Bridges: A World Community for Mathematical Art

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This column is a forum for discussion of mathematical communities throughout the world, and through all time. Our definition of “mathematical community” is the broadest: “schools” of mathematics, circles of correspondence, mathematical societies, student organizations, extra-curricular educational activities (math camps, math museums, math clubs), and more. What we say about the communities is just as unrestricted. We welcome contributions from mathematicians of all kinds and in all places, and also from scientists, historians, anthropologists, and others.

Submissions should be uploaded to http://tmin.edmgr.com or sent directly to Marjorie Senechal, mi.editor1@gmail.com

3 The play was inspired by Senechal’s article “The Mysterious Mr. Ammann,” The Mathematical Intelligencer, 2004, 26(4), 10–21.
4 Cf. “In the lobby outside the lecture hall, there were always a few children, participants, and spouses seated or kneeling on the floor, busy joining 3720 ZomeTool connector balls to 10,680 struts in modules that each hour were added to two growing monster models, [3D] shadows of the 4D cantellated 600-cell. David Richter and Daniel Duddy orchestrated the project.” (Schattschneider 2006: 32).
negotiations initiated in Banff, the *Journal of Mathematics and the Arts*\(^5\)—a periodical dedicated to examining connections between mathematics and the arts—was started in 2007, published by Taylor & Francis, with the professional support of the Bridges community.

Schattschneider noted that “Mathematics creates art”; “Mathematics is art”; “Mathematics renders artistic images”; “Hidden mathematics can be discovered in art”; “Mathematics analyzes art”; “Mathematical ideas can be taught through art.” After eighteen consecutive years of Bridges gatherings, we can say that the inverses are also true: Art creates mathematics; Art is mathematics; Artistic images render mathematics; Hidden art can be discovered in mathematics; Art analyzes mathematics; Artistic ideas can be taught through mathematics. Together with the organization supporting these events, the Bridges conferences have established a two-way bridge, aiding transfer between mathematics and the arts that has a significant amount of traffic.

From its beginnings in 1998, Bridges has advocated for mathematics as a core component of STEM (Science, Technology, Engineering, Mathematics) education. Years before the STEM acronym was even created (Christenson 2011) and spread, Bridges had humanized it. The Bridges community has never had to expand its approach from STEM to STEAM (Science, Technology, Engineering, Arts, and Mathematics); it has always included those aspects of the arts, design, creative thinking, and artistic imagination so very necessary to, yet still so very lacking from many STEM projects today. From its inception Bridges has given the STEAM movement inspiration for a transdisciplinary and intercultural platform.

**Figure 1.** A colorful group of Bridges participants in front of the Gossamer Zometool model, a massive sculptural tribute to the late architectural visionary, Jean Christoph Kling, at the Bridges 2009 “Renaissance Banff II” conference. Five meters in diameter and assembled from 50,000 Tinkertoy-like parts, the gossamer model was the largest of its type ever attempted. One hundred fifty mathematicians and artists from all over the world and several of their children assembled the small plastic Zometool components into superstructures that became the final sculpture. The work took more than 250 person-hours, performed during breaks between presenting and attending talks. Although the model is built entirely from points and straight lines (i.e., nodes and struts) the model looks like a 3-dimensional “spirograph” drawing, with organic curves that mimic life forms. The underlying structure is derived from a shadow of a 6-dimensional cube. (Photo: Carlo H. Séquin.)


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