

NASGEm News

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(ICEM—4)

July 25-29, 2010

Towson University in
Maryland, U.S.A.

In Memory of
Rex Montang
(1958 – 2010)



Claudette Engblom-Bradley,
Ed.D.
Editor-in-Chief of NASGEm
News

International Study Group on Ethnomathematics, Fourth Conference (ICEM-4)

ICEM-4 Report

by

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The International Conference on Ethnomathematics (ICEM-4) was held for the first time in the United States July 25-29, 2010, at Towson University in Maryland. ICEM-4 attracted over 80 people from 20 different countries and from 20 different states of the U.S. All are passionately interested in mathematics and international understanding and all eager to get to know each other and to learn more about the highly varied ways that mathematics is understood and taught in many cultures. The participants were friendly and congenial; it was an exciting opportunity to converse with people from many countries.

ICEM-4 included a celebration of ethnomathematics as a 25-year-old discipline, dating from the founding of the International Study Group on Ethnomathematics (ISGEm), now with papers published and books available. It provided four plenary talks, a variety of contributed presentations, several poster sessions, and two field trips, one to the

Smithsonian Institution's National Museum of the American Indian and one to the nearby museum of Benjamin Bannaker, known as the first African American scientist. Bannaker was an eighteenth century free black American who helped lay out the nation's capital and whose almanac was a best seller for the six years after Benjamin Franklin died. After the trip to the Bannaker museum, many ICEM-4 participants visited Baltimore's Inner Harbor, but the trip home included some unwelcome excitement. One of the two busses had a fire, so the riders left the smoking bus and crowded into the other. Nobody was hurt.

One of the repeated themes of the conference was that knowing one's roots gives the dignity that enables intellect to flower. As students learn about the mathematics in their own culture and ancient cultures, they are better able to embrace mathematics of all types. They and others find joy in these discoveries.

Other themes included building peace on earth via mathematics, and living a more fully human life via ethnomathematics.

The question of how we learn the mathematics of various cultures was implied in every talk, and the focus of some. Do we need to know the language? If we don't, how do we get the information? Many words in one language have no equivalent in another. How much can we trust even well-meaning, skilled translators?

How much does mathematics depend on written language? Ascher (1991) claimed that 90% of all cultures never developed written languages. Yet all of them used mathematics via an oral tradition. Ancient Pacific Islanders navigated canoes over thousands of miles in the Pacific, using fairly sophisticated trigonometry, function theory, geometry, and algebra without writing.

How ethical is it to invade others' cultures with questions? Usually careful protocols must be followed. How much dare we reproduce sacred art that a culture considers taboo to copy? How much must we adapt it to share with students and others?

Writing curricula using cultural mathematical topics was much discussed because many of the participants had worked so hard at it. Rik Pinxten from Belgium was allowed to study the Navaho language and mathematics only under the condition that he would write a geometry curriculum suitable for their children! Seeing people that look like themselves encourages children (and others) everywhere to believe that they too can succeed at difficult mathematics. (Harvey, Pinxton, & Van Dooren, 1983)

Indigenous weaving was a recurring theme. Tom Gilsdorf of North Dakota told how it gave dignity to Aztec women and that it, along with their role in family economics, did much to make the Aztec culture thrive as it did. When the Spanish came, the status of women plummeted. Samuel Aboagye told us that in his country of Ghana, "kente" weaving is primarily a male activity, although some women weave. According to Noor Aishikin Adam from Malaysia, weaving is a complex part of the Malay culture, and is done mostly by women.

Ethnomathematics pervades many other indigenous activities. Those presented at ICEM-4 included constructing houses in Papua New Guinea by Kay Owens, planning weddings by the Bedouins by Ada Katsap from Israel, beading and games in South Africa by Mogege Mosimege, stone masonry in Portugal by Darlinda Moreira and Eugenia Pardal Pires, bus conductors' mental accounting in India by Nirmala Naresh, and the aforementioned long-distance navigation by Linda Furuto. Many of the participants had studied at least one indigenous culture deeply for years.

