Renaissance Banff II

Bridges Banff

Mathematics, Music, Art, Architecture, Culture

2009

The 12th Annual Bridges Conference

Bridges Banff

Mathematics, Music, Art, Architecture, Culture

Banff International Research Station for Mathematical Innovation and Discovery

The Banff Centre
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Cover: *Limosa* is a work by Brian Evans, an Associate Professor in the Department of Art and Art History, at the University of Alabama. The full image is presented on the 2009 Bridges Art Exhibition website. The artist says: "Here we see a slice, through the time dimension, of an abstract animation (a mathematical visualization). We see how a single scanline changes as the animation unfolds. This 2D slice of a 4D object is then mapped into sound, so the image is actually a graphical music score. I sonify the score to create music that correlates sonically with what we see unfold visually in the animation. We hear the colors. We listen with our eyes." Jeffrey Rutzky, the cover designer, selected a part of the artwork and harmonized the presentation of the words with the movement of the image.

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Contents

Preface . . . . . *xv*

Regular Papers

Mathematics Is Art 1
Erik Demaine and Martin Demaine

Mathematical Methods in Origami Design 11
Robert J. Lang

Kircher's Mechanical Composer: A Software Implementation 21
Jim Bumgardner

Three Conceptions of Musical Distance 29
Dmitri Tymoczko

Using Turtles and Skeletons to Display the Viewable Sphere 39
David Swart

Notation for a Class of Paperfolded Models 47
Goran Konjevod and Ana Maria Kuprešanin

The Art of Iterated Function Systems with Expanding Functions 55
Philip Van Loocke

Harmonious Dances 63
Karl Schaffer

Bridging Art Museums and Middle School Math Classrooms 69
Benjamin Wells and Philip Wagner

Combinatoria Poetica: Counting and Visualizing Rhyme Patterns in Sonnets 79
Hartmut F.W. Höft

Tubular Sculptures 87
Carlo H. Séquin

Comic Books That Teach Mathematics 97
Bruce Kessler

Art and Nonlinear Projection 105
John Brosz, Sheelagh Carpendale, Faramarz Samavati, Hao Wang and Alan Dunning

Aesthetically Pleasing Azulejo Patterns 115
Russell Hendel

Marking a Physical Sphere with a Projected Platonic Solid 123
Carolyn Yackel

Coloring Uniform Honeycombs 131
Glenn Laigo, Ma. Louise Antonette N. De las Peñas and René Felix

Map-Colored Mosaics 139
Robert Bosch and Andrew Pike

The Unique Eleven-Pointed Star Polygon Design of the Topkapı Scroll 147
B. Lynn Bodner

Composite Digital Mosaics using Duotone Tiles 155
Gary Greenfield

The Symmetry of "Circle Limit IV" and Related Patterns 163
Douglas Dunham

Symmetry and Transformations in the Musical Plane 169
Vi Hart

Counterchange Patterns and Polyhedra 177
B.G. Thomas

Non-Flat Tilings with Flat Tiles 183
Rinus Roelofs

Using Polyhedral Stellations for Creation of Organic Geometric Sculptures 193
Vladimir Bulatov

Polyhedra Through the Beauty of Wood 199
Robert Rollings

Growth Forms 207
George Hart

Using Works of Visual Art to Teach Matrix Transformations 215
James Luke Akridge, Rachel Bowman, Peter Hamburger and Bruce Kessler

Regular 3D Polygonal Circuits of Constant Torsion 223
Tom Verhoeff and Koos Verhoeff

A Garden of Statistically Self-Similar Plants 231
Anne Burns

Real Tornado 239
Akio Hizume and Yoshikazu Yamagishi

Concave Hexagons 243
Paul Gailiunas

A New Method for Designing Iterated Knots 251
Robert Fathauer

A Group Portrait on a Surface of Genus Five 259
Jay Zimmerman

Tiling the Musical Canon with Augmentations of the Ashanti Rhythmic Pattern 265
Carl Bracken, Gary Fitzpatrick and Nadya Markin

Spidronised Space-Fillers 271
Walt van Ballegooijen, Paul Gailiunas and Dániel Erdély

Spirograph Patterns and Circular Representations of Rhythm: Exploring Number Theory Concepts Through Visual, Tangible and Audible Representations 279
Susan Gerofsky, Francisco Gomez, David Rappaport and Godfried Toussaint

On Constructing a Virtual Loom 287
Susan McBurney

ShamsehTrees: Providing Hierarchical Context for Nodes of Interest 293
Katayoon Etemad and Sheelagh Carpendale

Short Papers

Talking About Math/Art: The Long Pause 301
Bathsheba Grossman

The Whitney Music Box 303
Jim Bumgardner

Mathematical Experiments with African Sona Designs 305
Darrah Chavey

Honors Seminar: A Creative Interdisciplinary Approach for Student Exploration 309
Gail Kaplan

Realistic Image Making with Mandelbrot Set 313
Mehrdad Garousi and Khalil Taleslami

An Interdisciplinary First Seminar on Symmetry 315
Tamara Lakins

This Equation is Art 317
Peter Smith

ZenArt, graphic geometrical modules 319
André Génard

Amazing Labyrinths, further Amazing Labyrinths, further developments 321
Samuel Verbiese

Finding a New Route to the Moon Using Paintings 323
Edward Belbruno

Text from Truchet Tiles 325
David Reimann

Geometry and Geodesy: Estimating the Earth's Circumference with Prospective Elementary Teachers 327
Sandy Spitzer

A Myriad Shades of Green 329
Liselott Flodén, Anders Holmbom, Marianne Olsson and Jens Persson

