# International and African Mathematical Union
# Commission
# on the
# History of Mathematics in Africa

# (AMUCHMA)

# AMUCHMA-NEWSLETTER-31

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Maputo (Mozambique), 31.03.2006

# AMUCHMA

Chairman: Paulus Gerdes (Mozambique)
Secretary: Ahmed Djebbar (Algeria)
Honorary members: Abdoulaye Kane (Senegal), Georges Njock (Cameroon), Théophile Obenga (Congo-Brazzaville, USA), Claudia Zaslavsky (USA)
Members: Mohamed Aballagh (Morocco), Mahdi Abdeljaouad (Tunisia), Nkechi Agwu (Nigeria, USA), Djamil Aïssani (Algeria), Marcia Ascher (USA), José Barrios García (Canary Islands, Spain), Muhammad Bello (Nigeria), Salimata Doumbia (Côte d'Ivoire), Ron Eglash (USA), Kgomotso Garegae (Botswana), Cyprien Gnanvo (Benin), Youcef Guergour (Algeria), Jan Hogendijk (Netherlands), Dirk Huylebrouck (Belgium), Annette Imhausen (Germany), Abdulcarimo Ismael (Mozambique), Jama Musse Jama (Somalia), Mogege Mosimege (South Africa), David Mtwetwa (Zimbabwe), james Ritter (France), Jacques Sesiano (Switserland), Lawrence Shirley (USA), Bernard Vitrac (France), Scott Williams (USA)
Corresponding Members: Pascal Kossivi Adjamagbo (Togo, France), Manuel Cadete (Angola), Nefertiti Megahed (Egypt), Mary Teuw Niane (Senegal), Daniel Soares (Mozambique), Kalifa Traore (Burkina Faso), John Babila Njingum (Cameroon).

## 1. OBJECTIVES

AMUCHMA was formed in 1986 by the African Mathematical Union as its Commission on the History of Mathematics in Africa, with the following objectives:

a. To improve communication among those interested in the history of mathematics in Africa;
b. To promote active cooperation between historians, mathematicians, archaeologists, ethnographers, sociologists, etc., doing research in, or related to, the history of mathematics in Africa;
c. To promote research in the history of mathematics in Africa, and the publication of its results;
d. To cooperate with any and all organizations pursuing similar objectives.

The main activities of AMUCHMA are as follows:

a. Publication of a newsletter;
b. Setting up of a documentation centre;

c. Organisation of lectures on the history of mathematics at national, regional, continental and international congresses and conferences.

Taking into account the growing number of scholars outside Africa doing research on the history of mathematics in Africa, it was decided at the end of 2004 to transform AMUCHMA into an International Commission, maintaining its original acronym. The African members continue to be appointed by the Executive Committee of the African Mathematical Union. The international members are invited based on their research contributions.

## 2. MEETINGS, EXHIBITIONS, EVENTS

### 2.1 6th Pan-African Congress of Mathematicians

The 6th Pan-African Congress of Mathematicians took place in Tunis from September 1 to 6, 2004. During the congress the English and French language versions of book "Mathematics in African history and cultures. An annotated bibliography" by Paulus Gerdes and Ahmed Djebbar was launched. Copies were distributed to the congress participants.
Ahmed Djebbar (Algeria) gave the plenary address "*From Cairo to Marrakech: Thousand years of mathematics in the North of Africa*."
Paulus Gerdes (Mozambique) presented two invited lectures "*From African 'sona' to cycle matrices and variations*" and "*Woven polyhedra in African cultures*."

### 2.2 8th Maghrebian Colloquium on the History of Arab Mathematics

The 8th Maghrebian Colloquium on the History of Arab Mathematics took place in Tunis from 18 to 20 december, 2004. The President and Secretary-General of the African Mathematical Union, Abderrahman Boukricha (Tunisia) and Nouzha El Yacoubi (Morocco) were present at the opening ceremony.
The following papers were presented at the colloquium:

* Abdelajouad, Mahdi (Tunisia): *Il y a 800 ans mourait le mathematician maghrébin Ibn al-Yasamîn* [800 years ago the Maghrebian mathematician Ibn al-Yasamîn died],
* Ausejo, Elena & Benito, M. (Spain): *Le calcul des problèmes d'héritage en Andalus* [calculation of inheritance problems in Andalusia],
* Bebbouchi, Rachid (Algeria): *Algèbre et algorithme, même source mais non même parcours* [Algebra and algorithm: the same source but not the same course]
* Bentaleb, Farès (France): *Ibn al-Hâ'im et ses travaux mathématiques* [Ibn al-Hâ'im and his mathematical works],

