



CMS NOTES de la SMC

MESSAGE DU VICE-PRÉSIDENT - Québec

Bruno Rémillard
HEC Montréal



IN THIS ISSUE DANS CE NUMÉRO

Editorial / Éditorial 2

ICM 2006 3

Making Connections -
Adrien Pouliot Lecture 4

Book Review: *Leading the
Mathematical Sciences
Department* 7

Book Review: *Conics* 8

Brief Book Reviews 10

Education Notes 11

Joint CMS/CMESG Education
Session 13

Session SMC/GCEDM sur
l'éducation 14

CMS Summer 2006 Meeting
Réunion d'été 2006 de la
SMC : SESSIONS 17

Un Mathématicien nommé
scientifique de l'année 18

Call for Nominations /Appel de mises en candidatures

David Borwein Distinguished
Career Award / Prix David-
Borwein de mathématicien
émérite pour l'ensemble
d'une carrière 19

Research Prizes
Prix de recherches 20

Adrien Pouliot Prize
Prix Adrien-Pouliot 21

Distinguished Service Award
Prix pour service méritoire 21

Associate editors CJM-CMB
Rédacteurs associés JCM-
BCM 22

Math in Moscow Competition
Concours Math à Moscou 22

Message from the Vice-
President-Québec 23

Call for nomination - CMS
Treasurer / Appel de mises en
candidatures - trésorier de la

démystifier les mathématiques auprès de la population en général. Pour l'occasion, Jean-Marie De Koninck anime même un spectacle, tantôt humoristique, tantôt sérieux, intitulé '*Show Math*', et qui a été présenté dans plusieurs villes jusqu'à présent, dont Québec et Ottawa. Les médias se sont heureusement tout de suite intéressés à ce projet; le professeur De Koninck a d'ailleurs reçu pour l'année 2005 le prix du scientifique de l'année tel que remis par Yanick Villedieu, animateur de la populaire émission radiophonique de vulgarisation scientifique 'Les années lumières', présentée chaque dimanche à Radio-Canada. Cela fait maintenant 19 ans que ce titre est décerné à une personnalité scientifique qui s'est illustrée par une découverte, une publication ou une réalisation remarquable, choisie après consultation de collègues journalistes du milieu de l'information scientifique. La cérémonie a eu lieu le 18 janvier dernier, à l'Université Laval, à Québec. Dans ce qui suit, je vous présente les extraits d'un court interview que j'ai réalisé la veille avec le professeur De Koninck

B R : Qu'est-ce qui vous a poussé à vous impliquer dans l'éducation populaire des mathématiques? Est-ce le peu d'étudiants qui choisissent les mathématiques et les autres sciences?

J-M De Koninck : En fait, c'est bien connu qu'il y a une baisse d'intérêt pour les études en sciences partout en occident. Pas seulement au Canada, aux États-

Unis; c'est la même chose en France, en Europe de l'ouest, alors que dans les pays asiatiques comme en Chine, en Inde, ou au Japon, il y a un accroissement de l'intérêt pour les sciences en général. Dans ces pays, il y a beaucoup plus de jeunes en sciences; ces jeunes asiatiques sont même très nombreux au Canada et aux États-Unis, surtout dans les programmes d'études graduées. C'est intéressant de constater que sur le plan économique, il semble y avoir une corrélation, entre l'intérêt pour les mathématiques et les autres sciences, et la croissance économique. Par exemple, l'économie chinoise a une croissance de 10% par année; en Inde l'économie est s'améliore vraiment. En Chine, ils sont en train de développer une voiture qui devrait être prête en 2008, qui serait vendue 2 000\$, des ordinateurs portatifs à 100\$, etc. Ce n'est pas seulement à cause d'une main-d'œuvre bon marché, c'est parce qu'ils ont vraiment développé la recherche et la haute technologie à un coût moindre. Ces produits envahiront notre économie, qui est plus ou moins stable; en tout cas, elle ne croît pas annuellement de 10 %. Peut-être qu'il y a une relation à faire entre les deux. La coïncidence est frappante : il y a une baisse d'intérêt chez nous ainsi qu'une stagnation de l'économie. Chez eux, il y a une hausse d'intérêt pour les sciences et une croissance de l'économie. Le lien n'est pas évident à faire, mais en tout cas, il y aurait quelque chose à étudier là.

suite page 15



CONVERSATION

Returning from the winter meeting of the CMS at Victoria, BC, I took the so-called ‘red-eye’ night flight from Vancouver. Having checked in early I took a seat at the gate and was thinking about a problem in matrix analysis with a pad and pencil.

A gentleman in the next seat was watching me and started a conversation.

G. That’s math. I see a matrix there. Are you a math teacher?

S. Yes, Sir, I’m on my way back from a math conference in Victoria. I’m trying to work on a problem that arose in a discussion there.

G. I am an engineer. I used to like math in college. But I do not use any in my work.

S. Even if you do not use it everyday what you have studied must be helpful to you in arriving at good judgment and logical conclusions.

Any special reason why you liked math in college?

G. I got good marks in assignments and exams. But most of the professors I had did not make math subjects interesting. I do not know how it is now. Almost all those in my class found them boring.

S. That could be due to several reasons. For example, the professors may find themselves constrained to cover the syllabus; the students are usually interested in learning just what is necessary for doing well in assignments, tests and exams.

G: Given time and facilities is there a method by which students can be taught in such a way that they really learn the subject well?

S. Yes, there is.

And I told him about the famous Texas professor R. L. Moore (1872-1974) and his unique method of getting students to work and learn on their own without consultation of any sort.

G: Without consultation of any sort! Isn’t going to conferences consulting?

S. Let me tell you an anecdote. Professor Moore became the President of the American Mathematical Society in 1938. As such he was obliged to attend conferences. In one conference he found two famous mathematicians in deep discussion at the blackboard. Moore asked, “What are you both doing?”

One of the mathematicians replied, “Well, as you can see we are discussing mathematics. Isn’t this a math meeting?” Moore’s response: “It’s indeed a mathematics meeting, but it seems to me that’s the last thing you ought to be talking about.” He went away as the mathematicians looked puzzled. They didn’t understand what he meant.

Boarding announcements were heard and we took leave of each other.

Après notre Réunion d’hiver de Victoria (C.-B.), j’ai pris un vol de nuit au départ de Vancouver. Comme je suis arrivé tôt, j’ai attendu dans l’aire d’embarquement en réfléchissant à un problème d’analyse matricielle, crayon et calepin en mains.

À côté de moi, un homme me regardait du coin de l’œil. Il engagée la conversation :

H. Vous faites des maths? Je vois une matrice. Enseignez-vous les mathématiques?

S. Oui, monsieur. J’arrive d’un congrès de mathématiques qui s’est tenu à Victoria. Je travaille sur un problème soulevé lors d’une discussion.

H. Je suis ingénieur. J’aimais les mathématiques quand j’étais à l’université, mais je ne m’en sers pas dans mon travail.

S. Même si vous ne faites pas des maths tous les jours, ce que vous avez appris vous aide sûrement à prendre de bonnes décisions et à tirer des conclusions logiques.

Pourquoi aimiez-vous les mathématiques à l’université?

H. J’avais toujours de bonnes notes. Mais la plupart de mes professeurs ne rendaient pas le sujet intéressant. Je ne sais pas comment ça se passe maintenant. Presque tous les étudiants trouvaient les cours de mathématiques ennuyants.

S. Ça tient peut-être de plusieurs facteurs. Il arrive que les professeurs soient forcés d’enseigner tout juste ce qu’il y a au programme, et les étudiants sont souvent intéressés à apprendre tout juste ce qui est nécessaire pour bien réussir leurs travaux et leurs examens.

H. Si on a le temps et les ressources nécessaires, il y a bien un moyen d’enseigner pour que la matière passe bien?

S. Bien sûr.

Je lui ai alors raconté l’histoire du célèbre professeur du Texas R. L. Moore (1872-1974) et de sa méthode unique de faire travailler les étudiants par eux-mêmes, sans aucune consultation.

H. Sans consultation! Le fait d’assister à des congrès n’est-il pas une forme de consultation?

S. Laissez-moi vous raconter une anecdote. Le professeur Moore est devenu président de l’American Mathematical Society en 1938. À ce titre, il n’avait pas le choix d’assister à des congrès. Lors d’un congrès, justement, il a surpris deux mathématiciens célèbres en grande discussion devant un tableau. Moore leur a demandé ce qu’ils faisaient là. L’un des hommes répondit : « Eh bien, comme vous le voyez, nous discutons d’un problème de mathématiques. Ne sommes-nous pas à un congrès de mathématiques? Et Moore de leur répondre : « Oui, c’est bien un congrès de mathématiques, mais il me semble que vous devriez parler de tout sauf de cela. » Et il est parti en laissant les deux mathématiciens bien perplexes. Ils n’avaient pas compris ce qu’il voulait dire.

On annonça les départs, et nous nous sommes dit au revoir.

New Satellite Conferences

- Sixth International Workshop on Automated Deduction in Geometry, ADG-2006 - Pontevedra **31 Aug-2 Sept**
- Stochastic Analysis in Mathematical Physics Lisboa (Portugal) **4-8 September**
- CIMPA-School: New Trends in Singularities - Madrid **14-21 August**
- 7th International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing, MCQMC- 2006 Ulm (Germany) **14-18 August**
- International Summer School and Workshop on Operator Algebras, Operator Theory and Applications ITS Lisboa (Portugal) **1-5 September**
- Workshop From Lie algebras to quantum groups Coimbra (Portugal) **28-30 June**
- Geometric and Asymptotic Group Theory with Applications UPC - Manresa (Barcelona) **1-5 September**
- International Congress on K-Theory and non-commutative geometry - (VASBI) Valladolid **31 Aug-6 Sept**
- CR Geometry and PDE's CIRM - Trento (Italy) **3-8 September**

NOTES de la SMC

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Rédacteurs en chef

Robert J. MacG. Dawson
Srinivasa Swaminathan
notes-redacteurs@smc.math.ca

Rédacteurs gérant

Graham P. Wright
gwright@smc.math.ca

RÉDACTION

Éducation : Edward Barbeau
notes-education@smc.math.ca

Critiques littéraires: Peter Fillmore
notes-redacteurs@smc.math.ca

Réunions : Gertrud Jeewanjee
reunions@smc.math.ca

Recherche : Vacant
notes-recherche@smc.math.ca

Assistante à la rédaction :
Nathalie Blanchard

Note aux auteurs: indiquer la section choisie pour votre article et le faire parvenir au Notes de la SMC à l'adresse postale ou de courriel ci-dessous.

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Canadian Mathematical Society - Société mathématique du Canada

577 King Edward, Ottawa, Ontario, Canada K1N 6N5
T: (613) 562-5702 | F: (613) 565-1539
notes-articles@smc.math.ca
www.smc.math.ca | www.cms.math.ca
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- II Euro-Japanese Workshop on Blow-up El Escorial (Madrid) **4-8 September**
- International Conference on Global Differential Geometry Muenster (Germany) **13-19 August**
- International Congress of Mathematical Software 2006 Castro Urdiales (Cantabria) **1-3 September**
- 2nd SIPTA Summer School on Imprecise Probabilities URJC-I (Madrid) **24-28 July**
- International Conference on Complex Analysis and Potential Theory Gebze Institute of Technology - Istanbul (Turkey) **8-14 September**
- Geometric Aspects of Integrable Systems University of Coimbra Portugal **17-19 July**
- International Conference on "The Logic of Soft Computing" Málaga **13-15 September**
- 3rd International Workshop on Mathematical Techniques and Problems in Telecommunications - Leiria (Portugal) **4-8 September**
- The Summer School "Statistical Tools in Knowledge Building" CIM, (Coimbra, Portugal) **23-29 July**
- Geometric Measure Theory - Naples (Italy) **1-5 September**
- Integrable Systems in Applied Mathematics Colmenarejo (Madrid) **7-12 September**
- Advances in PDE's Geometry Madrid **31 Aug-3 September**
- CMDE2006 - 'Communicating Mathematics in the Digital Era' Aveiro (Portugal) **15-18 August**
- XXIst International Workshop On Differential Geometric Methods In Theoretical Mechanics - Madrid **31 Aug-7 September**
- International Workshop On Spatio-Temporal Modelling (METMA3) Pamplona **27-29 September**
- Algebraic Geometry and Geometric Modeling (AGGM 2006) IMUB, Barcelona **4-8 September**
- MKM 2006, the Fifth International Conference on Mathematical Knowledge Management - TBA (UK) **10-12 August**
- New Trends in Viscosity Solutions and Nonlinear PDE Lisboa (Portugal) **24-28 July**
- IV Summer School in Modern Mathematical Physics Zlatibor (Serbia and Montenegro) **3-14 September**
- XVth Oporto Meeting on Geometry, Topology and Physics Oporto (Portugal) **20-23 July**
- Workshop on Analytic aspects of low dimensional geometry Warwick (UK) **4-9 September**
- Workshop on Triangulated Categories - Leeds (UK) **13-19 August**
- The Eighth International Conference on Computational Structures Technology - Las Palmas de GC **13-15 September**
- The Fifth International Conference on Engineering Computational Technology - Las Palmas de GC **13-15 September**

Special Activities

ICM 2006 Closing Round Table

Are pure and applied mathematics drifting apart?

Moderator: John Ball, IMU President

Panelists: Lennart Carleson, Ronald Coifman, Yuri Manin, Peter Sarnak

Special Lecture on the Poincaré Conjecture

John Morgan, Columbia University, New York, USA

Emmy Noether Lecture

Yvonne Choquet-Bruhat

Title: Mathematical problems in General Relativity

e-Learning Mathematics, a Panel Discussion

Organised by the Executive Committee of the Spanish Conference of Deans of Mathematics

Moderator: Sebastian Xambó Descamps

Panelists: Hyman Bass, Hilda Bolaños Evia, Ruedi Seiler, Mika Seppälä

Making Connections: Adrien Pouliot Presentation



Katherine Heinrich

It is both an honour and a pleasure to be with you this afternoon. Thank you for coming. I have chosen to speak to you on the theme of “connections” – those contacts we make with others that support and enable change and allow us to advance our common interests. In doing so I also hope to challenge each of you, on returning home, to take a chance and do something more to enable broader mathematical connections to be made and thus advance both mathematics and mathematics education.

