

William Goldbloom Bloch

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Born: Pittsburgh, PA
December 8, 1962

Education

Certificate, Harvard University, Management Development Program, 2005
Ph.D. University of California, Berkeley, Mathematics, 1993
B.A. Reed College, Mathematics, 1987

Faculty Positions

2007–present Professor, Wheaton College
2001–2007 Associate Professor, Wheaton College
1995–2001 Assistant Professor, Wheaton College
1993–1995 Lecturer, University of Texas at Austin

Visiting Positions

2010–2013 Visiting Scholar, Philosophy, Harvard University, Cambridge, Massachusetts
2000 (August) Visiting Researcher, Santa Fe Institute, Santa Fe, New Mexico
1998 (summer) Visiting Scientist, Oregon Health Sciences University, Portland, Oregon

Academic Awards

Honorable Mention/Finalist for PROSE award, 2008
Tricia Arnold Faculty Fellow, 2002
National Need for Mathematicians Fellowship (declined), 1992
University of California Tuition Fellowship, 1988
Neurological Sciences Institute Summer Fellowship, 1985

Professional Associations

Society for Ancient Greek Philosophy, 2010
The Borges Center, Associate Researcher, 2005–present
Mathematical Association of America, 1995–2001, 2008–present
American Association of University Professors, 1993–2005
American Mathematical Society, 1987–present

Books

“The Unimaginable Mathematics of Borges’ Library of Babel,” Oxford University Press,
August 2008

Articles

- “On two of Zeno’s paradoxes,” submitted to *Mind*
- “Fair and Unfair Division in Neal Stephenson’s *Cryptonomicon*,” with Michael D. C. Drout, in *Mathematics and Popular Culture*, Jessica Sklar and Elizabeth Sklar, eds., MacFarland, 2011
- “Discontinuous Open Maps from \mathbf{R}^n onto \mathbf{R}^n ,” resubmitted with revisions to the *American Mathematical Monthly*
- “Fractal Boundaries are Not Typical,” *Topology and its Applications* **154** (2007), 533-539
- “The Unimaginable: Catalogues and the ‘Book of Sand’ in *The Library of Babel*,” *Variaciones Borges* **19** (2005), 23-40
- “Typical Sets and Meager Spaces,” *Topology and its Applications* **131** (2003), 39-49
- “Tension in Generalized Geometric Sequences,” *College Mathematics Journal* **32**, no. 1, (2001), 44-47
- “Extending Flows from Isolated Invariant Sets,” *Ergodic Theory and Dynamical Systems* **15**, no. 6, (1995), 1031-1043

Book Reviews

- “Nets, Puzzles, and Postmen,” to appear in SIAM Review

Invited Presentations

- “Lost in a Good Book: Mathematical and Literary Labyrinths in Borges’ *Library of Babel*” *Matematica e Cultura* 2011, Venice, Italy, March 26, 2011
- “Navigating the Mathematical and Literary Labyrinths in Borges’ *Library of Babel*, v. 3” British History of Mathematics Society, Oxford University, Oxford, England, May 31, 2009
- “Navigating the Mathematical and Literary Labyrinths in Borges’ *Library of Babel*, v. 2” Abramson Colloquium, Bridgewater State College, Bridgewater, MA, April 26, 2009
- “Navigating the Mathematical and Literary Labyrinths in Borges’ *Library of Babel*, v. 1” Boston College Colloquium Series, Boston College, Boston, MA, March 25, 2009
- “The Residential Liberal Arts College: A Model Community,” Hiram College, Cleveland, OH, October 13, 2008
- “The geometric structure of typical boundaries of manifolds,” American Mathematical Society Spring Eastern Section Meeting, University of Montreal, Montreal, Canada, May 3, 2002
- “Stable Extensions of Smooth Flows,” Dynamical Systems Seminar, University of Texas at San Antonio, San Antonio, TX, April 1995
- “On Smale’s Horseshoe,” Augsburg College, Minneapolis, MN, March 1995

Selected Presentations

- “Zeno the Gedankenexperimentalist,” SAGP-SSIPS, Fordham University, New York, NY, October 16, 2010
- “The Topology of Borges’ *Library of Babel*,” Joint AMS/MAA Mathematical Meetings, San Francisco, CA, January 15, 2010
- “Making Connections: Curriculum-Inspired Research and Integrative Learning,” AAC&U, Atlanta, GA, October 23, 2009