* Bouzari, Abdelmalek (Algeria): *Les coniques de l'Istikmâl d'al-Mu'taman dans la rédaction d'Ibn Sartâq* [ The conic sections of the *Istikmâl* of al-Mu'taman in the redaction of Ibn Sartâq],
* Caianiello, Eva: *Interest and usury in Fibonacci's Liber Abacci. A first comparaison of the mathematical tradition of the Western Muslim World*,
* Calvo, Emilia & Puig, Roser (Spain): *Andalusian improvements in the field of astronomical instruments. Materials and perspectives* [Le développement des instruments astronomiques en Andalus. Bilan et perspectives],
* Cheddadi, Abdesselam (Morocco): *Le problème de Ceuta, un exercice de mathématique maghrébine au temps des Almohades* [The problem of Ceuta, an exercise of Maghrebian mathematics in the time of the Almohades],
* Cobos, José M.: *Contribution à la connaissance des sciences dans la Taïfa de Badajoz* [Contribution to the knowledge of the sciences in the *Taïfa* of Badajoz],
* Comes, Mercè & Ruis, Monica (Spain): *Kiblah and nautical charts: Finding Kiblah in the Islamic Mediterranean Charts*,
* De Young, Gregg (USA): *Arabic into Latin : The case of Euclid's Elements*,
* Djebbar, Ahmed (Algeria): *La tradition mathématique du Maghreb au Caire : l'exemple du Hâwî al-lubâb d'Ibn al-Majdî* [The mathematical tradition from the maghreb to Cairo: the example of the *Hâwî al-lubâb* of Ibn al-Majdî],
* Escribano, R. Carmen & Fernandez, Gabriela (Spain): *Les mathématiques d'al-Andalus dans la transition du X^e^ au XI^e^ siècle* [The mathematics of Andalusia in the transition from the 10th to the 11th century],
* Guergour, Youssef (Algeria): *Al-Mu'taman (m. 1085) et le théorème de Pythagore : ses sources et ses prolongements* [Al-Mu'taman (d. 1085*)* and the theorem of Pythagoras: its sources and continuation],
* Harbili, Anissa (Algeria): *Le Takhlis d'al-Ghurbi : un commentaire inédit du Talkhis d'Ibn al-Bannâ* [The *Takhlis* of al-Ghurbi: an unpublished commentary of the *Talkhis* of Ibn al-Bannâ],
* Hoyrup, Jens (Denmark): *Questions for the historiography of Arabic mathematics derived from abbaco mathematics* [Questions pour l'historiographie des mathématiques arabes tirées des mathématiques de l'abaque],
* Laabid, Ezzaim (Morocco): *Le Hisâb ad-dawr dans la tradition mathématique des héritages en pays d'Islam*
* Martos Quesada, Juan (Spain): *Les mathématiciens d'al-Andalus à l'époque Omayyade (IX^e^-X^e^ s.)* [The mathematicians of Andalusia at the Omayyade epoch (9th – 10th c.],
* Pinel, Pierre et Taha Abdelqaddous (France): *La discussion de la conservation des rapports anharmoniques sur la sphère par les savants arabo-musulmans* [The discussion of the conservation of the anharmonic relationships on the sphere by arab-muslim scholars],

* Ramirez M., Angel & Carlos Uson Villalba (Spain): *L'art mudéjar aragonais: Algèbre et géométrie modelées en brique, bois et plâtre* [Aragon mudejar art: Algebra and geometry modelled in brick, wood and plaster],
* Schubring, Gert (Germany): *Le processus d'algébrisation comme un des déterminants de l'histoire des mathématiques* [The process of algebraisation as one of the determinants of the history of mathematics],
* Schwartz, Randy (USA): *Issues in the Origin and Development of Hisab al-Khata'ayn (Double False Position)*,
* Sesiano, Jacques (Switserland): *Harakat-e Faras ast*,
* Souissi, Mohamed (Tunisia): *Problèmes "solides" d'origine hellène traités par certains mathématiciens arabo-musulmans* ['Solid' problems of Hellenic origin treated by certain arab-muslim mathematicians],
* Spiesser, Maryvonne & Pinel, Pierre (France): *Eléments mathématiques et linguistiques pour une recherche des sources arabes du Liber abbaci de Fibonacci : l'étude de la numération et des pratiques opératoires* [Mathematical and linguistic elements for an analysis of the Arab sources of *Liber abbaci* of Fibonacci: the study of numeration and operatory practices],
* Zemouli, Moussa (Algeria): *Les mathématiques dans la classification des sciences : Aspects bibliographiques et épistémologiques* [Mathematics in the classification of sciences: bibliographic and epistemological aspects].

## 2.3 International Colloquium on the History of Mathematics in Bari (Italy)

The department of mathematics of the University of Bari (Italy) organized an international colloquium on the history of mathematics (January 21-22, 2005) to launch the new international mathematical journal entitled *Mediterranean Journal of Mathematics*. Although the journal will only be dedicated to the publication of papers in pure and applied mathematics, the organizers Francesco Altomaré and his team, had chosen the history of mathematics in the mediterranean as theme for the colloquium. The following papers were presented:

* Manuel de Leon (Spain): *Collaboration in Mathematics in the Mediterranean countries : Past, Present and Futur* [Collaboration en mathématique dans les pays méditerranéens : Passé, present et futur],
* Gilles Godefroy (France): *The adventures of numbers* [L'aventure des nombres],
* Ahmed Djebbar (Algeria & France): *Les mathématiques arabes, de l'héritage gréco-indien à la réception européenne* [Arab mathematics, from the Greek-Indian heritage to the European reception],
* Umberto Bottazzini (Italy): *Il destino di Pitagora dalla Magna Grecia al nazionalismo* [The destiny of Pythagoras from the Great Greece to nationalism],
* Nikolaos K. Artemiadis (Greece): *La science de l'antiquité grecque* [The science of the Greek antiquity].

