PSYCHOLOGY OF MATHEMATICS EDUCATION

PME NEWSLETTER

February/March 2011

IMAGINE....

Message from PME President João Filipe Matos

It has become widely recognized that mathematics is really in operation and is critical in many social practices. And the same applies to mathematics education as part of everyday interaction and communication although we certainly value mathematics education taking place at school. This leads to key questions – what can mathematics and mathematics education do to bring to place a better world? What can we learn from history of the social world and its relationships to mathematics and mathematics education? How do our actions as mathematics educators impact on the world?

If we agree that learning is the most critical source of stability and sustainability that helps to promote lifelong development in the social world in all dimensions of the person and if we assume that mathematics is a powerful domain in shaping the future, our responsibility as mathematics educators may gain new dimensions and give birth to new forms of interpreting our role in society. I include in our responsibilities the need to assure that people learn and appropriate mathematics and that in doing so people are empowered and that mathematics education contributes to creativity, to produce new forms of formulating problems, new ways of working towards solutions and understanding the models that rule the world, and to create real conditions of participation and democracy.

PME community has a word to say on that dream. Our goal of understanding how mathematics education operates, how teachers and students develop and learn mathematics, is certainly aligned with the need for a better world where financial and social crises and threats to peace and quality of life are understood and prevented.

You may say that I'm a dreamer
But I'm not the only one.
Imagine, John Lennon (1971)

PME *Message from the Editors*

Welcome to our Newsletter of February/March 2011! It is difficult to believe that in a few months PME 35 will be upon us. Turkey, here we come.

In this issue of the Newsletter we continue from our discussion of PME as a living organization that thrives on the contributions of its members and interview out-going IC member Peter Liljedahl. We also summarize PME 34 AGM IC Portfolio Group reports and the major decisions made at the AGM in Belo Horizonte Brazil.

What role does mathematics play in healing the world? In this issue we feature a conversation by Tony Brown and Richard Barwell on the place of mathematics and climate change followed by an engaging response by research methodologist Saville Kushner. Finally Behiye Ubuz introduces us to Ankara Turkey and the wonderful mysteries that await those who will be travelling to PME 35.

Cynthia Nicol <cynthia.nicol@ubc.ca>; Silvia Alatorre <alatorre.silvia@gmail.com>
Cristina Frade,<frade.cristina@gmail.com>; – Editors of PME Newsletter

Inside this Issue

The IC Experience: My contribution

Outgoing IC member Peter Liljedahl reflects on his four years on the IC

PME IC members are elected for a four-year term. Each year at the AGM four new members are elected to fill the places of those outgoing members whose terms are completed. Peter Liljedahl of Simon Fraser University in Vancouver Canada became an IC member in 2006 at PME 30 Prague. We asked Peter to share his thoughts about the 4-year experience. Taking time out from some excellent March skiing Peter responded to our questions.

Can you remember your first PME?

My first PME conference was 2001 Utrecht. I enjoyed the research reports and couldn't believe how much good information could be packed into a 20 minute presentation. I also liked the diversity of the program; from Research Reports to Posters, from Topic Groups to Research Forums.

What helped you decide to run for the IC?

Markku Hannula planted the seed about running for the IC in Bergen in 2004. By 2006 I came to care about PME as an organization that I would be a member of for a very long time, and as such, I decided to run for the IC. Markku acted as my nominator and I attended the first IC meeting two days later.

From your perspective, what was happening with PME at the time you entered the IC?

The IC had just been restructured into a portfolio system under then President, Chris Breen. It had also moved to having a paid Administrative Manager and to create the PME Database. Part of this move was to get away from a too centralized system of management where all of the knowledge and information of the organization resided with one individual.

Of all your tasks as an IC member, which did you find most interesting?

For me, there were two tasks that I take great pride in having spearheaded. The first was to lobby the IC to move away from the PME database that had been established under Chris Breen's presidency. The idea had been great, as had the initial actualization of it. But, in the end, it left the organization in exactly the same place as before. Although the database now held all of the information, it was fragile, and as such was allowed to be managed only by the Administrative Manager. Not only did this leave us vulnerable, but it also cost the organization an astronomical amount of money as the local organizers were now dependent on the AM, whose salary we paid, for all

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Peter Liljedahl reflects con't....

of the information needed in the planning of the annual meeting.

PME needed a system that was more robust and accessible directly by the LOC for conference planning. As such, I first consulted with Chris Breen on the issue, and then in June 2009 drafted a proposal together with Marcelo Borba and Cynthia Nicol to move to a more robust data management system that was simpler to use by a more decentralized group of individuals. This proposal was adopted at the IC meetings in Thessaloniki in July 2009. After much hard work by the adhoc Conference Management System subcommittee this proposal led to the move to the current ConfTool system which is now used for managing our annual meeting.