“Zeno of Elea: ur-Gedankenexperimentalist,” Faculty Lunch Series, Wheaton College, Norton, MA, October 7, 2009

“Discontinuous open maps from \mathbf{R}^n onto \mathbf{R}^n ,” Joint AMS/MAA Mathematical Meetings, Washington, DC, January 5, 2009

“Combinatorics, Topology, and Graph Theory in Jorge Luis Borges’ Short Story *The Library of Babel*,” MathFest, Madison, WI, July 31, 2008

“The Math that Happens When We Make Online Purchases,” Faculty Lunch Series, Wheaton College, Norton, MA, February 21, 2007

“Case Studies in Interdisciplinary Education: Connections and Infusion at Wheaton College,” AIS/AGLS, Washington, DC, October 6, 2005

“Practicing Respect for a Diverse World: ‘Infusion’ and Connected Learning in the Wheaton Curriculum; A Case Study with Some General Applications,” AAC&U, Washington, DC, January 23, 2004

“Ambiguity, Information, Paradox, and Borges,” Faculty Lunch Series, Wheaton College, Norton, MA, April 17, 2003

“The Geometric Structure of Typical Boundaries,” International Conference on Partial Hyperbolicity in honor of the 60th birthday of Charles Pugh, Evanston, IL, June 1, 2001

“Mysteries of Dimension and the Primacy of Vision,” Faculty Lunch Series, Wheaton College, Norton, MA, October 4, 2000

“A Natural Setting for Certain Types of Chaotic Phenomena,” Santa Fe Institute, Santa Fe, NM, August 3, 2000

“Flows on the Hilbert Cube,” American Mathematical Society Northeastern Sectional Meeting, University of Massachusetts, Lowell, MA, April 1, 2000

“Boundaries of Typical Compact Sets,” Spring Topology and Dynamical Systems Conference, San Antonio, TX, March 16, 2000

“Tension in Generalized Geometric Sequences,” MathFest, Mathematical Association of America, Providence, RI, July 31, 1999

“Applying Flow Extensions to Neuroscience,” Neurological Sciences Institute, Portland, OR, August 1998

“Pay at the Pump: Credit Cards, Mini-Marts and Consumer Choices,” NSF Workshop on Statistics, University of the Pacific, Stockton, CA, June 1996

“On Classifying 2-Dimensional Anosov-type Attractors,” American Mathematical Society Southeastern Sectional Meeting, Orlando, FL, April 1995

“Embedding Knots in Flow Extensions,” Topology Seminar, University of Texas at Austin, Austin, TX, September 1995

“Are there Axiom-A Attractors that are Branched Manifolds?” Dynamical Systems Seminar, University of Texas at Austin, Austin, TX, September 1994

“Axiom-A Attractors have no Boundary,” Southwest Dynamical Systems Conference, University of Texas at Austin, Austin, TX, April 1994

“Pathologic Axiom-A Attractors,” Southeast Dynamics and Spring Topology Conference, Auburn University, Auburn, AL, March 1994

“Is there a Continuous Flow on S^n with Most Orbits Dense?” Dynamical Systems Seminar, University of Texas at Austin, Austin, TX, April 1993

“Extending Flows from Isolated Invariant Sets,” Dynamics Days, Arizona State University, Tempe, AZ, January 1993

“A Generalization of Results of L. Wen,” MSRI-UCLA Summer Workshop on Dynamics, UCLA, Los Angeles, CA, June 1992

Additional Professional Activity

Referee for article in *American Mathematical Monthly*
 Referee for articles in *Topology and its Applications*
 Referee for articles in *College Mathematics Journal*
 Referee for article in *Iranian Bulletin of Mathematics*
 Referee for article in *Symmetry*
 Referee for NSF grants
 External Review of Stonehill College's Mathematics Department, September 2008

Grants

Teagle Foundation Grant, January 2006–August 2007, Principal Investigator
 Funded “Year of Quantitative Analysis” at Wheaton College

Multilevel Dynamics of Conditional Control Mechanisms, Collaborator, October 2002
 Part of team application, grant awarded by the National Institute of Health

Hewlett Foundation Grant for Diversity, 2004
 Funded debate between Rep. Barney Frank and Asst. Attorney General Viet Dinh

Davis Grant for Technology for Course Development, 2004
 Created interdisciplinary Cryptography Course

