

## Joint Mathematical Council of the United Kingdom: Council

### Minutes of the meeting held at the Royal Statistical Society on Tuesday 5 November 2013

#### MORNING SESSION

##### Present

###### *Officers*

Chair

Tim Rowland

Honorary Secretary

Peter Thomas

Honorary Treasurer

Paul Harris

###### *Representatives of Participating Societies*

Association of Mathematics Education Teachers

Ros Hyde

Association of Teachers of Mathematics

Sue Pope

British Society for Research into Learning Mathematics

Ian Jones (deputy)

British Society for the History of Mathematics

Robin Wilson (deputy)

Conference of Heads of Departments of Mathematical Sciences

–

Edinburgh Mathematical Society

Colin Campbell

Institute of Mathematics and its Applications

Chris Sangwin

London Mathematical Society

Alice Rogers

Mathematical Association

Alison Clark-Wilson

Mathematics in Education and Industry

Charlie Stripp

National Association for Numeracy and Mathematics in Colleges

Sally Barton

National Association of Mathematics Advisors

Alice Onion

NRICH representing the Millennium Mathematics Project

Lynne McClure

National STEM Centre

Stephen Lyon

Operational Research Society

Louise Orpin

Royal Academy of Engineering

–

Royal Statistical Society

Moussa Haddad (deputy)

Wales Institute of Mathematical and Computational Sciences

–

###### *Co-opted Members*

JMC International Representative

Ros Sutherland

UK Representative to International Commission on Mathematical Instruction

–

###### *Representatives of Observing Societies*

Adults Learning Mathematics

Jeff Evans

Advisory Committee on Mathematics Education

Robert Barbour

Department for Education [England]

–

Department of Education [Northern Ireland]

Raymond Caldwell (deputy)

Education Scotland

Fiona Robertson

Higher Education Academy

–

National Centre for Excellence in the Teaching of Mathematics

Jane Imrie

National College for Teaching and Leadership

James O'Donoghue

Office for Standards in Education

–

Office of Qualifications and Examinations Regulation

–

Royal Society

Juliet Upton

School Mathematics Project

–

Sector Skills Council

for science, engineering and manufacturing technologies in the UK

John Harris

United Kingdom Mathematics Trust

Bill Richardson

###### *In attendance*

Executive Secretary

David Martin

###### *Visitors*

Advisory Committee on Mathematics Education Secretariat

Rosalind Mist

Department for Education and Skills [Wales]

–

Immediate Past Chair

–

Immediate Past Honorary Secretary

Gerald Goodall

## 1 Apologies for absence

Apologies for absence were received from David Arrowsmith (HoDoMS), June Barrow-Green (BSHM), Roeland Beerten (RSS), Matthew Harrison (RAEng), Dylan Jones (DfES), Jane Jones (OFSTED), Mary McAlinden (HEA), John Monaghan (BSRLM), Stephen Rogers (DfE), Nick Todd (DENI), and Stephen Williamson (WIMCS).

## 2 Welcome to new representatives, alternates and others attending

The Chair welcomed everyone to the meeting.

## 3 Appreciation of departing representatives

No representatives were known to be attending their final meeting.

## 4 Minutes of meeting of 13 June 2013

*JMC- 2013-June-Minutes.doc*

The Chair thanked the Honorary Secretary and the Minuting Secretary for preparing the minutes. The minutes were **approved**.

## 5 Consideration of any matters arising from the Minutes that do not appear on the main agenda

There were no matters arising.

## 6 Reports from JMC Executive

6.1 **Chair** The Chair had no matters to report.

6.2 **Honorary Secretary** The Honorary Secretary reported that JMC had received a letter from the Meeting of Mathematics Subject Associations requesting that JMC joins the Council for Subject Associations; the JMC Executive Committee will consider this at its next meeting.

6.3 **Honorary Treasurer** The Honorary Treasurer had no matters to report.

6.4 **Executive Secretary** The Executive Secretary said that the JMC's review of its international work which is being undertaken by Sally Barton, Chris Budd, Chris Sangwin, Ros Sutherland and himself was ongoing.