The conference began with a plenary talk by Ubiratan D'Ambrosio from Brazil, introduced by the conference organizer Larry Shirley as "the father of ethnomathematics." Ubi, as everyone calls him, made a strong plea for "respect, solidarity, and cooperation" as fostered by ethnomathematics. He lamented (as did others) the ivory tower tendencies of ethnomathematicians and urged participants to "Go out into the world," admitting "It is not so easy."

More strongly, he worried that mathematics has been so often used for "weaponry, unrestrained capitalism, and strategies of domination." He asked, "Can we develop a non-killing mathematics?"

He talked at length about the threat of climate change, and showed a breath-taking photo of hundreds of stopped cars in a traffic jam in his hometown of Sao Paulo, "the largest metropolis in the southern hemisphere." He observed that modern technology has invented time-saving devices but the time is too often used to sit in traffic jams, which does not improve the quality of human life.

He said that "unplanned urban growth" and "unplanned family growth" has resulted in crowds of street children "in every city on our planet." They are developing an ethnomathematics of their own as they cope with issues of money, time and space. He told us their culture has been studied and reported by Monica Mesquita, whose life research has been "children in street situation" in São Paulo/Brazil, Lisbon/Portugal, Nottingham/UK, Sal/Cape Verde, Luanda/Angola, and Kupang/Timor. Ethnomathematics involves more than just indigenous peoples.

He concluded that time and space have been basic to traditional mathematics in all cultures but the web is changing our perception of both. We can communicate quickly with people far away and do our banking at 11:30 PM. How will this affect mathematics and our lives?

Formally and informally, many people expressed appreciation to Larry Shirley, Professor of Mathematics and Associate Dean, College of Graduate Studies & Research at Towson University, for such a wonderful conference. He and his assistants, Judy Macks, a colleague, and Jefferson Shirley, his mathematician son who is clearly an expert on technology, were visible much of the conference, working to make things run smoothly. I know I reflect the feelings of all participants as I hereby express my gratitude. Furthermore, I want to express my personal appreciation to Rick Silverman for his encouragement and help in preparing this article.

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Ascher, M. (1991) *Ethnomathematics: A Multicultural View of Mathematical Ideas*, Boca Raton: Chapman & Hall/CRC

Harvey, F., Pinxten, R. & Van Dooren, I., (1983). *The Anthropology of Space: Explorations into the Philosophy and Semantics of the Navajo.*, Philadelphia, PA: The University of Pennsylvania Press

NASGEM Welcome Remarks to ICME-4

given by

Dr. Bill Collins

Eighteen years ago, I attended a quadrennial meeting of math educators, ICME 7 in Quebec City. Living in upstate NY, roughly a 7-hour drive from the conference, I felt this would be my only opportunity to experience such an event. While there were many topics of interest at that meeting, it was there that I first met the people who shared my enthusiasm for the confluence of math and culture. Finding other people who were interested, not only in the homogeneity that many cherish in math, but rather in its diversity, led to many personal friendships as well as professional collaborations since that time.

So I'm here as a past president of NASGEM, the North American Study Group on Ethnomathematics, the Regional Organizational Host, to welcome you to ICME-4, the first such meeting on this continent.

NASGEm is the regional branch of ISGEm, the official host, so I'd also welcome you as a representative of the International Study Group on Ethnomathematics.

So while my welcome is universal, I confess that it's a special welcome to those of you for whom this is your first international meeting. May the personal friendships and professional collaborations you form here at ICEM-4, last a lifetime.



**In Memory
of
Rex Matang
(1958 – 2010)**

**By
Kay Owens**

Ethnomathematics and Papua New Guinea have lost one of their significant scholars, Rex Asaka Sanankeoc Matang. He was 52. Rex was a warm, friendly and considerate person. He was highly respected by his Kâte people (Morobe Province) who had conferred on him the position of chief Elder since the passing of his father whom he greatly admired. During his research, he spend some time at home in the rugged mountain regions and his heart went out to helping his people. In another language group, we were visiting for our research, he spoke eloquently in Tok Pisin to the village men and women about elementary school and research. He was a regular attender and support of his Lutheran church. He commented that his language was rich in spiritual words. Rex's son has continued his studies in linguistic work and Melanesian culture, his daughter is an

agriculture graduate. His brother is a mathematics lecturer at a teachers' college. His death was hard to come to grips with for his extended family with memorial services in Goroka, Lae, and he was buried in his village (1000km apart). His wife, daughter and second son returned to her rural village in another part of the country.