## 2.4 Realities re-viewed / revealed: Divination in Sub-Saharan Africa

A conference on "Divination in Sub-Saharan Africa," took place at the National Museum of Ethnology (Leiden, Netherlands) on July 4-5, 2005. Paulus Gerdes (Mozambique) presented the keynote address "*On mathematical ideas in African cultural practices*." At the panel "*mathematically inspired interpretations of divination*" the following papers were presented:

* David Zeitlyn (UK), *Almost the real thing – using computer based simulation to study mambila divination*,
* Ron Eglash (USA), *An ethnomathematics comparison of African and Native American divination systems*,
* Franklin Tjon Sie Fat (Netherlands), *Binary models in divination in Africa and beyond*,
* Jan Jansen (Netherlands), *Maninka sand divination: a formalized teaching trajectory in an illiterate context*.

## 2.5 Series of lectures in Egypt

From November 5 to 12, 2004, Ahmed Djebbar (Algeria) gave a series of lectures in Egypt at the invitation of the Cultural services of the Frennch Ambassy in Egypt, in the context of the programme of mathematical training coordinated by Marc Boccone. Seven lectures on the history of mathematics were given:

* A lecture on "*Mathematics education and its history*" (November 7) in the French Cultural and Cooperation Centre. The audience was composed of Egyptian inspectors of mathematics from Cairo and surrounding areas (about 40) and mathematics students from the University Institute for Teacher Training.
* Four lectures in Cairo and 2 in the Bibliotheca Alexandrina of Alexandria for college and secondary school students (about 500) about the "*Arab phase in the history of algebra*."

## 2.6 Series of lectures in Norway

At the Conference "Knowledge Production and Higher Education in the 21st century" held at the University of Bergen (Norway) Paulus Gerdes (Mozambique) was invited the deliver on August 31, 2005, the plenary Memorial Lecture Stieg Mellin-Olsen (1939-1995), entitled "*Forms of valuing the embedded knowledge and creativity of African artisans*." In the days before and after the Memorial lecture he gave the following lectures:

* "*About traditional African sand drawings and their exploration in mathematics education and research*" for staff and post-graduate students at Agden University College (Kristiansand, August 29);

* "*African sand drawings and basketry in mathematics education*" and "*People's knowledge and culture: The case of Mozambique*" for staff members at Bergen University College (Landas, August 30);
* "*About traditional African sand drawings"* for students and staff and "*Basketry and geometry in Africa*" for staff members at Oslo University College (September 2).

## 2.7 Papers presented at recent meetings

* At the 4th International Meeting on the History of Africa, held at the Eduardo Mondlane University (Maputo, Mozambique) from September 8-11, 2004, Paulus Gerdes (Mozambique) gave a plenary address entitled *"Mathematics in the history of the African continent*."

* On October 15, 2004, Ahmed Djebbar (Algebra) gave a lecture on "*Scientific activities in the Maghreb and Andalusia from the 9th to 15th century*" in Helsinki (Finland) during the Arab film day organised by the Finnish Cinemateque.

* On November 15, 2004, Ahmed Djebbar (Algeria) gave a conference at the Piccolo Theater of Milan (Italy) on "*The Arab sciences around the Mediterranean*."

* Paulus Gerdes (Mozambique) presented on July 6, 2005, at the Mathematics Institute of the University of Amsterdam (Netherlands) an invited paper on *"From the geometry of African sand drawings to new symmetries and matrices*."

* At the 32nd International Annual Conference of the Southern African Society for Education, held at the Eduardo Mondlane University (Maputo, Mozambique) from September 21-23, 2005, Paulus Gerdes (Mozambique) gave a keynote address entitled *"On education and culture: Incorporating mathematical ideas from African cultural practices into mathematics education*."

* Parallel to the exhibition "The Golden Age of Arab Sciences", Ahmed Djebbar organized with UNESCO an International Conference (December 15-16, 2005, Paris, France) on "*The introduction of the history of sciences in higher education in the Islamic countries*."

# 3. CURRENT RESEARCH INTERESTS

See under 5: Theses

## 4. NOTES AND QUERIES

This section is reserved for questions that readers would like to have answered; these are the 'queries'. The answers will be the 'notes'. If you have questions or answers about sources, dates, names, titles, facts, or other such matters related to the history of mathematics in Africa, frame them in clear and concise language and send them to the editors. If you are answering a question, make clear reference to that question. All readers may send both questions and answers. Each will be published with the name of the sender.

## 5. THESES

* On January 27, 2006, Ezzaim Laabid defended at the Université Mohammed V – Agdal (Rabat, Morocco) with success his doctoral thesis (Doctorat d'état) entitled "*Les techniques mathématiques dans la résolution des problèmes de partages successoraux dans le Maghreb médiéval : l'exemple du 'Mukhtasar' d'al-Hûfî (m. 588/1192)*" [Mathematical techniques in the solution of inheritance problems in the medieval Maghreb: the example of the *Mukhtasar* of *al-Hûfî (d. 588 / 1192)*]. His thesis advisors are Driss Lamrabet (Morocco) & Ahmed Djebbar (Algeria).

* Kalifa Traoré (Burkina Faso) is concluding at the Université de Québec (Montréal, Canada) a doctoral thesis entitled "*Étude des pratiques mathématiques développées en contexte par les Siamous au Burkina Faso* " [Study of mathematical practices developed-in-context by the Siamous of Burkina Faso]. Nadine Bednarz and Ph. Jonnaert are his thesis advisors.

* In 1977, Madiambu Kaseka concluded at Université de Montréal (Canada) a masters thesis entitled "*L'histoire de la formation mathématique des enseignants du secondaire au Zaïre*" [The history of the mathematical education of secondary school teachers in Zaire (DR Congo)].