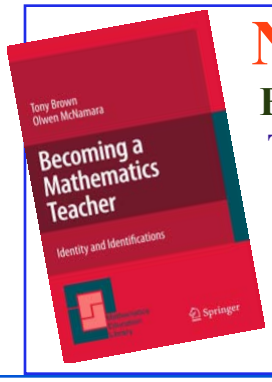
Being part of the IC necessitates a willingness to take up leadership roles in forging of new directions for the organization...

The second task I found most interesting as an IC member was to initiate a move to improve communication between the IC and the PME membership. After the AGM at PME 32 in Morelia it became clear that the organization was in need of a better way to move ideas from the membership to the AGM to be voted on. As such, at the IC meeting in 2009 I worked hard on the "Path to the AGM. Part of this path involved creating a mechanism by which the membership could have input on issues prior to the AGM so as to (a) ascertained whether or not it was, in fact, an issue for the membership as opposed to just one member and if so, (b) to help refine the language of the proposal to be voted on. To this end, I worked on designing and implementing a communication plan that included the "PME Communications Wiki".

The "Path to the AGM" along with the wiki were subsequently used for three issues: (1) the ongoing nature of print proceeding, (2) the number of contributions someone can make to a single meeting, and (3) the need for, and nature of, the work of an ombudsperson. The first two of these went to vote at PME 34 while the third one was held over for further discussion. This process, if continued, will allow for the smoother enactment of the participatory governance that PME was built upon.

What lessons can you give to colleagues who are interested in contributing to the IC?

The work of the IC is important. But it is much more than simply discussing and voting on issues. The organization is growing and the field of mathematics education is changing. PME needs to be responsive to these changes, as well as its membership. As such, being part of the IC necessitates a willingness to take up leadership roles in forging of new directions for the organization, while at the same time preserving, and finding reasons to preserve, the aspects of PME that forms our history and our foundation.



New Book! Just Released!

Becoming a Mathematics Teacher: Identity and Identifications

Tony Brown and Olwen McNamara (2011)

Examines how aspirant teachers begin to think of themselves as teachers, and about mathematics in particular. The book draws upon contemporary psychoanalytical theory in portraying the identities that teachers come to occupy, and the forms of mathematics with which they identify. Published by Springer ISBN: 978-94-007-0553-1. http://www.springer.com

PME International Committee Reports

Highlights of the IC Portfolio Groups From PME 34 AGM.

Report details can be found in the PME 34 AGM minutes.

President's Portfolio Group (PPG) Report

Fou-Lai Lin, Taiwan; Silvia Alatorre, Mexico; Alena Hošpesová, Czech Republic; Bat-Sheva Ilany, Israel; Peter Liljedahl, Canada

Then PME President, Fou-Lai Lin thanked retiring IC members, Cynthia Nicol *Canada*, and Behiye Ubuz *Turkey* and resigning members Helen Forgasz *Australia* and Peter Liljedahl *Canada* for their contribution, dedication and work as IC members since 2006. The President's Portfolio Group dedicated a great deal of time over 2009-2010 on various projects including: 1) development of a comprehensive communication plan; 2) development of a Pathway to the AGM; and 3) comprehensive PME policy review.

Vice President's Portfolio Group (VPPG) Report

Aiso Heinze, Germany; Helen Forgasz, Australia; Jeong Suk Pang, Korea; Marcia Pinto, Brazil

The report included summary of work of the VPG over the year: 1) prepared motions for the AGM at PME 34 such as the motion for the form of proceedings and the motion for multiple co-authorships; 2) prepared new topics for the PME Communication Wiki such as the topic of plenary speaker and topic of free online access to proceedings; 3) prepared ideas for developing the review system such as the possibility of having a more fine grained system which gives more information that 0=reject and 1=accept, simulation studies to parallel PME 34 and PME 35, and providing a precise description for RF (research forum), DG (discussion group), WS (working session), SE (seminar), AS (ad hoc session).

Secretary Portfolio Group (SPG) Report

Cynthia Nicol, Canada; Olimpia Figueras, Mexico; Marianna Tzekaki, Greece; Samuele Antonini, Italy

The report included summary of work of the SPG over the year: 1) analysis of PME organization website and links in order to suggest improvements to the website; 2) development of a PME New Members Booklet; 3) Development of a PME New IC Members Booklet; 4) revisions of PME conference guidelines; and 5) PME newsletter (Cynthia Nicol and Cristina Frade).