As I thought about this award, I read and reflected on the words written about Adrien Pouliot by Danielle Ouellet in her book *Adrien Pouliot, un homme en avance sur son temps*. In that work she describes Pouliot as a builder, an innovator, a man who changed people’s way of thinking and enhanced their spirit, a culture advocate, a world-class ambassador for science and mathematics, a great educator, an outstanding popularizer, a great humanist, and even an anecdotal and legendary figure. (It is indeed daunting to have one’s name even remotely associated with his.)

Among her comments, and of particular resonance with me, was the statement that he was a man who “changed people’s way of thinking and enhanced their spirit.” This is what I believe has been taking place during the last decade or more within the mathematical community in Canada. We’ve changed our ways of thinking and I am honoured to have been able to play a small part in those changes. Changes I believe have come about through the connections made by individuals and organizations associated with mathematics.

The Encyclopedic World Dictionary definition of “connection” includes the following:

- Association
- A circle of friends or associates
- Bond, tie, link
- Affiliation, alliance.

Mathematically, there is also a definition of connection. In graph theory, connectivity is basically defined as the minimum number of vertices in a graph whose removal disconnects that graph. A tree therefore has connectivity 1 and a cycle connectivity 2; a complete graph cannot be disconnected. A graph is in some sense “stronger” or “harder to break apart” the higher its connectivity.

In my mind, these two definitions inform our sense of connectivity. A highly connected community is one of strong relationships, trust and inclusion. Such a community can successfully design and implement shared agendas. Connections and building strong relationships have been essential to my work generally, and particularly to my involvement with the CMS and the mathematical community.

Much has been said about the first CMS Forum on Mathematics Education, and I too have something to say. My recollection about how we came to conceive of and plan the first Forum varies slightly from that given in the media release describing this award.

I recall a group of people sitting around talking about the need to “join forces” if you will with the many groups participating in or concerned about mathematics education. We thought it would help if there could be a gathering of people (teachers, researchers, government officials, business and industry) in an environment which would support their coming to know one another and understand their diverse interests and challenges. Either I volunteered or was volunteered (which actually seems more likely) and took the lead in organizing the first forum. That forum took place in Quebec City in 1995.

For me the success of the forum wasn’t that at the end we had some sort of plan for the future of mathematics education in Canada – we didn’t. Rather a group of people from many constituencies involved in mathematics education across Canada (including many in this room) had come together to plan, to organize, to fund and to participate in a conversation. By doing so we came to know and understand one another in a new way. Participants became colleagues and friends and made a commitment to work together and continue the conversation after the forum – although how that would happen wasn’t explicitly defined. They did so and in the following years many joint initiatives took place across the country. In 2003 the second forum took place in Montreal and in 2005, this year, the third was held in Toronto. In all cases those involved came from schools, math associations, CEGEPs, universities (both mathematics departments and education faculties), school boards, government. Many people attended all three forums, connections were made and each year they strengthened.

At this point one might be tempted to think that the job is done. That the partnerships have been developed and the issues are soon to be resolved – we have succeeded. There have indeed been many successes – connections are strong and much has been accomplished. But much remains to be done. Most of the challenges in existence when the first forum took place in 1995 remain:

- Students still claim to hate mathematics. Just this year I bought my grade 6 niece the book “I Hate Mathematics.” Why? Because she claims mathematics is boring and she hates it.
- There is still an atmosphere of blame.
 - Of those responsible for the education of the students before they reach us. I was recently asked: “How do I contact the Ministry of Education – the students come to university not knowing anything.” I sensed a need to complain, to tell them what changes were needed – in the schools, in the teachers.
 - And of those who don’t understand or appreciate math. “What is the matter with them? What is wrong with them?”

Making Connections: Adrien Pouliot Presentation *continued*

- People remain intimidated by mathematicians and, when you say you are a mathematician, still respond “I was never any good at math.” As if this is a negative measure of their very being.
- Mathematics jokes (like jokes in every discipline) abound – some are clever and funny. From the web (where there are thousands most of which are funny only to mathematicians):
 - A geometer went to the beach to catch the rays and became a TanGent.
 - There are three kinds of mathematicians: those who can count and those who can’t.

But others illustrate common widespread societal fears. One of my “favourites” in this category is the person waiting for admission into heaven – but first he must solve a word-problem. These are the ones that tell us things are not well.

- So many have no real sense of what mathematics is or why it is relevant and wonder why we do mathematics research. Perhaps this is not surprising given that many of us have great difficulty describing the mathematics we do – not only to the public but all too often to one another.

All that being said, things are different. There is cause for considerably more optimism today than there was in 1993 as we planned that first forum.

- There are many examples of strong partnerships between departments of mathematics and faculties of education. There are joint degrees and joint research projects.
- Conversations regularly take place between faculty and teachers, researchers and industry, mathematicians and the public – these conversations and collaborations are frequently supported and facilitated by MITACS, BIRS and the three Canadian mathematics research institutes.
- Discussions and collaborations are taking place with our Aboriginal communities and our Aboriginal mathematics instructors and researchers.
- The CMS has supported a higher profile for mathematics education, has included participants from a broad range of jurisdictions, and is working more closely with other professional associations in the mathematical sciences.
- There is a forensic drama series based on mathematics. Numb3rs is now in its second season. From its web-site: “Some of the genius-level math featured on the TV program “Numb3rs” is being translated into exercises for kids by a math professor at the University of Montana. Johnny Lott, a faculty member at UM for the past 31 years, leads a team that designs activities derived from the prime-time CBS program, which airs on Fridays. The lessons for teachers, students and parents are then placed on the “We All Use Math Every Day” Web site at www.cbs.com/primetime/numb3rs/ti/activities.shtml. ”
- We have a new generation of mathematicians at universities, many of whom expect to work with others. On meeting a new

colleague in computer science his first question to me was: “Will I be able to work with the Music Department?”

While there is a stronger foundation on which to build, connections continue to need to be supported and encouraged in all of our colleagues. But it is much more than this. The connections we make must be real and substantive. They are not about connecting in order to tell others what to do, or to solve their problems for them. Rather we must continue to invite others to help us. We must offer to be available if needed and do what others ask of us. We must accept criticism of what we do and consider suggestions for change. We must recognise and accept that others will understand the issues in different ways and their understanding has value, as do their thoughts on how problems might be approached. Most importantly, we must understand that this is a very long journey, and that connections are difficult to make and to maintain. Fortunately, to share the challenges and the solutions facing mathematics education, and to take the necessary risks is liberating and exciting – as those who have already done so can tell you. And, of course, each risk you take is easier than the last.

So what might we (those in universities) now do? What connections do we still need to build? What risks might we take? In what I am going to suggest there is nothing new. I expect there are examples of each right now being explored at some institution in Canada; but for many of us they remain extremely challenging.

- Welcome other disciplines into mathematics departments. For example: invite a physicist to teach calculus, a sociologist to teach a stats course, a math educator to join a thesis committee. Teach or co-teach a course in another discipline.
- Create degrees and courses in partnerships with other disciplines; degrees that have less mathematics than a major usually has – view these students as math majors, call them majors.
- Offer alternatives to calculus, perhaps in partnership with another discipline. Develop a course in which you teach mathematics with minimal (if any) use of algebra or calculus.
- Offer university math courses in the schools – for credit.
- Ensure that our colleagues who are working effectively to advance mathematics education, who undertake research in educational areas and who promote mathematics are valued – promote them – to the rank of Professor.
- Make outreach and mathematics teaching required components of graduate degrees – without adding more program requirements.
- Debate what the goals should be – more math majors or more people with a basic understanding and appreciation of mathematics, what it is, what it can do and why it is important. Value service teaching. Value the students in service classes.
- Visit an elementary school, give a public lecture – reach out to those learners outside the university.
- Include others as partners and as mathematicians. Call them mathematicians. For years I could not refer to myself as a

Making Connections: Adrien Pouliot Presentation *continued*

mathematician. I looked at those I considered mathematicians who clearly knew much more than I did, had larger grants and proved more important and more difficult theorems, and knew I was not like them. And now, at a time when I am doing almost no mathematics I am not at all uncomfortable with the term. I know that there are many ways of being a mathematician and of advancing and supporting mathematics and all have value.

- And above all keep talking and listening to others.

As I said, none of the above are new ideas and most of them would generate little debate – on the surface they’re not so unreasonable. But in the doing they are very difficult; in the doing they too often become unreasonable. Responses come as follows: Maybe we can promote to Associate Professor, but not Professor. We could require all graduate students to take a 3-credit teaching course – but it couldn’t replace a math credit. She could teach a 100 level course but not a senior course. They could take the course at high school but will still have to write a placement exam. He could be an adjunct but could only vote on issues related to the first year courses. As I said, these ideas, perhaps reasonable at first consideration, always prove to be difficult to implement. Trust must be given. Risks must be taken. Making connections and giving real support to mathematics education is difficult.

Nevertheless, these approaches are already taking place or being considered somewhere in Canada. And we need to find ways to know more about what others are doing and to communicate success. Communication is essential to building and strengthening connections. And let’s talk for just a moment about communicating mathematics. Two stories.

1. Several years ago I was invited to be the plenary speaker at a math conference in an elementary school. I decided I would talk about tiling the plane and sat down a few days before the event to prepare overheads. I took out my pen and the first sheet of plastic and began to write when I suddenly realised that a large percentage of my audience was unable to read. There was a moment of panic as I didn’t know what to do. But then I realised and all my slides were pictures. I talked with the students about the pictures and they understood the mathematics.
2. My PhD was on properties of Latin Squares and I had a particular interest in pairwise orthogonal Latin squares. So I decided to read Euler’s original proof that for all n not congruent to 2

modulo 4, there is a pair of orthogonal Latin squares. (Of course we now know they exist for all n except 2 and 6.) Euler’s result is not a difficult result to prove and can be accomplished easily in a page or so. However, essentially the same proof took Euler about 50 pages. Why? Because he did not have available a streamlined and broadly understood mathematical language.

I have often reflected on these two experiences; particularly as I have considered the challenges of teaching math to elementary school teachers and to business students.

Most of the people we talk to about mathematics (whether in public presentations or first and second year undergraduate classes) neither appreciate nor understand the highly specialised and idiosyncratic language we have developed. A language we need but one which is not easily understood, and in the eyes of the uninitiated is confusing, unforgiving and often at odds with the way “normal” English is used.

To establish connections with others we must understand our audiences (be they students, the public or participants at a conference) and we must change the way we speak with them – we must adapt to their needs. People can and do understand and enjoy mathematics provided they have the environment (language) in which to do so.

I was in Australia about a month ago. On the train from Sydney to Newcastle I watched an older gentleman spend the entire journey (two hours) working on a Sudoku puzzle. They are in every newspaper I open (sadly my preferred math puzzle in the *National Post* has disappeared). My brother is addicted, my mother has tried, her friends are learning how to do them, and colleagues at the university in other disciplines are doing them every day. People want to think mathematically and enjoy doing so. But to connect with them, we must learn to tell our story in their language.

As we learn better how to communicate (a connection itself), and as we include a broader range of people as our allies, we strengthen our connections and thus expand mathematics understanding and interest. Like Pouliot we will change people’s way of thinking and enhance their spirit.

Thank you.

CMS Prizes and Awards Prix de la SMC

The most up-to-date information concerning all CMS Prizes and Awards, including complete lists of recipients, can be found at: www.cms.math.ca/Prizes/

Vous trouverez l’information la plus récente sur les prix de la SMC, y compris les listes de lauréats, sur le site Web suivant :
[www.smc.math.ca/Prix/](http://smc.math.ca/Prix/)

Leading the Mathematical Sciences Department, a Resource for Chairs

By Tina H. Straley, Marcia P. Sward,
and Jon W. Scott, Editors

Mathematical Association of America, 2005
xviii + 185 pp

In reviewing this book, I have taken into consideration also an earlier publication from the American Mathematical Society [2]. I have further, I have tried to consider the book from a Canadian perspective. Note that the words “chair” and “head” are interchangeable in this review, since some departments have heads and others have chairs, where their roles are essentially identical.

Most academics who are appointed to the positions of Head or Chair of a Mathematical Sciences Department are appointed because of their academic standing. Only a very few have any background in personnel management, which is one of the primary functions of the position. This is made very clear in the Part 1 of [1]. There are academics whose paper record is first class, but whose ability to manage other people is limited. Some universities do give some training to new heads, but the majority do not. This is a pity. On the other hand most new deans and higher administrators are given such training. This having been said, a great deal of Part 1 of [1] is just plain common sense. There is a section on advice from experienced chairs. This is in line with my own experience as a department head. The “words of wisdom” are summarised as follows (my additions in parentheses):

- Be open (it is not your own opinion that matters most).
- View yourself as serving the faculty; not the other way round.
- Don’t try to do everything yourself (be prepared to delegate, and trust those to whom you have delegated tasks).
- Meet deadlines (especially in dealing with your Dean).
- Lead, but do not manage (especially, do not micro-manage).
- Be available (work with your office door open as much as possible, and do not hide behind a large desk).
- Find a way to say “yes” (this can be problematic if your resources are limited).
- Be at peace with indirect success.
- Maintain good lines of communication (follow up every phone conversation with a written or email document).
- Pay attention to details.
- Success is permanently plugging the holes.

Perhaps the most difficult part in being a department leader is maintaining one’s own academic program. The advice given is to stay as active as possible, remembering that one day, you will no longer be the chair. This makes a lot of sense.

The book does distinguish amongst the various types of post secondary academic institutions (remember that this book was written essentially for an American audience, where there is a



much wider variation in post secondary institutions than in Canada). There is, of course, variation within Canadian institutions. There are universities which are very research orientated and those which are essentially undergraduate teaching places. Therefore, one must read this book with reference to the local situation.

Perhaps the best piece of advice given is to treat your colleagues in the way that you would like to be treated yourself when you cease to be the department head!

The second part of the book I found to be less useful and relevant in a Canadian setting. It consists of a collection of case studies. Many of the case studies here deal with situations that are less likely to arise in Canadian universities. For example, there are sections on how to deal with summer employment. Also, the vast majority of Canadian universities are unionised (or have Faculty Association with collective agreements), whereas the vast majority of American universities are not unionised. With a collective agreement, certain procedures are spelled out, and a head must follow them. Without that, it is vital for a head to know the local procedures and to follow them. A growing problem in Canadian universities is the reliance on non-full-time instructors (called, in the USA, Adjunct Faculty). The way such people are treated seems to vary widely, and again, the advice is for the Head to know the local procedures and follow them to the letter.