Rex was a lecturer at the University of Goroka and Director of the Glen Lean Ethnomathematics Centre. The work of this Centre can be found at <http://www.uog.ac.pg/glec/> where you will find a number of Rex's papers under Key papers. Rex was getting ready to board a plane to finalise his thesis at Southern Cross University Australia when he collapsed in early January, 2010. Rex was researching the impact of home language on the arithmetic understandings of children in elementary schools (Prep, Grades 1 and 2, with teachers who speak the local language). PNG has 800 languages so it was important to find out whether beginning school in the home language had an impact on education. He showed that students who began school with their vernacular language and transitioned to English rather than beginning school with the lingua franca (Tok Pisin) or English understood the concepts better. For a paper on this work see ICME 11.

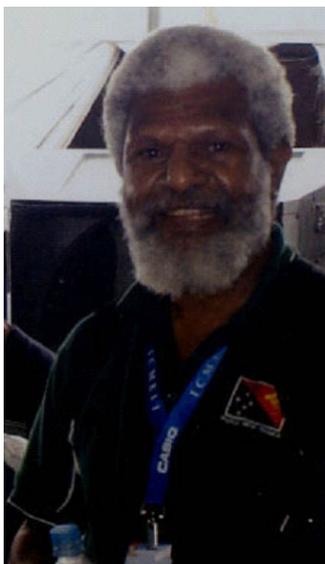


Rex loved books which he had piled around his office, each precious. He was an excellent organiser having Geoffery Saxe, Morobeian dancing group and school children as well as a number of dignitaries at the centre opening. With Lucy, his wife, Wilfred Kaleva (former Head of the Mathematics and Computing Department and also an ethnomathematician) and his wife, and helpers they decorated the Centre in true PNG fashion. Rex managed a large National Science Foundation grant meticulously. He guarded the Centre's materials carefully. He applied for funds to attend postgraduate studies and international conferences, a near impossibility from PNG with its low currency and rurality. He organised his research around the country. Rex admired Geoffery's work on cognitive anthropology and was inspired by Ubitran D'Ambrosio whom he spoke about fondly.



Rex will be remembered from his ICME 10 and 11 presentations and the friendships he made especially with the Africans in Copenhagen and everyone in the Working Group in Monterrey. We miss him greatly and acknowledge his work and its importance in promoting ethnomathematics in PNG with its colonised curriculum. He has contributed theoretically and practically to the Reform in education in which culture is to be considered especially at elementary school. Through his work at the University with teachers, mainly secondary teachers and his service on national curriculum committees, he ensured teachers and curriculum writers understood the value of ethnomathematics.

Whenever we acknowledge and remember the Elders of Indigenous colonised communities, we shall remember Rex Asaka Sanankeoc Matang.



Rex Matang

(1958 – 2010)

An Ethnomathematical Encounter: A Cultural Immersion of Mathematics Teachers in the Daily Practices of Craftsmen in the Old City of Fez- Morocco

by
Iman Chahine

In an attempt to immerse student teachers in the realities of those cultures where people appropriate their ethnomathematical practices as part of daily life routines, 19 graduate students from Middle-Secondary Education & Instructional Technology at Georgia State University (GSU) joined a 7- week summer program on ethnomathematics. The primary purpose of this session was to examine how different cultural groups engage in ‘mathematizing’ in ways that are quite different than what is typically expected in formal institutionalized settings. This experience was facilitated over 7 weeks and dovetailed two components:

Part 1: Class work (June 16- July 23, Location: GSU). Prior to immersion, students attended 4-week long classes at GSU in which they were introduced to ethnomathematics as a program of study involving the mathematical practices emerging from a plethora of historical and cultural junctures. Implications of integrating ethnomathematics in the school curriculum were also examined. The coursework employed an assortment of in-class activities that included investigations of the ethnomathematical ideas emanating from myriad activities such as creating calendars, art and decoration, divination, and counting schemes. Various educational modalities were incorporated and orientation and preparation for on-site activities in Morocco was administered.