The Executive Secretary also drew attention to the programme for the afternoon session of that day's Council meeting. He thanked the planning group for the session and Sally Barton and Paul Harris for the work they had done in going through the JMC's archive to identify material for the lunchtime exhibition of significant documents. The presentations at the afternoon session would be recorded and an article marking the occasion would be submitted to the journal of the British Society for the History of Mathematics. Those present were asked to note the key times; it was important that they were observed to ensure the smooth running of the session.

6.5 **Chair of Nominations Committee** The Chair of the Nominations Committee had nothing to report but pointed out that in future the work of nominating would be undertaken by the Executive Committee.

## 7 JMC International Representative [Ros Sutherland]

The JMC International Representative reported that she had met with the UK Representative to ICMI to discuss high-level questions and that a larger meeting was necessary to discuss matters relating to ICMI. Reflections following the meeting will be brought to a future meeting of Council.

## 8 UK Representative to ICMI [Chris Budd]

In the absence of the UK Representative to ICMI, this item was not considered.

## 9 BCME 8 (to be held 14–17 April 2014)

*JMC-2013-Nov-BCME.doc*

The report was noted.

## 10 Reports received from JMC organisations

10.1 **Association of Mathematics Education Teachers [Ros Hyde]**

*JMC-2013-Nov-AMET.pdf*

The report was noted.

10.2 **Institute of Mathematics and its Applications** [Chris Sangwin]

*JMC-2013-Nov-IMA\_(Scholarships).docx*

The report was noted.

10.3 **National Association of Mathematics Advisors** [Alice Onion]

*JMC-2013-Nov-NAMA.docx*

The report was noted.

10.4 **NRICH representing the Millennium Mathematics Project** [Lynne McClure]

*JMC-2013-Nov-NRICH.pdf*

The report was noted.

10.5 **Operational Research Society** [Louise Orpin]

*JMC-2013-Nov-OR.docx*

The report was noted.

10.6 **Royal Society** [Juliet Upton]

*JMC-2013-Nov-RS.pdf*

Juliet Upton spoke about the RS's Vision Project. She spoke of a vision of developing an inspirational education system across the UK over the next twenty to twenty-five years. The meeting was important to test whether key players shared the vision.

Juliet Upton talked about the consultation meeting with the mathematics community which took place on 4 November 2013 (chaired in the morning by Dame Julia Higgins and in the afternoon by Ian Jones) which she felt had been very successful. She mentioned two discussions at the consultation meeting.

There was discussion of what is valuable in mathematics based on an input from Lynne McClure and Andrew Taylor. This included a discussion of the future role of computer-based mathematics which could have a particular importance in the post-16 curriculum. Also, computer-assisted mathematics will be important. Celia Hoyles also gave her own vision of the future of mathematics education and this was technology-based.

There was a discussion of what excellent mathematics teaching is. It was critical that higher education institutions played a central role in teacher training. A strong professional body was needed, something teachers lack, rather than the present multiplicity of bodies. There was a desire to see a coalition which would bring teaching to the fore and to see the community coming together to take teaching forward.

Juliet Upton having introduced the report on the RS's Vision Project, there was a period of discussion.

James O'Donoghue asked about the professional body for teachers: should the professional body span all subjects whilst the Vision Project was urging that this should go forward just for STEM subjects. Juliet Upton responded that the proposals around for a Royal College of Teaching are unlikely to come to fruition in the short-term; she also questioned whether the Royal College of Teaching was on an old-fashioned model. She said that science and mathematics were well placed as they already have organisations in place so there is leadership already there. Charlie Stripp said that a subject-based body would be more useful and powerful; he wanted to see a body which supported the teaching of the subject in a coherent way. Lynne McClure said that all these things exist already but teachers do not take up these opportunities; she asked how we can transform things so we have impact.

The Chair asked what role was seen for the JMC. Juliet Upton responded that the Vision Project did not see a particular role for the JMC; it was up to individual bodies to respond to the vision; indeed it was shocking that there was such a multiplicity of bodies. The problems of teachers not engaging and not valuing membership are systemic and extend beyond particular specialisms, and like many issues are not subject-specific.