Mellon Grant for Connected Course Development, 2001
 Pioneered interdisciplinary course with colleague from English, supplanted team-taught model

Junior Faculty Development Leave, Spring 2000
 Competitive award of semester off at full pay

Library, Technology and Learning Grant, Wheaton College, Norton, MA, Fall 1998
 Wrote labs and adapted the program *Maple* for class

Library, Technology and Learning Grant, Wheaton College, Norton, MA, Spring 1997
 Wrote labs and adapted the program *Interactive Differential Equations* for class

Library, Technology and Learning Grant, Wheaton College, Norton, MA, Fall 1997
 Created Web-Page resource for First Year Seminar (this was innovative in 1997)

Math Department Research Grant, University of Texas at Austin, Austin, TX, 1993
 Used for conference travel and research-related purchases

Committee and Departmental Service

Tenure Committee, 2004–2005, 2010—present
 Resigned in 2005 due to service as Assisant Provost

Educational Policy Committee, 2003–2005
 Chair 2003-2005, resigned due to service as Assisant Provost

Chair, Department of Mathematics and Computer Science, 2001–2005, 2010–present
 Resigned in 2005 due to service as Assisant Provost

First Year Seminar Steering Committee, 2001–2002
 Elected by instructors

AAUP, 2001–2002
 Member-at-Large

Budget Advisory Committee, 2001–2003
Division of Natural Sciences representative

Curriculum Review Subcommittee, 2001
Visiting Team and Goals Subgroup

Thesis Parade Subcommittee, 1998–present
Founder and Permanent Co-Chair

Math-Logic General Education Requirement Subcommittee for Reaccreditation, 1998
Chair

Provost Search Committee, 1998
Division of Natural Sciences representative

Faculty Workload and Economic Status, 1997–2000, 2002, 2008–2009
Chair, Fall 1999

Committee on Admissions and Academic Standing, Fall, 1997
Division of Natural Sciences representative

Honors Thesis Reader

Mehlhorn, Alison, 2011
“Allelic variation of major histocompatibility complex and toll-like receptor gene regions in grey seal (*Halichoerus grypus*) population.”

Trevor Paul, 2008
“Forging *The Sword*: Self-Reflection and the Crafting of a Fantasy Novel.”

Sam Pearson, 2003
“The Pattern of Ethir”

Willie Stone, 2003
“Plurality elections: How many voters does it take before something goes wrong?”

Katherine Malone, 2001
“Blood-sucking, cross-dressing, and why is Frodo Baggins so effeminate anyway?: The Lord of the Rings’ gender structure in its WWI context”

Kenneth Bycenski, 2001
“Power dependency of nonradiative transitions in Er:Glass”

Lauren Dufort, 2000
“The role of metals in stabilizing the folding of alkaline phosphatase”

Benjamin J. Hansz, 1999
“Coherent transient spectroscopy: a study of energy shifts in rare doped solids”

Courses Taught

Topology
Dynamical Systems
Differential Geometry
Partial Differential Equations
Real Analysis
Abstract Algebra
Complex Analysis
Ordinary Differential Equations
Probability
Cryptography
Linear Algebra
Multivariable Calculus
Calculus II
Calculus I
Business Calculus
Precalculus
Accelerated Statistics
Introductory Statistics
The Edge of Reason
Lost in the Maze
Infinity, Hyperspaces, and Code-Breaking: The Math of Science Fiction
Knots and Surfaces (general education course for non-majors)
Technology: The Means of Salvation or Tools of Evil?

Administrative Positions

Associate Provost, Wheaton College, Norton, Massachusetts, 2006–2008.

Line officer and second to the chief academic officer of the College. Responsibilities included:

- Stewardship of Wheaton’s First Year Seminar program consisting of 26-37 instructors, with workshops, meetings, arranging and hosting speakers, and \$50,000 budget.
- Principal Investigator for \$100,000 Teagle grant for Fresh Thinking for Liberal Education.
- Organized campus academic workshops, including the monthly Teaching and Learning series, and the twenty (approximately) offered at the end of the year.
- Supervised scientific equipment budget disbursements totaling approximately \$84,000.
- Coordinated and managed Asian and Arabic languages, including adjuncts and staff.
- Allocated academic office spaces, coordinated moves and renovations with Physical Plant.
- Managed and edited semi-annual faculty newsletter.
- Liaison between Academic Affairs and Registrar’s Office, Grants Management, Academic Advising, Hate Crime Incident Response Team, and the Division of Natural Sciences.
- Liaison for Davis Foundation’s *100 Projects for Peace*, a program competitively awarding \$10,000 to each of 100 student teams to pursue summer projects promoting social justice.
- Liaison to American Association for the Advancement of Science.
- Oversaw \$250,000 Federal earmark grant for scientific equipment.

