

# Henri Picciotto

## Résumé

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..... [Math Education Consulting](#)



I have been involved in mathematics education since 1971, at every level from counting to calculus.

- I have been a [teacher](#), a math specialist, and a department chair.
- I have written many [books](#) and [articles](#), and edited the "Activities" department in *The Mathematics Teacher*.
- I am an authority on the use of [manipulatives](#) in secondary math education.
- I have spoken at [conferences](#), been a [consultant](#) to schools (hundreds of [workshops](#) and presentations), and served on advisory [boards](#) for various projects.

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I am also involved in [word puzzles](#), particularly cryptic crosswords.

For more information about me, see [below](#), and check out my [personal home page](#).

[Teaching](#)      [Publications](#)      [Consulting](#)      [Workshops](#)  
[Presentations](#)      [Boards](#)      [Associations](#)      [Education](#)

### **1985-present: Math education consultant and freelance curriculum developer.**

2007-2012: Director, Center for Innovative Teaching (based at the Urban School of San Francisco.) Organized dozens of summer workshops in multiple disciplines for the professional development of educators. From 2010 to 2012, the workshops were offered at an East Coast location as well as at Urban.

## Teaching

1981-2013: Mathematics Teacher, [The Urban School of San Francisco](#), grades 9-12

- Math Department Chair (until June 2011); mentoring and evaluation of new teachers.
- Introduced cooperative groups and hands-on labs; organized teacher collaboration; integrated manipulatives, graphing calculators, computers, and kinesthetics into math classes; led a continuous and thorough development of the math program, including substantial curriculum creation. Shared our program with countless visitors.
- Taught: Pre-Algebra through Calculus; Probability, Statistics; Logic; Math and Art; advanced electives (chaos theory, fractals, infinite sets, transformational geometry, the fourth

- dimension); programming in BASIC, Logo, Boxer, Scratch, BYOB; playwriting.
- Pioneered many principles and practices that were adopted throughout the school.
- Designed and repeatedly helped revise the school's block schedule; coordinated the school's accreditation self-study; explored online and blended courses.
- Retired in June 2013.

2006: Adjunct Professor, University of San Francisco

Taught the Mathematics Field Work course for undergraduates in the Dual Degree (math and education) program.

2001-2004: Mathematician, Lawrence Hall of Science (University of California, Berkeley)

Designing and teaching intensive inservice summer courses (with follow-up sessions during the school-year), as part of the State of California Mathematics Professional Development Institutes and the Bay Area Math Project. 2001: algebra. 2002: number theory, with Professor Ted Slaman. 2003: algebra, with Kim Seashore and Emiliano Gomez

1992: Visiting Instructor, Mathematics Education, North Carolina State University, Raleigh, NC

Course: Teaching Mathematics with Microcomputers.

1987-88: Master Teacher, University of California, Berkeley Gifted Program, School of Education

Grades 2-3: Measurement and Physical Science.

Grades 7-8: Probability and Statistics (using Boxer, a computer environment for education)

1981-83: Math/Science/Computer specialist, Lawrence Hall of Science (University of California, Berkeley)

Teaching hearing-impaired junior high school students; teaching Micronesian high-school students and teachers; teaching in a summer day camp; creating a planetarium show; inventing games and activities; writing teachers' guides.

1980-82: Math/Science/Computer specialist, Ecole Bilingue, grades 2-5 (East Bay French American School, Berkeley CA.)

Math enrichment; software development; astronomy; physical sciences; drama.

1971-80: Classroom teacher, Black Pine Circle School, grades 3-5; Math Specialist, grades K-6. (Berkeley, CA)

Self-contained classroom; team teaching; astronomy; physical sciences; drama; French. Math enrichment program; developing educational software.

## Publications ↑

### Books

([How to get some of them.](#))

Created the Algebra [Lab Gear](#), including *Lab Gear Activities for Algebra 1* (1995), *The Algebra Lab: Middle School* (1990), and *The Algebra Lab: High School* (1990), a manipulatives-based algebra curriculum (Creative Publications, Mountain View, CA, 1990). The Lab Gear has been imitated, but not equaled in mathematical depth or pedagogical savvy. The blocks are available from [Didax](#), along with updated versions of the original books: *Algebra Lab Gear: Basic Algebra* (2016, grades 6-9) and *Algebra Lab Gear: Algebra 1* (2016, grades 7-10).

Created the following works, for [math lessons through geometric puzzles](#) in grades K through 12: [Working with Pentominoes](#) (a book and e-book published by Didax in 2013); [SuperTangrams for Beginners](#)(1 and 2) (1987), *Pentomino Puzzles*(1986), *Pentomino Lessons*(1986), [Polyomino Lessons](#)(1986), *SuperTangram Activities*(1 and 2) (1986), *Pentomino Activities*(1984, all published

by Creative Publications), The Math Machine *Pentomino Puzzles*, and *Pentomino Pattern Cards* (1984, both from Ideal School Supplies).

Co-edited [National Puzzlers' League Cryptic Crosswords](#) (Random House, November 2005) with Joshua Kosman, and co-authored four puzzles therein.

Co-edited [Reframing Anti-Semitism](#) ([Jewish Voice for Peace](#), 2003) with Mitchell Plitnick, and wrote one of the essays therein.

Co-authored [Zome Geometry](#) (Key Curriculum Press, 2001, Emeryville, CA) with [George W. Hart](#). This is a book on polyhedra and much more, based on models built with [Zometool](#).

Wrote [Geometry Labs](#) a book of discussion-provoking activities for grades 8-11 (1999, Key Curriculum Press, Emeryville, CA). The book is available for free download on this site.

Co-authored, with Anita Wah, [Algebra: Themes, Tools, Concepts](#), a textbook (Creative Publications, Mountain View, CA, 1994). The book is available for free download on this site.

Co-authored *Energy*, a physics workbook for educationally handicapped teenagers, with Cary Sneider (1984, Janus Book Publishers, Hayward, CA.)

Seeking a publisher for [Look! Up in the Sky!](#) an introduction to the Solar System for grades 4 and up.

## Articles



"[Square-Sum Pair Partitions](#)", by Gordon Hamilton, Kiran S. Kedlaya, and Henri Picciotto (*College Mathematics Journal*, vol 46, No. 0, 2015). Winner of the 2016 George Pólya Award of the Mathematics Association of America.