## 6. SOURCES

### 6.1 Examples of Books published by African Mathematicians (3)

To give the readers of the AMUCHMA Newsletter an impression of books and booklets published by African mathematicians, we continue in this issue to present examples. Any reader who has information on books not yet referred to in the AMUCHMA Newsletter, please contact the editors.

João Carlos Beirão & Bhangy Cassy (Mozambique)

* *Cálculo diferencial em $R^n$* [Differential calculus in $R^n$], Imprensa Universitária, Maputo (Mozambique), 2005, 226 p.

Fethi Belgacem (Tunisia)
* *Elliptic boundary value problems with indefinite weights: variational formulations of the principal eigenvalue and applications*, Addison Wesley Longman (Pitman research notes in mathematics series, 368), London (UK), 1997, 236p.

Leonard Kwuida (Cameroon)
* *Dicomplemented Lattices: A Contextual Generalization of Boolean Algebras*, Shaker (Germany), 2004, 132 p.

Gaston Mandata N'Guereka (Central African Republic)
* *Almost Automorphic and Almost periodic Functions in Abstract Spaces*, Kluwer, New York (USA), 2001
* *Topics in almost automorphy*, Springer, New York (USA), 2004

Boniface Nkemzi (Cameroon)
* *Numerische Analysis der Fourier-Finite-Elemente-Methode für die Gleichungen der Elastizitätstheorie* [Numerical analysis of the Fourier finite elements method for equations from elasticity theory], Tectum Verlag, Marburg (Germany), 1997, 109 p.

Carl Rohwer (South Africa)
* *Nonlinear Smoothing and Multiresolution Analysis*, Birkhauser International Series of Numerical Mathematics, Basel (Switserland), 2005

Maurice Tchuenté (Cameroon)
* *Parallel Computation on Regular Arrays*, Halsted Press, New York (USA), 1991

## 7. REVIEWS

None were received.

## 8. HAVE YOU READ?

### 8.1 Publications on the History of Mathematics in Africa

#460 Crowe, Donald W. & Dorothy K. Washburn: **Geometrical, Perceptual, and Cultural Perspectives on Figure/Ground Differences in Bakuba**

**Pattern**, *Visual Mathematics*, 2005, 7(3) [http://www.mi.sanu.ac.yu/vismath/bridges2005/crowe/index.html]

"Two tabletops carved by a Bakuba wood-carver reveal a surprising duality. Although the carvings at first glance appear completely different, closer attention shows that the carved portion of each is exactly the uncarved portion of the other. Hence, in a certain sense, they have exactly the same symmetries. We discuss the cultural insights suggested and supported by this observation."

#461 Djebbar, Ahmed: ***L'algèbre arabe, genèse d'un art*** [Arab algebra, genesis of an art], Paris, Vuibert-Adapt, 2005, 211 p. (ISBN 2-7117-5381-6, 2-9096-8065-7) (Preface: Bernard Maitte)

Presents an overview of the genesis of algebra in Arab culture. The introduction explains the context in which the Arab algebraic tradition emerged (p. 11-18). The following chapters constitute the first part entitled "Arab algebra in the Muslim East": "The first steps of algebra as a discipline" (p. 19-48), "The Arab algebraic practices in the 9th century" (p. 49-51), "The contributions of the 10th century" (p. 51-54), "The new orientations of algebra in the 11th and 12th centuries (p. 54-70), and "The algebraic practices in the east after the 12th century" (p. 70-72). The second part "Arab algebra in the Muslim West" is composed of two chapters: "The beginnings of algebra in the Muslim West (p. 74-78) and "The algebraic practices through existing works" (p. 78-104). The third part is about Arab algebra in Europe (p. 105-116). The first appendix (p. 123-145) presents short biographies of mathematicians, including the following North Africans Abu Kamil (d. 930), Abu Bakr al-Hassan (12th century), Samaw'al (d. 1175), Ibn al-Yasamin (d. 1204), Ibn Rashiq (c. 1275), Ibn al-Banna (1256-1321), Uqbani (1320-1408), Ibn Qunfudh (1339-1407), Ibn al-Ha'im (1352-1412), Ibn Haydur (d. 1413), Ibn al-Majdi (1365-1447), Qatrawani (15th century), Sibt al-Maradini (1423-1506), Ibn Ghazi (1437-1513), and of mathematicians born outside Africa but who lived for many years in North Africa, like Ibn al-haytham (965-1041), Al-Qurashi (d. 1184), and Al-Qalasadi (1412-1485). Appendix 2 (p. 147-180) presents some types of algebraic problems. Appendix 3 (p. 181-184) presents testimonies on problems not solved by mathematicians from the countries of the Islam. Appendix 4 (p. 185-190) presents a lexicon of technicl terms, followed by the general bibliography in appendix 5 (p. 191-206) and an index.

#462 Djebbar, Ahmed: ***L'âge d'or des sciences arabes*** [The golden age of the Arabic sciences], Éditions Le Pommier & la Cité des sciences et d'industrie, Paris (France), 2005, 183 p. (ISBN 2-7465-0258-5)

Gives an overview of the development of the scientific production and practices realised in the Arabic language from the 8th to the 16th century. The chapters deal with mathematics, astronomy, geography, medicine, chemistry, mechanics and the appropriation of the Arab sciences in Europe.

