Mathematics
And
Lateral Thinking

Proceedings of the First Annual Conference

of the

International Group for Research

in

Mathematics And Lateral Thinking

May 1997

Editors:

**Gary Davis, Sylvia di Giacomo, Eddie Gray,
Stephen Hegedus, Mercedes McGowen, Marcia Pinto,
Demetra Pitta, Adrian Simpson, David Tall**

The concept of a conference in *Mathematics And Lateral Thinking* arose out of the research of McGowen and Tall on the Isle of Islay, 1995.

Subsequently an organising committee consisting of Gary Davis, Steve Hegedus, Adrian Simpson and David Tall met to plan the Inaugural Conference of MALT as it came to be named. The first conference was due in Islay, May 1997, but was changed to Kenilworth at a late stage to accommodate the needs of one of the organisers.

We would wish to thank Laphroaig, Talisker, Lagavulin, Bowmore and others of their ilk for stimulating the brain in creative ways.

We are proud to announce that delegates attended from five different continents (if you count the waiter at the Tibetan Restaurant).

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∼ WHISKY 97 ∼

"A wee dram can do ye no harm"

Notice is hereby given of the following meeting:

THE 1st INTERNATIONAL CONFERENCE ON MATHEMATICS, LEARNING, & WHISKY

(subsequently entitled Mathematics And Lateral Thinking, or … err … *MALT*)

WHEN: A few days around the last Monday in May, 1997

WHERE: Kenilworth, United Kingdom[1]

CONFERENCE ORGANISERS: The International Group for Research in *Mathematics And Lateral Thinking.*

CONFERENCE THEME:

"Mathematics, drinking, and the brain"

Special topic areas:

- The effects of alcohol on symbolising.
- Semiotics of peat smoke.
- Ardberg and the radical constructivist.
- Inter-subjectivity after two glasses of Laphroaig.
- What is signified by the signifier "Bunahabhain"?
- Malt and metacognition.

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[1] The late change in venue from the Isle of Islay was due to the necessity of David Tall requiring oxygen to cope with the intense pressure of intellect of his co-conferencees.

- Wort problems.

- Mashematics.

- Whisky - object or process?

- Maltiplicative structures.

- Encapsulation, reification, and distillation.

- "Splitting blends" ® (by kind permission).

- Whisky - accommodation or assimilation?

- Whisky - internalising or interiorising?

- Learning about proof.

- Whysgotsky - language, thought and malt.

- Social pissed-emology.

- What is the object of "A Perfect Old Scotch" (APOS) ?

- Mathematics and malt.

- The role of Laphroaig in learning.

- Algebra and Ardbeg.

- Bowmore as a substitute for neurons.

Confirmed speakers/drinkers:

* David "*Talisker*" Tall
* Gary "*Glen Garioch*" Davis
* Mercedes "*Macallan*" McGowen

To apply, contact:

David Tall
david.tall@warwick.ac.uk,

The "1st International Conference on Mathematics, Learning, & Whisky" was held from Saturday 24 – Friday 30 May at 21 Laburnum Avenue Kenilworth, UK. This was a change from the advertised venue of Islay, Scotland, and was a consequence of inadequate oxygen supply on Islay.

The focus of the conference was:

"If you can't have fun and be serious at the same time, we don't wanna know ya!"

Thanks are due to Adrian "*Ardberg*" Simpson who, although not in attendance Saturday-Monday, organised many of the most stimulating topic groups. Adrian was present "in spirit", and in person on Tuesday/Thursday to add his pertinent wit to other-wise mundane proceedings.

The conference attendees were:

    * David "*Talisker*" Tall .... UK
    * Gary "*Glen Garioch*" Davis............... Australia
    * Mercedes "*Macallan*" McGowen ...... USA
    * Eddie "*Pinta*" Gray............................ UK
    * Demetra "*Poit Dhub*" Pitta................ Cyprus
    * Marcia "*Porto*" Pinto......................... Brazil
    * Silvia "*Dalmore*" Di Giacomo........... Italy
    * Adrian "*Ardberg*" Simpson .... Grimsby

Accompanying persons:

    * Diego
    * Sue Tall, B.A.

Keynote Speech

Several people battled for the honour of presenting the keynote speech, but David Tall fought them off decisively with a "Shut up, you bastards. I'm talking!!"