Treasurer Portfolio Group (TPG) Report

Laurie Edwards, USA; Cristina Frade, Brazil; Tim Rowland, UK; Behiye Ubuz, Turkey

The TPG presented the following account summaries:

PME OPERATING ACCOUNT 2009-2010 (1-Jul-09 to 30-Jun-10)

	Nordea Euro	Nordea Dollar	South Africa	TOTAL
OPENING BALANCE	€ 9,756.52	€ 440.80	€ 930.10	€ 11,127.42
INCOME				
FROM PME33 (GREECE)				
MEMBERSHIP-PME 33				€ 32,560.00
CONFERENCE SURPLUS				€ 55,495.74
PROCEEDINGS SALES				€ 1,429.27
MEMBERSHIP-OTHER				€ 90.00
EXHIBITOR FEES-PME 34				€ 2,000.00
TOTAL INCOME				**€ 91,575.01**
EXPENSES				
ADMINISTRATIVE MANAGER (488.7)				
J. Novotna (463.5)				€ 7,689.10
A.M. Breen (25.2)				€ 822.77
ADMINISTRATIVE MANAGER EXPENSES				€ 2,557.35
PME DATABASE & WEBSITE (to Nov. 2010)				€ 1,101.06
CONFTOOL SITES (Conference & Membership)				€ 1,939.00
INTERNATIONAL COMMITTEE EXPENSES				€ 18,497.60
BANK FEES				€ 224.27
TAX & FEES ON PME 33 FUNDS TRANSFER				€ 13,926.63
TOTAL EXPENSES				**€ 46,757.78**
CLOSING BALANCE				€ 55,944.65

PROJECTED PME OPERATING ACCOUNT 2010-2011
(1-Jul-10 to 30-Jun-11)

		TOTAL
OPENING BALANCE	€	55,944.65
INCOME		
FROM PME34 (BRAZIL)		
MEMBERSHIP-PME 34	€	18,960.00
CONFERENCE SURPLUS	€	3,000.00
PROCEEDINGS SALES	€	1,500.00
MEMBERSHIP-OTHER	€	2,000.00
TOTAL INCOME	**€**	**25,460.00**
EXPENSES		
ADMINISTRATIVE MANAGER	€	12,450.00
ADMINISTRATIVE MANAGER EXPENSES	€	1,000.00
PME WEBSITE & WIKIS	€	300.00
CONFTOOL SITES (Conference & Membership)	€	2,000.00
INTERNATIONAL COMMITTEE EXPENSES	€	9,000.00
BANK FEES	€	300.00
TOTAL EXPENSES	**€**	**25,050.00**
CLOSING BALANCE	€	56,354.65

PME Paper Proceedings Continue ... for now

The PME 34 AGM July 2010 in Belo Horizonte involved discussions and decisions on a number of items including paper vs CD only for PME proceedings, maximum number of contributions per participant, and the possibility of a PME Ombudsman. We highlight and summarize some of these decisions made at this AGM.

Brief reports on the work of the year were presented by the four portfolio groups and by the Treasurer. There was a brief discussion about the budget presented by the Treasurer, and the fact that it was un-audited, after which the membership accepted the un-audited treasurer report by hands raised with the proviso that an audit be completed by Fall 2010.

The new Conference Management System (CMS) was briefly presented; it has been in operation for one year, with a cost of about $1900 per year.

Following the PME 34 Policy meeting where a possible path to the AGM was discussed, membership discussed and voted on the motion to accept the path to the AGM. It was decided that any member can put an item on the agenda at any time even within the last minute before the deadline (which is one month before the AGM).

There was a discussion on the form of the proceedings (paper vs CD), including the pros and cons of three cases: 1) the current situation, 2) having the proceedings printed by an established publisher (such as Sense), and 3) having the proceedings printed by a print-on-demand company (such as Lulu.com). A vote was taken, but only as a non-binding vote (membership favouring the second case, followed by the first one). It was decided to leave the current situation as is with the understanding that further research by the IC would follow.

There was a discussion and a vote on the maximum number of contributions per conference participant; an issue that had been discussed during the year through the PME wiki and in the IC. The final decision was not to change the current situation, which is: *No one should have his or her name on the programme more than four times (although more than four submissions are possible). If more than four of your submitted proposals have been accepted, you must choose only four to include in the conference*; *every participant is allowed a maximum of one participation as presenting author in RR or SO.*

There was a discussion and vote on the issue (presented in PME32 and PME33 policy meetings) of having an Ombudsman, whose role would be to listen to and investigate complaints on the reviewing process. The IC discussed practical logistics and suggested to implement a comprehensive review and improvement of the reviewing process and to develop a feedback process. Ideas were given for developing high quality reviews, and for developing a PME member feedback process.