### ["The Common Core High School Math Standards — a closer look"](#)

"[Why I Use Interactive Whiteboards](#)" (*The Mathematics Teacher*, November 2010.) An [earlier version](#) appeared on my [Math Education Blog](#).

"[A New Path to the Quadratic Formula](#)" (*The Mathematics Teacher*, February 2008).

"[Thoughts on the Art and Technique of Crossing Words](#)", by Georges Perec. An annotated translation, by Henri Picciotto and Arthur Schulman, *The Believer*, September 2006

"[Into the Domain of Shared Endeavor: Teacher Collaboration](#)" by Jonathan Howland and Henri Picciotto, *Independent School*, Spring 2003

"[Ceding the Survey: Depth vs. Breadth in Secondary Curriculum](#)", by Jonathan Howland and Henri Picciotto, *The Urban Community*, April 1999

"[The Turtle in the Age of the Mouse: Why I Still Teach Programming](#)" (*Proceedings: Inquiry-Based Geometry Throughout the Secondary Curriculum*. St. Olaf College, Northfield, MN 1997)

"[Iterating Linear Functions](#)", by Jonathan Choate and Henri Picciotto, (*The Mathematics Teacher*, February 1997)

"[Make These Designs](#)", a graphing calculator lesson on linear functions (*The Mathematics Teacher*, May 1996).

"[Operation Sense, Tool-Based Pedagogy, Curricular Breadth: A Proposal](#)", a chapter in *Employing Children's Natural Powers to Build Algebraic Reasoning in the Context of Elementary Mathematics*, James Kaput, editor (a book which apparently never came out).

Co-authored "[A new Algebra: Tools, Themes, Concepts](#)" with Anita Wah (*Journal of Mathematical Behavior*, v 12, #1, March 1993).

Co-authored "Learning About Sampling with [Boxer](#)" for the *Journal of Mathematical Behavior*, v 10, # 1 (1991). Wrote "Teacher-Created Educational Software: BASIC, Logo, Boxer" (Technical

Report E4, the Boxer Group, Graduate School of Education, University of California, Berkeley, 1989), which was excerpted in *Logo Exchange* (International Society for Technology in Education, Portland, OR, March 1990).

Wrote "Polyarcs", "Simultaneous Pentomino Rectangles", and "Tetratan Puzzles", three articles on my explorations of [geometric puzzles](#). All published in *World Game Review* (Special Issue on Polyforms, December 1989, Ellicott City, MD).

Wrote three brain-teasers for *Games* magazine (New York): "Math McPuzzle", "Colorist to the King" (April/May 1987), and "Small Change" (June/July 1987).

## Blogs

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[My Math Education Blog](#), where I write mini-essays, announce updates to [my Web site](#), and publicize [my workshops](#).

*Word Salad*, my blog with Joshua Kosman about our weekly [cryptic crossword](#) puzzle in *The Nation* magazine. (2012-2015)

## Other Media

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Wrote [Delving into Functions with Function Diagrams](#) for NCTM's online journal ON-Math (Volume 5, #1, 2006-2007).

Provided commentary on video for the Quadratic Equations unit of [Seeing Math](#), a joint project of the Concord Consortium and PBS.

Wrote [two units on algebra](#) for the [INTEC](#) on-line course for teachers.

Wrote three lessons on algebra as part of [Teaching Mathematics with Manipulatives](#), an in-service video course (University of South Carolina, Ed Dickey, editor.)

Created *Logo Math: Tools and Games*, a comprehensive computer environment to enhance the discovery-based learning of secondary school mathematics (Terrapin Software, Cambridge MA, 1990).

Conceived, designed, and programmed *Guesstimation*, a computer game to develop students' grasp of number line relationships for whole numbers, integers, decimals, and fractions. (E.M.E Corporation, Danbury, CT, 1987.)

Helped develop kits for the informal learning of physics and mathematics, as a member of the Games Project at Lawrence Hall of Science: *Rubber Bones*, *Bompers*, *Limbericks*, *Speed-O-Meter*. Wrote all accompanying text and teachers' manuals (1983.)

## Consulting

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([Math Education Consulting](#))

Chapin School, New York NY, starting in Fall 2015

Consultant and facilitator for in-depth two- or three-year K-12 math curriculum review (class visits, meetings, remote support, coaching, management of process)

San Francisco Day School, March 2017

"Trends in Math Education", presentation for parents

Ecole Bilingue, Berkeley CA, November 2016-February 2017

Coaching the middle school math teacher

"Trends in Math Education", presentation for parents

Curriculum advice

New Roads School, Santa Monica CA, January 2017

"Reaching the Full Range", and "Teacher Collaboration" workshop

## Classroom visits and meetings

Cupertino Union School District, August 2016

"Hands-On Geometry" two-day workshop for 8th grade Geometry teachers

Urban School of San Francisco Math Department, July 2016

"Proof in Transformational Geometry", one-day workshop

Morristown-Beard School, Morristown, NJ, November 2015

Presentation to 6-12 faculty: "Depth over Breadth"

Presentation to 6-12 faculty: "The Art of Teaching"

Consultant on high school curriculum revision

Norwood School, Bethesda MD, October 2015

"Pattern Blocks and Pentominoes", workshop for K-8 faculty

Mini-workshops:

- "Place Value and Egyptian numerals" (K-2)

- "McNuggets and Combining Operations" (3-4)

- "Mod Clocks and Other Function Machines" (5-8).

Winston School, Del Mar CA, September 2015

Introduction to the Lab Gear manipulatives for algebra (workshop for the whole faculty)

Friends Seminary, New York NY, January-June 2015

Transition to the longer period: meetings and workshops with the Math Department.

Workshops for broader faculty group: "The Art of Teaching", and "Depth vs. Breadth"

Morristown-Beard School, Morristown, NJ, January 2015

Professional Development days: Tool-rich Pedagogy and Student-Centered Teaching

Fremont Unified High School District, 2014-2015

(with Lew Douglas) Professional development on Transformational Geometry

Three workshops with all the geometry teachers in the district

South San Francisco USD, inservice workshops for Common Core readiness, October 2014

Proportional Relationships in middle school

Using GeoGebra in high school

The Bush School, Seattle, 2014

Consultant on revamping of the middle school math program.