Sessions

There were actually quite a few sessions when David Tall was absent or otherwise occupied – reflecting on the throne, watching the bastard Poms[2] beat the Aussies at cricket (and crowing about it), snoozing (but pretending to be awake), and generally farting about. These sessions, remarkably, proved very productive. Credit, after all, where credit is due.

The conference then was addressed impressively through liberal applications of the "water of life" in its various Scottish derivatives. (These proved more useful variants than the Leibnizian and Newtonian forms.)

Categorization (Is it a bird? Is it a plane?)

We discussed the recent book "Women, fire water, and wondrous things", by Jamieson and Laphroaig.

Gerald Edelman e-mailed and said "Geez guys, I gotta get to Islay next year! You guys are really brainy."

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[2] Given the slanderous and pejorative comments made in unseemly language about the character of an English gentleman, we leave it to the reader to guess the nationality and parentage of the perpetraror of theis outrageous production

Essential background reading for these sessions was:

> Lamond, J. & Tucek, R. (1995) *The Malt Whisky File*. Edinburgh: Canongate.

Tall stories

> We discussed the time that Lesh ... , Kaput ... and when Pat Thompson said ... . And when Anna Sfard admired Shlomo's poetry ... .!

> "When I conducted the PME choir" lasted a full 4 hours in the re-telling.

Schemes

The spirits of Richard Skemp guided us throughout these sessions. God they were good spirits: Talisker, Lagavulin, Laphroaig, Bowmore. No wonder Skemp had such incredibly distilled ideas. The sessions were regarded as a great success: they certainly got us scheming.

The way of TAO

Feng-shu Lee's recent TAOist theory of mathematics learning, encapsulating Tactics -> Action -> Object, was discussed in light of a possible alternative of Dörfler's in which the "object" of the theory would disappear. Mysterious disappearing objects saw the participants stagger to a state of "spiritus sanctus" with the help of a bottle of Talisker.

Report of a case study

Methodology: we sat around drinking and eating a lot, and pontificated greatly. We did not video-tape the sessions in order to protect ~~the innocent~~ - err, us.

Results: The discussions were increasingly wide-ranging but seemed to produce nothing of any significance. Possible exceptions that may have significantly clarified discussions were remarks of David Tall, such as:

Tall: "You bastard, Davis!"

Tall: You stupid crow-face McGowen!"

Tall: " I know I learned something last night, but I can't remember what it was. What was it McGowen?"

Tall: " It's definitely the alcohol that does it."

Tall: "I could do with some peace and quiet. Why don't you go to the pub for lunch. while I stay here."

Methodological problems: alcohol consumption and late hours, may have led to inadvertent and unrecognised memory problems. Care was taken to avoid this by stimulated recall, but David Tall proved remarkably uncooperative in this regard. " I don't not remember nothing!", was a typical response to such interviews.

Workshops

Dynamics of squaring (mod p)

Mercedes McGowen led this session with so many damned
questions (is a woman never satisfied??) and jollied Davis with
Talisker/Lagavulin, laced with coffee, at midnight and beyond,
as the bugs in his Maple program got more resistant to de-
bugging.

A 5-cycle was found for $p = 311$, solving an 11-year old prob-
lem. Fermat's little theorem proved decisive, and an application
of Dirichlet's theorem on primes in arithmetic sequences will
probably prove to be important. Many questions remain. (Why
put coffee in whisky? springs to mind.)

After the *Phantom of the Opera* in London on Wednesday, fol-
lowed by a Tibetan dinner, a few moment's thought showed
that for each $p > 2$ there are cycles of length order(2,order(a,p)),
generated by $2 < a \le p-1$, precisely when order(a,p) *is* odd.

Davis, G.; di Giacomo, S.; Gray, E. M.; Hegedus, S.; McGo-
wen, M.; Pinto, M. M. F.; Pitta, D.; Simpson, A. P.; Tall, D. O.
(1997): The Object of the Encapsulation of a Distilled Spirit.
A paper from page 22 to page 100 ....

... (continued).

Thesis writing

David Tall led this session admirably. McGowen interjected several times: "Yes, but what about MY thesis, David?" Tall parried immediately with: "Your story, as uninteresting as it is, ...". Davis blocked McGowen's attempt to plant a knife between Tall's shoulder blades, and a seething, unstable peace ensued.

