

Report on Bridges 2016—In Memory of Our Founder, Reza Sarhangi (1952–2016)

Carlo H. Séquin

For the last decade, the international Bridges conference has showcased mathematical connections in art, architecture, music, and many other cultural domains. It regularly attracts a few hundred participants—artists, mathematicians, computer scientists, teachers, etc.—from dozens of countries.

Sample Annual Bridges Conference Sites

2014 Seoul, South Korea
 2011 Coimbra, Portugal
 2010 Pécs, Hungary
 2009 Banff, Canada
 2008 Leeuwarden, Netherlands
 2006 London, United Kingdom
 2003 Granada, Spain

This year the annual Bridges conference was held at the beautiful University of Jyväskylä in Finland. The conference comprised four days of talks and interactions plus an optional excursion day. The formal, refereed part of the conference entailed ten plenary presentations, forty regular papers, sixty-one short papers, and seventeen “hands-on” workshops. There was also a curated art exhibition, a festival of short mathematical movies, a session of mathematical poetry, and an informal theatre event performed by conference participants. More—

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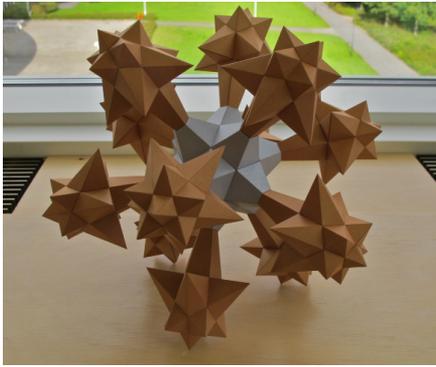
Founder Reza Sarhangi at the CrossBorderScience 2012 Conference in Kaposvár. (The photo was first published in an article by Dirk Huylebrouck, “Is mathematics ‘halal?’” in the Dutch popular science magazine *Eos*, www.kennislink.nl/publicaties/is-wiskunde-halal.)



Henry Segerman and his 4 π camera.



Prizewinner Judy Holdener discussing “Immersion.”



Robert Webb's "Game of Thorns."



Art Exhibit with George Hart's "Oxalis."

over, participants who did not want to formally present a refereed paper could give ten-minute summaries or display their works in a large "Show and Tell" area.

Sadly, this was the first conference where Reza Sarhangi, the founder of this conference series and the president of the Bridges organization, could no longer be with us and infect us with his boundless enthusiasm. The conference started with a touching memorial session, where Bridges board members and friends shared fond memories of interactions with Reza. We all miss him very much as a person, but it was also clear that he was present in spirit and that he lives on through his various legacies: the annual Bridges conferences, the mini-Bridges symposia, and a whole shelf full of beautiful and inspiring Bridges Proceedings.

The memorial session was followed by two particularly inspiring plenary papers. Marjorie Wikler Senechal's "The subtlety of influence: Math, art, and Black Mountain College" was an illuminating set of reminiscences

about the role of this college in the hills above Asheville, North Carolina, promoting a spirit and interactions similar to those fostered by the Bridges conferences. Henry Segerman then showed us what astounding pictures a true 4π -spherical camera can produce when coupled with the right image-processing software. On the second day, Judy Holdener talked about "Immersion in Mathematics," explaining, among other things, her black and white submission to the Art Exhibit, which won the prize for Most Effective Use of Mathematics.

In this year's Art Exhibit, the most astounding piece was "Gödel, Escher, Bach: just another Braid" by Hans Kuiper and Walt van Ballegooijen. The central piece consists of 256 cubelets connected in a fractal tetrahedral lattice. The black plastic struts of each cubelet were individually modulated in thickness to change the gray-tone density when the lattice was viewed from a particular direction. A frame was set up to show this lattice from

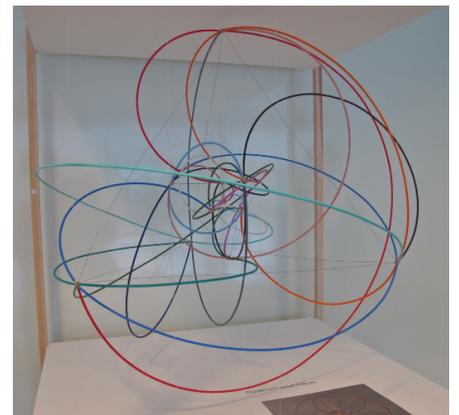


"Gödel, Escher, Bach: just another Braid" by Hans Kuiper and Walt van Ballegooijen.

the front, from one side, and from the bottom with two suitably placed mirrors. As a result, from the proper vantage point, one could see simultaneously the portraits of Gödel, Escher, and Bach. This piece won the Best of Show award.