#463 Djebbar, Ahmed (Ed.): ***Le catalogue de l'exposition "L'âge d'or des sciences arabes"*** [Catalogue of the exhibition "The golden age of the Arabic sciences"], Institut du Monde Arabe - Actes Sud, Paris (France), 2005

#464 Djebbar, Ahmed: **Les sciences autour de la Méditerranée jusqu'à la guerre de Cent ans** [Sciences around the Mediterranean until the 100-year war], *Cahiers art et science*, Université de Bordeaux 1 (France), numéro spécial 8, 2004, 75-90.

#465 Djebbar, Ahmed: **Savoirs mathématiques et pratiques métrologiques arabes** [Mathematical knowledge and Arab metrological practices], in: L. Moulinier, L. Sullimann, C. Verna & N. Weill-Parot (Eds.), *La juste mesure, quantifier, évaluer, mesurer, entre Orient et Occident (VIIIe-XVIIIe siècle)*, Presses Universitaires de Vincenne, Paris (France), 2005, 59-78.

#466 Djebbar, Ahmed: **Les sciences arabes et leur circulation autour de la Méditerranée** [Arab sciences and their circulation around the Mediterranean], in: *Figures de la science*, Editions Parenthèses, Marseille (France), 2005, 174-186.

#467 Djebbar, Ahmed: **Universalité et localité dans les pratiques scientifiques des pays d'Islam** [Universality and locality in the scientific practices of the countries of the Islam], *Alliage*, No. 55-56, 2005, 35-42.

#468 Djebbar, Ahmed: **Kamâl Eddîn Fârsî, Physicien et mathématicien novateur** [Kamâl Eddîn Fârsî, innovating physicist and mathematician], *Târikh-e'Elm*, Teheran (Iran), 2005, No. 3, 9-38.

#469 Djebbar, Ahmed: **Les poèmes mathématiques arabes** [The Arab mathematical poems], Revue *Pour la science*, Dossier No. 47, April-June 2005, 42-43.

#470 Friberg, Jören: ***Unexpected links between Egyptian and Babylonian mathematics***, World Scientific, Hackensack NJ (USA), 2005, 308 pp. (ISBN 981-256-328-8)

> "Mesopotamian mathematics is known from a great number of cuneiform texts, most of them Old Babylonian, some Late Babylonian or pre-Old-Babylonian, and has been intensively studied during the last couple of decades. In contrast to this Egyptian mathematics is known from only a small number of papyrus texts, and the few books and papers that have been written about Egyptian mathematical papyri have mostly reiterated the same old presentations and interpretations of the texts. In this book, it is shown that the methods developed by the author for the close study of mathematical cuneiform texts can also be successfully applied to all kinds of Egyptian mathematical texts, hieratic, demotic, or Greek-Egyptian. At the same time, comparisons of a large number of individual Egyptian mathematical exercises with Babylonian parallels yield many new insights into the nature of Egyptian mathematics and show that Egyptian and Babylonian mathematics display greater similarities than expected."

#471 Gerdes, Paulus & Djebbar, Ahmed: ***Mathematics in African History and Cultures. An annotated Bibliography***, African Mathematical Union, Cape Town (South Africa), 2004, 262 p. (Preface by Jan Persens)

#472 Gerdes, Paulus & Djebbar, Ahmed: ***Les Mathématiques dans l'Histoire et les Cultures Africaines. Une bibliographie annotée***, African Mathematical Union & Université des Sciences et des Technologies, Lille (France), 2004, 392 p. (Preface by Jan Persens)

#473 Gerdes, Paulus: ***Basketry, Geometry, and Symmetry in Africa and the Americas***, E-book, Visual Mathematics, Belgrade (Serbia), 2004 [on-line available at: www.mi.sanu.ac.yu/vismath/]

#474 Gerdes, Paulus: **Weaving Polyhedra in African Cultures**, *Symmetry: Culture and Science*, Budapest (Hungary), Vol. 13, No. 3-4, 2004, 339-355.

#475 Gerdes, Paulus: **Mathematical research inspired by African cultural practices: The example of mirror curves, Lunda-designs and related concepts**, in: Giandomenico Sica (Ed.), *What Mathematics from Africa?*, Polimetrica, Milano (Italy), 2005, 29-47.

#476 Gerdes, Paulus: **About Culture and Geometrical Thought**, in: Giandomenico Sica (Ed.), *What is Geometry?*, Polimetrica, Milano (Italy), 2005, 53-64.

#477 Gerdes, Paulus: **Ethnomathematics, geometry and educational experiences in Africa**, in: Theophilus Okere, Chukwudi Njoku & René Devisch (Eds.), *All knowledge is first of all local knowledge*, Special issue of the *Africa Development Journal*, CODESRIA, Dakar (Senegal), Vol. XXX, No. 3, 2005, 48-65.

#478 Gerdes, Paulus: ***Nirrosula*, an African musical instrument as a source of inspiration for mathematical exploration**, in: Rosemond, Frances A. & Copes, Larry (Eds.), *Educational Transformations: Changing our lives through mathematics; A tribute to Stephen Ira Brown*, AuthorHouse, Bloomington Indiana (USA), 2005, 367-378.

#479 ***Leonardo Fibonacci: Matematica e società nel Mediterraneo nel secolo XIII*** [Leoneardo Fibonacci: Mathematics and society in the Mediterranean in the 13th century; Special double issue of the Italian journal *Bolletino di Storia delle scienze matematiche*, Vol. 2, 2003; Vol. 1, 2004], 272 p. (ISBN 88-8147-374-7)

Directly related to North Africa are the chapters by Djamil Aïssani and Dominique Valerian "*Mathematics, commerce and society in Béjaïa (Bugia) at the time of the stay of Leonardo Fibonacci (12th – 13th century)*" [in French], by Roshid Rashed "*Fibonacci and the Latin continuation of Arabic mathematics*" [in French], and by Ivo Schneider "*The solutions of the two main problems concerning games of chance in the late European Middle Ages and the possibility of Islamic sources*."