Alison Clark-Wilson said that there should be an entitlement and expectation of professional development, and one cannot rely on teachers funding this voluntarily. Sue Pope raised the question of what headteachers look for when recruiting; if things are not valued then teachers will not engage with them. Charlie Stripp said we need to get to the point where you cannot practice without membership of the relevant professional body. Juliet Upton responded that it is about professional responsibility not entitlement: teaching must embrace this. It was envisaged that professional development would be the main route to progression and higher pay. We need to engender trust.

Fiona Robertson added that in Scotland there was already a requirement for membership of a professional body and professional updating, although there were problems about access to appropriate professional development.

Juliet Upton said that the Vision Project report would be laid before the Council of the RS in January 2014 and it was hoped that it would be published in May 2014.

**10.7 Royal Statistical Society** [Moussa Haddad]  
*JMC-2013-Nov-RSS\_(A\_world\_full\_of\_data).doc*

Moussa Haddad briefly described the report, *A world full of data*. The Chair said that the Executive Committee is considering providing a half-hour session for discussion of the report at a future meeting of the Council.

**11 Report from ACME** [Robert Barbour]  
*JMC-2013-Nov-ACME.doc*

Robert Barbour mentioned that three new members had joined ACME: Jennie Pennant, Anne White and himself in September 2013. He drew attention to the professional development report which was to be published on 28 November 2013 for which a small event was to be held targeted at policymakers. He said that ACME was developing a strategic plan linked to the 2014-19 funding cycle. He observed that every part of mathematics education is in flux and this presents challenges to all, including ACME.

Sue Pope asked whether ACME was intending to act in response to the previous Friday's announcement of changes to GCSE Mathematics. She said there was much concern as to how little time was being provided to implement these changes in 2015; what was being introduced was a mega-GCSE with extra content, unworkable assessment objectives, no indication of tiering and a new grading scale; the information gained from the linked pair of GCSEs, which were known to affect teaching, was being ignored. Rosalind Mist said that ACME would be meeting on 21 November 2013 and it expected to discuss the matter with the DfE then; she invited others to send her thoughts before then once they had had a chance to reflect on the matter. Sue Pope asked whether it was worth the JMC writing to ministers. Rosalind Mist replied that that was a matter for the JMC. The Chair intervened saying that this matter would be discussed later in the meeting under Any other business when consideration would be given to whether a letter should be written.

**12 Report from NCETM** [Jane Imrie]  
*JMC-2013-Nov-NCETM.docx*

The report was noted.

**13 Update on current developments**

**13.1 Northern Ireland** [Raymond Caldwell]  
*JMC-2013-Nov-NI.doc*

Raymond Caldwell pointed out that the full Best Practice report was available online (at [www.etini.gov.uk](http://www.etini.gov.uk)). The emphasis in the report was on identifying good practice in working with students from socially-deprived backgrounds (in schools receiving Targeting Social Need (TSN) funding). There were three key recommendations: well-planned progression in the schemes of work, challenging questioning which involves all; and rigorous follow-through of support given to pupils.

Ros Sutherland suggested that the RS Vision Project might look at what happens for mathematics and science with lower socio-economic groups.

**13.2 Ofsted** [Jane Jones]

No report was received and there was no discussion.

**13.3 National College for Teaching and Leadership** [James O'Donoghue]  
*JMC-2013-Nov-NCTL.docx*

James O'Donoghue reported that recruitment was 78% of target for 2013 in September 2013 but the final position for initial teacher training would be known at the end of November 2013. Recruitment for mathematics and physics remains problematic and a strategy refresh is taking place to look for fresh initiatives and approaches; he invited suggestions.

Bill Richardson asked if the problem isn't coming earlier and that we need more young people to go to university to read for mathematics degrees. James O'Donoghue said that they were looking to engage second-year undergraduates.

Lynne McClure said that retention as well as recruitment was important and asked what is being done to increase retention. James O'Donoghue said that he was aware of the issue. Lynne McClure asked if there had been any comparison of retention between those trained in higher education institutions and those trained under SchoolDirect. James O'Donoghue said that it would be looked at but it was too early to say. Juliet Upton said that retention was key and asked if there was a retention strategy in the DfE, particularly if there was an upturn in the economy as mathematics and physics graduates will not go into teaching. James O'Donoghue said there was not a strategy but a concern that an economic upturn would present a real challenge. Alice Rogers also expressed concern about retention and asked whether work was done to find out why people leave. She was appalled at the current rhetoric and the climate of fear existing in schools which doesn't treat teachers with respect. Ros Hyde drew attention to the highly increased demand from the further education sector because of increased post-16 participation and the implications for recruitment that will have for 11–16 and 11–18 schools. Charlie Stripp asked whether the DfE has subject-specific retention data. James O'Donoghue replied that he had not seen robust data but what he had seen suggested mathematics was not an outlier.

