BRIDGES

Mathematical Connections in Art, Music, and Science

Conference Proceedings
1999

Reza Sarhangi, Editor

Bridges

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Preface

We pause at the beginning of the second gathering of a conference called Bridges to marvel at the diverse nationalities, cultures, languages, academic fields, and talents which make this conference possible. There are moments in our lives that are preserved in our memories beyond time and location. We want this to be one of those moments. Our hope is that the *Bridges Conference Proceedings* will assure this possibility. Only words and memories will remain. The rest will be gone.

The cover of the book has been decorated with two images. One was made centuries ago by an unknown artist based on years of practice and experiments with simple construction tools. The other was created a few months ago by a mathematician using high speed computers and contemporary technology. One is the production of a person who didn't have a solid knowledge of mathematics in today's sense. The other is the production of modern mathematics – Chaos Theory. One is from the East; the other is from the West. One is centuries old, during the time when today's productions were dreams. The other was created only a few months ago. But both bring a similar feeling. Both excite us. Both go somewhere inside us deeper than any words can describe. They are similar beyond culture, geographic location, time, and knowledge. Symmetry is universal. Mathematics expresses this universality.

The first Bridges proceedings came as the result of our excitement and love for a process with an unknown future. We did not know what to expect. The second proceedings, with the same excitement and love, has added the flavors of wisdom and experience. Can we say we have grown? We leave that to the reader to decide.

The proceedings gets its reputation from its authors who have spent hours creating quality work. At the same time, we should not forget about the many, many reviewers who patiently read these papers and commented on them for their improvement. In some cases, the reviewers explained in such detail how the paper could be improved that the review could be considered a paper itself. The short time available for reviewing papers brought even more responsibility to the reviewers, most of whom were overwhelmed by their own professional duties. To them we say a sincere "Thank you."

It was our intention that advice and comments from the reviewers come in language that encourages authors to improve their work – the language that is, unfortunately, rare in the academic world. Can we publish a valuable collection of papers and review them in a friendly environment that not only brings knowledge, but also creates community?

On May 1, 1999, the conference lost one of its close friends. Professor Richard Morrison, a member of the physics department of the University of New Haven in Connecticut, was more than a friend. Professor Ralf E. Carriuolo, his colleague for more than 30 years and a friend outside of the university, says, "He was so enthused when he returned from the conference last year that he kept asking me, almost

daily, if I had cleared my calendar for the end of July of this year so the two of us could go together. We read the proceedings from last year thoroughly and spent many wonderful breakfasts in my kitchen discussing several of the articles." Professor Morrison adopted the *1998 Bridges Conference Proceedings* as the textbook for a class of honor students at his school during the spring of 1999. He had planned to establish a scholarship for students to participate in the conference each year. We hope his colleagues will bring his dream to reality. The conference will do its part to make this dream possible.

Bridges has become symbolic of our own integrative studies program at Southwestern College. Here we invite students in their general education to consider where fields overlap or meet and which subjects seem to be transdisciplinary. Our two-semester course, Creativity, has called on the interests and creativity of more than half of our faculty and most of the fields represented here. A course titled Mathematics and Art was another of the pillars of this conference. There is a hunger for this gathering and dialogue among disciplines, and we are delighted that we can provide a home for this critical discussion of science, mathematics, and the arts.

Southwestern College has new leadership. Bridges 1998 could not have been realized without the support of Past President Carl Martin, Dean David Nichols, and their staff. Today, President Dick Merriman and his staff have continued this tradition of support for Bridges 1999. We are grateful for their encouragement for this conference and for all the Bridges yet to be built.

A large number of the papers in this collection and the previous one have been formatted and made ready for publication in the mathematics department of Southwestern College. Special thanks are due to Lois McCaw, Cathy Feist, Jennifer Dougherty, Jennifer Benevento, and Simon Luhur for their work in this regard.

Reza Sarhangi