

Bridges

Mathematical Connections in Art, Music, and Science



2004

BRIDGES

**Mathematical Connections
in Art, Music, and Science**

**Conference Proceedings
2004**

Reza Sarhangi and Carlo Séquin, Editors

*Bridges: Mathematical Connections in Art, Music, and Science;
Conference Proceedings, 2004.*

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ISBN: 0-9665201-5-7
ISSN: 1099-6702

Prepared with the help of the Southwestern College Office of Communications and Public Relations, Winfield, Kansas, United States of America.
Printed by Central Plain Book Manufacturing, Winfield, Kansas, United States of America.
Distributed by MATHARTFUN.COM (<http://mathartfun.com>)

Front cover design: *Ornamented Rhombi-Icontahedron* by Chris K. Palmer
Back cover design: *Spiraling Cubes* by Rinus Roelofs
Cover layout: Chris K. Palmer

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Preface

This is the seventh instance of the conference *Bridges: Mathematical Connections in Art, Music, and Science*. The gathering has become an icon in the world of Art and Mathematics, and it is great to be back in the Bridges birthplace where the conference was held for its first four years from 1998 through 2001. The Campus of the Southwestern College in Winfield, Kansas, has always been particularly welcoming to the conference participants and has been able to hold them together in intense discussions until late at night. Many close friendships have formed over those years.

As usual the characters of the papers cover a wide spectrum from exotic new concepts to hard-core mathematical analysis. This is one of the charms and attractions of this conference, and it makes its proceedings an inspirational source book of ideas, a reference journal for art-math publications, as well as a workbook for courses and seminars. The 2004 Bridges proceedings book, in addition to the quality of articles, exhibits the hard work of paper reviewers. We would like to express our appreciation for the time and efforts that the referees put on to guarantee a quality publication, which is in your hands.

The rhombi-icontahedron on the front cover is ornamented with an original composition using a traditional tile set laser engraved onto wood. The pattern consists of rings of twelve pointed stars that would be on an equilateral triangular grid when tessellated on a plane. The pattern is slightly distorted to fit on the rhombic faces and the stars make rings of ten when the polyhedron is assembled. Ornamented polyhedra have been a subject of interest to Chris K. Palmer for many years but he has been recently inspired to do this work and others like it by contact with Marc Pelletier, Jay Bonner and George Hart.

The back cover, *Spiraling Cubes*, is a digital artwork by Rinus Roelofs. Each pair of cubes is connected in exactly the same way. The transformation needed to go from one cube to the following is a combination of a translation and a rotation: *Swing Translation*.

Special thanks must be given to the administrators and faculty at Southwestern College for their key roles in organizing the conference in Kansas. We also should thank Patrick Kane for his time and effort to organize the registration process, to Simon Luhur for his effort in updating the Bridges website, to Robert Craig for his help in compiling the Bridges index, to Eliza Gyampoh and Harini Cheruvu for their assistance, and to Chris Palmer for laying out the Bridges proceedings cover.

One of the key contributors whom we could always count on coming to this conference with some new intriguing insights into the world of numbers linked to music or art, was Steve Eberhart, a dedicated mathematician, an enthusiastic musician, and a great colleague! A severe illness has taken him away from us, and this year the conference will have to do without his humor and his charming stories. We will miss him – but we will remember him vividly! His spirit will live on at this conference.