The Chair asked James O'Donoghue to look into the questions raised and to report back to the next meeting. Alison Clark-Wilson invited James O'Donoghue to a Meeting of Mathematics Subject Associations meeting to discuss the issues in more depth.

## 14 Reports from meetings

- 14.1 **OCR Mathematics Consultative Forum held on 8 October 2013** Gerald Goodall said that notes of the meeting will be issued by OCR in due course and they will be circulated. [*Post-meeting note*: This was done on 4 December 2014.] He considered the meeting to be a good forum for discussion and felt it was valuable that JMC had corporate representation. The next meeting will be on 22 January 2014.
- 14.2 **Joint BIS/DfE STEM Ministerial Advisory Group** The Chair said that he attends these meetings three times a year (he also noted that Alice Rogers attends for LMS and Stephen Sparks for ACME). He said that the main item of interest was teacher education and training for STEM. Minutes will be issued by BIS/DfE in due course and will be circulated to Participating Societies. [[This was done on 14 November 2013.]]

## 15 Any other business

**Changes to GCSE Mathematics in England** The Chair invited Sue Pope to provide some background to this item, which she did while making clear that she was speaking in a personal capacity. She said that a lot of concern had been expressed when the consultation took place about the proposals: the content, who the content was for (was it for all or was there to differentiation, in which who would need what), tiering and the unworkability of the assessment objectives. On 1 November 2014 the rules for GCSE Mathematics for first teaching from September 2015 were published. There had been some slight changes, some rewording of the assessment objectives but they were still overly complex, and there was now bold and underlined content giving some indication of differentiation. To absorb all this schools would need more time than would be allowed by a 2015 start. Further, the valuable evidence from the Linked Pair has not been taken into account, with less statistics and probability and no financial mathematics. There is less motivating material, new grades, no clarity over tiering and all this to be ready for 2015. Sue Pope asked how all this could be done well in time (with syllabuses to be in schools by September 2014 to prepare for a September 2015 start). She said that what was being introduced was reckless and irresponsible and should be resisted, and that it took little account of the responses to the consultations.

The Chair asked what was being asked for in any letter we might send. Sue Pope said we should ask for more time for consideration and implementation, including awaiting the final report on the Linked Pair which was due at the end of 2013.

Colin Campbell welcomed the changes being made to GCSE; they would be useful for higher education and he would be worried if the proposed letter was sent from the JMC.

Alice Rogers said that the LMS was unhappy about aspects of the DfE's planned changes to GCSE Mathematics, especially the ordering of material, but she welcomed that Key Stage 3 material would be re-tested. The content overload was a concern to the LMS. There was no indication of tiering, how will differentiation be achieved? Many difficulties could be foreseen and she supported the JMC making a statement.

Alice Onion said that the letter should be kept simple. It should start on a positive note welcoming the aspiration to raise standards and then go on to express concern with the timescale and that it was not informed by the final report on the Linked Pair pilot, alongside other elements, and it should call for a year's delay. She also observed that the Linked Pair showed that students valued mathematics more when it had the same weight as English.

Charlie Stripp said that Adrian Smith had asked for a double award and he also felt that the final report on the Linked Pair should have been taken into account.

Colin Campbell said that he was happy to support what Alice had said.

Sally Barton expressed concern about the extra year if it was all given over to reconsideration, as it would create a year of uncertainty and there would be again only a year in which to prepare implementation.

Rosalind Mist said that the case needed to be made for what would be done in the year's delay. She also raised the question of a double award.

Charlie Stripp said that it was his impression that it was Ofqual that had opposed a double award.

Rosalind Mist said that in her judgement there was no chance of a delay but more chance of a double award.

Alice Onion said that the more time should be for implementation and revision of the curriculum, once the final report on the Linked Pair had been reviewed.

