.berkeley.edu

* * *

Michael Tempel replies:

It's not that I want to write my own FadeToBlack procedure. I'm happy to use someone else's as long as it's written in a language I can understand so I can modify it if it isn't quite what I want. Having a library of procedures is also a good thing because it provides a body of Logo literature from which to learn.

Right now, no such library exists for MicroWorlds, but ironically it does for HyperStudio: the long and growing list of New Button Actions (NBAs). Users are encouraged to create their own NBAs and development tools are provided in the HyperStudio package. Unfortunately, the NBAs are written in C and the tools support C programmers rather than ordinary humans using Logo.

What is most interesting is that Brian is unaware that MicroWorlds is in fact the Smalltalk-like environment that he advocates. MicroWorlds is Logo written in Logo: The development system is itself a version of Logo. The entire user interface is controlled by Logo procedures. While this is no secret, LCSi provides no documentation or support for using this underlying Logo. Except for an occasional weird error message about "button-loop" you wouldn't know it exists.

So I think Brian's critique is valid. It would be great to muck around underneath MicroWorlds, but without LCSi's help we can't. MicroWorlds might as well be written in C.

Michael Tempel
Logo Foundation
New York City
michael@media.mit.edu

* * *

Mike Westerfield replies:

There's certainly a lot to be said for a recursively developed programming system, designed in itself and using source code that is available to any user. In a research environment, that's a real boon. In many ways, it's exactly what happened with C and UNIX, although the effort was not as well organized or carefully thought out as Smalltalk.

Yet Brian Harvey seems to dismiss an important point about HyperStudio. It is not a Logo language environment with multimedia commands. It is a multimedia word processor. It doesn't even need a scripting language to be a useful product, and in fact, early versions of HyperStudio were shipped without a scripting language.

Comparing HyperStudio and HyperLogo to Smalltalk is like comparing calculators to desktop computers: There is some overlap of purpose, but they are not the same thing. The appropriate model for HyperStudio is Microsoft Word, not Smalltalk. Both are editors, although one edits multimedia and the other edits text. Both have scripting languages that are not used for routine tasks, but are available when needed.

While a system such as the one Brian describes would no doubt be useful to many people, I doubt that the typical HyperStudio customer would give it a second glance. Just as someone who needs to write a letter uses Microsoft Word rather than Icon, someone who wants to develop a multimedia resume or classroom lesson will find HyperStudio easier to use than a Logo programing environment.

Brian and I share a lot of common interests. Like him, I would be inter-
Memories of Logo

The following message appeared recently on the UseNet newsgroup comp.lang.logo.

Article 2474 in comp.lang.logo:
From: kolean@gwis2.circ.gwu.edu (Kylie Elizabeth Olean)
Subject: Memories of Logo

Hi, I'm not a teacher, nor do I really have anything to do with Logo anymore. I saw this newsgroup, though, and couldn't help but subscribe. My first experience with computers was on an Apple IIe, using Logo. That turtle was the coolest thing when I was seven or eight. I read a post where someone said that Logo was too difficult for younger children to comprehend. I seriously disagree with that statement. I started learning Logo in second grade. It was what piqued my interest in computers.

I'm now working as a technical assistant in my university's computer resource center. I help people with problems they're having with computers. And I kind of owe it all to Logo. Of course, I probably would have eventually gotten interested in computers, even without it. I would have started later when I learned BASIC in jr. high. But I still have very fond memories of that turtle. And I just wanted to share that.

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From these carefully sequenced activities, students learn Logo. Crystal Logo, an easy-to-use version, can be run separately from the adventure, and its command names can be modified.

The Crystal Rain Forest is available as a single user version ($49.95), as a single version for school use with curriculum materials ($59.95), and as a building site license ($250.00).

PC version requires a 286 or better with VGA and a mouse.
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ObjectLogo™ for the Macintosh® - The Logo Language for All Ages!

Regarded by educators as the most powerful Logo on the market, ObjectLogo is now also one of the easiest Logo languages to learn and use. Thanks to the 180-page highly acclaimed tutorial, Logo for the Macintosh, by Harold & Amanda Abelson. Whether your interest is for home or school, give ObjectLogo a try. The Student Edition (includes the tutorial) is well-suited for the beginner. The Full Version (includes the tutorial and the Reference Manual) is for a more serious exploration of programming on the Macintosh. Lab Packs include both the tutorial and Reference Manual.

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Oops!
We forgot to mention one small thing...

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When You Are Really Serious About Logo...