#480 Niane, Mary Teuw: **La numération dans les langues nationales au Sénéga*l*** [Numeration in the national languages of Senegal], Université Gaston Berger, Saint-Louis (Senegal), 17 p.

Proposes a representation compatible with the way to express numbers in four national languages of Senegal (Joola, Pulaar, Sereer, and Wolof), spoken by more tha 90% of the population.

#481 Velpry, Christiaan: ***Euclide l'Africain ou la géométrie restituée – enquête mathématique et historique*** [Euclid the African or geometry restored – a mathematical and historical enquiry], Éditions, Menaibuc, Paris (France), 2004, 113 p. (ISBN 2-911372-55-7)

Contains a collection of reflections on the "themes of geometry and logic, Euclid's postulate, history of geometry and philosophy from Alexandria to our days."

#482 Vitrac, Bernard: **A propos des démonstrations alternatives et autres substitutions de preuves dans les Eléments d'Euclide** [About alternative demonstrations and other substitutions of proofs in Euclid's

*Elements*], *Archive for History of Exact Sciences*, Berlin (Germany) Volume 59, No. 1, 2004, 1-44.

#483 Vitrac, Bernard: **Les géomètres de la Grèce antique** [The geometers in Ancient Greece], in: *Les génies de la science*, No. 21, Paris (France), November 2004 - February 2005, 29-99.

Contains the following papers: Invention of geometry: an enigma (30-37); A first scandal in geometry? (38-45); The Alexandrian mathematical tradition (46-51); Euclid, the founder (52-59); Measure and prove (60-65); Construct and compare (66-71); Archimedes (72-81); The Roman conic and the contribution of Apollonius (82-89); The renewel of Alexandria (90-95); The end of the Alexandrian world (96-99).

## 9. ANNOUNCEMENTS

### 9.1 Executive Committee of the International Commission for the History of Mathematics

In 2005, Ahmed Djebbar, secretary of AMUCHMA, was elected a Member of the Executive Committee of the International Commission for the History of Mathematics.

### 9.2 Vice-President of the African Academy of Sciences

During the 7th session General Assembly of the African Academy of Sciences (AAS) realized in Nairobi on December 15, 2005, Paulus Gerdes, chairman of AMUCHMA, was elected AAS Vice-President for the Southern Africa region.

### 9.3 In memoriam Claudia Zaslavsky (1917 – 2006)

At the age of 89, Claudia Zaslavsky (b. January 12, 1917), a founding member of AMUCHMA, died on Friday, January 13, 2006, in New York (USA).
Below we reproduce first part of the obituary, posted on-line at www.math.binghamton.edu/zaslav/cz.html and then a list of her publications related to mathematics in Africa.

"Claudia Zaslavsky was born in New York City, and always attributed her first interest in the practical application of mathematics to her experience as a child helping in her parents' dry goods store in Allentown, Pennsylvania. She studied mathematics at Hunter College and the University of Michigan. Her interest in mathematics in African culture developed when she was a teacher at Woodlands High School in Hartsdale, New York and sought materials that would encourage her African-American students to regard mathematics as part of their cultural

heritage. Carrying forward this research as a project for a course at Teachers College of Columbia University, she discovered that little of what was known about this topic was available in accessible sources.
Thus began a years-long project of assembling, organizing and interpreting a vast amount of little-known material on expressions of mathematics in diverse African cultures including number words and signs, reckoning of time, games, and architectural and decorative patterns. Her field work on a trip to East Africa in 1970 was assisted by the photography of her husband Sam and travel guidance from her son Alan, then teaching in Kenya. Further materials were collected on a trip to Nigeria. In 1973 she published her major work, *Africa Counts: Number and Pattern in African Culture*, which remains the classic reference on this topic and has been translated into French and Hungarian."

Follows a reproduction on the bibliographic information on the publications of Claudia Zaslavsky related to mathematics in African history, as listed in Paulus Gerdes & Ahmed Djebbar, *Mathematics in African history and cultures. An annotated bibliography*, The African Mathematical Union, Cape Town, 2004:

ZAS-70a
1970a Zaslavsky, Claudia: Black African traditional mathematics, *The Mathematics Teacher*, Reston VA (USA), Vol. 63, No. 4, 345-356.

Overview of various number systems in Africa.

ZAS-70b
1970b Zaslavsky, Claudia: Mathematics of the Yoruba people and of their neighbours in Southern Nigeria, *Two-Year College Mathematics Journal*, Washington DC (USA), Vol. 1, 76-99.

ZAS-73a
1973a Zaslavsky, Claudia: *Africa Counts: Number and Pattern in African Culture*, Prindle, Weber & Schmidt Inc., Boston MA (USA), 328 p. (Paperback edition: Lawrence Hill, Westport, Connecticut (USA)).

Already classical introduction to the mathematical heritage of Africa south of the Sahara. Includes chapters on 'Numbers-words, gestures, significance', 'Numbers in daily life', 'Mathematical recreations', 'Pattern and shape', and two regional studies on southwest Nigeria and East Africa. Bibliography with 191 references.