McGowen contributed a plaintive generality, probably useful to many PhD students: "My God! I thought I'd done the literature survey!" Tall's : "You haven't done much, I've had some intelligent students you know," sent McGowen straight for the Laphroaig. McGowen's attitude softened noticeably when Tall stated categorically: " The problem with most people is that they're too stupid to understand what I'm saying."

Learning mathematics through cooking and drinking

This was a very popular workshop, led wonderfully by Di Giacomo. Her subtle mingling of food and wine flavours, her discourse delivered in a delightful Italian accent, led us to transports of delight. We all felt there should be mathematics in there somewhere, and that perhaps with other great meals and wines, we could figure where. An unqualified success. (see overleaf.)

Conference Dinner, Sunday, May 25

8 p.m to ... who remembers?

Menu

Primo Piatti
Rice and Broccoli Entrée

❀❀❀❀❀

Secundi Piatti
Melanzone alla Parmigiana
Broccoli and Walnut Bake

❀❀❀❀❀

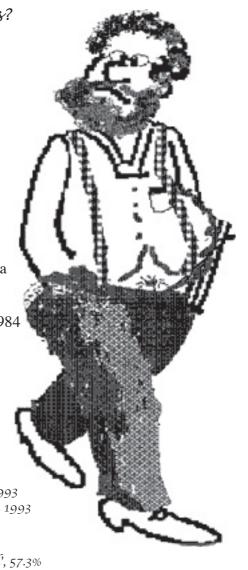*Dolce*
Peaches and Almonds in Valpollicella

❀❀❀❀❀

Quinta da Cavadinha Vintage Port 1984

❀❀❀❀❀

Wine and Whisky List

Frascati Superiorie 1995
Valpollicella - indeterminate year
Montana Sauvignon Blanc 1996
Petaluma Chardonnay 1994
Chianti Italia 1995
Chianti Rufina Villa di Vetrice, Riserva 1993
Penfold's Coonawarra Cabernet Sauvignon 1993
Quinta da Cavadinha Vintage Port 1984

Talisker, 10 year old, 45.8%
Laphroaig, 10 year 'straight from the wood', 57.3%
Bowmore, 12 year old, 43%
Lagavulin, 16 year old, 43%

Conference Outings

On Saturday, Davis drove McGowen and Tall to ~~drink~~ - Oxford - where they purchased several books specified in the conference bibliography, including

Kossyln - *Images and the Brain of an Alcoholic*

Bloggs and Huntit - *A Blind man's introduction to the Internet*

McTavish - *Lagavulin and the inverse of the exponential function*

Michael Jackson - *Whiskies of the World*

Corbin and Clueless - *Basic Grounded Theory of Barley Grist*

Edelmann - *Brilliant Fire Bright Water Great Whisky*

Crick - *The Impossible Hypothesis Distilled*

Lakoff and Johnson and Johnson - *Women and Dangerous Drink*

Jeer Confreeeeee - By *kind permission*

Davis - A *lusty life in liquor*

McGowen - *Bra bending*[3]

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[3] For more information on this enigmatic etymology, the reader must confer with the supposed father of the author.

Tall Stories (again?)

On Sunday, several conference participants and an accompanying person, set off for Kenilworth Castle, leaving Tall to do ... ??? who knows what? (Reflect?) A magnificent time was had by all: instruction in body armour piercing by bullet-nosed arrows, and the weight of mail armour were among the highlights. A somewhat heated discussion on the merits of medieval swordmanship versus the oriental art of aikido was followed by a spirited investigation of the late Earl of Leicester's bedroom (albeit with the stone wall, and the Earl, blown away by Cromwell).

On Monday, Chinese Dinner was provided for the three remaining participants, followed by Traditional English Pub Grub and Ale on Tuesday (organised by Adrian Simpson). Multi-national ramblings continued at the Tibetan Banquet on Wednesday and Malaysian Meal on Thursday, where the latter was, at last, attended by Dr E. Gray (graduate Warwick University) who had been proceptually disadvantaged earlier in the week. The delightful Pinto, Pitta and Simpson were also present.

By Friday, only McGowen was left and she bummed off to dig up her ancestors in Coventry.