San Francisco Math Circles, August 2014

Presentation: Developing a Problem-Solving Culture

Urban School, June 2014

Professional development: how to teach [Space](#) (post-Algebra 2 elective)

Blue Oak School, Napa, April 2014

Parent night, preceded by a meeting with teacher leaders

Fresno Unified School District, November 2013 to June 2014

Ten workshops on Common Core topics for middle school teachers, plus curriculum development

Wildwood School, Los Angeles, October 2013

Thorough audit of middle school and high school math program

Renaissance Charter School, Queens NY, September 2013

Inservice workshop for grades 7-12 math teachers, site visit

Pingry School, New Jersey, June 2013

Professional development days for the math department, to assist in transition to a one-to-one

laptop situation and a new longer-period schedule.

Blue Oak School, Napa, February 2013, Fall 2013

"Student-Centered Math", workshops and training for teachers of grades K-8.

Oxbow School, Napa, 2012-2013

Ongoing support / coaching for the math program.

College Prep School, Oakland CA, May 2012

Helping the math department move towards a collaborative model: meetings with the chair and facilitation of professional development days.

Athenian School, Danville, May 2012

"Teacher Collaboration", a presentation to the science department, to open a professional development day.

Synergy School, San Francisco, 2011-12

Assessment of the middle school math program and advice on next steps

Panel at Head-Royce School, Oakland CA, March 2010

"Teaching in the Long Period"

Presentations to the math department, and consultation with the instructional leadership at Chapin School, New York NY, February 2010

"Reimagining High School Mathematics"

"Nothing Works"

Demonstration lesson: "Polyomino Perimeter"

Chapin School, New York City (February 2010)

Envision Schools, Oakland CA (February 2008)

Presentation to the Little Red Elizabeth Irwin Math Department, New York NY, February 2010

Presentation to the Friends Seminary Math Department, New York NY, February 2010

"Reimagining High School Mathematics"

Presentation to the Peddie School Math Department, Hightstown NJ, January 2010

"Seeking Depth in Algebra 2"

Presentation to department chairs, Berkeley Carroll School, Brooklyn NY, Nov 2009

"Curricular Innovation: the Urban School Math Department"

Conversation with Calhoun Math Department, New York NY, November 2009

"Teaching math in the long period"

Consultant, Friends School, San Francisco

Advice on new middle school math program, March 2009.

Consultant, Redwood Day School, Oakland

Advice on new high school math program, November 2008.

Consultant and mentor (supporting teachers, providing advice and training on curriculum and pedagogy)

San Francisco Day School, 2005-2006

The San Francisco School, 2004-2006

Leadership Public Schools, San Francisco Bay area, 2003-2006

Synergy School, San Francisco, 2002-2004

Presentation for parent education: "Trends in Mathematics Education"

The San Francisco School, November 2005

San Francisco Day School, October 2005

Synergy School, San Francisco, November 2002

San Francisco Day School, December 2001



Sierra School Open Minds event, March 1995  
Urban School 25th Anniversary event, October 1994

Presentations: "Benefits and Trade-Offs of Block Scheduling" and "Depth over Breadth"  
Westridge School, Pasadena CA, October 2005

Consultant, Crowden School, Berkeley  
Analysis of math program, suggestions for change. April 2003.

Presentation: "[Teacher Collaboration](#)", with Jonathan Howland  
Woodside Priory School, Portola Valley CA, May 2003  
College Preparatory School, Oakland CA, April 2003

Consultant, Prospect-Sierra School, El Cerrito, CA  
Meeting with middle school algebra teacher on curriculum, November 2002.

Meeting with the Mathematics Department, as consultant on teacher collaboration  
College Preparatory School (Oakland, CA), November 2001

Two-day visit as consultant on "Benefits and Trade-Offs of Block Scheduling" and "Depth over Breadth", including presentations and many meetings.  
Concord Academy, (Concord, MA) April 2001

Three-day visit to provide a full evaluation of the math program  
Crystal Springs Upland School, Hillsborough, CA, October 2000 (The visiting team included Deborah Hughes Hallett and Emily Scheinman, and was led by Lew Douglas.)

Workshop: "Block scheduling: benefits and trade-offs"  
Northfield-Mount Hermon School, MA, April 2000

Guest speaker for Math Night: "[The McNuggets Problem](#)"  
Acalanes High School, Lafayette, CA, June 1998

Tele-workshop: "Mathematics in the block schedule"  
Beaver Country Day School, MA, October 1997

Math specialist and resource: training teachers; organizing math lab; coordinating curriculum; teaching demonstration lessons, running math inservice workshops. Yearly school-wide themes: Probability and Statistics; Geometry; Measurement.  
Sierra School, grades K-6, El Cerrito CA, 1985-1991

Probability curriculum unit review.  
Interactive Math Project (Lawrence Hall of Science, San Francisco State University) Summer 1989

Presentation to high school math department: "Cooperative Learning"  
University High School, San Francisco CA, June 1988

## Workshops

Workshop for high school students: "Archimedean Tilings and Polyhedra"  
Marin Academy, San Rafael CA, April 2017

Workshop: "Taxicab Geometry"  
AIM Math Teachers Circle, San Jose CA, April 2017  
AIM Math Teachers Circle, Palo Alto CA, April 2017

Workshop: "Proof in Transformational Geometry"  
Math for America, Blanding UT, April 2017

Workshop: "Geoboard Problems for Teachers"  
San Francisco Math Teachers Circle, March 2017



Workshops for grades 2-3 and 4-5: "Pentomino Puzzles"

Synapse School Math Circle, Menlo Park CA, December 2016

Workshop: "[Lab Gear](#): Manipulatives for Algebra"

Session for pre-service teachers, San Francisco State University, October 2016

Session for pre-service teachers, Santa Clara University, February 2009

Session for pre-service teachers, SF State University, November 2007

Half-day workshop, Castlemont High School, Oakland, May 2004

All-day workshop, Key Curriculum Press / UC Extension, San Diego, January 2003, April 2002

All-day workshop, Key Curriculum Press / UC Extension, Emeryville, January 2003, March 2002, March 2001

