CURRICULUM VITAE

NAME: Miller, Nathaniel G.

DATE: August 23, 2016

POSITION: Professor
School of Mathematical Sciences
College of Natural and Health Sciences
University of Northern Colorado
Greeley, CO 80639

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Boulder, CO 80302

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EDUCATION:

Year(s)	Degree	Institution	Area of Study
2001	Ph.D.	Cornell University	Mathematics
1999	M.S.	Cornell University	Computer Science
1994	B.A.	Princeton University	Mathematics

WORK EXPERIENCE:

Professional Academic

Year(s)	Institution/ Organization	Position	Responsibilities
2012 – present	University of Northern Colorado, Greeley, CO	Professor	Teaching, Research, Service
2007 – 2012	University of Northern Colorado, Greeley, CO	Associate Professor	Teaching, Research, Service
2001 – 2007	University of Northern Colorado, Greeley, CO	Assistant Professor	Teaching, Research, Service
1994-2001	Cornell University Ithaca, NY	Graduate Student/ T.A.	Teaching, Research

Professional
Non-Academic

Summer 1994, Summer 1995	Young Scholars' Institute, Trenton, NJ	Computer Science Teacher	Teaching Middle School Students
Summer 1993	Hollowbrook Center, Ewing, NJ	Tutoring Program Developer	Tutoring, Organizing Program
Summer 1992	Études et Productions Schlumberger, Clamart, France	Geophysics Researcher	Research

AREA OF SPECIALIZATION: Logic and Geometry

RESEARCH AREAS/INTERESTS: Geometry, Logic and Foundations, Mathematics Education, Inquiry-Based Teaching and Learning of Mathematics

PUBLICATIONS: (Author(s), Title, Publisher, Date, Pages)

Juried: (reviewed by editorial board, or refereed)

Book:

Miller, Nathaniel, *Euclid and His Twentieth Century Rivals: Diagrams in the Logic of Euclidean Geometry*, Studies in the Theory and Application of Diagrams, Vol. 1. CSLI Press, Stanford, CA, 2007.

Articles:

Miller, Nathaniel, "Teaching Inquiry to High School Teachers Through the Use of Mathematics Action Research Projects," *Primus*, to appear.

Miller, Nathaniel, "The Philosophical and Pedagogical Implications of a Computerized Diagrammatic System for Euclidean Geometry" in Gold, Bonnie, ed., *Using the Philosophy of Mathematics in Teaching Mathematics*, MAA Notes Series, to appear.

Miller, Nathaniel, "Teaching Writing and Proof-Writing Together," in Schwell, Steurer, and Vasquez,

eds., *Beyond Lecture: Resources and Pedagogical Techniques to Improve Student Proof-Writing Across the Curriculum*, MAA Notes Series, Vol. 85. MAA Press, Washington, DC, 2016.

Miller, Nathaniel, and Nathan Wakefield, "A Mentoring Program for Inquiry-Based Teaching in a College Geometry Class," *International Journal of Education in Mathematics, Science and Technology*, Volume 2, Issue 4, 2014, p. 266–272.

Miller, Nathaniel, "CDEG: Computerized Diagrammatic Euclidean Geometry 2.0," in Cox, Plimmer, and Rodgers, eds., *Diagrammatic Representation and Inference*, Springer-Verlag Lecture Notes in Artificial Intelligence, Volume 7352, April 2012, p. 294–296.

Miller, Nathaniel, "On the Inconsistency of Mumma's Eu," *Notre Dame Journal of Formal Logic*, Volume 53, No. 1, 2012, p. 27-52.

Miller, Nathaniel, "Mathematical Modeling," *Journal of Inquiry-Based Learning in Mathematics*, Issue No. 24, January 2012.

Bing, R H, Sam Creswell, and Nathaniel Miller, "Notes for R H Bing's Plane Topology Course," *Journal of Inquiry-Based Learning in Mathematics*, Issue No. 23, August 2011.

Miller, Nathaniel, "Modern Geometry II," *Journal of Inquiry-Based Learning in Mathematics*, Issue No. 19, January 2010.

Miller, Nathaniel, "Modern Geometry I," *Journal of Inquiry-Based Learning in Mathematics*, Issue No. 17, January 2010.

Allison, Dean, Ricardo Diaz, and Nathaniel Miller, "Generalized Baseball Curves: Three Symmetries and You're In!," *Loci,* September 2008. Retrieved October 22, 2008 from http://mathdl.maa.org/mathDL/23/?pa=content&sa=viewDocument&nodeId=2866.