Introducing PC Logo, a powerful new version of the Logo programming language designed for the IBM PC and compatibles. PC Logo is versatile and flexible, suitable for novice as well as experienced programmers. With more than 300 built-in commands, PC Logo supports all the functions you would expect from a full-featured Logo program.

New PC Logo features include:

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There's also a growing list of Logo materials, books and curriculum from educators and Logo experts. Low-cost multiple-workstation licensing available, too.

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Logo Update / Spring 1996
The Well-Tempered Turtle
An Introduction to Programming Using Logo

by Susan Anderson-Freed and Lisa J. Brown

The Well-Tempered Turtle is a new curriculum that uses Logo as a means of testing and exploring programming concepts. It emphasizes learning Logo applications and highlights Logo's unique programming power. Each chapter is independent and may be used in any order.

The Well-Tempered Turtle has been extensively field-tested in introductory college level computer science courses and is appropriate for students of high school and college age. By utilizing Logo to implement examples, The Well-Tempered Turtle has students quickly writing their own programs to explore computer science concepts. Students build on simple introductory programs to explore increasingly complex subjects, progressing for example from line drawings to fractals and bit-mapped graphics.

The Well-Tempered Turtle also provides a complete introduction to computer science covering such topics as data types, control structures, graphics, natural language processing, and music. Appendices provide supplementary information on the history of computers, mathematics and grammar.

Since The Well-Tempered Turtle contains more material than can be covered in a semester, an instructor can pick and choose the topics to emphasize. Each chapter's structured progression encourages students to learn at their own pace and pursue further exploration.

The Well-Tempered Turtle is written by Dr. Susan Anderson-Freed and Dr. Lisa J. Brown, Professors of Computer Science at Illinois Wesleyan University. Together they have more than 27 years’ experience teaching mathematics, programming and computer science. Their Logo courses are both highly demanding and in high demand among students at Illinois Wesleyan, and always fill immediately.

250 pages. $49.95

To order The Well-Tempered Turtle, please call 1-800-774-LOGO or fax 1-800-776-4610

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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 Software Prices
(Guaranteed through August 31, 1996)

The Logo Foundation 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 page 7, and in conjunction with workshops we conduct in your school or district. Contact us for details.

A few good Logo books:

Teaching With Logo
by Molly and Daniel Watt
This is a unique source book offering educators and parents a wealth of information about using Logo.

Headlight Stories
This is a collection of case studies written by the teachers of the Hennigan School in Boston, the site of Project Headlight, a joint effort with researchers at MIT. The detailed descriptions of classroom projects provide inspiration and information for Logo-using teachers everywhere.

The Well-Tempered Turtle
by Susan Anderson-Freed and Lisa J. Brown
Turn to page 13 for a detailed description of this comprehensive curriculum guide for high school and college students.

Computer Science Logo Style
by Brian Harvey
The best tutorial available for learning Logo.

Roamer
A free-range turtle that does not need to be attached to a computer. Look at the description of this creature on page 5.

Professional Development Services
The Logo Foundation offers a wide range of Logo learning opportunities from half-day workshops to five-day institutes and long-term professional development programs. We can come to your school or district, or your staff can attend activities such as the Summer Institutes described on page 7 of this issue of Logo Update.

Call, write, email, or use the form on the next page to request additional information.
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Purchase orders and inquiries may be faxed.

**Send me:**

- Information and registration materials for the Logo Summer Institutes:
  - Logo St. Paul
  - Summer at Spence

- Information about Logo Foundation Professional Development Services

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The third annual Logosium will be a day of Logo workshops, discussions, and presentations hosted by the world-renowned St. Paul Logo Project. Special features of this year’s Logosium will include hands-on workshops, sessions conducted by students, and a Robotics Pit.

- Myst and Microworlds
- Logo and Montessori
- Logo in High School
- Logo Animation Techniques
- Professional Development
- Keynote Speaker: Geraldine Kozberg, Founder and Director of the St. Paul Logo Project

General Admission: $55 for Adults $5 for Children
(Teachers and students in the St. Paul Public Schools will be admitted without charge. Register by contacting Geraldine Kozberg, 228 3631, or Jenny Croucher, 228 3625, at 360 Colborne Street.)

For additional information contact:
Marian Rosen & Michael Tempel
c/o Logo Foundation
250 West 57th Street, Suite 2228
New York, NY 10107-2228
Telephone: 212 765 4918
Fax: 212 765 4789
http://el.www.media.mit.edu/groups/logo-foundation/
mrosen@oui.com  michaelt@media.mit.edu

For registration and hotel information contact:
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Logosium is an NECC ’96 post-conference activity sponsored by the Logo Foundation, ISTE’s SIG Logo, and the St. Paul Public Schools.