Both parts are well worth reading, not only for department heads and those aspiring to such a position, but also for every faculty member. Getting a perspective on the head’s job is very helpful for the smooth and effective running of a department.

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Conics

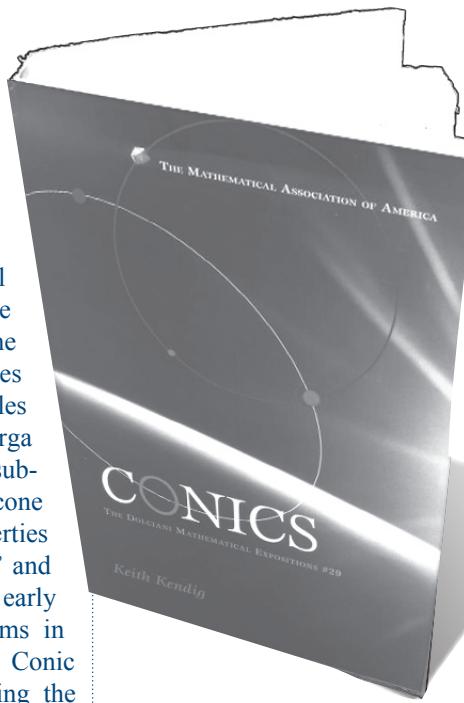
by Keith Kendig, *The Dolciani Mathematical Expositions, 29. The Mathematical Association of America, Washington, DC, 2005, xvi + 403 pp.*

The Greek philosopher and commentator Proclus credited Menaechmus (350 B.C.) (who was a pupil of Eudoxus and a teacher of Alexander the Great) with the first treatment of conic sections. While trying to solve the Delian problem Menaechmus considered sections of cones with planes perpendicular to an element, the vertex angles of the cone being acute, right or obtuse. Apollonius of Perga (c.225 B.C.) wrote *Conic Sections*, the first book on the subject; he obtained all of the conics from one double right cone by varying the angle of sections and studied their properties using geometric methods. The names ‘ellipse,’ ‘parabola,’ and ‘hyperbola’ were used first by him, borrowed from an early terminology of the Pythagoreans who coined these terms in connection with a method called ‘application of areas.’ Conic sections were largely forgotten in the centuries following the ancient Greeks until Johannes Kepler (1571-1604) used ellipses in his laws of planetary motion. It was only after a long struggle to determine planetary paths from Tycho Brahe’s (1546-1601) data on planetary positions (obtained from life-long observation) that Kepler turned in desperation to ellipses. Aiming at a ‘perfect circle’ as the path of a planet, he considered the ellipse as a step down.

Purely geometrical methods of investigating properties of conics are no longer part of regular college courses. The algebraic method of studying conics that is part of today’s college and university courses was introduced by René Descartes in his famous *Discours de la Methode* in 1637. About the same time Gerard Desargues published an original treatise on conic sections exploiting the idea of projection and projective methods, but it got overshadowed by the work of Descartes. Projective geometry was revived two centuries later by Jean-Victor Poncelet; it was work done as a prisoner of war with no books at hand.

One might think that all that is interesting about conics has been investigated and said. Not quite so. In the book under review Keith Kendig presents a fresh perspective and astonishing new insights to the subject. Written in an easy, conversational style, with historical pieces and other points of interest in shaded boxes, the book engages the reader in a journey through a spirited discussion among three characters: Philosopher, Teacher and Student. Philosopher pursues his dream of a unified theory of conics without exceptions. He is the main source of important questions. Teacher is mathematically the most broadly educated of the three. With an open mind he makes important connections based on Philosopher’s questions. Student intercedes in the discussion of the other two by asking for clarifications and examples.

Philosopher begins by expressing frustration at the lack of symmetry and the many exceptions encountered in the usual study of



conics. This leads to discussions resulting in a unification that is achieved as follows:

- (1) In the sphere model of the projective plane, the opposite points of the unit sphere are identified. The ordinary conic is the central projection of the intersection of a sphere and an elliptic cone into the plane $z = 1$. The disk model conic is the orthogonal projection of the intersection of the upper hemisphere and the elliptical cone into $z = 0$. More generally, one gets translated ellipses and hyperbolas by rotating the cone (and nothing else) from the vertical.

(2) By considering identical ellipses on opposite sides of a sphere and then rotating the sphere, one observes that as part of one ellipse disappears over the horizon, another part of its mate appears over the opposite horizon, thus creating two branches of a hyperbola. The horizon turns out to be the ‘line at infinity’. When the ellipse appears tangent to the boundary during the rotation it corresponds to a parabola in the ordinary plane.

(3) Consider an ellipse symmetrically resting inside its “standard rectangle,” touching the midpoint of each of the four sides. If ellipses and hyperbolas are unified as mentioned above then why don’t we see a similar box surrounding a hyperbola? By looking at conics in projective space it becomes apparent that the familiar diagonals, used in drawing the asymptotes, are in fact the two missing rectangle sides.

(4) The sphere is compressed to form a cube, and the ellipse together with the two standard hyperbola views (corresponding, roughly, to equations $x^2 + y^2 = 1$, $x^2 - y^2 = 1$ and $-x^2 + y^2 = 1$) now appear as circles on the three pairs of opposite faces. This highlights inherent symmetry.

(5) By expanding the domain from reals or complex numbers a new pair of foci arise lying on the imaginary axis. All traditional properties of focal-point pairs hold good for this new pair.

(6) Philosopher’s aesthetic sense tells him that there should also exist a second pair of directrices. By carefully constructing drawing of 3-D slices of four-space, the suspected new pair of directrices is uncovered and they are found to have properties analogous to traditional ones.

(7) An ellipse can be looked at as a suitably-stretched circle. That the same is true of hyperbolas is shown by using linear algebra. Symmetric matrices can have imaginary entries and the trio finds that it is precisely stretching in imaginary directions that produce hyperbolas.

(8) The complex projective 2-space turns out to be the best setting in which to consider conics. Two ‘crossing ellipses’ meet in four points. As one ellipse is moved, but not the other, the four points decrease to two after a while, and ultimately, to no points of intersection. The disappearing points never actually disappear at all – they simply move into complex space. In moving one of the ellipses precisely when the number of points decrease, the two become tangent to each other, two points coalescing into one. By regarding such merged points as ‘multiple,’ Bezout’s theorem concerning intersections of algebraic curves is proved. It is seen to be an extension of the fundamental theorem of algebra. Some of the consequences of this generalization include Pascal’s and Brianchon’s theorems.

(9) In the larger complex projective space there are more solutions to the equations defining conics. The conics now include more points and live in four dimensions. By gluing together 3-D slices of 4-space the conics are shown to be topologically spheres.

(10) The full conic – a topological sphere in 4-space — has constant curvature.

The book assumes a course in calculus, basic linear algebra and elementary differential equations. It is profusely illustrated with pictures, worked-out examples. Exercises and a CD containing 36 applets are included. A few exercises require a rudimentary ability

to use Maple or Mathematica or other software of this type. An appendix provides the basics of topology that is needed.

Since the book provides a beautiful and expanding vista of conics it can be used profitably as additional reading in first year college and university courses.

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Les lieux des réunions d'été et d'hiver sont confirmés jusqu'à l'an 2008 (réunion d'été - voir le calendrier des événements). Le Comité de la recherche de la SMC invite les départements intéressés à tenir l'une de ces réunions en hiver 2008 ou plus tard à soumettre une proposition. Les chefs de département intéressés doivent soumettre leur propositions au président.

Dr. J.F. Jardine, Chair/Président

CMS Research Committee / Comité de recherches de la SMC

Department of Mathematics

The University of Western Ontario

London, Ontario N6A 5B7 Canada

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Professor Y.P. Chaubey - Chair, Department of Mathematics and Statistics chair@mathstat.concordia.ca

Geometry and Topology of Manifolds

**Hans U. Boden, Ian Hambleton, Andrew J. Nicas,
and B. Doug Park, editors**
Fields Institute Communications 47
AMS 2005 xii + 347 pages

The 23 papers which make up this volume were contributed by participants in the conference “Geometry and Topology of Manifolds” held at McMaster University in May 2004 with the support of the Fields Institute. There are both expository papers, which recount recent developments and open problems in the field, as well as research articles that include new results appearing in print for the first time. The unifying theme is the problem of understanding manifolds in low dimensions, principally dimensions three and four. Techniques include algebraic topology, surgery theory, gauge theory, Floer homology, contact and symplectic geometry, and Gromov-Witten invariants.

Differential Geometry and Topology: With a View to Dynamical Systems

by Keith Burns and Marian Gidea
Studies in Advanced Mathematics
Chapman & Hall/CRC 2005 ix + 389 pages USD 89.95

The aim of this book, which grew out of notes from a differential geometry course given by Gidea at Northwestern University, is to provide an introduction for beginning graduate students to differential geometry and Riemannian geometry. A noteworthy feature of the presentation is that dynamical systems, which are introduced in the second chapter, are used systematically to illustrate concepts and as a source of applications. The material is divided into nine chapters, each ending with a section of exercises, and at the end of the book is a five-page list of references and a brief index. The chapter titles are: Manifolds, Vector Fields and Dynamical Systems, Riemannian Metrics, Riemannian Connections and Geodesics, Curvature, Tensors and Differential Forms, Fixed Points and Intersection Numbers, Morse Theory, and Hyperbolic Systems.

Harmonic Measure

by John B. Garnett and Donald E. Marshall
New Mathematical Monographs 2
Cambridge 2005 xv + 571 pages USD 110

During the last two decades several remarkable new results about harmonic measure in the complex plane were discovered, among them Makarov’s theorems that harmonic measure on any simply connected domain is singular to α -dimensional Hausdorff measure for $\alpha > 1$ but absolutely continuous for $\alpha < 1$. The authors’ aim is to explain these exciting new results and to provide students with an introduction to this part of mathematics, assuming a background of standard graduate courses in real and complex analysis.

There are ten chapters, of which the first four “provide a foundation that every student of function theory will need”, on univalent functions, potential theory, and extremal length. At the end of each chapter there are brief biographical notes and a section of exercises and related results.

Thirteen appendices, some hundred pages in all, serve to make the book more self-contained and cover additional related material. The book ends with a twenty-page bibliography and three indexes (author, symbol and subject). This beautifully-produced hardback volume, the second in a new Cambridge series with an impressive editorial board, is a pleasure to read and hold in one’s hand.

On Finiteness in Differential Equations and Diophantine Geometry

Dana Schlomiuk, editor
CRM Monograph Series 24, AMS 2005 ix + 182 pages

In 2000 a workshop entitled “Asymptotic Series, Differential Algebra, and Finiteness Problems in Nonlinear Dynamical Systems” was held at the CRM, organized by Luc Bélair and Dana Schlomiuk. The present volume is based on four of the main lecture series at the workshop, given by A. A. Bolibrugh (Linear differential equations, Fuchsian inequalities and multiplicities of zeros), Sergei Yakovenko (Quantitative theory of ODEs and the tangential Hilbert 16th problem), V. Kaloshin (Around the Hilbert-Arnold problem), and Alexandru Buium (Finiteness results in differential algebraic geometry and Diophantine geometry). An overview of the material in the monograph is given in the first chapter, written by the editor—“it is meant to indicate how the four other chapters form a general picture of finiteness problems in differential equations and Diophantine geometry highlighting relations among these chapters.” The volume is dedicated to A. A. Bolibrugh, who died in 2003.

EARLY BIRD  **LÈVE TÔT**
REGISTRATION **INSCRIPTION**
CMS Summer 2006 Meeting
Réunion d'été 2006 de la SMC
April 30, 2006 **30 avril 2006**

A few years ago, I was asked by TV Ontario to participate in a program whereby pupils were invited to post mathematical questions on a website during a prescribed period to be answered on the spot by an online tutor. On the whole, I found the experience quite unsatisfying. While the pupils were elementary students, the level of incoherence that most of them displayed in asking their questions was quite remarkable, many of them appearing to assume that somehow you could look back through their computer screens and see the textbook that the problem was from. This was compounded by the fact that most of them did not stay around long enough for the tutor to probe and find out what the question was really about. The following article by Dragana Martinovic of the Education Department at the University of Windsor based on a presentation to the Mathematics Education Forum at the Fields Institute in January 2005, indicates that the giving and receiving of online help is beset by difficulties even for older students.

ARE STUDENTS ABUSING MATHEMATICS ONLINE HELP?

This note is about mathematics help sites where volunteer expert and/or peer tutors answer questions online. Such sites, designed like bulletin boards, provide for asynchronous, text-based communication between tutors and students. A visitor does not need to register nor pay a fee, and can post a question, answer some already posted question or browse through the public archives. Although this environment provides conditions for learning by tutoring others, by being tutored by others, or by vicariously observing communication of the site, one often hears that students use the facility as an easy way out of their homework. This is no secret. Even the web sites advertise themselves as "homework help". However, if the service is used only to copy answers into a workbook, then it is simply, in the words of Hewitt (1996, p. 6) one of the "strategies that are inefficient from an educational standpoint, but are effective techniques for rapid task-completion."

While we like our students to ask questions, the questions may not be sincere. Students get involved in a "didactic contract" (Brousseau, 1997) where they adapt by relying not only on mathematical knowledge but also on knowledge of the teaching system, its norms and customs, and guesses about the expectations of the teacher. Since these motivations are not plausible in a virtual environment that connects people who are unknown to each other, the questions posted on the help sites are likely due to bottlenecks in learning, students' genuine interest, or the convenience of getting homework done by someone else.

The last option, termed "abuse of online help", is the theme of this report. In the classroom, similar behaviour may consist of excessive questioning, where, as Van Der Meij (1994, p. 143) pointed out, students "do not exhibit need, will, or desire to learn from the response they receive. Instead, it is their intention to

have the teacher or respondent solve the problem on their behalf, to rid themselves of the unpleasant state of ignorance. "In the computer-assisted learning environment, Aleven and Koedinger (2001, p. 1) recognized the danger of placing control of help-seeking tools in the hands of students tutored by a computer. In their interpretation, the abuse of help features is "asking for a hint when in fact the student knows enough to proceed successfully without help". Abuse of mathematics online help is likely a combination of the above. Students may post questions online rather than put any effort into doing the homework themselves.

To find out if the cases of abuse of online help can be distinguished from other questions, I randomly selected and quantified 200 threads from each of three purposely chosen websites. In addition, interviews with five expert tutors and examination of their tutoring logs (for five online questions each) provided a relevant insight for this report.