Miller, Nathaniel, "Visualization on Cones and Pool Tables using Geometer's Sketchpad," *Primus*, Volume 16, No. 3, September 2006, p. 257-274.

Miller, Nathaniel, "Extended Abstract of *Euclid and His Twentieth Century Rivals: Diagrams in the Logic of Euclidean Geometry*" in Barker-Plummer, Cox, and Swoboda, eds., *Diagrammatic Representation and Inference*, Springer-Verlag Lecture Notes in Artificial Intelligence, Volume 4045, June 2006, p. 127-129.

Miller, Nathaniel, "A Brief Proof of the Full Completeness of Shin's Venn Diagram Proof System," *Journal of Philosophical Logic*, Volume 35, No. 3, June 2006, p. 289-291.

Miller, Nathaniel, "Computational Complexity of Diagram Satisfaction in Euclidean Geometry,"

Journal of Complexity, Volume 22, Issue 2, April 2006, p. 250-274.

Miller, Nathaniel, "CDEG: Computerized Diagrammatic Euclidean Geometry," in Hegarty, Meyer, and Narayanan, eds., *Diagrammatic Representation and Inference*, Springer-Verlag Lecture Notes in Artificial Intelligence, Volume 2317, April 2002, p. 91-93.

Miller, Nathaniel, "Case Analysis in Euclidean Geometry: An Overview," in Anderson, Cheng, and Haarslev, eds., *Theory and Application of Diagrams*, Springer-Verlag Lecture Notes in Artificial Intelligence, Volume 1881, September 2000, p. 490-493.

PROFESSIONAL PRESENTATIONS: (Date, Author(s), Title, Organization, Location)

Invited:

"Multiply-Modified Moore/Miller Methods: The Many Faces of Inquiry-Based Learning in my Classes," invited planary talk, 14th annual Legacy of R.L. Moore conference, Washington, DC, June 2011. Video available online at http://legacyrlmoore.org/Reports/201106/video/miller.html.

Invited Panel Member, MAA Committee on Technology in Mathematics Education Panel Discussion, "Online articles from JOMA to Loci," MAA/AMS Joint Meetings, San Francisco, January 2010.

"Reasoning with Diagrams by Humans and Machines," invited talk, Fourth International Conference, Diagrams 2006, Stanford University, CA, June 2006.

"Discovery Method Geometry Classes for Pre-Service Teachers," invited dinner talk, special session on Geometry and the Moore Method, 8th annual Legacy of R.L. Moore conference, Austin, TX, April 2005.

"Modified Moore Methods in the Teaching of Geometry," Invited talk, Breakout session on Project NExT, 5th annual Legacy of R.L. Moore conference, Austin, TX, March 2002.

"A Diagrammatic Formal System for Euclidean Geometry," Invited Talk, First CSLI Workshop on Visual Reasoning, Center for the Study of Language and Information, Stanford University, May 1999.

Invited Panel member, Panel Discussion/Presentation on Assessment Methods in Undergraduate Geometry courses, NSF/MAA UFE (Undergraduate Faculty Enhancement) Workshop on the Teaching of Undergraduate Geometry Courses, Ithaca, NY, June 2001.

Juried: (reviewed by editorial board or refereed)

Papers/Professional Society Poster Sessions:

"Discussion on a Mentoring Program for using IBL Methods in Teaching College Geometry," Panel Discussion with Lee Roberson, Sarah Rozner Haley, and Becky-Anne Dibbs, 17th annual Legacy of R. L. Moore Conference, Denver, CO, June 2014.

"CDEG: Computerized Diagrammatic Euclidean Geometry 2.0," Poster session, Seventh International Conference, Diagrams 2012, Canterbury, UK, July 2012.

"CDEG: Computerized Diagrammatic Euclidean Geometry," MAA contributed paper session on the Philosophy of Mathematics and Mathematical Practice, MAA/AMS Joint Meetings, Boston, January 2012.

"Mentoring a Graduate Student in Teaching an Inquiry-Based Modern Geometry Course for Pre-Service Teachers," presentation with Nathan Wakefield, 11th annual Legacy of R.L. Moore Conference, Austin, Texas, June 2008.