Half-day workshop, Klein Unified School District, TX, August 2000

Teacher Enhancement Workshop sessions, Lewes, DE, July 1995

Two-day course, Charlotte, NC, July 1994

Two-day course, Johnston, Iowa (organized by Heartland AEA) June 1994

All-day workshops in 7 North Carolina towns (sponsor: Math Science Education Network) June 1993

Training for Create A Vision consultants, January 1993

All-day workshops in Minneapolis, Denver (organized by Creative Publications, Mountain View, CA) Nov 1992

North Carolina Department of Public Instruction, Summer Algebra Institute, ten 2-hour workshops July 1992

All-day workshops in Seattle, LA, Chicago, Washington, Orlando, Houston (Creative Publications) June 1992

New Hanover Schools (Wilmington, NC) May 1992

Functions Research Group (UC Berkeley) March 1992

North Carolina State University, secondary math seminar (Raleigh) February 1992

Math Science Education Center (University of North Carolina, Chapel Hill) August 1991

Durham County Schools (Durham, NC) June 1991

Granger Junior High (National City, CA.) October 1990

Creative Publications consultants (Sunnyvale, CA) April, September 1990

Henry Hall Middle School (Larkspur, CA) September 1990

Mill Valley Middle School (Mill Valley, CA) April 1990

Marin Academy (San Rafael, CA) February 1990

Holy Names College, secondary math student teachers, November 1989

Summer Workshop: "No Limits!" (2 days)

At the Principia School, Saint Louis MO (July 2016)

Center for Innovative Teaching, Urban School of San Francisco (June 2014)

Chapin School, NY (August 2013)

Center for Innovative Teaching, Urban School of San Francisco (June 2011)

Center for Innovative Teaching, Urban School of San Francisco (August 2009)

Center for Innovative Teaching, Urban School of San Francisco (July-August 2007)

Summer Workshop: "Visual Algebra" (3-4 days)

At the Principia School, Saint Louis MO (July 2016)

At the Head-Royce School, Oakland CA (June 2016)

At the Carroll School, Waltham MA (August 2015)

At the Bush School, Seattle (August 2015)

Center for Innovative Teaching, Urban School of San Francisco (June 2013)

Center for Innovative Teaching, at Chapin School, NY (August 2012)

Center for Innovative Teaching, Urban School of San Francisco (July 2010)

Center for Innovative Teaching, at Flint Hill School, Oakton VA (June 2010)

Center for Innovative Teaching, Urban School of San Francisco (August 2009)



Center for Innovative Teaching, Urban School of San Francisco (August 2008)  
Center for Innovative Teaching, Urban School of San Francisco (July-August 2007)  
Center for Innovative Teaching, Urban School of San Francisco (August 2006)

Summer Workshop: "Making Sense in Algebra 2"  
At the Head-Royce School, Oakland CA (July 2016)

Workshop: "[Abstract Algebra](#)"  
American Institute for Mathematics Teacher Circle, San Jose, April 2016, June 2016

Workshop: "The Symmetries of Platonic and Archimedean Solids"  
American Institute for Mathematics Teacher Circle, Stanford, October 2015

Summer Workshop: "Hands-On Geometry" (2-4 days)  
At the Carroll School, Waltham MA (August 2015)  
Center for Innovative Teaching, Urban School of San Francisco (June 2014)  
Chapin School, NY (August 2013)  
Center for Innovative Teaching, Urban School of San Francisco (June 2012)  
Center for Innovative Teaching, at Flint Hill School, Oakton VA (August 2011)  
Center for Innovative Teaching, Urban School of San Francisco (July 2010)  
Center for Innovative Teaching, Urban School of San Francisco (August 2008)

Summer Workshop: "Transformational Geometry"  
At the Bush School, Seattle (August 2015)  
Bay Area Math Project, Cupertino CA (August 2014)  
-- co-presenter with Lew Douglas  
Math for America Summer Workshop, Midway UT, July-August 2014  
-- co-presenter with Prof. Emina Alibegovic  
Center for Innovative Teaching, Urban School of San Francisco (June 2014)  
Bay Area Math Project, Napa CA (June 2014)  
-- co-presenter with Lew Douglas and Emiliano Gomez  
Bay Area Math Project, Albany CA (June 2013)  
-- co-presenter with Lew Douglas and Patrick Callahan

Workshop: "The Mathematics of Pattern Blocks"  
American Institute for Mathematics Teacher Circle, San Jose, March 2015

Summer Workshop: "GeoGebra for Teachers" (1 day)  
Center for Innovative Teaching, Urban School of San Francisco (June 2014)

Workshop: "Connecting the Dots: Geoboard Area"  
University of San Francisco Mathematics undergraduates symposium, April 2014  
American Institute for Mathematics Teacher Circle, Palo Alto, February 2014

[Three Paths to the Quadratic Formula](#)  
Math for America Utah Fall Workshop (October 2013)  
(Center for Science and Mathematics Education at the University of Utah)

Summer Workshop: "Reimagining High School Math" (2 days)  
Center for Innovative Teaching, Urban School of San Francisco (June 2013)  
Center for Innovative Teaching, at Chapin School, NY (August 2012)

Workshop: "[Function Diagrams](#)"  
American Institute for Mathematics Teacher Circle, Palo Alto, March 2013  
Bay Area Circle for Teachers, Oakland, January 2013

Workshop for preservice teachers: "[Infinity](#)"  
School of Education, University of California Berkeley (February 2013)

Workshop: "Computer Programming and Math with BYOB/SNAP"

Bay Area Professional Development Outreach Group (affiliated with the Park City Mathematics Institute), Palo Alto, February 2013

Workshop for pre-service teachers: "Geoboard Lessons / Everything I know"  
School of Education, Sonoma State University (December 2012)

Three sessions: "[Staircases](#)", "[Nothing Works](#)", "[Pattern Block Trains](#)"  
Math for America Utah Fall Workshop (October 2012)  
(Center for Science and Mathematics Education at the University of Utah)

Workshop: "[Pattern Block Trains](#)" and "[The McNuggets Problem](#)"  
San Francisco Math Circle (May 2012)