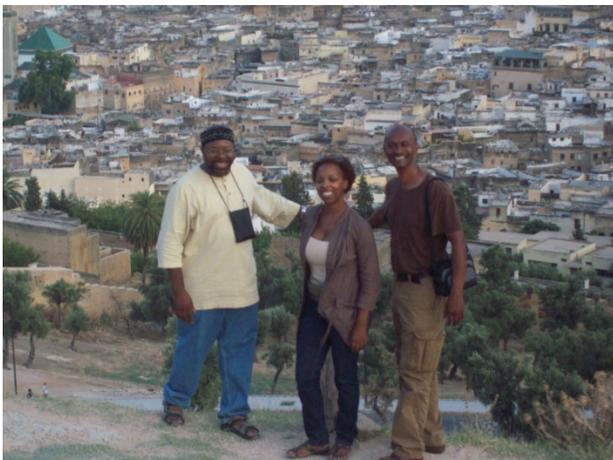
Part 2: Cultural immersion (July 26-July 31, Location: Old City of Fez-Morocco). This component afforded field experiences of what it means to do ethnomathematics by immersing students in the authentic, elusive, and problematic daily experiences of expert craftsmen and practitioners in the old city of Fez, Morocco. Students visited artisans and craftsmen workshops that master the art of tile making, bronze carving, embroidery, fabric weaving, and traditional carpentry. During the site visit, students explored the impressive integration of those powerful hand and mind tools that the Moroccan craftsmen continuously used to systematically plan, conceptualize, visualize, and execute a myriad of design projects as part of their daily practice. Students documented their field experiences by video-taping episodes capturing those nuances in

which the craftsmen were involved in a process of ‘mathematizing’. Students were also asked to keep a daily journal to document and reflect on their lived experiences as a result of immersion.

The thrust of the immersion program was to offer students a trans-cultural experience where they can participate in the realities of knowing and doing mathematics amidst contextual challenges. A less direct goal was to help endow students with the necessary predispositions to look at the world through ethnomathematical eyes, to see the benefits (and risks) of thinking analytically about commonplace issues, and to provide an alternative lens to view the mathematics that transpires in the workplace with greater precision. By the end of the program, students were afforded the opportunity to:

- 1) Examine the proliferation of mathematics in the daily practice of craftsmen in the old city of Fez by exploring the impressive integration of those powerful hand and mind tools which were continuously used to systematically plan, conceptualize, visualize and execute a myriad of design projects as part of their daily practice.
- 2) Investigate the problem solving behavior of craftsmen and apprentices in their traditional work environment and examine various heuristics that emerged in the process.
- 3) Develop an awareness and appreciation of the complex dynamics that instigate the evolution of mathematical tools.
- 4) Think more critically and humanely about what it means to do mathematics in a risk-taking environment in which the practitioners needed to continuously defend and justify their work and where precision and parsimony guided the design and execution of projects’ schemes.

After immersion, students completed a critical reflection paper describing their immersion experiences and comparing their newly gained knowledge and perceptions as a result of immersion to preconceived notions and dispositions before the immersion.



MSIT students overlooking the Medina (old city in Fez), a UNESCO world heritage site and one of the largest car-free urban area.



On the outskirts of Medina, a view from a 15th century citadel to the north of the old city. Assistant professor Iman Chahine, in the middle, with some students who went on the immersion trip in summer 2010.



The Bab Boujeloud gate in medina Fez, the facade is covered with blue ceramic handmade tiles painted with flowers and calligraphy; the inside is green, the official color of Islam.



Working in a traditional carpentry workshop, teachers witnessed the artisans engraving geometric designs using pure and natural cedar wood and traditional authentic tools.



Before the trip to Morocco, students spent 4 weeks learning about ethnomathematics as a program of study involving the mathematical techniques emerging from a myriad of historical and sociocultural practices.

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For

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Greer, B., Mukhopadhyay, S., Powell, A. B., Nelson-Barber, S., Eds. (2009). *Culturally Responsive Mathematics Education*, Studies in Mathematics Thinking and Learning Series, New York, NY: Routledge. Here is the publisher's link that has more information (table of content, etc.) <http://www.routledge.com/books/details/9780805862645/>