Accomplishments

- Demonstrated urgency of staffing First Year Seminar, created blueprint for staffing subsequently enacted by Provost.
- Planned, managed, and assessed four pilots for First Year Seminar Program:
 - Linked seminars with writing classes, aided retention by fostering cohorts.
 - Linked alumnae/alumni to FY seminars, aided retention by inculcating “long-view” of Wheaton experience.
 - Affiliated new faculty members with FY seminars, familiarized them with the dual instructor/advisor pedagogy.
 - Created “Friday Afternoon Lab” series, moved discussions of co-curricular skills and experiences from classrooms to support staff.
- Oversaw Teagle grant:
 - Assessed campus culture regarding Wheaton’s quantitative general education requirement, improved acceptance and engagement, then assessed the changes.
 - Spearheaded, coordinated, and led workshops, classroom visits, lectures, invited speakers, colloquia, symposia, and the creation of permanent campus displays.
 - Responsible for publicity, science department involvement in Community Day.
 - Ran four weekly campus-wide puzzle contest series.
 - Facilitated the incorporation of Text Encoding of manuscripts into select humanities and social science courses.
 - Managed budget, including disbursements.
- Planned and structured Academic Affairs response to Harvard Graduate School of Education’s Collaborative on Academic Careers in Higher Education (COACHE) survey, after results suggested a significant percentage of junior faculty of color felt alienated in a hostile environment.
- Coordinated creation of consistent policy regarding transfer of credit into Wheaton.
- Planned, at the institutional level, Wheaton’s forthcoming new Science Center.
- Planned Wheaton’s acclaimed semester-long orientation program for new faculty.
- Refined standard analysis of data regarding number of students per FTE by departments, and applied to five years of data.
- Gathered and analyzed data on class sizes and grade distributions.
- Established key benchmarks with comparable institutions as adjunct to creating policy.

Assistant Provost, Wheaton College, 2005–2006.

Brought into the provost's office to help implement the Wheaton curriculum and raise the profile of quantitative and scientific literacy.

Accomplishments

- Wrote grant to Teagle Foundation to recontextualize Wheaton's quantitative requirement vis-à-vis campus culture.
- Spurred faculty to reinvigorate First Year Seminar program.
- Relieved divisional tensions by streamlining processes of allocating resources for scientific equipment and by linking advancement staff with faculty in the sciences.
- Gathered and analyzed data comparing grading practices by department and division.

Chair, Educational Policy Committee, Wheaton College, 2003–2005.

Elected to facilitate the first years of Wheaton's new curriculum.

Accomplishments

- Created consistent and workable policies aligning goals of new curriculum with long-standing practices.
- Facilitated creation of faculty position Coordinator of Infusion. (*Infusion* is Wheaton's way of integrating diverse perspectives into courses.)
- Convinced top administrators of the need to embrace assessment as a tool to improve teaching and demonstrate success to the non-academic world, resulting in reallocation of \$25,000 in discretionary funds to Evaluation subcommittee.
- Stimulated the creation of a grants person dedicated to faculty support.
- Envisioned and laid direction for Kollett Center, Wheaton's academic resource center for students and faculty.
- Unified divided group of scientists and mathematicians to create feasible and demanding Bioinformatics major squarely within the tradition of the liberal arts. Shepherded the major through committee, administrative, and faculty approvals.

Chair, Department of Mathematics & Computer Science, Wheaton College, 2001–2005.

Elected to position immediately following tenure.

Accomplishments

- Stimulated and oversaw growth of department from 5.5 FTE to 9.5 FTE.
- Grew the budget correspondingly, oversaw departmental expenditures.
- Led effort to redefine departmental majors and minors in terms of building concepts and skills transferring up from course to course.
- Healed breach between mathematicians and computer scientists.
- Committed and led department in first external review in over three decades. Coordinated and drafted internal white paper.
- Led departmental planning for new science center.