Review: WILD-75.
Latest edition: ZAS-99a.
Translations: ZAS-84, ZAS-95.

ZAS-73b

1973b Zaslavsky, Claudia: Mathematics in the study of African culture, *The Arithmetic Teacher*, Reston VA (USA), Vol. 20, 532-535.

Presents some examples for classroom use from the (Ba)Kuba culture (Congo / Zaire) and from cowrie shells currency in West Africa.

ZAS-75
1975 Zaslavsky, Claudia: African network patterns, *Mathematics Teaching*, London (UK), Vol. 73, 12-13.

ZAS-76a
1976a Zaslavsky, Claudia: The Afro-American mathematical heritage, *Outlook*, Washington DC (USA), Vol. 20, 3-8.

ZAS-76b
1976b Zaslavsky, Claudia: African stones, *Teacher* (USA), Vol. 94, No. 2, 110-112.

ZAS-76c
1976c Zaslavsky, Claudia: African numbers, *Teacher* (USA), Vol. 94, No. 3, 91-96.

ZAS-79
1979 Zaslavsky, Claudia: Symmetry along with other mathematical concepts and applications in African life, in: *Applications in School Mathematics*, National Council of Teachers of Mathematics, Reston VA (USA), 82-97.

Examples of bilateral and rotational symmetries, repeated patterns on a strip, tessellations in the plane, occurring in African art, architecture and design (e.g. *adinkra* cloth of the Asante people, Ghana; *adire* cloth of the Yoruba people, Nigeria) are given and it is shown how these examples may be integrated in an interdisciplinary approach to the study of mathematics.

ZAS-80
1980 Zaslavsky, Claudia: *Count on your fingers African style,* Harper & Row, New York (USA), 33 p. (Latest edition: ZAS-99b)

The book “guides children (ages 6-9) through the animated activity of the marketplace, showing the traditional finger counting of various African peoples – the Maasai, the Kamba, and the Taita in Kenya; the Zulu of South Africa; and the Mende of Sierra Leone.”

ZAS-81

1981 Zaslavsky, Claudia: Networks—New York subways, a piece of string, and African traditions, *The Arithmetic Teacher*, Reston VA (USA), Vol. 29 (October), 42-47.

Graph theoretical analysis for school children of the networks drawn by the Kuba of Congo.

ZAS-82

1982 Zaslavsky, Claudia: *Tic Tac Toe and other three-in-a-row games, from Ancient Egypt to the modern computer*, Harper & Row, New York (USA) & Fitzhenry & Whiteside, Toronto (Canada), 96 p.

"Games suitable for all ages, reading level ages 9-12." Includes several African versions: Achi (Ghana), Shisiba (Kenya), Murabaraba (Lesotho), Dara (Mali, Morocco, Niger, Nigeria), Akidada (Nigeria), Tsoro Yematatu (Zimbabwe).

ZAS-84

1984 Zaslavsky, Claudia: *Africa Szaniol*, Gondalet, Budapest (Hungary), 350 p.

Hungarian translation of ZAS-73a.

ZAS-89a

1989a Zaslavsky, Claudia: People who live in round houses, *The Arithmetic Teacher*, Reston VA (USA), September, 18-21.

Gives information on the tradition of round houses in Africa and other parts of the world with suggestions for incorporating this issue in the mathematics classroom.

ZAS-89b

1989b Zaslavsky, Claudia: Mathematical aspects of traditional African games, *AMUCHMA Newsletter*, Maputo (Mozambique), Vol. 3, 6.

ZAS-93

1993 Zaslavsky, Claudia: *Multicultural Mathematics: Interdisciplinary Cooperative-Learning Activities*, J. Weston Walch, Portland ME (USA), 158 p.

Activities for middle grade students, involving ancient Egyptian numeration and computation, cowrie shell and other currency in West Africa, the African slave Thomas Fuller, Egyptian pyramids, probability with cowry shells and the Nigerian game of Igba Ita, and Chokwe and Kuba networks.

ZAS-94a

1994a Zaslavsky, Claudia: *Africa Counts* and Ethnomathematics, *For the Learning of Mathematics*, Montreal (Canada), Vol. 14, No. 2, 3-8.

A description of the motivation for and some of the research leading to the author's classic ZAS-73a.

ZAS-94b
1994 Zaslavsky, Claudia. Mathematics in Africa: Explicit and implicit, in GRA-94, Vol. 1, 85-92.

Mathematics in ancient Africa, African mathematics in the Arabic language, and mathematics "frozen" in the practices of many African societies.

ZAS-95
1995 Zaslavsky, Claudia: *L'Afrique compte! Nombres, formes et démarches dans la culture africaine*, Éditions du Choix, Argenteuil (France), 328 p.

French language edition of ZAS-73a.

ZAS-96
1996 Zaslavsky, Claudia: *The Multicultural Math Classroom: Bringing in the World*, Heinemann, Portsmouth (USA), 288 p.

Pleads for a multicultural mathematics curriculum and presents examples of mathematical activities for use in the classroom, including many examples from Africa.

ZAS-98
1998 Zaslavsky, Claudia: *Math Games and Activities from around the World*, Chicago Review Press, Chicago IL (USA), 146 p.