Kyoko Urata: "Icosahedral Temari."



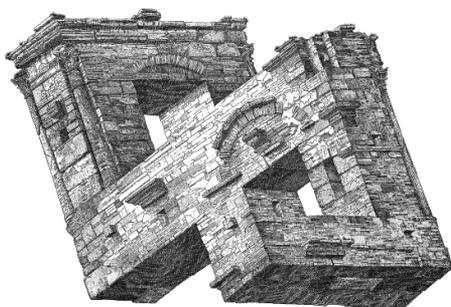
A. Wintterlin: "Projective Plane without Crossings."

Other awards were given to Kyoko Urata for "Icosahedral Temari" (Best Craftsmanship) and to Albrecht Wintterlin for "Projective Plane without Crossings" (Most Innovative). High-quality pictures of all exhibited artwork can be seen online in the "Bridges Galleries." Two additional special exhibits featured works by Rinus Roelofs, Lajos Szilassi, and István Orosz.

One of the four conference days was open to the general public. It is typically referred to as "Family Day," since it attracts a large number of



Rinus Roelof: "Elevations."



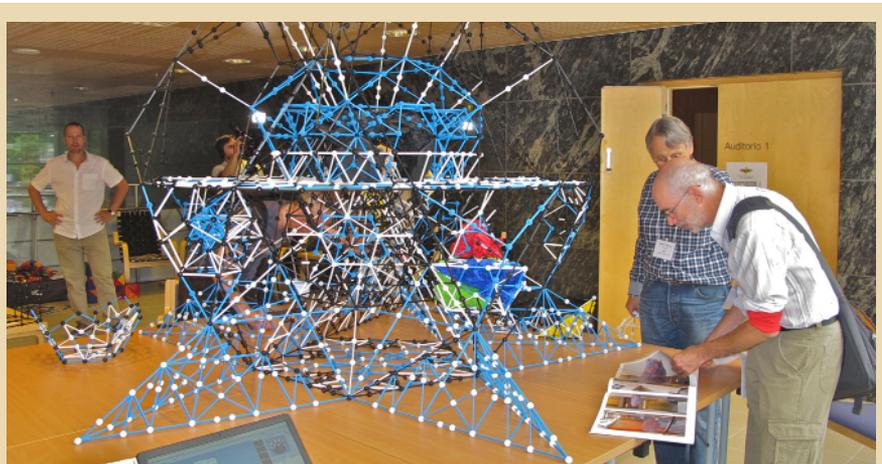
"An impossible geometry" by István Orosz.

children. The great lobby of the main conference building was teeming with multiple activities: sculpture constructions, dozens of "Show & Tell" tables, 3D-printing of mathematical pancakes, and occasional music performances. The unusual group photo on page 155 was taken by Henry Segerman with his 4π -spherical camera and manipulated with some special code he developed to produce a stereographic projection of the scene.

The traditional Music Night featured an exquisite concert by the duo Corey Cerovsek and Paavali Jumppanen.

The next Bridges conference will be held in Waterloo, Ontario, July 27-31, 2017. Check the Bridges website¹ for the Sarhangi memorial and material on past and future conferences.

¹bridgesmathart.org



Family Day activities.

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Carlo H. Séquin

ABOUT THE AUTHOR

For the last thirty years, Carlo H. Séquin has connected mathematics and art in graduate courses on solid modeling, computer-aided design, and rapid prototyping, as well as in freshman seminars “Symmetry and Topology.” Since 1994 he has collaborated with Brent Collins to create a few large sculptures such as “Pax Mundi” (at the H&R Block Headquarters, Kansas City) or “Music of the Spheres” and “Evolving Trefoil” (at the Agenstein Science Center of the Missouri Western State University in Saint Joseph, MO). He has attended all nineteen Bridges conferences so far and over those years has presented twenty-seven papers.