There was a vote and two decisions were taken: to implement a comprehensive review and improvement of the RF, WS, DG, RR, reviewing process, and to develop and implement a member feedback process that includes the option of members to submit feedback to IC members or a non-IC designated person. It will be up to the person to choose who to give the feedback to.

Finally, it was announced that Kiel, Germany will host PME 37 in 2013.

MASTER AND DOCTORAL PROGRAM ON RESEARCH IN MATHEMATICS EDUCATION 2011-12

The Department of Mathematics Education of the University of Valencia (Valencia, Spain) announces the 2011-12 edition of its Research Master and Doctoral Program. The program, offered for the first time in 1989, prepares for specialization in different research areas related of Mathematics Education. The Master program may be one or two year long. Classes are in Spanish.

Pre-registration applications can be presented until September 13, 2011.
Classes shall begin on October 2011.

More academic information in http://www.uv.es/~didmat/postgrado More administrative information in http://www.uv.es/postgrau/indexsp2.htm Or contact the Program Coordinator, Dr. Angel Gutierrez (angel.gutierrez@uv.es).

Mathematics and Climate Change

a conversation with Tony Brown and Richard Barwell

Tony Brown (TB): I greatly enjoyed your talk (Barwell, 2010) in Brazil but did not manage to have the follow up talk that I hoped for. I am writing a book relating to the financial crisis and I see an analogy between the common faith in mathematics to illustrate and control the climate and its complicity in the financial crisis. In this book (Brown, in press), I am arguing that the certainty of mathematics is always with respect to some arbitrary choice of axiomatic field, and that often, false analogies are drawn between axiomatic fields and real life.

Without mathematics, we would have very little inkling of climate change as a global problem —Richard Barwell

The economy is governed as much by psychology as by exact calculations, and in the case of climate change there is a psychological dimension to the reading of mathematical models that feeds directly in to any mediatised account, such as the ones you presented.

photo credit: Flickr b1uub. Grizzly bear Vancouver

Richard Barwell (RB): There is the issue you refer to about faith in mathematics to know and control our environment/ economy. In the case of the economy, the mathematics seems to construct it - derivatives change the nature of the economy. In the case of climate change, that's less the case- although there are people proposing 'geo-engineering' - planetary scale interventions.

With climate change, the tension is that we only really know anything about climate change because of mathematics. The changes are at too large a scale for humans to discern them individually for the most part. So it seems like we need mathematics to understand and (maybe) respond to a huge threat...but of course mathematics brings its certainties and values, which may make responses more difficult.

TB: I was thinking more in terms of how populations do respond to various stimuli. We are destroying our world and our children's world, and if we really knew that, we might act differently. But the stories that govern our actions are not yet quite enough to convince us that we could change, or to convince us that we might have the capacity to act collectively in a different way- since everyone else is acting badly, it sort of excuses me acting badly.

I think my difference with you is that I don't see mathematics having much *use* at all except as control technology. There is not an objective picture because you can only understand the world in terms of how it might be possible to change it, and that requires people to change - and media plays a part in how they change. You can't get people to obey a mathematical model. For it to be control technology it needs to have the psychological dimension fully integrated for the models to have any effect at all.

RB: I think we are talking about two slightly different things. It seems unquestionable to me (as soon as I write that I have to question it) that without mathematics, we would have very little inkling of climate change as a global problem. Yes there would be people saying the bears wake up earlier now or there's something funny about the weather these days. But the mathematical analysis of huge amounts of measurements offers something much more powerful. Of course it isn't an objective picture, but neither is it a fairy story.

The issue of how to respond is not quite the same although they are related. It is quite likely that the mathematical presentation of the evidence for climate change is sometimes counter-productive. People look at all the graphs and see maths, not danger. Moreover, the bloggers have done a good job of disrupting confidence in such things, often by offering alternative interpretations of the same data or graphs. Some of this disruptive work goes into quite a high level of mathematical argument - I found a nice one on tree-ring data.

So I agree that change is a psychological issue - and psychologists have started to pay attention. This year's key-

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Climate Change continued ...

note at the British Psychological Society meeting was about the psychology of climate change. And I think that education has a role to play, including mathematics education - education is a psychological business as much as anything. Education certainly should be supporting future citizens to be critical about their consumption (or production) of the media you refer to.

Of course the kind of response that is needed goes beyond a couple of lessons on the greenhouse effect and calculating the rise in mean temperature over the past 20 years. The whole structure of society needs to be different and people (including us) just don't like change much, or at least, there is inertia - it takes less effort to keep going as we are. I wrote a piece for PME News several years ago estimating how much carbon each conference produces and suggesting we meet every other year. Response? No response at all.