Geometric Transformations in Surface Design Generation 331
Fatma Mete

The Quinary–Permuting Meaning with Generative Poetry 333
Brian Evans

Spelunking Adventure II: Combining Cyclons 335
Curtis Palmer

Binary Based Fresco Restoration 337
Wolfgang Baatz, Massimo Fornasier, Peter A. Markowich and Carola-Bibiane Schönlieb

Plane, Space, Cubism and Perpetual Displacement in 3D Design 339
Joel Varland

Mathematical Classroom Quilts 341
Elaine F. Ellison

Mathematical Iconography in Gaudí's Cosmos 343
Stephen Luecking

Chaos – The Movie 345
Susan Happersett

The Frustrated Mathematician 347
Michael Frantz

An Optical Demonstration of Fractal Geometry 349
Billy C. Scannell, Ben Van Dusen and R.P. Taylor

Using Geometer's Sketchpad to Construct Pop-up Polyhedra as a Tool for Classroom Study of Geometry 351
S. Louise Gould

Workshops

Chaos, Complexity, and Creativity 355
Krystyna Laycraft

Stories Count: Narrative Approaches to Quantitative Learning 363
Suzie Garfield

Creating Islamic Patterns from Folded Shapes 367
E.B. Meenan and B.G. Thomas

Workshop: Working With Patterns To Introduce Mathematics Concepts To Young Children 375
Patricia Bentley

Exploring Some of the Mathematical Properties of Chains 379
Eva Knoll and Tara Taylor

Bridges 09 Interactive Workshop: The Geometry of Longsword and Rapper Sword Locks 383
Susan Gerofsky

The Beautiful Triangle 385
Greg Beiles and Daphne Rosenwald

Perspectives on Perspective 389
Duncan Melville and Sarah Melville

Workshop on The Fusion Project: Bridging Art Museums and Middle School Math Teachers 395
Benjamin Wells and Philip Wagner

A Workshop to Build Three Simple Tensegrity Models for K-12 Mathematics Classrooms 403
Robert McDermott

Transferring Patterns: From Twill to Peyote Stitch 409
Eva Knoll

Author Index 413

Preface

2009 marks the 12th year of the annual Bridges Conference. This year we find ourselves returning to The Banff Centre, a wonderful facility nestled in the Canadian Rockies. It's hard to imagine a location better suited to the spirit of Bridges. The region inspires with its natural beauty. The campus itself has a longstanding reputation as a world leader in art, media and culture, and a tradition of interdisciplinary cooperation. Over the past decade, the Banff International Research Station (BIRS) has grown to become a focal point for mathematical interaction within North America and worldwide, and has made The Banff Centre an ideal place to explore ideas that lie in the intersection of art and mathematics. We are honoured and thrilled that BIRS has invited us back to Banff for Bridges 2009. and hope to make the trip again many times in the future.

As always, we make an effort to bring new and exciting experiences to Bridges. This year we will explore sights around the Banff region as well as some of the studios and facilities on campus at The Banff Centre. Three evenings will be dedicated variously to music, theatre, and film.

Like last year, we collected regular paper, short paper, and workshop submissions using EasyChair, a free conference management service hosted by the University of Manchester. Each submission was then assigned to two members of our international Program Committee for review. In some cases one or more additional reviews were provided by other Program Committee members or by external experts. The quality of the reviewing was quite high, with many reviewers providing fine-grained, detailed advice for improving a paper's content or presentation. In several cases authors wrote back to express their gratitude to the reviewers who helped improve their papers significantly.

Once the reviewing process was complete, Craig S. Kaplan, the chair of the Program Committee, worked with the reviewers and the Bridges organizers to arrive at a decision for each paper. Occasionally the decision process called for additional opinions or communication with the authors. Submissions of all kinds were either accepted as-is, accepted with revisions, or rejected. In addition, some regular paper and workshop submissions were recommended for inclusion in the short papers program. In the end, we arrived at a total of 38 regular papers (including four contributed papers from invited speakers), 24 short papers (including one contributed paper), and 11 workshops. These papers represent a wide range of multidisciplinary work in mathematics, art, culture and pedagogy, from an equally diverse group of authors from around the world. We are certain to have another stimulating week of inspiration and dialogue.

The Bridges Visual Art Exhibition is always a highlight of the conference. Robert Fathauer, the curator, collected submissions. He then assembled a Jury that decided on the works to include in the exhibition. This year we will feature the work of 40 artists working in a variety of visual media. One design by Brian Evans was chosen as the cover image for the Proceedings. The cover was expertly designed by Jeff Rutzky.

In organizing and producing a Bridges Conference, the Bridges Organization relies on the concerted volunteer efforts and general goodwill of a large number of people. The members of the board of the non-profit Bridges Organization work on aspects of conference planning and management throughout the year. Robert Fathauer has worked tirelessly to run the Art Exhibition, as well as hosting the registration website. Mara Alagic and Paul Gailiunas oversee the workshops. This year we received support and participation from Mary Hofstetter, the president of The Banff Centre, Barry Schiffman, the Director of Music Programs, Kerry Stauffer, the Director of the Creative Electronic Environment, Leslie Vanderzwet, General Manager, and Kameko Higa, the manager of Conference Services. Also, Bridges would never have made it to Banff

without the support of Nassif Ghoussoub, the director of BIRS, along with BIRS Station Manager Brenda Williams, Programme Coordinator Wynne Fong, and Administrator Danny Fan. To these people we offer our sincere gratitude. They have helped make the conference an event that many of us look forward to all year.

Most of all, we would like to thank everyone who has made the trip to Banff to participate in this year's conference. We look forward to talking to you, seeing your work, exchanging ideas with you, and building one more bridge to another source of inspiration.

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