"Concept Development Using Guided Discovery," presentation with Frieda Parker, MAA contributed paper session on Guided Discovery in Mathematics Education, MAA/AMS Joint Meetings, San Diego, January 2008. Also presented at 11th annual Legacy of R.L. Moore Conference, Austin, Texas, June 2008.

"The Philosophical Status of Diagrams in Euclidean Geometry," MAA contributed paper session on the Philosophy of Mathematics, MAA/AMS Joint Meetings, New Orleans, January 2007.

"*Euclid and His Twentieth Century Rivals: Diagrams in the Logic of Euclidean Geometry*: a Forthcoming Book from CSLI press," Poster session, Fourth International Conference, Diagrams 2006, Stanford University, CA, June 2006.

"Generalized Baseball Curves: Three Symmetries and You're In!," presentation with Dean Allison, MAA Rocky Section Meeting, Grand Junction, CO, May 2006.

"Visualization on Pool Tables and Cones Using Geometer's Sketchpad," MAA contributed paper session on Teaching Visualization Skills, MAA/AMS Joint Meetings, Atlanta, GA, January 2005. Also presented at the MAA Rocky Mountain Section Meeting, Greeley, CO, May 2005.

"CDEG: Computerized Diagrammatic Euclidean Geometry," Poster session on Computational Aspects of Diagrammatic Representation and Reasoning, Second International Conference, Diagrams 2002, Callaway Gardens, GA, April 2002.

"A Diagrammatic Formal System for Euclidean Geometry," Project NExT/Young Mathematicians' Network Poster Session, Joint Meetings, San Diego, CA, January 2002.

"Case Analysis in Euclidean Geometry: An Overview," Poster Session, First International Conference, Diagrams 2000, University of Edinburgh, Scotland, September 2000.

"A Diagrammatic Formal System for Euclidean Geometry," LICS (Logic in Computer Science) '98 Workshop on Logic and Diagrammatic Information, Indiana University, June 1998.

Non-Juried:

"Geometry Courses for Pre-service Teachers at the University of Northern Colorado," NSF GeoSET Workshop, Stillwater, OK, June 2004.

"Using Geometer's Sketchpad on the Voyage 2000 Calculator," session leader, TI Mathematics Teacher Educator Short Course, Breckenridge, CO, May 2004.

"Modeling car stopping distances in a Calculus class," PREP (Professional Enhancement Program of the Mathematical Association of America) Workshop on Modeling and Methods Courses Followup meeting, AMS/MAA Joint Meetings, Baltimore, MD, January 2003.

Panel member, Panel Discussion/Presentation on Assessment Methods in Undergraduate Geometry courses, NSF/MAA UFE (Undergraduate Faculty Enhancement) Workshop on the Teaching of Undergraduate Geometry Courses, Ithaca, NY, June 2001.

"Logic, Geometry, and the Nature of Proof: What are we teaching in our geometry courses?" Fourth Annual New York Graduate Mathematics Education Research Conference, Syracuse University, October 1997.

FUNDED PROJECTS:

2012, $20,000 grant from the National Science Foundation, Doctoral Symposium at the Seventh International Conference on the Theory and Application of Diagrams

2011–2014, $48,570 grant from Educational Advancement Foundation, Mentoring Graduate Students in Teaching Inquiry-Based Geometry Classes

2007–2009, $32,000 grant from Educational Advancement Foundation, Mentoring Graduate Students in Teaching Inquiry-Based Geometry Classes

PROFESSIONAL SERVICE:

Article referee, 4 articles, Diagrams 2016 conference.

Program Committee, Diagrams 2016 conference.

Article referee, *PRIMUS*, 2015.

Article referee, *Journal of Inquiry-Based Learning in Mathematics*, 2015.

Article referee, *Journal of Logic, Language and Information*, special issue on Euler and Venn diagrams, 2014–2015

Project NExT Mentor/Consultant to 2014 Project NExT fellow T. Alden Gassert, University of Colorado, Boulder.

Princeton University Alumni Schools Committee, interviewer of local applicants to Princeton University, 2014-present.

Listserver owner, overseer, and administrator, teachgeom-l listserv, 2013–present.

Article referee (3 articles), Diagrams 2014 conference.

Program Committee, Diagrams 2014 conference.

Article referee, *SIMODE*, 2013.

Article referee, *PRIMUS*, 2013.

Article referee, *African Journal of Mathematics and Computer Science Research*, 2013.

Editorial Board Member, *Journal of Inquiry-Based Learning in Mathematics*, 2013–present.