Change is a psychological issue ...I think that education has a role to play, including mathematics education ... Education certainly should be supporting future citizens to be critical about their consumption (or production) of the media. —Richard Barwell

I don't understand the phrase: "you can't get people to obey a mathematical model" - of course you can't...but what's your point?

TB: I suppose my concern is with your 'we would' in the third line. Rather mathematics has enabled some people to raise the issue, with some impact on governments, but the capacity of a wider audience to conceptualise this issue and act on it works in a domain that transcends mathematical analysis and the supposed mathematical modelling of (or governance of) human actions (both emissions and political strategies are part of human action).

I am linking it to my work on Zizek and ideology, where there is always a fundamental split between what we say and what we do. I might be a radical at an intellectual level but practically compliant without knowing it.

I'm seeing psychological as being more collective rather than individual ... We need to re-think where the 'psychological' is located in the 'psychology of mathematics education.' —Tony Brown

Zizek linked this to climate change in one of his lectures that I attended. Analysis of the financial crisis, or of the climate, can never be non-polluted analysis since the interpretation feeds in to the state of affairs we face from our various perspectives.

I am seeing psychological as being more collective rather than individuals being persuaded to change, more how do we work on the collective story of who we are to open new futures and how do we see mathematical models functioning within that story and associated actions? [*That is, we need to re-think where the "psychological" is located in the "psychology of mathematics education"*.]

In short, mathematical models don't work unless we attend to the interpretive layers that enable them to function in their interface with humans. Likewise in schools I feel there is often insufficient attention to how the pedagogical layers process and construct the ideas they seek to locate.

I am probably being too convoluted here, but it remains a live issue for me.

RB: The idea of interpretive layers in relation to mathematical models makes sense to me, particular drawing on the kind of discursive perspectives I use. Mathematics is not the same in the different discourses of climate change – mass media, scientific, policy etc. It's quite interesting to look at a news report of the latest scientific finding about climate change and then look at the journal article that prompted the story.

Mathematics is very present in the journal article, e.g. In the form of models and statistical analysis. In the news report, mathematics has almost disappeared. This vanishing act, a discursive shift, is I think an example of the interpretive layers you are talking about, and of course there are others.

Ole Skovmose has written quite a bit about this kind of thing. Society is increas-

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Climate Change continued ...

ingly structured by mathematical models, yet most people have no idea, and even many of the people that use the models have little idea how they work or relate the mathematics to the social effects. It isn't yet clear to me, however, how this applies to climate change, as opposed to the financial crisis. I'm not sure what you mean when you say mathematical models don't work, though. Surely it is the discourses in which they arise and are constructed (ideologies if you like) that cover up the interpretive layers, precisely so that they may work more 'efficiently'. An interesting question is what happens if these layers of interpretation are exposed, if that is really possible.

TB: Zizek's punchline is that if you take the interpretive layers away there is nothing!

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Tony Brown is Professor of Mathematics Education at Manchester Metropolitan University, UK. He is co-leader of Centre for Research in Mathematics Science Education and leader of the Building Research in Teacher Education research group. Tony has published seven books in mathematics education and mathematics teacher education. http://www.esri.mmu.ac.uk/resstaff/profile.php?name=Tony&%20surname=Brown

Richard Barwell is Associate Professor at the University of Ottawa Canada. Richard's research focuses on language and discourse in mathematics classrooms, particularly in multilingual settings.

http://www.education.uottawa.ca/ideg/richard_barwell.html

17th Mathematical Views (MAVI) Conference

September 17 - 20 2011 University of Bochum, Faculty of Mathematics, Germany

MAVI Conference explores research on issues related to mathematics affect, beliefs, emotions and attitude.

For registration contact Bettina Roesken (bettina.roesken@rub.de).

Submission of papers

The deadline for papers (max. 10 pages using PME format) is **May 1, 2011.** The papers will be peer-reviewed. All submitted papers and presentations should explicitly address the field of affect, beliefs,attitudes, emotions, etc.

The Crisis of Science and Narrative Control: A Response to Mathematics and Climate Change

invited submission by Saville Kushner

Take the UK as an example of narrative control by science and government. Try to find data that says the UK is in financial crisis - you will be as frustrated as Tony Blair searching for weapons of mass destruction in Iraq. National debt is historically low; debt repayments are close to half the level they reached under Thatcher; the deficit is low in relation to our capacity to repay it; our debt is repayable over 12-14 years; and so on.

This does not diminish the power of the crisis narrative, which defies political gravity just as the bee which floats, seemingly without the required aerodynamic wherewithal. Well – not quite. The bee, it turns out, has ancillary wings – and so do these single political narratives. In the latter case, what takes the place of evidence is a social psychological disposition on which false or single narratives can float with ease. Tony Blair and George Bush were banking on society's disposition to believe the trope of WMD; we did not – they lost narrative control.