Book for children for ages 9 and up. Includes several examples of mathematical games or activities from Africa, like: [three-in-a-row games] *Shisima* from Kenya (4-5), *Tsoro yematatu* from Zimbabwe (8-9), *Dara* from Nigeria (18-19); [Mankala board games] Easy *oware* from Ghana (22-23), The real *oware* game from Ghana (24-25), *Giuthi* from Kenya (28-29); [More board games] *Yoté* from West Africa (42-43); [Games of chance] *Igba-ita* from Nigeria (52-53); [Puzzles with numbers] Magic squares from West Africa (64-65), Dividing the camels from North Africa (73-74), The Ishango bone from Congo (75); [Puzzles without numbers] Crossing the river in Liberia (81), Crossing the river with jealous husbands from Kenya (82), The snake and the swallow's nest from Angola (84), The Chokwe story tellers from Angola (85-86), Decorations on the walls from Angola (87), How the world began from Angola (88-89), Children's networks from Congo (90-91); [Geometry all around us] Round houses in Kenya (100), Cone-cylinder houses in Kenya (101-102), The pyramids of ancient Egypt (105-106); [Repeating patterns] African patterns from Congo (127-129), *Adinkra* cloth from Ghana (133-134).

Translations: ZAS-00b, ZAS-02.

ZAS-99a

1999 Zaslavsky, Claudia, *Africa Counts: Number and Pattern in African Cultures*, Third edition, Lawrence Hill, Chicago IL (USA), 368 p.

Reprint of Claudia Zaslavsky's classical study ZAS-73a, updated with an additional chapter on ethnomathematics in Africa.

ZAS-99b

1999 Zaslavsky, Claudia: *Count on your fingers African style*, Black Butterfly Children's Books, New York (USA), 42 p. (illustrations by Wangechi Mutu).

New edition of ZAS-80.

ZAS-00a

2000 Zaslavsky, Claudia: African networks and African-American students, in: Marilyn Strutchens, Martin Johnson & William F. Tate (Eds.), *Changing the Faces of Mathematics: Perspectives on African Americans,* National Council of Teachers of Mathematics, Reston VA (USA), 157-166.

The appeal of such activities to African-American students at various grade levels, based on actual classroom experiences.

ZAS-00b

2000 Zaslavsky, Claudia: *Jogos e Atividades Matemáticas do Mundo Inteiro*, Editora Artes Médicas Sul, Porto Alegre (Brazil), 155 p.

Translation into Portuguese of ZAS-98 by Pedro Theobald.

ZAS-00c

2000 Zaslavsky, Claudia: Review of Gerdes' *Geometry from Africa* (GER-99a), *Humanistic Mathematics Network Journal*, Claremont CA (USA), Vol. 23, 55-57.

ZAS-02

2002 Zaslavsky, Claudia: *Math Games and Activities from around the World*, Yuan T. Lee Foundation, Taipei (Taiwan), 154 p. (in Chinese).

Chinese language edition of ZAS-98.

ZAS-03a

2003 Zaslavsky, Claudia: *More Math Games and Activities from Around the World*, Chicago Review Press, Chicago IL (USA), 160 p.

Sequel to ZAS-98. For children age nine and up. Includes the following games and activities from Africa: [Three-in-a-Row Games] *Achi* from Ghana (14-15),

*Murabaraba* from South Africa and Lesotho (23-25); *Alquerque de Nueve* from Muslim Spain and North Africa and *Akidada* from Nigeria (18-20); [More Board Games: Mankala] Little Goat Game and Cow Game from Sudan (35-38), *Adi* from Ghana (39-41); [How People Use Numbers: Money] Beads, Shells and Gold from Africa (56-57); [Is There a Lucky Number?] Magic Squares from the Muslim World (70-71); [How People Measure] Standard Measures from Ancient Egypt (81); [Puzzles with Dots, String, and Paper Strips] *Julirde* from West Africa (91-93), Bead and String Puzzle from West Africa (94-95), Animal Picture and "Three Villages" Sand Drawings from Angola (98-103); [Symmetry and Similarity of Designs] *Akua Ba* Doll from Ghana (114-115); [Repeated Patterns] *Adire* Cloth from Nigeria (138-139).

ZAS-03b

2003 Zaslavsky, Claudia: Review of Gerdes' *Awakening of Geometrical Thought in Early Culture* (GER-03a), *AMUCHMA Newsletter*, Maputo (Mozambique), No. 27, 14-15; *History and Pedagogy of Mathematics Newsletter*, Romsey (UK), No. 53, 9-10.

ZAS-03c

2003 Zaslavsky, Claudia: The Influence of Ancient Egypt on Greek and Other Numeration Systems, *Mathematics Teaching in the Middle School,* NCTM, Reston VA (USA), Vol. 9, No. 3, 174-178.

"The article traces the development of the alphabetic numeration systems of the early Greeks, Hebrews, and Arabs to the concepts underlying ancient Egyptian hieratic numeration, and includes activities for students."

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## 11. SUGGESTIONS

What are your suggestions for improving the AMUCHMA Newsletter?
What are your suggestions for other activities of AMUCHMA?
Send your suggestions, comments, information, questions and any other contributions to the chairman or secretary of AMUCHMA.
Send articles, books and manuscripts for the AMUCHMA Documentation Centre to the Chairman or Secretary.

## 12. DO YOU WANT TO RECEIVE THE NEXT AMUCHMA-NEWSLETTER?

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## 13. AMUCHMA-NEWSLETTER website

Thanks to Scott Williams, the English language edition of all issues of the **AMUCHMA Newsletter** is also accessible on the following website:

http://www.math.buffalo.edu/mad/AMU/amuchma_online.html