Workshop for preservice teachers: "The Pythagorean Geoboard"  
School of Education, University of California Berkeley (April 2012)

Workshop for preservice teachers: "Everything I know"  
School of Education, University of California Berkeley (December 2011)

Workshop, Math for America, New York City, November 2009 (1 day)  
Go 3D with Zome  
The Pythagorean Geoboard

Summer Workshop: "Tool-based Algebra"  
Bishop O'Dowd School, Oakland CA (July 2008)

Afternoon Workshops: "Tool-based Algebra"  
Skyline High School, Oakland CA (April-May 2008)

Presentations: "[Three Paths to the Quadratic Formula](#)" and "Proof in High School Math"  
Bay Area Professional Development Outreach Group (affiliated with the Park City Mathematics Institute), Palo Alto, January 2007

Workshop: Incorporating the Geoboard in a Geometry Course  
Gann Academy (New Jewish High School) Math Department, Waltham MA, May 2004

All-day workshop: "Manipulatives in Secondary School"  
Key Curriculum Press / UC Extension, Emeryville, January 2004

Mathematician, California Mathematics Professional Development Institute, Delano, CA  
Four-day algebra institute, June 2003; one-day follow-up, October 2003

Workshop: "Geometry Labs"  
All-day workshop, Key Curriculum Press / UC Extension, San Diego, March 2003, January 2002  
All-day workshop, Key Curriculum Press / UC Extension, Emeryville, February 2003, January 2002, January 2001  
Lawton, Oklahoma Public Schools (Create A Vision, Mountain View, CA) May 1995

Workshop: "Signed Number Arithmetic -- In Depth"  
Guest presenter, Lawrence Hall of Science Mathematics Professional Development Initiative in Algebra, (Berkeley, CA) March 2001

Workshop: "Objects to think with: hands-on mathematics"  
Boston, MA, Museum of Science staff, April 2000

Field expert for the [INTEC](#) on-line course on teaching algebra with manipulatives, 1998/99.

Three-day workshops, and two-week summer institutes: "A New Algebra"  
New Orleans Public Schools June-July 1997, January 1998, June-July 1998

Workshop: "Fonctions Affines sur la TI-92" ("Linear Functions on the TI-92")  
Université d'été, Université Joseph Fourier, Grenoble, France, July 1996

### All-day workshops: "A New Algebra"

Acalanes Unified School District, August 1995

Creative Publications-sponsored workshop for Haddonfield, NJ teachers, July 1995

Alief, Texas schools, July 1995

Connecticut Department of Education April 1994

Create A Vision seminars (Montclair NJ; San Francisco, CA) July 1993

### Workshop: "Functions"

Teacher Enhancement Workshop sessions, Lewes, DE, July 1995

Two-day course, Charlotte NC, July 1995

Acalanes Unified School District, August 1994

### Workshops: "Trends in Mathematics Education"

Westridge School, Pasadena, CA, November 1993

Acalanes Unified School District, September 1993

### Workshops: "Manipulatives in Secondary Math"

DesMoines, Iowa, Independent Community School District. August, September 1993

San Francisco Education Fund, January, March 1991

San Francisco Unified School District, April, Dec 1990

San Lorenzo Unified School District, March 1990

### Workshop for K-8 Teachers: "Geometric Puzzles"

University of North Carolina (Chapel Hill, NC.) March 1992

Durham Arts Council, NC, November 1991

San Bruno USD, CA February 1988

### Workshop series: "Manipulatives in Junior High School"

King Junior High, Berkeley CA, January-March 1991

### One-week Institute: "Manipulatives, Computers, Discovery in Secondary Math" August 1990

Lecture in Summer Institute for K-8 teachers: "Geometric Puzzles" August 1987

Demonstration Lesson, grades 3-6: "Inventing Puzzles" February 1986

Nueva Learning Center, Hillsborough CA

### Workshop: "Logo Math: Tools and Games"

University of California, Berkeley, secondary math student teachers March 1990

The Boxer Group, UC Berkeley School of Education, May 1989

### Workshop: "Creativity"

JFK University, Orinda, CA March 1990

### Demonstration lessons and workshops: "Tangrams", "Polyominoes", "Pentominoes"

Orinda Unified School District, CA, Spring 1988

### Workshops: "Geometric Puzzles", "The California Mathematics Framework", "Computer Tools in Secondary Math"

Demonstration lessons on geometric puzzles in grades 1-8.

Maumee Valley Country Day School, grades K-12, Toledo OH, October 1987

### Demonstration lesson: "Geoboards and SuperTangrams"

Pennycook School, Vallejo Unified School District, 5th grade June 1987

### "Cooperation, Logo and Other Escapes from Tradition"

Woodrow Wilson Institute Workshop (College Preparatory School, Oakland CA.) June 1987

## Presentations at Professional Conferences



"Time Pressure: Bad for Students, Bad for Teachers" (Ignite!)