Jane Imrie said that we were at present struggling to build up the skills of the further education workforce to meet the GCSE resit requirement and longer was needed to prepare them for the new more challenging GCSE.

Ian Jones said that BSRLM may have a constitutional issue about subscribing to any letter and he would get back on this.

The Chair said that a draft letter should be written within a week for comment by Participating Societies. Alison Clark-Wilson asked for representatives to have time to go back to their societies to consider the draft. The Chair said he would like the draft approved within two weeks. It was **agreed** that Alice Onion and Sue Pope would draft the letter.

## 16 Dates of future meetings

Tuesday 25 February 2014

Tuesday 17 June 2014

Tuesday 11 November 2014 (following the Annual General Meeting)

These meetings will start at 1100 and be held at the Royal Statistical Society.

## 17 Thanks

The Chair expressed the Council thanks to Gerald Goodall for his work as Honorary Secretary.

## AFTERNOON SESSION

### **Golden Celebration of the JMC – then, now and the future**

#### **Sponsored by ACME and RSS**

ACME funded a photographer and wine

RSS provided meeting facilities at reduced cost

## Programme

13:00 – 13:45 Buffet lunch with wine – displayed artefacts.

14:00 – 15:30 Presentations in the lecture theatre on JMC

Chair: Sir Peter Williams CBE FREng FRS

Speakers:

Professor Sir Bryan Thwaites – The origins of JMC

Dr Sally Barton – Extracts from the archives

Professor Margaret Brown – Developing a JMC vision

Professor Chris Robson – Influencing Government

Professor Tim Rowland – JMC now and a look to the future

A sound recording was made of the session. Photographs taken at the session are stored at [http://cme.open.ac.uk/JMC\\_Council\\_DocLibrary.nsf/xsp/.ibmmodres/domino/OpenAttachment/jmc\\_council\\_doclibrary.nsf/18DB6B9C9D41BE5480257B1F0035E566/Body/JMC%20%40%2050%20years.pdf](http://cme.open.ac.uk/JMC_Council_DocLibrary.nsf/xsp/.ibmmodres/domino/OpenAttachment/jmc_council_doclibrary.nsf/18DB6B9C9D41BE5480257B1F0035E566/Body/JMC%20%40%2050%20years.pdf). An article describing the session will be submitted to the journal of the British Society for the History of Mathematics.

## **Attendance**

The following were present as well as those present for the morning session:

Past Chairs: Professor James Taylor, Professor Margaret Brown, Professor Chris Robson, Professor Celia Hoyles OBE, Professor Ros Sutherland, Professor Duncan Lawson;

Past Honorary Secretaries: Geoff T Wain, Graham Smart, Dr Sue Sanders, Dr David Martin, Gerald Goodall;

Past Honorary Treasurers: Professor Derek Woodrow; Professor Adrian Oldknow;

Past ACME Chair: Sir Peter Williams CBE FEng FRS;

ACME Chair: Professor Stephen Sparks CBE FRS;

Victoria Chapman, Dr Diane Crann, Tony Holloway, Professor Geoffrey Howson, Dr Vinay Kathotia, Dr Niamh McMahon, Dr Rosalind Mist, James Nicholson, Dr Roger Porkess, Professor Sir Bryan Thwaites, Professor Elizabeth Winstanley;

Photographer: Clive Sherlock.

Apologies: Dr Jenni Back, Professor Hugh Burkhardt, Professor W Derek Collins, Professor Heini Halberstam, Professor George Hall, Dame Julia Higgins DBE FEng FRS, Dr Daphne M Kerslake, Ann Kitchen, Professor Sir Chris Llewellyn Smith FRS, Hugh Neill, Stephen Rogers, Professor Bernard Silverman FRS, Professor Sir Adrian Smith FRS, Professor Nigel Steele.

## **Introduction**

Sir Peter Williams opened proceedings. He welcomed all present and said we should congratulate ourselves on what the JMC has done to put mathematics on the map. It was right that we should look back at our history but we should leave the meeting looking forwards to our future.

## **The origins of JMC**

Sir Bryan Thwaites spoke on how the JMC came to be founded, the context and concerns of the time, and the initiatives that were taken to respond to them, among which was the founding of the JMC in 1963. In support of his talk, in which he spoke mainly of his own involvement in those events, he circulated a paper which is appended to these minutes.