Article referee, *Erkenntnis*, 2013.

Article referee, *PRIMUS*, 2012.

Article referee, *Journal of Visual Languages and Computing*, special issue on Euler Diagrams, 2012.

Session chair, Session on Abstractions, Constructions, and Aesthetics, Euler Diagrams 2012: 3rd International Workshop on Euler Diagrams, Canturbury, UK, July 2012.

Article referee, *PRIMUS*, 2011.

Tutorial referee, 2 proposed tutorials, Diagrams 2012 conference.

Workshop referee, 4 proposed workshops, Diagrams 2012 conference.

Article referee, *Journal of Logic and Computation*.

Academy of Inquiry-Based Learning mentor to Molly Fenn, North Carolina State University.

Workshop chair, Organizing committee, Diagrams 2012 international conference (held in Canterbury, England, July 2012).

Article referee, *Journal of Inquiry-Based Learning in Mathematics*.

Article referee, *Let's be Logical* book.

Article referee, *Journal of Visual Languages and Computing.*

Article referee (5 articles), Diagrams 2010 conference.

Program committee, Diagrams 2010 conference.

Article referee, 2nd Workshop on Visual Languages and Logic (VLL 2009), Corvallis, Oregon, September 2009.

Program committee, 2nd Workshop on Visual Languages and Logic (VLL 2009), Corvallis, Oregon, September 2009.

Legacy of R.L. Moore mentor to Tanya Rivers and Jeremy Muskat, Western State College of Colorado

Legacy of R.L. Moore mentor to Diana White and Jason Williford, University of Colorado, Denver

Session moderator, 11th annual Legacy of R. L. Moore conference, Austin, Texas, June 2008.

Article referee (five articles), Diagrams 2008 conference.

Program committee, Diagrams 2008 conference.

Project NExT Mentor/Consultant to Angela Hodge, University of North Dakota

Article referee (two articles), Workshop on Visual Languages and Logic (VLL), Coeur D'Alene, Idaho, September 2007.

Program committee, Workshop on Visual Languages and Logic (VLL), Coeur D'Alene, Idaho, September 2007.

Article referee, *Journal of Automated Reasoning*, Summer 2007.

Session Moderator/Discussant, Session on Reasoning with Diagrams by Humans and Machines, Fourth International Conference, Diagrams 2006, Stanford University, CA, June 2006.

AP Calculus Exam Reader, Ft. Collins, CO, June 2006.

GeoSET Instructor's Manual Writing workshop, participant/co-author, Stillwater, OK, May 2006.

Co-organizer, MAA Rocky Mountain Section annual meeting, Greeley, CO, April 2005.

Co-organizer, Workshop on Mathematics Education Research for Mathematicians, MAA Rocky Mountain Section annual meeting, Greeley, CO, April 2005.

Article referee, *Journal of Philosophical Logic*, September 2004.

Article referee, *Philosophy of Science*, August 2003.

Article referee, *Research In Collegiate Mathematics Education,* August 2002.

Co-organizer, Project NExT session on Writing Assignments in Mathematics, Joint Meetings, San Diego, CA, January 2002.

PROFESSIONAL ASSOCIATION PARTICIPATION:

Membership:	Year(s)	Organization
	1998–present	Mathematical Association of America
	1994–2003	American Mathematical Society
	1994-2008	Association for Symbolic Logic

UNIVERSITY SERVICE:

	Date(s)	Position	Activity
Department/Unit:			
	2014–2015	School Evaluation Committee	chair
	2014–2015	Search Committee (Math Ed position)	member
	2014	Search Committee (Joint CS/ CIS lecturer position)	chair
	2013	School evaluation policies and procedures committee	member
	2007-2015	Mathematical Sciences graduate program coordinator and Ph.D. committee chair	
	2012-present	Master's Committee	member
	2007-2012	Master's Committee	chair
	2012–2013	Search Committee (tenure track CS position)	chair
	2012	Search Committee (CS lecturer position)	member
	2011–2012	Search Committee (tenure track position)	chair
	2011–present	Honors Program Departmental Advisor, Mathematics	
	2010-2011	School Comprehensive review committee	member
	2011	Search Committee (CS lecturer position)	member
	2010–present	School Assessment Committee	member
	2007- 2011	School Evaluation Committee	member
	2006–2007	Search Committee (tenure track position)	chair
	2006–2009	School of Math. Sciences webpage	primary webmaster
	2005–2007	School of Math. Sciences colloquium	organizer
	2005–present	Web committee	member
	2001–present	Mathematical Sciences Ph.D. Committee	member
	2001–2007	Mathematical Sciences Undergraduate Committee	member
	2004–2005	Undergraduate Committee subcommittee on revising the IDLA program	member
	2004–2005	Search Committee (non-tenure track	member

	position)	
2003–2004	Search Committee (tenure track position)	member; candidate interviewer, Joint Meetings
2002–2006	Math club	Faculty Advisor