Evidence – mathematical modelling, as an example – is mediated through social psychological disposition as both Richard Barwell and Tony Brown agree. No amount of falsification (e.g. read A.W. Montford's *The Hockey Stick Illusion*) will displace the trope of anthropogenic climate change (*"we are destroying our world"*); but equally, no amount of 'pro' evidence (melting glaciers, oceanic carbon capture) will persuade the sceptics.

We live in a complex historical moment that produces volatile psycho-social states – yearning for autonomy/belief in strong leaders, aspirations for immortality, the psychology of precipice-living, fascination with doom. The New Sociology is preoccupied with psycho-social states - 'resilience', 'respect', 'perception of risk', and these provide the emotional filters through which we pass evidence from mathematics and economics. Hence, people will not 'obey' a mathematical model – they may (or may not) be persuaded by one.

What is implied in the Barwell/Brown exchange is that there are two discourses - one, the substantive, about climate change or crisis or whatever, defined by evidence; the other, psychological/methodological, about how we engage the topic – how we believe evidence or not. We shift between the two, not always aware to which we are responding, sometimes convinced by the model, other times by our fears. Do you eat beef sausages in the middle of a mad-cow-disease scare? The maths suggests not, and that will frighten you enough to steer clear – but some weeks you will because you feel more optimistic about life. In fact, you may switch from responding to the scale of the mad-cow risk (low) to the scale of possible consequence (scary) – and that is the shift from evidence to psycho-methodology.

Do you eat beef sausages in the middle of a mad-cow-disease scare? The maths suggests not, and that will frighten you enough to steer clear ...

Here is the territory marked out in this exchange between 'axiomatic field and real life' (Brown), and between 'an objective picture...and a fairy story' (Barwell). But dualities break down – thankfully – we would not want to live either in a world of the tyranny of objectivity nor the whimsy of the fairy tale. Part of the strength of our moral constitution is our preference to live in the middle-ground of Brown's 'interpretive layers'. So where does this leave mathematical models?

The crisis in our society is not of economics or climate change or the integrity of science – it is a crisis of narrative control...

Paul Feyeraband (1978) famously, mischievously argued that scientific conclusions should be put to the vote of lay committees as part of an effort to separate out Science and the State – just as we fought to separate Church and State – to liberate us from narrative control. So - not so mischievous! This is, surely, the point of this exchange.

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Crisis of narrative control continued ...

Mathematical argumentation is a sub-set of democratic deliberation.

All forms of evidence achieve their warrant through persuasion and exchange rather than coercion and mere demonstration. Their methodologies are an admixture of moral belief, commitment to social justice, emotional tolerances and a desire for control – and these we submit to argumentation. We need mathematicians and economists to state their views, but to serve democracy we need to receive them with due scepticism, submit them to contestation, position models in a theoretical range, and, yes, give due status to emotional as well as cognitive impact.

We need to reserve our sternest scepticism for those arguments and models which claim unassailability or absolute truth. Healthy are the bloggers who are *"disrupting confidence...by offering alternative interpretations of the same data or graphs"* (Barwell) – Feyeraband would have blogged like mad!

The crisis in our society is not of economics or climate change or the integrity of science – it is a crisis of narrative control, the exploitation by government and scientists of our social psychological dispositions, a true crisis of democracy. Whether or not we are in economic crisis or climate-change crisis have as little potential in objective truth as do mathematical models – these narratives have only the possibility of democratic resolution or totalitarian imposition. We always risk the latter.

Donald Campbell (1988) envisioned what he called 'the experimenting society' – a society shaped by experimentation, social engineering and a liberal commitment to 'honesty' arising out of scientific exchange – *"science requires a disputatious community of truth-seekers"*. The utopian view provoked much admiration, but apprehension in equal measure. Few scientists reviewing his work were prepared to sign up to such harsh ideals of honesty. They acknowledged what Campbell could not – that we live in the murky scientific swamp-lands where we countenance 'ethical dishonesty' – such as the belief that the climate change science may be flawed – but it is prudent to promote it in any event since we all 'know' that the planet is under threat.

Or do we?