California Math Council, Northern Section, Asilomar, December 2016

- "Computing Transformations with Complex Numbers and Matrices"  
California Math Council, Northern Section, Asilomar, December 2016
- "A Deep Dive into Transformational Proof" (with Lew Douglas)  
California Math Council, Northern Section, Asilomar, December 2016
- "Reaching the Full Range"  
Global Math Department Webinar, November 2016  
Seminar at UC Berkeley's School of Education, October 2015
- "Equivalent Expressions with the [Lab Gear](#)"  
National Council of Teachers of Math, Regional Meeting, Phoenix, October 2016  
National Council of Teachers of Math, Annual Meeting, San Francisco, April 2016  
California Math Council, Northern Section, Asilomar, December 2015  
East Bay Charter Connect, October 2014
- "Common Core: We Need to Talk!"  
Twitter Math Camp, Minneapolis MN, July 2016
- "Advanced Transformations"  
Three two-hour workshops  
Twitter Math Camp, Minneapolis MN, July 2016
- "[The Two-Color Theorem](#)"  
Math Corner, NCTM Central, NCTM Annual Meeting, San Francisco, April 2016  
Math Teacher Circles Cove, NCTM Annual Meeting, San Francisco, April 2016
- "[Function Diagrams: A Visual Tool for Secondary Math](#)"  
California Math Council, Northern Section, Asilomar, December 2013
- "The Common Core: A closer look"
- "Re-Imagining High School Math: More Access, More Challenge"  
Nueva Innovative Learning Conference, Hillsborough CA, October 2013
- "Connecting the Dots: Geoboards and Dot Paper"  
EBCC Charter School Symposium, Oakland CA, October 2013
- "Strengthening Math Departments" (with Laura Hawkins)  
California Association of Independent Schools, Oakland CA, March 2013
- "Scaling Pentominoes"  
Workshop for grades K-8 teachers, Bay Area Math Project, Berkeley CA, June 2012
- "Staircases"  
Workshop for grades 6-12 teachers, Bay Area Math Project, Berkeley CA, June 2012
- "[Seeking Depth in Algebra 2](#)"  
Presentation at NCTM's Summer Institute on Reasoning and Sense Making, Orlando, August 2011  
Minicourse, with Naoko Akiyama, National Council of Teachers of Mathematics, San Antonio, April 2003  
Minicourse, with Naoko Akiyama and Scott Nelson, California Math Council, Southern Section, Palm Springs, November 2001
- [Kindergarten Toys in High School](#)  
TEDxSFED event, Urban School, San Francisco, April 2011
- [Escape from the Textbook!](#)  
Math 2.0 Interest Group, online presentation, March 2011  
California Association of Independent Schools, Oakland CA, March 2011 (with Liz Caffrey)  
California Math Council, Northern Section, Asilomar, December 2010 (with Carlos Cabana)

California Math Council, Southern Section, Palm Springs, November 2010

Panel: "Disciplinary Learning at the Urban School"

Independent Curriculum Group conference, New York City, January 2011

### [The Geometry of Conic Sections](#)

California Association of Independent Schools, North Hollywood, CA March 2010

California Math Council, Northern Section, Asilomar, December 2009

### [Space: an Alternate Elective after Algebra 2](#)

California Association of Independent Schools, North Hollywood, CA March 2010

National Council of Teachers of Mathematics, Annual Meeting, Washington DC, April 2009

California Association of Independent Schools, Oakland, CA, March 2009

California Math Council, Northern Section, Asilomar, December 2007

Panel: "How Schools Foster Innovative Teaching."

Independent Curriculum Group conference, Philadelphia, January 2010

Independent Curriculum Group conference, New York City, January 2010

Reimagining High School Math

Panel, Independent Curriculum Group conference, Philadelphia, January 2010

Presentation, Independent Curriculum Group conference, New York, January 2010

Panel: "Veteran Teachers Reflect"

Presentation: "[Math: Visual and Interactive!](#)"

Center for Innovative Teaching Tech Symposium, Urban School of San Francisco, August 2008, 2009

Laptop Institute, Lausanne Collegiate School, Memphis TN, July 2007

### [Teacher collaboration: a key to improving math instruction](#)

California Math Council, Northern Section, Asilomar, December 2008

### [Geometric Transformations and Symmetry](#)

Bay Area Math Project, Albany CA, May 2008

### [Serving Our Strongest Students](#)

Keynote address, California Association of Independent Schools Mathematics Day, Oakland CA, March 2008

### [Nothing Works! The Art of Teaching Mathematics](#)

Mathematical Association of America, Intermountain Section, Provo UT, March 2008

California Association of Independent Schools, Atherton, CA, March 2007

California Association of Independent Schools, North Hollywood, CA, March 2006

California Math Council, Northern Section, Asilomar, December 2005

### [Infinity: an Alternate Elective after Algebra 2](#)

California Association of Independent Schools, Atherton, CA, March 2007

California Math Council, Northern Section, Asilomar, December 2006

### [Three Paths to the Quadratic Formula](#)

California Association of Independent Schools, North Hollywood, CA, March 2006

National Council of Teachers of Mathematics, Annual Meeting, Anaheim, CA, April 2005

California Association of Independent Schools, Northern Regional Meeting, March 2005

California Math Council, Northern Section, Asilomar, December 2003 (major speaker)

Small group problem-solving session for middle school teachers

California Association of Independent Schools, Northern Region Math Day, Palo Alto CA, March 2004, as support for Prof. Andrew Bernoff

### ["Go 3D with the Zome System!"](#)

Bay Area Math Project, Berkeley CA, April 2003

Minicourse, National Council of Teachers of Mathematics, Annual Meeting, Las Vegas, April 2002

National Council of Teachers of Mathematics, Annual Meeting, Orlando, April 2001

Northwest Mathematics Conference, Victoria BC, October 2000

California Math Council, Northern Section, Asilomar, December 1999

"Teacher Collaboration", with Jonathan Howland

California Association of Independent Schools, Northern Region, March 2003

National Association of Independent Schools, San Francisco, February 2002

"Algebra: What? When?", a roundtable discussion

California Association of Independent Schools, Northern Region, March 2003

"Lessons in Teachers' Mathematics"

California Math Council, Northern Section, Asilomar, December 2002

"Symbol Sense: Deep Algebra for All", with Scott Nelson

California Math Council, Northern Section, Asilomar, December 2002

"Building Visual Foundations for Calculus", with Richard Lautze

California Math Council, Northern Section, Asilomar, December 2001

"Le diagramme-fonction et la géométrie dynamique" ([Function Diagrams and Dynamic Geometry](#))

Cabri World Conference, Montreal, June 2001

"The Circle-Trig Geoboard", with Richard Lautze

California Association of Independent Schools, Northern Region, March 2001

California Math Council, Northern Section, Asilomar, December 2000

"Teaching About Functions"

Bay Area Math Project, Albany, CA, January 2001

Middle Grades Symposium, California Math Project, San Diego, CA, April 1995

Mini-Course, NCTM Annual Meeting, Boston, April 1995

Middle Grades Symposium, Bay Area Math Project, San Francisco, CA, March 1995

Mini-Course, Colorado Council of Teachers of Mathematics, Denver, October 1994

California Math Council, Northern Section, Asilomar, December 1993

California Math Council, Southern Section, Palm Springs, November 1993

"Geometry Labs"

Council of Math/Science Educators of San Mateo County, Redwood City, CA, March 2000

National Council of Teachers of Mathematics, Annual Meeting, San Francisco, April 1999

Mini-Course, National Council of Teachers of Mathematics, Western Region, San Jose, March 1997