The expert tutors obviously ascribed the majority of students' questions to homework. One "was surprised how many times ... are blatantly asked questions directly from the textbook that was assigned for homework", an impression obtained because the students phrasing their question would never bother with the background, and "just use the textbook language and the textbook ideas".

However, there is a difference between the homework question where "the student is paralyzed partly by the fact that the assignment is over her head, partly by the way the question was assigned" and the question where students expect to just be recipients, which alerts the tutor to a likely case of abuse. In the latter case, expert tutors provided hints, being careful to adhere to a strict policy of not doing homework. Usually, where the tutor detected that the student genuinely did not know how to approach the problem or missed the point, they were more helpful than when they suspected foul play.

Analysis of students' messages. On a bulletin board, students' postings consist of a *topic* (the title of the message), a mathematics *problem* and a *question* (where a student can explain the difficulty, describe attempts, ask about alternatives, give background information, etc.) The messages were either fragments that were unclear or incomplete, or complete messages of various types:

- *with multiple mathematics problems (multiple)*
- *without a context (implicit)*: only the problem is given along with a social expression such as "please help me with this question";
- *with some context*: apart from the mathematical problem, the student asks "how?" or "wh..?", questions;
- *with partial solutions*: here students get to a certain point but stop, either not being able to continue, or thinking that they

- are not on the right track; remediation and error analysis is possible;
- **with full solutions:** here the students self-explain, or provide a complete answer, asking for verification and remediation; only an acknowledgment from a tutor may be enough.

These categories correlate to an increase in the student's cognitive effort.

Analysis of students' question on the web revealed that they mostly lacked enough information to be really helpful to tutors. In about 52% of the sampled questions, students deleted words, phrases and clauses from the questions assuming that the context was sufficiently rich for the tutor to make a reconstruction. The categories identified **multiple** and **implicit** provide most examples of abuse. Students who submitted multiple problems did not express that they were lost and were not in any way helpful to the tutors. This suggested they were abusing online help. However, there were fewer than 7% of the questions in these categories on any of the three websites.

How were multiple questions treated? On one of the sites where expert tutors select students' messages for archiving, none of the multiple nor implicit questions were archived; on the other two sites, they were not singled out for special treatment unless there were too many problems or repetition. Such questions were likely to be "brushed off" by tutors; for example, one administered the student not to expect "somebody to just do those 20 simple questions for you. This is not really the purpose of this board in my opinion".

"We are not doing your homework" policy. Occasionally, the topic of the message would say something like "not a homework problem", possibly in hopes that it would not be rejected. One extreme case was a message entitled "NOT HOMEWORK REVIEW QUASTIONS [sic] FOR A TEST ASAP" that contained nothing but 15 mathematics problems. Fortunately, such abuse cases were not widespread. There were more questions where students wanted to verify (11% of all), or where they stated that they lacked the knowledge or did not get the idea (25%).

One tutor explained that while there were some cases in which students wanted their homework done for them, there were a "fair amount of cases where they ask questions because they get stuck". In calculus, a lot of students don't remember the geometry and "what to do with a conical sink out of which the water is pouring".

There may be abuse not easily recognized. Rather than attract attention with multiple questions, some students might start several threads at different times or use different email addresses. Or a student may post one tutor's answer as his/her work and resend the question, asking for more details. However, such cases may be rare, as they require effort, time and sophistication from the student.

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Dragana Martinovic

Pennies dropping.

I was never taught proof by induction. When I was in grade 13, it was not on the syllabus, but was an extra topic in the back of the algebra text, and I remember it not making any sense to me. I suppose it was the usual hangup of assuming what you have to prove. However, in my first year, John Coleman assigned the problem of establishing Leibniz' Rule for the nth derivative of the product of two functions. I puzzled over it for a week, working up to the fifth or sixth derivatives, but not seeing how to get it out in general. On the day the problem set was due, on the streetcar to the university, I suddenly realized what induction was all about and that my reasoning for individual cases could be codified to the general case. With great joy, I wrote up the solution and handed it in.

Most of the time, when we give exercises, the students either do them or not, without receiving any particular revelation. But occasionally, there is a connection to be made. One time, I made the mistake of putting on an examination for second year honours analysis students the question: *Determine the Fourier series for the function $\cos^2 x$ on the interval $[0, 2\pi]$* , thinking it would be a nice starter problem. One student simply gave $\frac{1}{2} + \frac{1}{2} \cos^2 x$. Many used this to evaluate the Fourier coefficients using the standard formula. One student, getting the correct answer in this way, wrote on his page, "I guess I should have realized this right away". Unfortunately, many students tried to integrate $\cos^2 x$ directly with the trigonometric functions of multiple angles and simply got bogged down, often with several pages of futile effort. It is hard to know whether the student who simply wrote out the answer just started out and did not proceed, or actually had the insight to realize that this trigonometric expansion *had* to be the Fourier series. But there may have been one or two students who, through this question, realized that $\cos mx$ and $\sin nx$ are their own Fourier series, as is any finite (or even uniformly convergent infinite) linear combination of them, or that, under the right hypotheses, a trigonometric expansion is unique and therefore must be its own Fourier series.

Another example of this sort of thing might be the recognition that

$$ax^2 + bx + c = a\left(x + \frac{b}{2}\right)^2 - \left(\frac{b^2 - 4ac}{4a}\right)$$

is not only the completion of the square of a quadratic but also a Taylor expansion of the quadratic at a point where the linear term vanishes. Will a particular exercise bring this out?

This brings me to a query, indeed a challenge, for the readers. What questions - exercises or problems - have you used that were effective for some students in making, as the British put it, "the penny drop". In other words, did the question suddenly make

them realize the significance of some piece of mathematics, give sudden meaning to a process that they might have been successful at in the operational sense, or make a connection that previously eluded them.

Since the effect of a problem is highly idiosyncratic, depending on factors such as the attentiveness and receptiveness of the student, a harder question is: can one design particular questions that have a good chance of yielding this revelatory effect?

The level of the question does not matter - anything from elementary to advanced undergraduate, although you should put into context anything that the average reader of these *Notes* might not be expected to have at the fingertips.

Joint CMS/CMESG Education Session Calgary, June 3 2006, 2:45-3:45

français page suivante

Does a Math Education PhD program belong in a Math Dept?

A lot of attention has been paid to the need for mathematicians to take education more seriously, even "professionally." Questions arise, such as what kind of research in education a mathematician might do, where this might be published etc. But here we are interested in a more specific question: "is there a place in a math dept for a PhD student who is working in math education?" I have a feeling that the answer is yes, as there are some important, intellectually challenging (and possibly even profound) problems around university level mathematics education. But there are some important questions that arise.

1. **What does such a student learn?** *The first half of the answer is easy: lots of math, certainly enough to pass the PhD comprehensive exam or take the core courses. But what else?*
2. **What are the problem areas that a student's research might focus on?** *How do these differ from the comparable degree obtained in a Faculty of Education? Certainly there might be some overlap here, e.g. math anxiety, gender studies, the high school-university interface. But I feel that the difference would be the extent to which the student focused on the university (as opposed to the school) learning experience. There are other problems that I believe are intellectually important and possibly(!) unique to university, e.g. the relationship between teaching and research. [Actually even here there might be analogues at the high school level.]*
3. **What is the future career path of the graduate?** *Those who get their degree from a Faculty of Education often wind up teaching in a Faculty of Education. Those who get their*

degree from a Math Dept might wish to wind up teaching in a Math Dept. Will there be jobs for such graduates? Increasingly there is a consensus that Math Departments need to be hiring Math Education researchers. There's a whole climate of change around this issue, but there are questions too, for example concerning the priorities of the principal granting councils.

4. **Finally what do you say to this?** *There is an interesting argument that such a program shouldn't exist, that a potential student would be better off doing a standard PhD in Math (or possibly something like History of Math) getting a productive mathematics research program going, getting a job in a good Math Dept in the normal way, and then, armed with mathematical experience and credibility(?), starting to work in Mathematics Education. Certainly a number of significant leaders in the field today have gone this route.*

Structure of the session. I want to call this a discussion rather than a panel, because my view is that in most panel discussions, panelists talk for too long and we run out of time just when the questions and answers (!) start to get interesting. So rather than a call for panelists, this is a Call for Discussants. In fact I'm sure that many folks who simply attend will discuss, but some might want official status because

- they want to come prepared with a particular message
- they want official recognition to get travel money from their university
- They want a small share of CMS Education travel money.

If any of these apply, get in touch with me at taylorp@post.queensu.ca. I can imagine we could have 5 such formal discussants (including me) leaving us a half hour for general discussion. *Peter Taylor, Department of Mathematics and Statistics, Queen's University*

Un doctorat en enseignement des mathématiques a-t-il sa place dans un département de mathématiques?

On dit souvent que les mathématiciens doivent prendre l'enseignement plus au sérieux, même sur le plan professionnel. Plusieurs questions se posent toutefois, par exemple sur le genre de recherche en éducation que devrait faire un mathématicien, sur les endroits où publier ces recherches, etc. Ici, nous nous intéressons plutôt à une question bien précise : « Y a-t-il place dans un département de mathématiques pour un étudiant au doctorat qui s'intéresse à l'enseignement des mathématiques ? » J'ai l'impression que oui, puisque l'enseignement des mathématiques de niveau universitaire suscite des problèmes importants et stimulants (voire profonds) sur le plan intellectuel. Toutefois, plusieurs questions importantes se posent.

1. **Qu'apprendra un tel étudiant?** La première moitié de la réponse est facile : des mathématiques, beaucoup de mathématiques; certainement assez pour réussir l'examen de synthèse ou suivre les cours obligatoires. Mais quoi d'autre?
2. **À quels types de problèmes se consacrera un tel étudiant?** En quoi ces problèmes différeraient-ils des sujets abordés dans le cadre d'un grade semblable offert par une faculté d'éducation? Il y aurait certainement des recoulements (angoisse des mathématiques, l'apprentissage des mathématiques chez les filles ou les garçons, le passage du secondaire à l'université, etc.). Je crois toutefois que la différence tient à ce que l'étudiant se concentrera davantage sur l'enseignement universitaire que sur l'enseignement primaire-secondaire. Il y a sans doute d'autres problèmes importants à étudier et probablement certains qui sont uniques au milieu universitaire (par exemple le rapport entre l'enseignement et la recherche). [En fait, il y a probablement des similitudes au niveau secondaire là aussi.]
3. **Quelles sont les perspectives d'emploi pour un tel étudiant après ses études?** Ceux qui obtiennent leur doctorat d'une

faculté d'éducation finissent souvent par enseigner dans une faculté d'éducation. Parallèlement, ceux qui sortent d'un département de mathématiques pourraient vouloir enseigner dans un département de mathématiques. Y trouveront-ils du travail? On s'entend de plus en plus pour dire que les départements de mathématiques devraient embaucher des chercheurs en enseignement des mathématiques. Le vent semble tourner de ce côté, mais des questions subsistent, notamment au sujet des priorités des principaux conseils subventionnaires.

4. **Enfin, que pensez-vous de tout cela?** Certains affirment qu'un tel programme ne devrait même pas exister et qu'il vaudrait mieux aiguiller les étudiants vers un doctorat en mathématiques standard (ou peut-être en histoire des mathématiques), leur suggérer d'amorcer un bon programme de recherche, de se trouver un emploi dans un bon département de mathématiques de la façon courante, et ensuite, forts de leur expérience mathématique et de leur crédibilité, d'orienter leurs travaux vers l'enseignement des mathématiques. On constate qu'un certain nombre de spécialistes du domaine ont suivi cette voie.

Structure de la session. J'aimerais que l'on parle d'une discussion au lieu d'un panel ou d'une table ronde parce qu'à mon avis, la plupart des participants à un panel ou une table ronde parlent trop longtemps et parce que l'on manque toujours de temps au moment où les questions (et les réponses) commencent tout juste à être intéressantes. Ainsi, au lieu de solliciter des panélistes, nous sollicitons des participants à la discussion. En fait, je suis certain qu'un grand nombre de personnes qui assisteront à la session participeront à la discussion, mais certaines de ces personnes pourraient souhaiter un statut officiel pour l'une des raisons suivantes :

- se préparer à livrer un message particulier;
- obtenir une reconnaissance officielle pour se faire rembourser leurs déplacements par leur université;
- bénéficier d'une petite partie du fonds de déplacements du comité d'éducation de la SMC.

Si l'une de ces raisons s'applique à vous, écrivez-moi à taylorp@post.queensu.ca. Je verrais bien cinq personnes qui aborderaient « officiellement » les questions susmentionnées (moi y compris), ce qui nous laisserait une demi-heure de discussion générale.

Peter Taylor, Département de mathématiques et de statistique, Université Queen's

FIRST JOINT SMM/CMS MEETING - PREMIER REUNION DE LA SMM/SMC (www.cimat.mx)

A special joint conference of the Canadian Mathematical Society and the Sociedad Matemática Mexicana will be held September 21 – 23, 2006 at CIMAT in Guanajuato, Mexico.

Une réunion conjointe spéciale de la Société mathématiques du Canada et la Sociedad Matemática Mexicana aura lieu du 21 au 23 septembre 2006 à CIMAT, Guanajuato, Mexico.

Scientific Committee / - Comité scientifique:

CMS: Alejandro Adem (Chair / Président), Andrew Granville, Walter Craig
SMM: J.C. Gomez Larrañaga (Chair / Président), Lourdes Palacios, Fernando Brambila

Local Organizing Committee / Comité d'organisation à Guanajuato

Luis Hernandez-Lamoneda (Chair / Président)
Victor Nuñez-Hernandez
David Rivera-Caballero

Plenary Speakers / Conférenciers pléniers

David Brydges (UBC), Gonzalo Contreras (CIMAT), Francisco Gonzalez Acuña (UNAM, CIMAT), Pengfei Guan (McGill), Jorge Urrutia (UNAM), Maciej Zworski (UC Berkeley) - TBD

Ce que j'essaie de faire avec le projet *SMAC*, ce qui m'a motivé à faire quelque chose, c'est qu'il y a un mythe autour des mathématiques: on trouve que c'est difficile, que c'est ennuyant, que ce n'est pas utile. Alors je veux renverser la tendance et ramener le balancier dans l'autre sens et montrer que non, les mathématiques, c'est amusant, c'est intéressant, il y a des défis tellement formidables, et en réalité, c'est très utile parce que les mathématiques sont présentes partout dans notre vie de tous les jours. Ainsi, un peu comme je l'avais fait avec les émissions télé il y a quatre ans, je veux faire la même chose avec le projet *SMAC*, mais avec une variété d'activités, entre autres un spectacle grand public appelé *Show Math* et qui a été présenté 7 fois jusqu'à présent.