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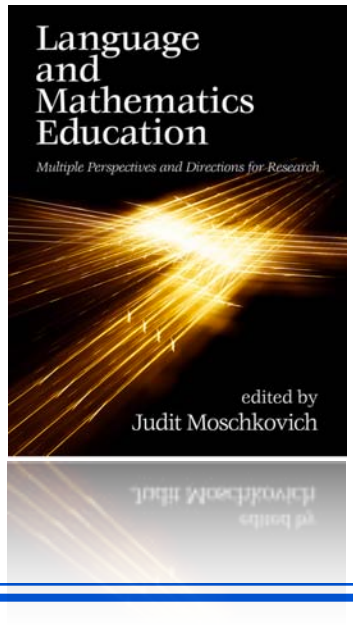
Saville Kushner is Professor of Public Evaluation at the University of the West of England, and a theorist and practitioner of programme evaluation. He is a methodologist by training and dedicates most of his writing to the interface between methodology and democracy. He is current president of the UK Evaluation Society. Saville Kushner <Saville.Kushner@uwe.ac.uk>



New Book

Language and Mathematics Education: Multiple Perspectives and Directions for Research

Judit Moschkovich (Editor) 2010 Information Age Publishing

Interdisciplinary reviews of the research literature on language issues in mathematics education from four perspectives: mathematics education (Moschkovich), cultural-historical-activity theory (Gutiérrez, Sengupta-Irving & Dieckmann), systemic functional linguistics (Schleppegrell), and assessment (Solano-Flores). ISBN 987-1-61735-159-4

Get Ready for PME 35 in Beautiful Ankara Turkey

invited submission by Behiye Ubuz, PME 35 Conference Chair

Ankara is the capital of Turkey located in the centre of Anatolia province and the country's second largest city after Istanbul. The city has a mean elevation of 850 metres, and has a population around 4 million. Ankara is an ideal environment with its cultural and historical richness as well as its social opportunities.

Having a long historical background as a city, Ankara hosts many architectural and historical findings in its museums.

There are at least three major museums worth visiting in Ankara: **Atatürk's Tomb (MAUSOLEUM) and Museum**, **Etnografya Museum**, **Museum of Anatolian Civilizations**.

The Mausoleum of Kemal Atatürk, founder of the Republic of Turkey, was completed in 1953. It is an impressive fussion of ancient and modern architectural ideas and remains unsurpassed as an accomplishment of modern Turkish architecture. There is a museum housing a superior wax statue of Atatürk; writings, letters and items belonging to Atatürk, as well as an exhibition of photographs recordings of important moments of his life and videos from the establishment of the Republic.

At **Etnography Museum** there is a fine collection of folkloric as well as Seljuk- and Ottoman-era artifacts.

The Museum of Anatolian Civilizations is close to the citadel entrance**.** An old bedesten **(**covered bazaar) has been beautifully restored and currently housing a marvelous and unique **c**ollection of Paleolithic**,** Neolithic**,** Hatti**,** Hittite**,** Phrygian**,** Urartian**,** and Roman works and exhibits the pieces Lydian treasures**.** In and around the historical Ankara Castle, the city's original urban plan can be seen. In mansions and inns that be restaurants, it is possible to taste delicious meals of Turkish Cuisine and to drink Turkish coffee.

Many cinemas, theaters, painting and art galleries are in the service of art lovers in Ankara. In addition to these, it is possible to watch the ballet and opera shown by "State Opera &Ballet", listen to concerts of the Classical Turkish Music Choir and the Presidential Symphony Orchestra and watch the performance of the State Folk Dance Ensemble.

The Mausoleum of Kemal Ataturk

Museum of Anatolian Civilization

...continued on page 12

Ankara host of PME 35 ....

Things to be seen are not limited to Ankara alone. Many travellers in Turkey try not to miss the Cappadocia, Ephesus, or Pamukkale.

Cappadocia has always been one of Anatolia's prime grape-growing areas, and still boasts many productive vineyards and wineries.

Ephesus is the best preserved classical city of the Eastern Mediterranean, and among the best places in the world enabling one to genuinely 'soak in' the atmosphere of Roman times. Located on the top of the "Bulbul" mountain 9 km ahead of Ephesus, the shrine of **Virgin Mary** enjoys a marvelous atmosphere hidden in the green. It is the place where Mary may have spent her last days.

Pamukkale is one of Turkey's top attractions and a precious in the world with its cotton-look terraces. The underground water once gave life to the ancient city of Hierapolis now helps Pamukkale be one of the most important thermal centers of Turkey.

Pamukkale

PME 35 conference will be hosted at the **Middle East Technical University** (METU), which is one of Turkey's most competitive universities. METU's 11000 acres main campus is located 5 kilometres from the center of Ankara. The campus is conveniently served by a variety of buses and minibuses (dolmuş) and is readily accessible by car or taxi. Today, METU's modern campus equipped with the most advanced scientific and technical facilities.

Section of METU Campus

Statue of "Science Tree" by the main entrance to METU campus

The Local Organizing Committee will do its best to ensure that the participants will enjoy their stay in Ankara in the hope that their visit to Turkey will become a pleasant and memorable experience for everyone.