On Saturday, some of us rested, while McGowen and Davis met up again in London. (What kind of masochist is this guy?) Sanity returned on Sunday when the lovely Demetra Pitta turned up and took McGowen off to look at antiques.

Suggestions for future sessions

In light of the unqualified success of the 1st International
Conference on Mathematics, Learning, & Whisky, the
drunken sots conference organisers have begun planning
for the 2nd International Conference on Mathematics,
Learning, & Whisky, Islay, Scotland, 1998, to be known
formally as "Mathematics and Lateral Thinking II",
(MALT II).

Several idiotic ramblings and emergent themes arose from
intense discussions at the conference. Procedurally the group
decided, by action as well as in principle, to encapsulate Davis'
notion of at least one totally crazy idea per day. Already a
number of truly crazy ideas profound conjectures have origi-
nated from the conference. McGowen, typically precise, asked:
" Is it 'ideas'? or 'conjectures', or 'hypotheses', or whatever??"

1. Maybe procedural kids are really trying desperately to see the
big picture? It's just that the picture is SO DAMNED BIG!!!

2. Maybe categorization difficulties lie at the heart of all difficul-
ties with mathematics.

3. Left-handers might really be better at mathematics, so there!

4. Pommies could well be useless at cricket, ~~football~~, ~~car-
racing~~, ~~drinking~~, ~~sex~~, ~~knowing where they a~~re, all of the above?

5. Apply Morse theory to the pits, passes, and peaks of van Hiele
levels. (McGowen dashed off to Blackwell's to pick up two
Inspector Morse books.)

6. Behind every procept lurks a really good procedure!

7. There's no-cept like a pro-cept.

8. Kaput's five strands of algebra could help us weave a really pretty tapestry.

9. It should be possible to develop an APOS ("A perfect old Scotch") theory of mathematics, whisky, and the brain. The conference participants were drinking on it.

10. Isn't mathematics just thinking? We pondered on this and generally rejected the idea. "Drinking" has to be in there somewhere.

11. Isn't Aspirin the solution to splitting theory? Is this an original thought or has someone published it before?

12. Whisky can really assist in image formation. McGowen reported seeing all sorts of strange things after the conference dinner. This is a previously unexplored application of Scotch to geometry, that will be taken up in full measure at the 98 conference in Islay.

Unsolved problem of the conference

What the hell is Diego's last name??

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Toast to absent fiends

To:

Shlomo Vinner

> for providing the cutlery, (utensils, you ignorant
> bastards) [4]

Richard Skemp

> for all the inspiration, we miss you;

Kaput and Lesh

> for providing so much mirth, in so many ways
> - their absence allowed us "greater flexibility of
> thought" which, however, we would gladly sacri-
> fice for their presence and input, inane as it might
> be;

Pat Thompson

> for all the kind, gentle, insightful, things that Pat
> is (aw shucks - but don't get a swollen head:
> you're buying the whisky next year, Pat);

Bob Davis

> for all the kind, gentle, insightful, … aw cut it out
> Bob, we're just saying nice things so's you will
> bring the glasses (only the best crystal please);

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[4] It should be explained that the foul language on this page is *entirely* due
to that Australian convict Davis, and David Tall affirms that he would never
address his fiends thus.

John Monaghan

>   Why didn't you ask him to come, Davis? I
>   thought you had, Tall! … McGowen fouling
>   things up as usual!

Eddie Gray

>   mainly absent in Bournemouth, on the wrong side
>   of the proceptual divide;

Ed Dubinsky

>   for suggesting to us a SAPS theory of
>   learning;

Jere

>   by kind permission;

and to all those people who didn't turn up because we didn't
invite them:

                    "Thank You!"

To help the organisers plan for the 2nd International Confer-
ence on *Mathematics, Learning, & Whisky,* Islay, Scotland, May
1998—to be known as *Mathematics and Lateral Thinking II*
for official citation purposes— it would be very helpful if you
answered the questionnaire overleaf. Please do not feel inhibited
if you did not attend the conference: Those attending the confer-
ence had no such inhibitions!

CONFERENCE QUESTIONNAIRE

	Absolutely <————				Is that what whisky tastes like? ————>
The whisky was great!					