B R : Êtes-vous le seul animateur de *Show Math*?

J-M De Koninck : Oui, je suis l'animateur, mais j'ai une équipe derrière moi, comme le *duo Tang*, une équipe d'humoristes, qui me donne un coup de main durant le spectacle. L'idée est que si je veux atteindre les jeunes, je me dis que de travailler avec des jeunes, ça aiderait. Alors on a trouvé des étudiants qui sont très près des préoccupations des jeunes, qui font leur maîtrise ou doctorat en mathématiques, et qui aiment bien l'approche de *SMAC*. C'est une approche amusante, très positive, qui ravive l'intérêt des jeunes pour les sciences et les mathématiques. D'ailleurs, ce n'est pas pour rien que *SMAC*, c'est 'sciences et mathématiques', dans le sens où les mathématiques, comme on le sait, c'est le langage universel des sciences, et il faut commencer par cela si l'on veut progresser en sciences. Il y a beaucoup de scientifiques qui reviennent aux études en mathématiques. Ils s'aperçoivent finalement qu'ils leur manquent la base pour vraiment progresser. Ils sont souvent bloqués dans leur domaine scientifique et ils se rendent compte que s'ils avaient de meilleurs outils mathématiques, ils pourraient être beaucoup plus efficaces. Donc, c'est pour ça que je dis 'sciences et mathématiques en action', parce que les mathématiques, c'est le moteur de toutes les sciences. Il y a donc le spectacle *Show Math*, mais il y a aussi '*Math en jeu!*' Nous sommes en train de développer un jeu du genre Monopoly, où pour se déplacer sur un échiquier, les participants doivent répondre à des questions mathématiques. L'idée étant que si l'on veut atteindre les jeunes, il faut descendre sur leur terrain de jeux. Quel est leur terrain de jeux? C'est l'univers des vidéos, des ordinateurs, de l'Internet et du jeu. Alors, c'est ça qu'on fait avec *Math en jeu!* On descend dans leur univers et on leur dit : écoutez, il y a moyen de faire des mathématiques dans votre univers à vous. C'est ça le défi de *Math en jeu!* C'est un peu la même approche avec *Show Math*. On veut leur montrer qu'il y a des choses amusantes qu'ils utilisent dans leur quotidien, comme les MP3, mais ils ne savent pas qu'en réalité les MP3, à la base ce sont des mathématiques, comme les séries de Fourier. Ce sont des outils mathématiques très spécialisés qui ont permis de développer des produits technologiques comme les MP3 dont ils sont les principaux utilisateurs. Nous avons développé *Show Math* surtout pour les étudiants du secondaire, le deuxième cycle en particulier, mais en même temps, on atteint le grand public parce que finalement l'éducation mathématique du grand public, c'est à peu près du niveau du secondaire 2 ou 3. On fait ainsi d'une pierre deux coups; on atteint les gens et on leur montre que les mathématiques peuvent être amusantes et l'on espère qu'ils vont envisager de mettre dans leur plan de carrière les sciences, les mathématiques ou carrément choisir la voie scientifique. En même temps, comme le grand public est là, parce que souvent les parents accompagnent

leurs enfants, on les éveille au fait que les mathématiques, c'est plus que des additions et des multiplications. Ce sont des outils qui ont permis de développer la qualité de vie dont ils profitent : la télévision numérique, les voitures confortables et sécuritaires et tous les progrès qui ont été faits en médecine. Les mathématiques sont à la base de tout cela. C'est bon que le grand public soit au courant de la place importante des mathématiques dans le progrès des sciences et des technologies dont ils bénéficient grandement. Ainsi, ils pourront encourager leurs enfants à embrasser une carrière scientifique. De plus, en même temps, je me dis que même si l'on ne parvient pas à éveiller tous les gens à l'importance des sciences et des mathématiques, au moins pendant 75 minutes, ils auront eu un bon divertissement!

Dans toute cette opération, j'essaie d'utiliser les médias pour répandre la bonne nouvelle, parce que l'on vit dans un monde médiatique. Les gens passent 25 heures par semaine devant leur télé. Les personnes âgées passent 65 heures par semaine devant leur télé. Donc je me dis que si la montagne ne vient pas à vous, allez à la montagne. Alors, allons à la télé avec la complicité des médias. Je pense que si l'on fait quelque chose qui sort de l'ordinaire avec les mathématiques, par exemple un spectacle sur les mathématiques, ce qui est assez inhabituel, je me dis que ça va peut-être intéresser certains médias. Donc j'utilise les médias pour propager la bonne nouvelle. La bonne nouvelle, c'est que faire des mathématiques, ça peut être amusant. Dimanche le 22 janvier, aux émissions 'Les années lumières' à la radio, et à l'émission 'Découverte' à la télé de Radio-Canada, je donnerai des entrevues sur le projet *SMAC*, où l'on verra ce que j'ai fait pour rendre les mathématiques plus vivantes. Avouons le : c'est rare qu'il y ait des mathématiques dans les émissions scientifiques.

B R : La physique bénéficie de beaucoup de couverture médiatique, pourtant le nombre d'étudiants n'augmente pas. Croyez-vous que les gens pensent qu'il est difficile de se trouver un emploi en sciences ou bien les mathématiques sont perçues comme étant rébarbatives au niveau pré-universitaire?

J-M De Koninck : C'est en train de changer pour les mathématiques. D'abord, les entreprises s'aperçoivent de plus en plus qu'elles ont besoin des mathématiques, surtout au niveau de la sécurité, pour la transmission de l'information, par exemple sur Internet, les transactions bancaires, les achats sur Internet, les guichets automatiques, etc. Tout maintenant dépend de la sécurité, et à la base, ce sont des mathématiques. En effet, le système de sécurité RSA, qui a été inventé à la fin des années 70, mise sur l'encryptage des messages en utilisant la théorie des nombres, et en particulier la factorisation des grands nombres. De nos jours, la méthode RSA est essentielle pour tous les achats en ligne et les transactions bancaires. C'est drôle à dire, ce sont des méthodes mathématiques qui datent de 300 ans. Par exemple, la méthode RSA est basée sur le petit théorème de Fermat, et elle utilise essentiellement le fait que nous sommes incapables de factoriser de grands nombres. Nous sommes capables de prendre deux gros nombres premiers de 100 chiffres, de les multiplier ensemble pour obtenir un nombre de 200 chiffres, mais nous sommes incapables de faire l'inverse. Si l'on se donne un gros nombre de 200 chiffres, on ne peut trouver les deux facteurs premiers dans un temps raisonnable, cela prendrait des millions d'années, même avec un ordinateur extrêmement puissant. La raison, c'est que les algorithmes de factorisation que l'on connaît aujourd'hui ne sont pas assez puissants pour factoriser les nombres de 200

chiffres. Il y a beaucoup de monde qui travaillent effectivement là-dessus, mais on y utilise la théorie des nombres, et ce sont des mathématiques pures. On pensait que la théorie des nombres de trouverait pas d'applications dans la vie de tous les jours : pourtant la méthode RSA est maintenant devenue fondamentale dans le fonctionnement de notre économie.

B R : Croyez-vous qu'un jour les découvertes mathématiques auront leur juste place dans les émissions scientifiques? Si oui, quelle devrait être la stratégie à employer pour y arriver?

J-M De Koninck : Je pense que oui. Tranquillement, il va falloir innover un peu si l'on veut rendre les mathématiques populaires. Je fais ma petite part de ce côté-là. Je pense que les américains font des choses relativement semblables. Il y a de plus en plus d'ouvrages de vulgarisation, des ouvrages qui essaient de montrer au grand public que, finalement, les sciences en général ne sont pas si rébarbatives, et qu'il y a moyen de comprendre un peu ce qu'on fait en mathématique, sans être obligé d'écrire un paquet de formules mathématiques. Par exemple, John Allen Paulos a écrit plusieurs livres de ce genre.

Il y a beaucoup d'actions, d'initiatives un peu partout sur notre planète pour rendre les mathématiques plus populaires. La stratégie serait de commencer par essayer de vulgariser. Vulgariser et rendre accessible. Pour ma part, j'essaie de ramener le balancier dans l'autre sens complètement et de faire rire les gens avec les mathématiques. Ce n'est pas évident et ce n'est pas tout le monde qui rit finalement, mais il y en a quelques-uns. Lorsque je présente *Show Math*, que je regarde les yeux de certains jeunes, je vois que le message est en train de passer et d'allumer une étincelle d'intérêt.

B R : Auriez-vous des conseils à donner à ceux qui voudraient rendre leur enseignement plus vivant? Et ceux qui voudraient mieux vendre leurs découvertes?

J-M De Koninck : C'est toujours un problème parce que souvent le scientifique n'a pas le temps de rendre ses découvertes intéressantes. Pour celui qui est intéressé, je suggère d'écouter et de lire ce qui se fait en vulgarisation scientifique. Je pense par exemple à l'émission 'Les années lumières'. Personnellement, j'ai beaucoup appris de cette émission. J'ai appris comment vulgariser et c'est intéressant de se rendre compte à quel point les journalistes scientifiques peuvent présenter des sujets vraiment difficiles sur le plan scientifique et arriver à transmettre cela dans un langage populaire, tout à fait accessible. Alors au lieu d'essayer de réinventer la roue tout seul dans son bureau, pourquoi ne pas regarder ce qui se fait, ce qui a été écrit, ce qui a été dit, ce qui a été raconté dans les médias sur la façon dont on doit vulgariser?

B R : Comment voyez-vous le projet *SMAC* dans quelques années?

J-M De Koninck : Je pense que cela évoluera. On développe présentement le logiciel *Math en Jeu!*, disponible sur Internet. Cela devrait créer un certain achalandage, un certain intérêt pour les mathématiques. Ensuite, je vois le spectacle *Show Math* évoluer vers un *Show Math II, III, etc.*, où éventuellement on fera des choses un peu plus compliquées, parce que l'on aura déjà créé une clientèle, le produit sera attendu. *Show Math*, ce n'est pas un cours, son but n'est pas d'apprendre les mathématiques aux gens. *Showmath* est surtout là pour susciter un intérêt pour les mathématiques. Ensuite, si on atteint une certaine masse critique

de crédibilité, on pourra se permettre d'aller un petit peu plus loin. Nous avons aussi dans nos plans de développer une version anglophone.

B R : Merci Professeur De Koninck pour cet intéressant entretien.

Pour terminer, voici quelques liens supplémentaires qui pourraient intéresser de possibles vulgarisateurs :

www.radio-canada.ca/actualite/v2/anneeslumiere

www.radio-canada.ca/actualite/v2/decouverte/

www.cmathematique.com

www.math.temple.edu/~paulos

ACTIVITES DU CRM: MARS - AVRIL 2006 CRM MARCH - APRIL 2006 ACTIVITIES

MARS / MARCH

"Atelier sur l'anatomie des nombres entiers"
"Workshop on Anatomy of Integers"

13 au 17 mars / March 13-17

Renseignement et inscription / Information and Registration :

www.crm.umontreal.ca/anatomie06

"École CRM-Clay en combinatoire additive"
"CRM-Clay School on Additive Combinatorics"

30 mars au 5 avril 2006 / March 30 - April 5, 2006

Renseignement et inscription / Information and Registration :

www.crm.umontreal.ca/CRM-Clay

AVRIL / APRIL

"Atelier sur la combinatoire additive"
"Workshop on Additive Combinatorics"

6 au 12 avril 2006 / April 6-12, 2006

Renseignement et inscription / Information and Registration :

www.crm.umontreal.ca/combinatoire06

Prix / Prize Andre-Aisenstadt

Prof. Iosif Polterovich (UdeM) & Prof. Tai-Peng Tsai (UBC)

28 avril 2006 / April 28, 2006

<http://crm.umontreal.ca/prix/prixAisenstadt/polterovich.shtml>

<http://crm.umontreal.ca/prix/prixAisenstadt/tsai.shtml>

SESSIONS

The list of speakers is preliminary; participants interested in delivering a talk should contact one of the organizers of that session.

La liste de conférenciers est préliminaire, et l'on demande à toute personne intéressée à présenter une communication doit contacter l'un des organisateurs de la session en question.

Category Theory

Théorie des catégories

Org: Robin Cockett (Calgary)

Michael Barr (McGill), John Fountain (York, UK), Peter Freyd (Pennsylvania, USA), Jonathon Funk (West Indies, Barbados), Nicola Gambino (Montréal), Zizhan Guo (Calgary), Andre Joyal (Montréal), Steve Lack (Western Sydney, Australia), Mark Lawson (Heriot Watt, UK), Dorette Pronk (Dalhousie), Phil Scott (Ottawa), Robert Seely (McGill), Alex Simpson (Edinburgh, UK), Ben Steinberg (Carleton), Paul Taylor (Manchester, UK), Jaap van Oosten (Utrecht, Netherlands), Michael Warren (Carnegie Mellon, USA)

Differential Equations and Dynamical Systems

Équations différentielles et systèmes dynamiques

Org: Elena Braverman (Calgary), Michael Y. Li (Alberta)

Yuming Chen (Wilfrid Laurier), Abba Gumel (Manitoba), Hongbin Guo (Alberta), Bill Lanford (Guelph), Rongsong Liu (York), James Muldowney (Alberta), Chunhua Ou (Memorial), Gergeley Rost (York; Szeged, Hungary), Samir Saker (Calgary; Mansoura, Egypt), Pauline van den Driessche (Victoria), Qian Wang (Alberta), Yuan Yuan (Memorial), Ziaqiang Zhao (Memorial), Zingfu Zou (UWO)

Discrete and Convex Geometry

Géométrie discrète et convexe

Org: Karoly Bezdek (Calgary), Jozsef Solymosi (UBC)

Game Theory / Number Theory in Honour of Richard Guy's 90th Birthday

Théorie des jeux et des nombres en l'honneur du 90e anniversaire de Richard Guy

Org: Richard Nowakowski (Dalhousie), Bill Sands, Hugh Williams, Robert Woodrow (Calgary)

Mike Bennett (UBC), Elwyn Berlekamp (Berkeley, USA), Peter Borwein (SFU), David Boyd (UBC), Andrew Bremner (Arizona State, USA), Karl Dilcher (Dalhousie), Aviezri Fraenkel (Weizmann Institute, Israel), Ron Graham (UC San Diego, USA), Kristin Lauter (Microsoft, USA), Carl Pomerance (Dartmouth, USA), Renate Scheidler (Calgary), Aaron Siegel (Berkeley, USA), David Singmaster (London South Bank, UK), Alf van der Poorten (Macquarie, Australia), Stan Wagon (Macalester, USA), Gary Walsh (Ottawa), David Wolfe (Gustavus Adolphus, USA)

Joint CMS/CMESG Education Session

Session SMC/GCEDM sur l'éducation

Org: Peter Taylor (Queen's)

Does a Math Education PhD program belong in a Math Dept?