## **Extracts from the archives**

Dr Sally Barton introduced extracts from the archives which are kept at the London Mathematical Society. The extracts included early minutes and reports made during the lifetime of the JMC. The reports on mathematics education ranged from primary to higher education; many statements in them could well have been written today.

## **Developing a JMC vision**

Professor Margaret Brown paid tribute to Professor Rolph Schwarzenberger's vision for the JMC to bring the mathematics community together, to act as a unified voice and so have influence on government. She also spoke of how she had striven to raise the profile of the JMC and broaden its membership, the establishment of BCME, the algebra and geometry working parties supported by The Royal Society, and the JMC's work in responding to government consultations.

## **Influencing Government**

Professor Chris Robson spoke of the frustrations the JMC had experienced when trying to gain access to and influence government which led in the 1990s to calls for a standing committee for mathematics. These gained ministerial support and financial support from the Gatsby Foundation, and came to fruition in the founding of ACME in 2002.

## **JMC now and a look to the future**

Professor Tim Rowland spoke of the great volume of reform taking place in mathematics education (and education more generally), particularly in England. He said that whilst the JMC has striven to mitigate the excesses of some changes, its representations have frequently gone unheeded. Nevertheless, he was encouraged by the thought that those changes which are good would stand the test of time and that changes were never as extreme in practice as they appeared when first proposed. He said that in the meantime teachers had to make the best of it, and the JMC should support them in doing so.

## **Conclusion**

Sir Peter Williams closed proceedings. He thanked the speakers and said we rightly celebrate what has been achieved but we also face challenges which he summarised in three words: continuity, consistency and adaptability.

## APPENDIX

### A Brief Outline of the Conception of the JMCUK by Bryan Thwaites with references **in bold** to the recently-published SMP History

1. April 8-18, 1957 saw the 1957 Oxford Mathematical Conference held in Trinity College, Oxford. It was the brainchild of John Hammersley, a distinguished mathematician and an FRS, who appreciated more keenly than most the fissiparous of the country's mathematical education. It can fairly be said that it was the first time that mathematicians of all kinds were brought together for serious discussions about the place of mathematics in the national life (**p4 and pp64-68**).
2. My Inaugural Lecture (**pp11-17**) on 23 May 1961 was largely motivated by the experience and proceedings of the Oxford Conference and of the subsequent Southampton Conference (**pp6-10; pp69-73**). The lecture (i) gave startling statistics about university staff and student numbers (p12); (ii) proposed a national body to represent all mathematical interests; and (iii) sparked an unprecedented correspondence in *The Times* (**pp74-102**).
3. Such national exposure put the universities on the spot and it led Sir William Hodge of Cambridge to convene the first-ever meeting of the country's professors of mathematics on 29 September 1961. The agenda was my Inaugural Lecture. It was agreed to set up some kind of steering group to pursue 2(ii) above, and for this purpose I lunched with Hodge at the Athenaeum on 22 February 1962.
4. In the following months there were numerous meetings and discussions which brought in more and more of the various mathematical societies then in being. In particular a Note in the *Mathematical Gazette* (**47** (1963), pp 130-1) reports a meeting held on 11 July 1962 in King's College London "at which it was agreed to set up a Joint Mathematical Council, and a draft constitution was agreed" together with a proposed membership. It does not record who was present and I have no diary note of such a meeting.
5. The next mention in my desk diary records a meeting on 9 January 1963 as being the second meeting of Professors of Mathematics where-as the MA has unearthed a typescript of the "Minutes of the first (Inaugural) meeting" held on the same date under the title "Joint Mathematical Council of the United Kingdom". My desk diary then records a meeting on 23 May 1963 as being the First Meeting of the JMCUK.
6. The discrepancies between these records are not all that surprising. The mathematical world was in a state of considerable turmoil, compounded by the moves independently being led by James Lighthill for the eventual establishment in 1964 of the IMA. Thus, although the various discussions and meetings in 1961-63 can be attributed directly to my 1961 Inaugural Lecture and the subsequent *Times* correspondence, by 1964 something akin to the JMCUK would, in any case, have been found desirable and, no doubt, established by 1965.

*"The rest is history."*

14 October 2013.