	Absolutely <————				Absolutely ————>
The food was great!					

	Absolutely <————				Is that what whisky tastes like? ————>
Oxford is really nice!!!					

	Absolutely <————				Is that what whisky tastes like? ————>
Elizabeth I was not a virgin!					

	Absolutely <————				Can I see her photo first? ————>
I want to stay with Adrian Simpson s aunt on Islay!					

	Absolutely <————				David who??? ————>
David Tall s keynote was great!					

Please give your opinion in the space provided:

David Tall's talk taught me that ......

Whisky is good for you because ....
....
....
....
....
....
....
....

Re*servation slip (rush to a.p.simpson@warwick.ac.uk)

YES!! Save me a place at the 2nd International Conference on Mathematics And Lateral Thinking (a.k.a. MALT II), Islay, Scotland, May July 1998.

I definitely want to stay with Adrian's aunt at the special rate of £230 per day Bed & Breakfast ("Specials" not included).

I understand I will bring my own booze drinks, or I will purchase them through Adrian Simpson at the special "Once Only" price to be determined in the 2nd announcement (minimum £128 per bottle- definitely no agent's fee).

Payment by cash—small, unmarked notes—preferred. Otherwise a cheque in favour of "David Tall's New Zealand Trip" is acceptable.

If you cannot attend you can send a paper to be read at the conference, "in spirit". We promise not to laugh. ("Oh no we don't!" said organiser McGowen, in a rare moment of honesty.)

Yes*!!! Reject papers from PME gladly accepted, (*but not those turned down for lack of taste).

We welcome offers for support and venues for MALT III and MALT IV. (eg Honolulu, Hebrides, Jamaica, ... – Kentucky & Tennessee need not apply.)

Extra bonus miles for those providing sponsorship (Bill Gates included).

You can win a *free stay* with Adrian Simpson's aunt, if your estimate of the ranking of each wine/whisky/port on our Conference Dinner list, is closest to the average ranking of all entrants. Send in your entry now to avoid disappointment!

Legal Notices

Any reference taken to refer to anyone resembling anyone alive or dead is entirely meant and we won't pay damages. So, *nah*, nah-nah, *nah*, nah.

We should explain that Adrian Simpson's aunt comes from the "other side of the family". He claims she used to live near Perth (that's Perth Scotland, not Perth W A). but it is alleged that she moved to open up a boarding hose on Islay, "several years ago."

The organisers whish to disassociate themselves from any mention of Adrian's aunt. Anyone booking up to stay with her is either stupic or drunk. (But, as this includes everyone likely to attend MALT II, then you may form your own conclusions.)

And, finally ...

If you can't follow the numbering, then you can't be much of a mathematician. It's in base 3. We decided for citation purposes a conference proceedings with 202_3 pages in it looked a heck of a lot more impressive than a modest 20_{10}. In our book, a reference to pp.8–9 becomes pp. 22–200. UK researchers publishing in our journal can say "Up yours!" to the Research Agenda Exercise.

PS

If you are peeved that you have not been insulted in this book, then buy us a drink next time. (And that includes *you*, Cobb!)

Reviews

This book is no match for the brilliant philosophical conceptions so ably published by Falmer Press.

Paul Ernest, Philosophical Society Newsletter 4,324

Buy this book, because, if you don't, we won't be able to buy the scotch for the next conference. *Gary Davis, JRME*

A masterly book, with much attention to empirical detail, so lacking in the works of other masters. *Jeremy*

This book exhibits a certain sense of a sense of a concept. *J. Mason*

How can they publish this and not give due credit to the originator of splitting theory? Anyone knowing the origins of constructivism cannot fail to know the true source of Davis's splitting headaches. This matter will be taken up with the Governing Board. *J.C.*

A consideration of new technology and the interplay between thinking and drinking would have been an advantage. But I think it is great—really—and I want to be invited to speak at the next conference, (plus expenses, please). *Name witheld, PO Box 123123.*

My God, Who is J.C.? *J.C.*

I haven't a Kluwer how much it costs to produce, but costs a lot to buy. At least the authors will have a copy. *A.J.B.*

Reject this paper! *Experienced P.M.E. Referee.*

Yet another Davis McGowen Tall Story. Book your advance copy of MALT II now, available exclusively from MERCR!ME.