Please see page 13 for details.

Un doctorat en enseignement des mathématiques a-t-il sa place dans un département de mathématiques? Voir page 14 pour les détails.

L-functions, Automorphic Forms and Representation Theory

Théorie de la représentation, formes automorphiques, et fonctions L

Org: Amir Akbary (Lethbridge), C. Cunningham (Calgary)

Imen Chen (SFU), Lassina Dembele (Calgary), Paul Mezo (Carleton), Kumar Murty (Queen's), Nathan Ng (Ottawa)

Mathematical Finance

Finance mathématique

Org: Len Bos, Anatoliy Swishchuk (Calgary)

Abel Cadenillas (Alberta), Joe Campoletti (Wilfrid Laurier), Matt Davison (UWO), Jean-Marie Dufour (Montréal), Ivar Ekeland (UBC), Robert Elliott (Calgary), Peter Forsyth (Waterloo), Ulrich Horst (UBC), Adam Kolkiewicz (Waterloo), Cristiane Lemieux (Calgary), Alex Melnikov (Alberta), Luis Seco (Toronto), Anatoliy Swishchuk (Calgary), Tony Ware (Calgary)

Model Theory

Théorie des modèles

Org: Patrick Speissegger (McMaster)

Matthias Aschenbrenner (Illinois - Chicago, USA), Itay Ben-Yaacov (Wisconsin-Madison, USA), Ozlem Beyarslan (Illinois - Chicago, USA), Gregory Cherlin (Rutgers, USA), Alf Dolich (McMaster), Dragos Ghica (McMaster), Deidre Haskell (McMaster), Tobias Kaiser (Regensburg, Germany), Salma Kuhlmann (Saskatchewan), David Lippel (Notre Dame, USA), Chris Miller (Ohio State, USA), Carol Wood (Wesleyan, USA)

Positivity in Functional Analysis and Applications

Positivité en analyse fonctionnelle et applications

Org: Charalambos Aliprantis (Purdue), Vladimir Troitsky (Alberta)

Charalambos Aliprantis (Prudue, USA), Razvan Anisca (Lakehead), Gerard Buskes (Mississippi, USA), Roman Drnovsek (Ljubljana, Slovenia), Valentina Galvani (Alberta), Yevgeniy Gordon (Eastern Illinois, USA), Gheorghe Isak (Royal Military College), Nigel Kalton (Missouri, USA), Arkady Kitover (Community College of Philadelphia, USA), Anton Schep (South Carolina, USA), Martin Weber (Technische Universität Dresden, Germany)

Recent Work in History of Mathematics

Travaux récents en histoire des mathématiques

Org: Tom Archibald (SFU)

Tom Archibald (SFU), Marcus Barnes (SFU), June Barrow-Green (Open Univ., Milton Keyes, UK), Deborah Kent (SFU), Reinhard Siegmund-Schultze (Harvard; Agder Univ. College, Norway), Laura Turner (SFU)

Set Theory and Infinitary Combinatorics

Théorie des ensembles et combinatoire infinie

Org: Stevo Todorcevic (Toronto)

Ilijas Farah (York), Piotr Koszmider (Sao Paolo, Brazil), Justin Moore (Boise State, USA), Cristian Rosendal (Illinois - Urbana, USA), Norbert Sauer (Calgary), Slawomir Solecki (Illinois - Urbana, USA), Juris Steprans (York), Franklin Tall (Toronto)

Symmetry in Geometry

Symétrie en géométrie

Org: Ted Bisztriczyk (Calgary), Ferenc Fodor (Szeged, Hungary; Calgary), Richard K. Guy (Calgary), Asia Weiss (York)

Leah Berman (Ursinus College, USA), Andras Bezdek (Auburn, USA), Karoly Bezdek (Calgary), Robert Dawson (Saint Mary's), Antoine Deza (McMaster), Branko Grunbaum (Washington, USA), Wlodek Kuperberg (Auburn, USA), Barry Monson (UNB), Egon Schulte (Northeastern, USA), Arthur Sherk (Toronto)

Contributed Papers

Communications libres

Org: Alexander Brudnyi (Calgary)

Contributed papers of 20 minutes duration are invited. For an abstract to be eligible, the abstract, the contributor's registration form, and payment of registration fees have to be received before **April 10, 2006**.

Nous lançons un appel de communications libres de 20 minutes chacune. Les résumés devront nous parvenir au plus tard le **10 avril 2006**, accompagnés du formulaire et des droits d'inscription du conférencier.



Jean-Marie De Koninck (Université Laval) et Yanick Villedieu (Radio-Canada)

Les Années lumière, le magazine d'actualité et de culture scientifiques diffusé sur les ondes de la Première Chaîne de Radio-Canada le dimanche de 12h à 14h, décerne le titre de Scientifique de l'année de Radio-Canada 2005 au mathématicien Jean-Marie De Koninck de l'Université Laval à Québec. Il a été choisi « pour avoir conçu et réalisé le projet Sciences et mathématiques en action (SMAC), dans le but d'éveiller et de renforcer chez les jeunes l'intérêt pour les mathématiques et pour les sciences ».

Le projet SMAC est un très bel exemple de sensibilisation du public à l'importance des mathématiques et des sciences en général dans la vie de tous les jours. En plus de chercher à susciter des carrières scientifiques chez les jeunes, il vise à démystifier les mathématiques auprès de la population. SMAC propose par exemple une conférence spectacle, *Show Math*, animée par Jean-Marie De Koninck et appuyée par des vidéos et des sketches humoristiques du Duo Tang; on y aborde de manière simple et amusante une foule de sujets mathématiques qui touchent les gens de près. Le site Internet de SMAC (www.smac.ulaval.ca) propose aussi, aux «mathophiles» comme aux «mathophobes», un coffret d'énigmes mathématiques et les clefs pour les déchiffrer intitulé *Math en jeu*. L'équipe de SMAC est composée autant d'étudiants en mathématiques, en informatique et en éducation, que de professeurs-chercheurs.

Âgé de 57 ans, Jean-Marie De Koninck est professeur de mathématiques à l'Université Laval depuis 33 ans. Auteur de cinq livres et de plus d'une soixantaine d'articles publiés dans des revues de

mathématiques réputées, il est bien connu dans le monde scientifique pour ses travaux sur les nombres premiers. Il préside depuis un an l'Association mathématique du Québec. Cet universitaire est aussi un passionné de communication: avant le projet SMAC, il avait présenté sa propre émission de vulgarisation scientifique, intitulée *C'est mathématique!*, sur les ondes du Canal Z. Jean-Marie De Koninck s'est par ailleurs fait connaître du grand public en imaginant et en mettant sur pied, en 1984, l'Opération Nez rouge, dont le succès est maintenant international. Fortement impliqué dans le sport amateur, il est aussi commentateur sportif en natation pour la télévision de Radio-Canada, avec laquelle il a couvert de nombreux Jeux Olympiques.

Rappelons que le titre de «Scientifique de l'année», décerné pour la 19e année consécutive, est remis à une personnalité scientifique qui, au cours de l'année écoulée, s'est illustrée dans sa discipline par une découverte, une publication ou une réalisation remarquable, de nature scientifique et de portée nationale ou internationale. L'honneur vise également à souligner l'implication du scientifique dans son milieu, tant sur le plan strictement scientifique qu'en matière de formation de chercheurs, d'engagement professionnel et de rayonnement social.

Jean-Marie De Koninck a été reçu à l'émission *Les Années lumière* animée par Yanick Villedieu le dimanche 22 janvier 2006 sur les ondes de la Première Chaîne. Il a également fait l'objet d'un reportage lors de l'émission de télévision *Découverte* le même jour.

CMS Winter 2006 Meeting

University of Toronto
December 9 - 11, 2006
Sheraton Centre Toronto

CMS/MITACS Summer 2007 Meeting

University of Manitoba
June 2007
Winnipeg, Manitoba

CMS Winter 2007 Meeting

University of Western Ontario
December 8 - 10, 2007
London, Ontario

CMS Summer 2008 Meeting

CRM
June 2008
Montréal, Québec

CALL FOR NOMINATIONS / APPEL DE MISES EN CANDIDATURE

**NEW CMS PRIZE
NOUVEAU PRIX
DE LA SMC**

DAVID BORWEIN DISTINGUISHED CAREER AWARD PRIX DAVID-BORWEIN DE MATHÉMATICIEN ÉMÉRITE POUR L'ENSEMBLE D'UNE CARRIÈRE

The David Borwein Distinguished Career Award recognizes mathematicians who have made exceptional, broad, and continued contributions to Canadian mathematics.

A complete nomination dossier consists of:

- A signed nomination statement from a present or past colleague, or collaborator (no more than three pages) having direct knowledge of the nominee's contribution;
- a short curriculum vitae, no more than five pages;
- Two to four letters of support in addition to the nomination;
- Other supporting material may be submitted, no more than ten pages.

A nomination can be updated and will remain active for three years. Six copies of the complete nomination dossier must arrive at the CMS Executive Office no later than **March 31, 2006**.

Le prix David-Borwein de mathématicien émérite pour l'ensemble d'une carrière rend hommage à un mathématicien qui a fait une contribution exceptionnelle et soutenue aux mathématiques canadiennes.

Le dossier de candidature comprendra les éléments suivants :

- une lettre de mise en candidature signée par un collègue ou un collaborateur actuel ou des années passées (trois pages maximum) qui connaît très bien les réalisations de la personne proposée;
- un bref curriculum vitae, maximum de cinq pages;
- de deux à quatre lettres d'appui, en plus de la mise en candidature;
- tout autre document pertinent, maximum de dix pages.

Toute mise en candidature est modifiable et demeurera active pendant trois ans. Le dossier complet, en six exemplaires, doit parvenir au bureau administratif de SMC au plus tard le **31 mars 2006**.

Selection Committee / Comité de sélection
David Borwein Distinguished Career Award
Prix David Borwein pour carrière distinguée
Canadian Mathematical Society / Société mathématique du Canada
577 King Edward, Ottawa, Ontario K1N 6N5

Its is hoped to present the first award
at the Summer 2006 meeting in Calgary.

Nous esperons présenter le premier prix
à la réunion d'été 2006 de la SMC à Calgary.



CONTRIBUTIONS TO DISCRETE MATHEMATICS A NEW ACADEMIC E-JOURNAL, FREE FOR ALL <http://cdm.math.ca/>

About the journal

Contributions to Discrete Mathematics is a refereed e-journal dedicated to publishing significant works in a timely manner. Based at the University of Calgary, CDM is free for both authors and readers. We publish research articles in areas such as combinatorics and graph theory, discrete and computational geometry, discrete optimization and operations research, theoretical computer science, and coding and communication theory.

Call for papers
We invite authors to submit original, unpublished research for peer review. We also welcome survey articles in the scope of the journal. More information about the submission procedures can be found on our website, at <http://cdm.math.ca>.

Honorary Editor-in-Chief: John H. Conway

Editors-in-Chief: Karoly Bezdek, Norbert Sauer, Hugh Williams

Managing Editor: Michael Lamoureux

Articles concerning the following topics are especially encouraged:

Mathematical logic and universal algebra (03B, 03C, 08)
Applications of logic to algebra and computer science (03B, 03D, 03G)
Set theory (03E)
Designs (05B, 51E)
Sphere packings, coverings and arrangements (05B, 52C)
Geometric and algebraic combinatorics (05E)
Partially ordered sets and lattices (06A, 06B)
Diophantine approximation (11J)
Cryptography, especially algebraic and number theoretic methods (11T, 14G)
Computational number theory (11Y)
Linear and nonlinear equations in matrices and operators (15A, 47A, 47J)
Discrete geometry including the theory of polytopes and rigidity (32F, 52B, 52C)
Operator theory with discrete aspects (46N, 47A)
Combinatorial and finite geometry (51D, 51E)
Computational geometry including computational convexity (52B, 65D)

CALL FOR NOMINATIONS / APPEL DE MISES EN CANDIDATURE

The CMS Research Committee is inviting nominations for three prize lectureships. These prize lectureships are intended to recognize members of the Canadian mathematical community.

Le Comité de recherche de la SMC lance un appel de mises en candidatures pour trois de ses prix de conférence. Ces prix ont tous pour objectif de souligner l'excellence de membres de la communauté mathématique canadienne.

Prix Coxeter-James Prize Lectureship

2007

Le prix Coxeter-James rend hommage à l'apport exceptionnel à la recherche de jeunes mathématiciens. Il est possible de proposer la candidature d'une personne qui a obtenu son doctorat il y a au plus dix ans. Les propositions pourront être mises à jour et demeureront actives pendant un an, à moins que la mise en candidature originale ne corresponde à la dixième année d'obtention du doctorat. La personne choisie présentera sa conférence à la Réunion d'hiver. Les lettres de mise en candidature devraient inclure les noms d'au moins trois répondants possibles ainsi qu'un curriculum vitae récent, si disponible. Le récipiendaire doit être membre de la communauté mathématique canadienne.

The Coxeter-James Prize Lectureship recognizes young mathematicians who have made outstanding contributions to mathematical research. Nominations may be made up to ten years from the candidate's Ph.D. A nomination can be updated and will remain active for a second year unless the original nomination is made in the tenth year from the candidate's Ph.D. The selected candidate will deliver the prize lecture at the Winter Meeting. Nomination letters should include at least three names of suggested referees as well as a recent curriculum vitae, if available. The recipient shall be a member of the Canadian mathematical community.

Prix Jeffery-Williams Prize Lectureship

2008

Le prix Jeffery-Williams rend hommage à l'apport exceptionnel à la recherche de mathématiciens d'expérience. Les propositions pourront être mises à jour et demeureront actives pendant trois ans. La conférence sera présentée à la Réunion d'été. Les lettres de mise en candidature devraient inclure les noms d'au moins trois répondants possibles ainsi qu'un curriculum vitae récent, si disponible. Le récipiendaire doit être membre de la communauté mathématique canadienne.