Middle Grades Symposium, Bay Area Math Project, San Mateo, CA, February 1997

California Math Council, Northern Section, Asilomar, December 1995

California Association of Independent Schools, Northern Region, March 1995

"Geometric Puzzles"

California Association of Independent Schools, Southern Region, March 2000

California Association of Independent Schools, Northern Region, March 1999

National Council of Teachers of Mathematics, Western Region, February 1989

California Math Council, Central Section, Fresno, October 1988

California Math Council, Northern Section, Asilomar, December 1987

California Association of Independent Schools, Math Day, Hillsborough, March 1986

"Depth Over Breadth in the Secondary Curriculum", with Jonathan Howland

California Association of Independent Schools, Northern Region, March 1999

National Association of Independent Schools, Dallas TX, February 1999

"Strategy and Tactics of Reform"



California Math Council, Northern Section, Asilomar, December 1998  
Closing address, Illinois Council of Teachers of Math, October 1997

"How to design rich activities; how to make them pay off"

California Math Council, Southern Section, Palm Springs, November 1997  
National Council of Teachers of Mathematics, Annual Meeting, Minneapolis, April 1997

[" The Turtle in the Age of the Mouse: Why I Still Teach Programming"](#)

St. Olaf/NSF Geometry Conference, June 1997

"Lab Gear: Manipulatives for Algebra"

Workshop, Conference for the Advancement of Mathematics Teaching, Houston, TX, July 1997

Mini-Course, National Council of Teachers of Mathematics, Southern Region, Atlanta, February 1997

Mini-course, Association of Teachers of Mathematics in New Jersey , October 1995

Middle Grades Symposium, Bay Area Math Project, San Diego, CA, April 1995

Middle Grades Symposium, Bay Area Math Project, San Francisco, CA, March 1995

National Council of Teachers of Mathematics, Eastern Region, Pittsburgh, PA, October 1993

California Math Council, Northern Section, Asilomar, December 1992

North Carolina Council of Teachers of Mathematics, Raleigh, NC, October 1992

National Council of Teachers of Mathematics, Annual Meeting, Nashville, April 1992

National Council of Teachers of Mathematics, North East Region, New Hampshire, Nov 1991

California Math Council, Southern Section, Palm Springs, November 1990, 1991

National Council of Teachers of Mathematics, Southwestern Region, New Mexico, Nov 1991

National Council of Teachers of Mathematics, Central Region, Kentucky, October 1991

NCCTM, SCCTM, Carolinas Math Conference, Charlotte, North Carolina, October 1991

Conference for the Advancement of Mathematics Teaching, Texas, August 1991

California Association of Independent Schools, Northern Section, March 1991

National Council of Teachers of Mathematics, Central Region, Indiana, March 1991

National Council of Teachers of Mathematics, Western Region, California, Feb 1991

Santa Clara Valley Mathematics Association, Santa Clara, January 1991

California Math Council, Northern Section, Asilomar, December 1990

California Math Council, Central Section, Fresno, October 1990

Colorado Council of Teachers of Mathematics, Denver, October 1990

National Council of Teachers of Mathematics, Western Region, Hawaii, July 1990

"Do manipulatives really help children learn mathematics?"

Panel discussion, National Council of Teachers of Mathematics, Annual Meeting, Minneapolis, April 1997

"Graphing calculator activities for algebra"

California Math Council, Northern Section, Asilomar, December 1996

California Association of Independent Schools, Northern Region, March 1995

"Operations"

National Council of Teachers of Mathematics, Annual Meeting, San Diego, CA, April 1996

California Math Council, Southern Section, Palm Springs, November 1995

"Avoiding Backlash: Teaching to All Levels"

Supervisors' Breakfast, Association of Teachers of Math of New Jersey, October 1995

"A New Algebra"

Keynote speech, Association of Teachers of Math of New Jersey, Trenton, May 1995

Mini-Course, NCTM Annual Meeting, Indianapolis, April 1994

California Association of Independent Schools, Northern Region, March 1993

National Council of Teachers of Mathematics, Central Region, Minneapolis, November 1992  
National Council of Teachers of Mathematics, North East, Hartford, CT, October 1992  
California Math Council, Northern Section, Asilomar, December 1991, 1994  
California Math Council, Southern Section, Palm Springs, November 1991, 1994

"Learning New Things in New Ways with a Computational Medium: Boxer", with Dr. Andrea diSessa

National Educational Computing Conference, Baltimore, June 1995

"Concrete and abstract algebra with children"

Early Algebra Conference, Center for Research in Mathematical Sciences Education, Madison, WI, June 1994

"Iterating Functions"

National Council of Teachers of Mathematics, Western Region, San Francisco, February 1994  
California Math Council, Northern Section, Asilomar, December 1992

"Square Roots: A Tool-Based Approach"

National Council of Teachers of Mathematics, Annual Meeting, Seattle, WA, April 1993  
Council of Math/Science Educators of San Mateo County, Redwood City, CA, March 1993

"Logo Tools and Games in Secondary Mathematics"

National Council of Teachers of Mathematics, Annual Meeting, New Orleans, April 1991  
California Association of Independent Schools, Computer Day, San Francisco, March 1990  
Hands On Technology Conference, Los Angeles, February 1989

"Mathematical Modeling and Probability/Statistics: a new course after Algebra 2"

Santa Clara Valley Mathematics Association, Santa Clara, September 1990  
National Council of Teachers of Mathematics, Annual Meeting, Salt Lake City, April 1990  
California Math Council, Northern Section, Asilomar, December 1989  
California Association of Independent Schools, Northern California Conference, 1989

"A Teacher's Perspective of Boxer"

American Educational Research Association, Annual Meeting, San Francisco, 1989

"Pentominoes"

National Council of Teachers of Mathematics, Annual Meeting, Anaheim, CA, 1987  
California Math Council, Northern Section, Asilomar, December 1984, 1985

"Cryptic Crosswords"

California Association of Independent Schools, Northern California Conference, 1985

## Boards

Bay Area Math Project

Lawrence Hall of Science, University of California, Berkeley  
Member of the Advisory Board

Problems with a Point

A project of the Educational Development Corporation, Boston  
Member of the Advisory Board

## Professional Associations

San Francisco Math Teachers' Circle

Member of the organizing team

#MTBoS (Math Twitter Blogosphere)

Online math teachers community

Banff International Research Station for Mathematical Innovation and Discovery

-- mathematicians and educators invitational meetings

"K-12 Sequences", Banff AB, March 2015

"K-12 Unsolved", Banff AB, November 2013

Founder and coordinator: [Escape from the Textbook!](#)

A sharing and collaboration network for math teachers who want to escape from the textbook for a day, a unit, or a whole course. (Online community with hundreds of members, quarterly gatherings in the Bay Area -- now dormant.)