MEGA: Conference for and by Graduate Students

submitted by Lissa D'Amour Vancouver Canada

The Mathematics Education Graduate Students Association (MEGA) 3rd annual conference, held the weekend of February 5 & 6, 2011 at the University of British Columbia, Canada was a resounding success. A conference for and by students, MEGA locates doctoral graduate students at a hub of broadly conceived, open, networked connections: amongst scholars, from undergraduates to faculty; across multiple perspectives in thinking educational concerns in mathematics, broad to particular; and regionally dispersed across Canada and internationally.

This year's theme, "Networking experiences in mathematics education and (mathematics education) graduate research", did indeed thread interestingly through the various presentations, capturing the tone and essence of the proceedings. We were thrilled to receive and engage with guest speakers, Sen Campbell (SFU), Cynthia Nicol (UBC) with Jennifer Thom (UVic), recently retired David Pimm (UAlberta), and Egan Chernoff (USask) whose presentations (respectively) around radical embodiment and neurophenomenology; ecology, mind and consciousness; language, symbols, and meaning; and networking online and otherwise anchored our discussions and served as springboards for thinking differently and beyond ourselves. In addition, and joining our small band of seven student presenters from SFU and UBC, we welcomed contributors from across Canada and as far away as Cinvestav, IPN, Mexico. Finally, and rounding out the synergistic group of 43 participants, the UBC Mathematics for Teaching [M4T] Masters cohort joined us, contributing their thoughts and observations—perspectives from the practicing field.

MEGA conferences are intended to build community and move thoughts both in terms of research and connections with people and ideas. Final comments in our closing discussions variably described the benefits of conference: "There was something in every presentation that I could connect to. It is so necessary to have this"; "The breadth and passion here was nice to see"; "An atmosphere of good humour and safety, with mathematics as embedded" characterized these two days; "The event was eye-opening in terms of helping me understand" the process of coming to one's dissertation; It allowed me "to see projects at all stages", "to learn what others are doing"; "It's very centering, especially useful when one finds oneself stalemated in one's research world".

In retrospect, we five mathematics education graduate students (Lissa D'Amour, Steven Kahn, & Alayne Armstrong of UBC and Armando Paulino Preciado Babb & Christian Berneche of SFU) of the organizing committee come away having benefited, in ways unforeseen, from the experience of organizing the event. The mere negotiation of such a challenge makes one stronger and ultimately less daunted at the prospect of facing like challenges in the future. As it turned out, the pooling of ideas and resources made a potentially intimidating task into one almost magically assembled. Apparently, "if you build it they will come". Who knew? Help seemed available everywhere, provided requests were judicially distributed. But it would be a gross understatement to limit a statement of benefits to a sense of accomplishment.

More important, undertaking such a project brought us closer to each other and to the community of researchers in mathematics education in general. Owing to the small size, this sort of conference necessarily moves everyone through the same experience together. This logistic—combined with consistent quality of presentation across a theme that we organizers were able to set—afforded a collective growth opportunity in community with others sharing common but differently expressed interests. Out of variations on a theme dear to us, we emerge in a kaleidoscope of opportunity where before only a shadow of possibility seemed to exist.

Finally and pivotal to our success—indeed without whom the conference would not have been possible—we point to our sponsors. Their generous support made the events broadly accessible: Contributions from the UBC Faculty of Education, the Pacific Institute for the Mathematical Sciences [PIMS], and SFU's Faculty of Education, Graduate Student Society, and Education Graduate Student Association supplemented a mere $10 registration fee to provide for meals throughout the conference and covering, where needed (as in the case of 2 participants), accommodations for those travelling from afar.

Recognizing the unmatched value both to participants and organizers of graduate student conferences, these totally conceived and carried out by students, we both urge others to consider similar projects within their own communities and welcome inquiries about the process as it unfolded here in Vancouver. Finally, we look forward to future MEGA's as the tradition of student networking in mathematics education continues.

For more details please see
http://m1.cust.educ.ubc.ca/mega2011/index.html

Upcoming Conferences....

PME 35 Ankara Turkey

Plenary Speakers and Reactors

Plenary Speakers

Ali Doganaksoy, *Turkey*
Konrad Krainer, *Austria*
Janet Ainley, *United Kingdom*
Brian Doig, *Australia*

Plenary Reactors

Minoru Ohtani, *Japan*
Teresa Rojano, *Mexico*

Plenary Panel Convener

Olive Chapman, *Canada*

PME-NA

North American Chapter of the International Group for the Psychology of Mathematics Education

2011 Conference

Transformative Mathematics Teaching and Learning

Oct 20-23 Reno Nevada USA

http://www.pmena.org/