The Jeffery-Williams Prize Lectureship recognizes mathematicians who have made outstanding contributions to mathematical research. A nomination can be updated and will remain active for three years. The prize lecture will be delivered at the Summer Meeting. Nomination letters should include three names of suggested referees as well as a recent curriculum vitae, if available. The recipient shall be a member of the Canadian mathematical community.

Prix Krieger-Nelson Prize Lectureship

2008

Le prix Krieger-Nelson rend hommage à l'apport exceptionnel à la recherche de mathématiciennes. Les propositions pourront être mises à jour et demeureront actives pendant deux ans. La conférence sera présentée à la Réunion d'été. Les lettres de mise en candidature devraient inclure les noms d'au moins trois répondants possibles ainsi qu'un curriculum vitae récent, si disponible. Le récipiendaire doit être membre de la communauté mathématique canadienne.

The Krieger-Nelson Prize Lectureship recognizes outstanding research by a female mathematician. A nomination can be updated and will remain active for two years. The prize lecture will be delivered at the Summer Meeting. Nomination letters should include three names of suggested referees as well as a recent curriculum vitae, if available. The recipient shall be a member of the Canadian mathematical community.

La date limite pour les mises en candidature est le 30 juin 2006. Faire parvenir vos lettres à l'adresse suivante :
The deadline for nominations is June 30, 2006. Letters of nomination should be sent to the address below.

J.F. Jardine, Chair/Président
CMS Research Committee / Comité de recherches de la SMC
Department of Mathematics
The University of Western Ontario
London, Ontario N6A 5B7 Canada

The 2006 Krieger-Nelson and Coxeter-James Prizes will be presented at the CMS Summer 2006 Meeting in Calgary, Alberta, June 3 to 5.
Les prix Krieger-Nelson et Coxeter-James 2006 seront présentés à la Réunion d'été 2006 de la SMC à Calgary (Alberta) du 3 au 5 juin.

CALL FOR NOMINATIONS / APPEL DE MISES EN CANDIDATURE

Prix Adrien-Pouliot Prize Lectureship

2006

Nous sollicitons la candidature de personnes ou de groupe de personnes ayant contribué de façon importante et soutenue à des activités mathématiques éducatives au Canada. Le terme « contributions » s'emploie ici au sens large; les candidats pourront être associés à une activité de sensibilisation, un nouveau programme adapté au milieu scolaire ou à l'industrie, des activités promotionnelles de vulgarisation des mathématiques, des initiatives, spéciales, des conférences ou des concours à l'intention des étudiants, etc.

Les candidatures doivent nous être transmises via le « Formulaire de mise en candidature » disponible au site Web de la SMC : www.cms.math.ca/Prix/info/ap. Pour garantir l'uniformité du processus de sélection, veuillez suivre les instructions à la lettre. Toute documentation excédant les limites prescrites ne sera pas considérée par le comité de sélection.

Il est possible de renouveler une mise en candidature présentée l'an dernier, pourvu que l'on en manifeste le désir avant la date limite. Dans ce cas, le présentateur n'a qu'à soumettre des documents de mise à jour puisque le dossier original a été conservé. Les mises en candidature doivent parvenir au bureau de la SMC avant le **30 avril 2006**. Veuillez faire parvenir vos mises en candidature en six exemplaires à l'adresse ci-dessous :

Nominations of individuals or teams of individuals who have made significant and sustained contributions to mathematics education in Canada are solicited. Such contributions are to be interpreted in the broadest possible sense and might include: community outreach programmes, the development of a new program in either an academic or industrial setting, publicizing mathematics so as to make mathematics accessible to the general public, developing mathematics displays, establishing and supporting mathematics conferences and competitions for students, etc.

Nominations must be submitted using the Nomination Form available from the CMS Web site at: www.cms.math.ca/Prizes/info/ap. To assure uniformity in the selection process, please follow the instructions precisely. Documentation exceeding the prescribed limits will not be considered by the Selection Committee.

Individuals who made a nomination in 2005 can renew this nomination by simply indicating their wish to do so by the deadline date. Only materials updating the 2005 Nomination need be provided as the original has been retained. Nominations must be received by the CMS Office no later **April 30, 2006**. Please send six copies of each nomination to the address given below.

The Adrien Pouliot Award / Le Prix Adrien-Pouliot
Canadian Mathematical Society / Société mathématique du Canada
577 King Edward
Ottawa, Ontario K1N 6N5

Distinguished Service Award / Prix de la SMC pour service méritoire

2006

In 1995, the Society established this award to recognize individuals who have made sustained and significant contributions to the Canadian mathematical community and, in particular, to the Canadian Mathematical Society.

Nominations should include a reasonably detailed rationale and be submitted by **March 31, 2006**, to the address below.

En 1995, la Société mathématique du Canada a créé un prix pour récompenser les personnes qui contribuent de façon importante et soutenue à la communauté mathématique canadienne et, notamment, à la SMC.

Pour les mises en candidature prière de présenter des dossiers avec une argumentation convaincante et de les faire parvenir, le **31 mars 2006** au plus tard, à l'adresse ci-dessous :

Selection Committee / Comité de sélection
Distinguished Service Award / Prix pour service méritoire
Canadian Mathematical Society / Société mathématique du Canada
577 King Edward
Ottawa, Ontario K1N 6N5

The 2006 Adrien-Pouliot and Distinguished Service Awards will be presented at the CMS Winter 2006 Meeting in Toronto, ON, December 9 to 11.
Les prix pour service méritoire et Adrien-Pouliot seront présentés à la Réunion d'hiver 2006 de la SMC à Toronto (Ontario), du 9 au 11 décembre.

CALL FOR NOMINATIONS

CJM/CMB - Associate Editors

The Publications Committee of the CMS solicits nominations for Associate Editors for the Canadian Journal of Mathematics (CJM) and the Canadian Mathematical Bulletin (CMB). The appointment will be for five years beginning January 1, 2007. The continuing members (with their end of term) are below.

The deadline for the submission of nominations is April 15, 2006.

Nominations, containing a curriculum vitae and the candidate's agreement to serve should be sent to the address below.

Address for Nominations / Adresse de mise en candidatures:

Juris Steprans, Chair / Président

CMS Publications Committee / Comité des publications de la SMC
Department of Mathematics, York University
N520 Ross, 4700 Keele Street
Toronto, Ontario M3J 1P3
chair-pubc@cms.math.ca

CURRENT MEMBERS / MEMBRES ACTUELS

CJM Editors-in-Chief / Rédacteurs-en-chef du JCM

Henri Darmon (McGill) 12/2006; Niky Kamran (McGill) 12/2006.

CMB Editors-in-Chief / Rédacteurs-en-chef du BCM

Nantel Bergeron (York) 12/2010; Jianhong Wu (York) 12/2010.

APPEL DE MISES EN CANDIDATURE

JCM/BCM - Rédacteurs associés

Le comité des publications de la SMC sollicite des mises en candidatures pour des rédacteurs associés du Journal canadien de mathématiques (JCM) et Bulletin canadien de mathématiques (BCM). Le mandat sera de cinq ans et débutera le 1 janvier 2007. La liste des éditeurs qui sont en cours de mandat se trouve ci-dessous..

L'échéance pour proposer des candidats est le 15 avril 2006.

Les mises en candidature, accompagnées d'un curriculum vitae ainsi que du consentement du candidat(e), devrait être envoyées à l'adresse ci-dessous.

NSERC - CMS Math in Moscow Scholarships

The Natural Sciences and Engineering Research Council (NSERC) and the Canadian Mathematical Society (CMS) support scholarships at \$9,000 each. Canadian students registered in a mathematics or computer science program are eligible.

The scholarships are to attend a semester at the small elite Moscow Independent University.

Math in Moscow Program

www.mccme.ru/mathinmoscow/

Application details

www.cms.math.ca/bulletins/Moscow_web/

For additional information please see your department or call the CMS at 613-562-5702.

Two scholarships will be awarded in the spring competition. Deadline **March 30, 2006** to attend the Fall 2006 semester



Bourse CMS/CRSNG Math à Moscou

Le Conseil de Recherches en Sciences Naturelles et en Génie du Canada (CRSNG) et la Société mathématique du Canada (SMC) offrent des bourses de 9,000 \$ chacune. Les étudiantes ou étudiants du Canada inscrit(e)s à un programme de mathématiques ou d'informatique sont éligibles.

Les bourses servent à financer un trimestre d'études à la petite université d'élite Moscow Independent University.

Programme Math à Moscou

www.mccme.ru/mathinmoscow/

Détails de soumission

www.cms.math.ca/bulletins/Moscou_web/

Pour plus de renseignements veuillez communiquer avec votre département ou la SMC au 613-562-5702.

Deux bourses seront attribuées au concours du printemps. Date limite le **30 mars 2006** pour le trimestre d'automne 2006



Bringing the Magic of Math to the Masses

As mathematicians, we all know about the waning interest of youth for the sciences...and for mathematics in particular. How can we rekindle math's appeal and avoid the economic and intellectual fallout that continued indifference would mean for the country?

Enter Jean-Marie De Koninck, a number theorist whose name resonates with everyone at the Canadian Mathematical Society. In the early 2000s, Professor De Koninck hosted virtually all 29 episodes of '*C'est mathématique!*' (literal translation : It's mathematical!), a TV series highlighting the role of mathematics in everyday life. And just recently, he launched a project titled SMAC, which stands for "science and math in action."

Visit the SMAC Web site (www.smac.ulaval.ca) and you discover a wealth of information, games and live shows designed not only to awaken and heighten the interest that youth have for mathematics, but also to demystify math for the general public. As part of the project, Jean-Marie De Koninck has hosted *Show Math*, a mathematics road show—that blends the humorous and the serious—in several cities, including Ottawa and Québec.

Luckily, the media became part of the equation at the outset; witness Professor De Koninck's award as scientist of the year in 2005, presented by none other than Yanick Villedieu, host of the highly rated popular-science show *Les années lumières*, which airs every Sunday on Radio-Canada. The award, now on its 19th year, salutes scientists who leave a special mark in their field, either through a discovery, a publication or some other special achievement. The winner is chosen by a panel of science journalists and writers. Professor De Koninck received his award at a special ceremony on January 18 of this year at Québec City's Université de Laval. Below are excerpts of a short interview with him on the eve of the ceremony.

B R: What prompted you to become involved in the popularization of mathematics? Does it have anything to do with the small number of students who take math and other science options?

J-M De Koninck: Certainly, it's well known that interest in science studies is dropping all over the Western world, and I don't just mean Canada and the U.S. It's the same in France and elsewhere in Western Europe. But in Asian countries like India, China and Japan, sciences in general are attracting more interest—in fact, a whole lot more students in these countries are studying science, and a huge number are doing so right here in Canada and the U.S., especially at the graduate-studies level. What's interesting is that, at the economic level, there seems to be a correlation between a country's economic growth and the interest its population shows in math and other sciences. Take China: its economic growth is about 10% a year; and India's economy has really shifted into high gear, too. China is working on a new car for 2008 that will cost about \$2000, and \$100 Chinese laptops are just around the corner. The list goes on. This isn't just about cheap labour, it's about their ability to really develop research and high tech at lower cost. The products will invade our economy, which is just

about stable right now—well, it's by no means growing 10% every year. Maybe we should see a relation between the two. It's a striking coincidence, for sure. We have weakening interest in sciences and a flat economy. They're taking greater interest in science and their economy is thriving. Sure, the relation can't be proven easily, but there's something to explore here.

What I'm trying to accomplish through the SMAC projects—or what prompted me to get involved—is the myth that surrounds math: people find it hard, boring, useless. I want to reverse the trend and show that math is actually fun and genuinely interesting, that it poses a whole array of fascinating challenges, and that it's truly useful because it's part of our everyday lives.

So, I'd like SMAC to do what I did with our TV series four years ago, except now we add a variety of activities, including a general-interest production called *Show Math* that we've already performed seven times.

B R: Are you the only host on Show Math?

J-M De Koninck: Yes, I'm the host, but there's a whole team I rely on, like *Duo Tang*, a comedy ensemble, that gives me a hand during the production. Also, given that our objective is to influence youth, my take on it is that it helps to actually *work* with young people; So we've rounded up master's and doctoral students in math who, on the one hand, reflect the very concerns felt by young people in general and, on the other hand, have really bought into the approach put forward by the *SMAC* project—they see it as fun, positive, and able to rekindle the interest of young people for science and math. In fact, there's a reason that *SMAC* stands for "**science and** math": math, as they say, is the universal language of science, and you have to start with that if you want to progress in science.

Many scientists come back to study math. That's because they realize they lack the foundation to truly keep moving ahead. They've often hit a dead end in their discipline and now understand that if they had better mathematical tools, they could be much more productive and efficient. So again, that's why I like to say "science and math in action," because math drives every single science.

Along with *Show Math*, we're producing something called *Math en jeu!* We're designing a Monopoly-style game where participants try to move about on a game board by answering mathematical questions. The premise here is that if we want to reach youth, we have to venture onto their playing field. And what exactly is that field? Well, it's all about computers, and videos, and games. So that's what we aim for with *Math en jeu!* We try to enter their universe and say: "Listen, there's a way to make math a part of your world, too! That's the challenge of *Math en jeu!*"

Show Math uses roughly the same approach. We want to show that fun gadgets used day in and day out, like MP3 players, are in fact mathematics products, like the Fourier series. Technological products like MP3s that are used first and foremost by students

came about largely thanks to highly specialized mathematical tools. We developed *Show Math* mostly for high-school students, with a special focus on the upper grade levels; but at the same time, we're reaching the general public, essentially because the general public's math level stands at about the grade 8 or 9 level (Quebec secondary levels 2 and 3). So, we're killing two birds with one stone; we're truly reaching people and we're showing them that math can be fun—and we keep hoping that they'll include math and science in their career paths, or that they'll decide on a science career outright. At the same time, because the general public is involved—you know, parents usually accompany their children—we also help them realize that math involves a lot more than adding and subtracting, that it's actually one of the cornerstones of the comfortable life we lead: digital television, safe, luxurious cars, incredible medical advances—math is the foundation for all those things.

It's a good thing that members of the public be aware of the huge role math plays in the scientific and technological advances that enrich their lives. This might prompt them to steer their children toward a scientific career. At the same time, I take solace in that even if we don't manage to awaken everyone to the importance of science and math, we'll at least give them some sound entertainment for 75 minutes!