University:

2012–present	University grievance committee	member
2007-2010	University grievance committee	member
2007–present	LAC committee	member
2006–2011	AP Calculus Institute	Director
2001 –2005	Swing Dance Club	Faculty Advisor

Honor's Thesis Advisor:

Heidi Williamson

Master's Committees:

Jacob Farmer (chair)
Gordon Causby (chair)
Karl Remsen (chair)
Kritika Chhetri (chair)
Chelsea Willemsen (chair)
Soofia Malik
Heidi Geyer
Kendra Versoi (chair)
Michael Spanneth (chair)
John Buch (chair)
Brandan Madsen (chair)
Amy Poppie (chair)
Lara Tabola
Kristin Ingalls
Julie Thomas
Todd Pfiefer
MacKenzie Metz
Megan Williams
Sara Slagle
Brian Christopher
Jacob Nazeck
Michelle Morgan
Coralle Haley
Sarah Rozner

Kristin King
Jason Conway
Bryce Leonhardt
Brian Rogers
Nathan Wakefield
Cheryl Olson
Shantelle Mulliniks

Ph.D. Committees:

Jeff King
Lee Roberson
Sarah Rozner
Casey Dalton, co-chair.

TEACHING:

Courses Taught at UNC:

2015, Math 543, Modern Geometry
2014, Math 795, Special Topics: Mathematical Modeling
2014, 2015 Math 599, Mathematics ARP seminar
2012, 2014, Math 709, Abstract Algebra
2011, 2016, Math 537, Mathematical Modeling
2010 Math 695, Special Topics: Geometry
2010 Math 437, Mathematical Modeling
2008, 2009 CG 120, Introduction to Python Programming
2007, 2008, Math 283, Geometry and Measurement
2006, Math 391, Introduction to Number Theory
2006–2011 MED 509, AP Calculus Institute
2005, 2007, 2013, Math 540, Topology
2005, 2007, 2009, 2011, 2013, Math 525, Linear Algebra
2004-2009, 2011-2013 Math 342, Modern Geometry II
2004, Math 120, Mathematics for the Liberal Arts
2004, MED 630, Technology in Mathematics Education
2003, 2012, Math 633/733, Geometric Analysis
2003-2004, 2006, Math 387, Mathematics in our Technological World
2002, Math 132, Calculus II
2001-2009, 2011-2016 Math 341, Introduction to Modern Geometry
2002, Math 591, Algebra and Number Theory
2001, Math 233, Calculus III

PROFESSIONAL DEVELOPMENT ACTIVITIES:

Workshops:

April, 2005, co-organizer, Workshop on Collegiate Mathematics Education, MAA Rocky Mountain Section annual meeting, Greeley, CO.
June, 2004, NSF GeoSET Workshop on Geometry Courses for pre-service elementary teachers, Stillwater, OK.
May, 2004, TI Mathematics Teacher Educator Short Course on using Technology with pre-service teachers, Breckenridge, CO.
January, 2003, MAA PREP Professional Enhancement Program) workshop on Modeling and Secondary Methods courses follow-up meeting, AMS/MAA Joint meetings, Baltimore, MD
Summer, 2002, MAA PREP (Professional Enhancement Program) weeklong workshop on Modeling and Secondary Methods courses, Portland, OR
August 2002, Project NExT short course on Liberal Arts Mathematics courses
August 2001, Project NExT short course on elementary education mathematics content courses
August 2001-2002 National Project NExT professional development program

Courses Taken: (Dates, Title, Credits)
Spring 2008, sat in on MED 701, Qualitative Research in Mathematics Education
Fall 2002, sat in on MED 703, Teaching and Learning K-12 mathematics

HONORS AND AWARDS:

2010 UNC Provost's Academic Excellence Award for Teaching Excellence in Undergraduate Education
2009 UNC College of Natural and Health Sciences Award for Excellence in Teaching