Organized a conference, (February 2011,) featuring Jo Boaler (Stanford) and Paul Zeitz (USF).

California Association of Independent Schools ([CAIS](#))

Faculty member, Retreat for Experienced Teachers ("The Classroom and Beyond"), 2007-2013.

Faculty member, Retreat for Beginning Teachers (Secondary), yearly, 1991-2005. (Chair of the RBT faculty, 1997-2005.) Master Teacher workshop on teaching math; sessions on the challenges of first year teaching, on the special challenges of working in independent schools, on general pedagogical techniques, and in general on the teaching profession.

Organized a professional development conference for math teachers in grades 3-12: *Escape from the Textbook!* in March 1988, and the secondary mathematics component of an Association-wide conference in April 1989.

Math representative, Academic Services Committee, 1987-1989

Member of accreditation visiting team for WASC (Western Association of Schools and Colleges)

Bentley School, Lafayette CA, February 2005

Midland School, Los Olivos CA, March 2004

National Council of Teachers of Mathematics ([NCTM](#))

Occasional reviewer for *The Mathematics Teacher* and *Journal for Research in Mathematics Education*

Editor of the "Activities" column in *The Mathematics Teacher* (1995-97)

Council for Technology in Mathematics Education (CLIME)

California Math Council (CMC)

## Education ↑

Secondary: French Baccalaureate (Mathematics), 1966

Undergraduate: Centre d'Etudes Mathématiques, Beirut, Lebanon

American University of Beirut

Princeton University

University of California (Berkeley)

B.A. (Mathematics): U.C.B., 1970

M.A. (Mathematics): U.C.B., 1972

Math Specialist Training: Community Teaching Fellowship, U.C.B., 1971

California Teaching Credential: Standard Elementary, grades K-8 / St-Mary's College, Moraga, CA, 1975-6

## Other Interests ↑

### Word Puzzles

Co-constructor, with Joshua Kosman, of a weekly cryptic crossword for [The Nation](#), since June

2011. The puzzles are collected, 20 puzzles at a time, in e-books for iOS, available from [Puzzazz](#). [Cryptic All-Stars](#) published the first sixty in a hard-copy book.

Co-author, with Joshua Kosman, of the *Word Salad* cryptic crossword blog on *The Nation* Web site (2012-2015.)

Member, as [Hot](#), of the [National Puzzlers' League](#) (NPL), since 1985.

Cryptic crosswords co-editor for [The Enigma](#) (the NPL's monthly newsletter), from 1995 to 2011.

Co-editor, with Joshua Kosman, of [National Puzzlers' League Cryptic Crosswords](#) (Random House, November 2005)

Picture puzzle editor for *The Enigma*, 1999-2002

Vice-President, 1989.

Since 1987: with Rebecca W. Kornbluh, co-constructor of an ongoing series of variety [cryptic crosswords](#), published in *Cryptic Crosswords Allstars vol. 2*, *The Enigma*, *Dell PuzzleSpectacular* (New York, NY, Emily Cox and Henry Rathvon, editors), *Tough Puzzles*, and *Tough Cryptics* (Stan Newman, editor, Long Island, NY). Some of these have been reprinted in *Random House Cryptic Crosswords*, Volumes 1 and 2 (1994, 1995) and *National Puzzlers' League Cryptic Crosswords*. For twenty years (1988-2007), contributed a puzzle a year to the NPL convention.

Collaborated with poet Alec Finlay on a book project: *Home to a King*. (The book never came out, but we created dozens of hidden word clues for trees.)

Founder, Eskymo Jose

Berkeley word puzzlers club: semi-annual Equinox Word Games parties since 1985; near-weekly team solving of cryptic crosswords since 1982.

Created many party games for word aficionados, some of which were published in *Super Party Games* (by John Chaneski, Sterling Publishing Co, 1999)

Made a presentation in English about Italian-language "classical puzzling" (enigmistica classica) to the 160th Convention of the National Puzzlers' League, in Big Sky, Montana in July 1999. It was published in *The Enigma*, August 1999.

Made a presentation in Italian about English-language cryptic crosswords to the joint meeting of the 58th National Congress of Classical Puzzling and the 20th Convention of the Italian Rebus Association, in Verona, Italy, in June 1999: [I cruciverba enigmistici](#).

From October 1997 to March 1998, co-author with Joshua Kosman of "Word Salad", a monthly series of narrative word puzzles for *San Francisco* magazine.

Constructed "On the Table", a cryptic crossword, for *Word Ways*, the Journal of Recreational Linguistics, November 1986 (Morristown, NJ).

## Theater

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Co-authored *Seeing Double, A Middle Eastern Comedy of Error* with Joan Holden and the [San Francisco Mime Troupe](#) (1989). (*New York Times* [review](#).)

Co-authored the *Factwinoplays*, with Joan Holden and the San Francisco Mime Troupe. Wrote "Comics on the Stage," an essay. (All published in *West Coast Plays 15/16*, California Theatre Council, Los Angeles, CA, 1983.)

Drama critic for *Artbeat* ("San Francisco's Independent Arts Newspaper"), 1980-1983.

Hundreds of political street theater performances (founder and leader of the SDS Radical Arts Troupe on several campuses, 1967-71, and Beast Street Theater in Berkeley, 1972-75.)

## Miscellaneous

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Native speaker of French.

Hobbies: [astronomy](#), bicycling, birding, literature, [painting](#), and especially [puzzling](#).

2002-2009: Member, then Chair of the Board of [Jewish Voice for Peace](#), a national organization working for a just resolution of the Israeli-Palestinian conflict based on human rights and international law.

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