And in the big scheme of things, I try to use the media to spread the word, because we do live in a media-driven world. People generally spend about 25 hours a week watching TV. Seniors hover around the 65-hour-a-week mark. So, I'm a realist—Mohammed going to a mountain that won't come to him. I use TV, together with the help and savvy of modern media. If we produce something out of the ordinary with math—say, something truly unusual like a math road show, I wager that some media will take an interest. So again, I use the media to spread the good word, that is, doing math can actually be a fun and fulfilling endeavour. On Sunday, January 22nd, I'll be a guest on *Les années lumières* (radio) and on *Découverte* (TV) to talk about *SMAC*. That's where you can see what I've done to inject life and vigour into the world of math. Let's be honest: few science shows devote time to the phenomenon of math.

B R: Physics is getting a lot of media coverage, but student numbers in that science aren't improving. Do you think it's because people believe it's tough to find a job in science or because math is seen as too daunting at the pre-university level?

J-M De Koninck: Well, things are changing for math. First off, companies are realizing more and more just how much they rely on mathematics, especially for security issues, for sending information; take Internet banking, for instance, and Internet shopping; then there are automated tellers, and others. All of these services depend on security—and the foundation of security features is a mathematical one.

In fact, the RSA security system invented in the 1970s operates on the principle of encrypted messaging that makes use of number theory, and especially the factorization of large numbers. These

days, the RSA system is pivotal for on-line purchases and banking transactions. It might sound funny, but the mathematical models used date back about 300 years! For instance, the RSA method revolves around Fermat's Little Theorem and operates on the fact that we're incapable of factorizing large numbers. We can take two large 100-digit prime numbers and multiply them together to get a 200-digit number, but we can't do the opposite. If we take a large 200-digit number, we can't find its two prime factors fast enough—it would take millions of years, even with a super computer. That's because the factorization algorithms we have today aren't powerful enough to factorize 200-digit numbers. Many people are working on this, in fact, but they're using number theory to do so—and that's pure mathematics. We didn't think number theory would spawn an application for everyday life, yet the RSA model has become a cornerstone of our economy. .

B R: Do you think mathematics discoveries will get their fair share of attention on science shows some day? If so, how do we go about making it happen?

J-M De Koninck: I think that'll come. Things will happen gradually, but we'll have to be innovative if we want to popularize mathematics. I'm trying to make my own modest contribution on that front, and I think the Americans are trying similar things. There are more and more popularization manuals and books out there trying to show the general public that math and science aren't so intimidating after all, and that people can get a decent grasp of math's workings without having to spew out a bunch of formulas and equations. John Allen Paulos, for example, has written several of these books.

And right around the world there are campaigns and initiatives designed to bring math closer to the average person. The first strategy would be to popularize math and make it accessible. I, for one, try to tip the scales completely and make people actually laugh with math. Not an easy task—and not everyone laughs in the end, but some really do. When I put on *Show Math*, I can see in the eyes of certain youngsters that my message is getting across and sparking some interest.

B R: What advice would you share with teachers trying to spice up their instruction? And what about those trying to make their discoveries better known?

J-M De Koninck: That's a constant challenge, because most scientists don't have the time to package their work into something glamorous. But for those who are keen, I suggest they start simply by watching and reading what's being done right now in scientific popularization. Shows like *Les années lumières* come to mind; I myself learn a lot from it, including the art of popularizing. And on that note, it's fascinating to realize just how well scientific journalists can take extremely complex scientific topics and present them in fully accessible terms. So, why try to re-invent the proverbial wheel alone in your office when you can tap into what's been shown, or written, or said, or detailed in the media when it comes to the art of popularization?

B R: What do you foresee for the *SMAC* project a few years down the road?

J-M De Koninck: I think things will evolve. Right now, we're developing the *Math en Jeu!* software, which is available on the Web. That should generate some traffic and help feed interest for math. Next, I see our *Show Math* production spawning *Show Math II, III, etc*, which will give us a chance to deal with more complicated topics—that'll be an expectation, especially that we've built a sort of faithful following. Mind you, *Show Math* isn't a course, and it's not designed to *teach* math to the average person. It's mostly a tool for generating interest in mathematics. In the end, if we manage to build a sort of critical mass of credibility, we'll

be able to go a bit further. We're actually setting our sights on an English-language version, too.

B R: Thanks very much for this interesting chat, Professor De Koninck.

Interested in the art of popularization? Explore the links below!

www.radio-canada.ca/actualite/v2/anneeslumiere
www.radio-canada.ca/actualite/v2/découverte/
www.cmathematique.com
www.math.temple.edu/~paulos

CALL FOR NOMINATIONS – CMS TREASURER / APPEL À CANDIDATURES - TRÉSORIER DE LA SMC

The CMS invites applications or nominations for the position of CMS Treasurer. The appointment will be for three years beginning July 1, 2006.

The Treasurer's role is vitally important to the Society. Appointed by the Board of Directors, the Treasurer is an ex-officio member of the Executive Committee and the Advancement of Mathematics Committee. As well, the Treasurer assists with the preparation of the annual budget proposal.

The Treasurer also attends the Annual General Meeting and meetings of the Board of Directors to report on the financial status of the Society and the annual budget proposal.

Supported by the professional staff in the Executive Office in Ottawa, the Treasurer is also responsible for ensuring that proper accounting records are maintained in compliance with the law, and that the handling of Society funds are in accordance with our policies and by-laws.

Applications or nominations, containing curriculum vitae, should be sent to the address below. The deadline for nominations is April 14, 2006.

La SMC lance un appel à candidatures pour le poste de trésorier de la SMC. Il s'agit d'un mandat de trois ans qui commencera le 1er juillet 2006.

Le rôle du trésorier est crucial pour la Société. Nommé par le conseil d'administration, le trésorier est membre d'office du comité exécutif et du comité pour l'avancement des mathématiques. Il participe en outre à l'élaboration du budget annuel.

Le trésorier assiste également à l'assemblée générale annuelle et aux réunions du conseil d'administration, où il rend compte de la situation financière de la Société et présente le projet de budget annuel.

Aidé du personnel du bureau administratif d'Ottawa, le trésorier est aussi chargé de veiller à ce que les livres comptables de la Société soient tenus conformément à la loi et que la gestion des fonds de la Société se fasse en accord avec nos politiques et règlements administratifs.

Veuillez faire parvenir les dossiers de candidature, composés notamment d'un curriculum vitae, à l'adresse ci-dessous au plus tard le 14 avril 2006.

Dr. Graham Wright
Executive Director / Directeur administratif
Canadian Mathematical Society / Société mathématique du Canada
577 King Edward
Ottawa, Ontario K1N 6N5
director@cms.math.ca

Letters to the Editors Lettres aux Rédacteurs

The Editors of the CMS Notes welcome letters in English or French on any subject of mathematical interest but reserve the right to condense them. Those accepted for publication will appear in the language of submission. Readers may reach us at notes-letters@cms.math.ca or at the Executive Office.

Les rédacteurs des *Notes de la SMC* acceptent les lettres en français ou anglais portant sur un sujet d'intérêt mathématique, mais ils se réservent le droit de les comprimer. Les lettres acceptées paraîtront dans la langue soumise. Les lecteurs peuvent nous joindre au bureau administratif de la SMC ou à l'adresse suivante: notes-lettres@smc.math.ca.

CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

MARCH	2006	MARS	JUNE	2006	JUIN
7-11	Holomorphic Dynamics, in Celebration of John Milnor's 75th Birthday (Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/05-06/		1	Actuarial Research Day (University of Western Ontario, London, ON) www.fields.utoronto.ca/programs/scientific/05-06/	
13-17	Anatomy of Integers (CRM, Montreal, Quebec) www.crm.umontreal.ca/Number2005/		1-3	Carleton Applied Probability Workshop (Carleton University, Ottawa, ON) www.fields.utoronto.ca/programs/scientific/05-06/applied_probability/	
13-17	International Congress on the Applications of Mathematics (in co-operation with SIAM) (Santiago, Chile) www.siam.org/meetings/calendar.php		3-5	CMS Summer 2006 Meeting / Réunion d'été 2006 de la SMC Westin Hotel, Calgary AB www.cms.math.ca/events_meetings@cms.math.ca	
29	Canadian Mathematical Olympiad Olympiade mathématique du Canada www.cms.math.ca/Competitions www.smc.math.ca/Concours		3-7	Rencontre annuelle 2006 du GCEDM/ CMESG 2006 Annual Meeting (University of Calgary, Calgary, AB)	
APRIL	2006	AVRIL	8-11	Digital Mathematical Performance Workshop (University of Western Ontario, London, ON) www.fields.utoronto.ca/programs/scientific/05-06/	
3-7	Workshop on Number Theory and Polynomials, Heilbronn Institute for Mathematical Research (University of Bristol, UK) www.maths.bris.ac.uk/heilbronn/heilbronn.html		10-20	Mathematical Modeling of Infectious Diseases Summer School (York University, North York, ON) www.fields.utoronto.ca/programs/scientific/05-06/	
6-12	Additive Combinatorics (CRM, Montreal, Quebec) www.crm.montreal.ca/Number_2005/		19-7 jul.	Computational Number Theory and Applications to Cryptography University of Wyoming (Fields Institute - Thematic Program in Cryptography) http://math.uwyo.edu/RMMC/2006/rmmc06.html	
MAY	2006	MAI	21-25	9th PIMS Graduate Industrial Math Modelling Camp (GIMMC) (Simon Fraser University, Burnaby, BC) www.pims.math.ca/gimmc	
5-10	Combinatorial and Geometric Group Theory (Vanderbilt University, Nashville, TN) www.math.vanderbilt.edu/~msapir/cggt/cggt.html		25-28	2006 SIAM Conference on Discrete Mathematics (Victoria, B.C.) www.siam.org/meetings/calendar.php	
7-11	Category Theory and its Applications a conference in memory of Saunders Mac Lane In conjunction with the 2006 Unni Namboordiri Lectures and the Spring 2006 Midwest Topology Seminar (The University Of Chicago, Chicago, IL) www.math.uchicago.edu/~may/MACLANE/		26-30	10th PIMS Industrial Problem Solving Workshop (IPSW) (Simon Fraser University, Burnaby, BC) www.pims.math.ca/ipsw	
10-12	Workshop on Numerical, Mathematical and Modeling Analysis related to Fluid Dynamics in Hydrogen Fuel Cells held at University of Ottawa, Supported by MITACS www.fields.utoronto.ca/programs/scientific/05-06/fuelcells/		27-Jul 3	International Commission on Mathematical Instruction: Challenging Mathematics in and beyond the Classroom (Trondheim, Norway) www.amt.canberra.edu/icmis16.html/ , barbeau@math.utoronto.ca	
12-13	Ottawa-Carleton Discrete Mathematics Workshop (Carleton University, Ottawa, ON) www.fields.utoronto.ca/programs/scientific/05-06/discrete_math/		JULY	2006	JUILLET
13-18	Analytical Methods for Diophantine Equations (Banff International Research Station, Banff, AB) paradis@crm.umontreal.ca		6-18	International Mathematical Olympiad / Olympiade Internationale mathématique (Ljubljana, Slovenia) www.cms.math.ca/Competitions www.smc.math.ca/Concours	
15-20	Workshop on Random Walks in Random Environments(Fields Institute, Toronto, ON) www.fields.utoronto.ca/programs/scientific/05-06/		10-14	SIAM Annual Meeting (Boston, MA) www.siam.org/meetings/calendar.php	
17-21	ASL Annual Meeting (Montreal, Quebec) asl@vassar.edu		24-27	MOPTA 06 -- 6th Annual MOPTA Conference Modeling and Optimization: Theory and Applications (University of Waterloo, Waterloo, ON) www.stats.uwaterloo.ca/stats_navigation/Mopta/index.shtml	
	Coxeter Lecture Series: Yair Minsky (Yale) (Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/05-06/date_to_be_determined/ / date à déterminer		24-Aug 4	Computational Commutative Algebra Workshop (Fields Institute, Toronto, ON) www.fields.utoronto.ca/programs/scientific/05-06/	
23-27	Hyperbolic Geometry (Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/05-06/				

CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

AUGUST 2006	AOÛT	SEPTEMBER 2006	SEPTEMBER
2-6 Eighth IMS North American New Researchers Conference (Minneapolis, Minnesota) galin@stat.umn.edu		14-17 Conference On Routing And Location 2006 (CORAL 2006), Satellite to ICM 2006 (Puerto de la Cruz, Tenerife) www.icm2006.org	
12-20 Methods of Integrable Systems in Geometry: An LMS Durham Research Symposium, Satellite to ICM 2006 (University of Durham, UK) www.icm2006.org			
13-19 10th Prague Topological Symposium, International Conference on General Topology and its Relations to Modern Analysis and Algebra (Prague, Czech Republic) topology-news@atlas-conferences.com		30-Nov.3 Computational challenges arising in algorithmic number theory and cryptography (the Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/06-07/crypto/number_theory/	
14-16 Canadian Computational Geometry Conference (CCCG)(Queen's University, Kingston, ON) www.fields.utoronto.ca/programs/scientific/05-06/			
16-19 Workshop on Geometric Methods in Group Theory (Carleton University, Ottawa, ON) www.fields.utoronto.ca/programs/scientific/06-07/group_theory/		27-Dec.1 Workshop on Cryptography: Underlying Mathematics, Provability and Foundations (the Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/06-07/crypto/crypto_foundations/	
16-19 Trends and Challenges in Calculus of Variations and its Applications, Satellite to ICM 2006 (UCLM, Toledo, Spain) www.icm2006.org			
16-19 Algebraic Geometry, Satellite to ICM 2006 (Segovia, Spain) www.icm2006.org			
22-30 International Congress of Mathematicians (Madrid, Spain) www.icm2006.org			
OCTOBER 2006	OCTOBRE	NOVEMBER 2006	NOVEMBRE
2-6 Quantum Cryptography And Computing Workshop (The Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/06-07/crypto/quantum			
		27-Dec.1 CMS Winter 2006 Meeting / Réunion d'hiver 2006 de la SMC Toronto, ON www.cms.math.ca/events_meetings@cms.math.ca	
DECEMBER	DÉCEMBRE	JANUARY 2007	JANVIER
		4-7 Joint Mathematics Meetings: AMS, MAA, AWM,etc. www.ams.math.org	

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