

WORKSHOP REPORT

Diversity and Decolonisation in Mathematics

Siri Chongchitnan, Warwick Mathematics Institute, University of Warwick, Coventry, UK.

Email: Siri.Chongchitnan@warwick.ac.uk

Ryan L. Acosta Babb, Warwick Mathematics Institute, University of Warwick, Coventry, UK.

Email: Ryan.L.Acosta-Babb@warwick.ac.uk

Jonathan Skipp, Department of Mathematics, College of Engineering and Physical Sciences, Aston University, Birmingham, UK. Email: J.Skipp@aston.ac.uk

Helena Verrill, Warwick Mathematics Institute, University of Warwick, Coventry, UK.

Email: H.A.Verrill@warwick.ac.uk

Elliot M. R. Vincent, Warwick Mathematics Institute, University of Warwick, Coventry, UK.

Email: E.Vincent@warwick.ac.uk

Abstract

The 'Diversity and Decolonisation in Mathematics' conference took place at the University of Warwick Mathematics Institute on 24-25 April 2025. This report highlights the main themes and key messages of the conference.

Keywords: inclusivity, diversity, decolonisation

1. Motivation and aims

Over the past few years, equality, diversity and inclusion (EDI) issues in academia have gained attention within the mathematics community. On the one hand, there have been pioneering, progressive efforts to discuss diversity and decolonisation issues in mathematics, particularly around university mathematics curriculums. On the other hand, diversity and decolonisation have sometimes been brushed aside as irrelevant (*how can Pythagoras' Theorem be racist?*) or politicised as another woke agenda gone too far.

We the conference organisers believe that there is a need for like-minded mathematics academics to come together in a safe space to share ideas on how diversity and decolonisation can make mathematics a richer, more inclusive subject to study and do research in.

The '*Diversity and Decolonisation in Mathematics*' conference¹ took place at the Warwick Mathematics Institute on 24th and 25th April 2025, hosting over 50 academics from 23 universities from UK and abroad. The conference focussed on two broad areas:

1. **Decolonising the mathematics curriculum**, including a) conducting an open discussion of the meaning and legacy of colonisation in the academic context, b) teaching mathematics and its history in a non-Eurocentric framework, c) diversifying the university maths curriculum to acknowledge the work of non-European mathematicians.

¹ <https://warwick.ac.uk/fac/sci/math/general/outreach/diversity-decolonisation-conference-2025/>

2. **Diversity issues in mathematics**, including a) lived experiences and mathematical contributions of mathematicians from diverse ethnicities, genders, sexual orientations and socio-economics backgrounds, b) making university mathematics more inclusive for neurodivergent and disabled students.

This report summarises the contributions shared at the conference and highlights key take-away messages. This document was prepared by the organisers of the conference (Chongchitnan, Acosta Babb, Verrill and Vincent) with contribution from a conference participant (Skipp).

2. Contributions

The conference opened with a brief welcome from the Chair (Chongchitnan) and Megan Caulfield, a representative of Warwick University's Student Office, which funded the event. Ms Caulfield highlighted key achievements of a 3-year plan for Inclusive Education¹ at Warwick, of which this conference is a key part.

2.1 Decolonising mathematics

Catarina Carvalho (Hertfordshire) kicked off the conference by defining colonisation as the practice of domination, which involves the subjugation of one people to another, and dismissing ideas that do not conform to white European traditions. She challenged the notion that decolonisation is irrelevant for mathematics and gave examples of how colonisation ideologies gave rise to inequitable, unethical and racist practices that still exist in higher education. To encourage student buy-in, Dr. Carvalho recommended asking open-ended questions around ethics in personal tutoring groups, to stimulate students' discussion. More generally, she reported on several initiatives related to the workshop themes run by the University of Hertfordshire. This experience is collated in the Diversifying and Decolonising the University website (D'Sena et al., 2025) and podcast (Lloyd 2025), and the Diversifying and Decolonising Mathematics website (Carvalho 2023).

Finally, Dr. Carvalho discussed the rise of *data colonialism*, i.e. the exploitative practice of tech companies in extracting and analysing data for profit (Couldry & Mejias 2018), made worse in recent years with the rise of AI. She also drew attention to the environmental harm caused by intensive data processing, often at the expense of disenfranchised communities. Dr. Carvalho concluded with a powerful quote by the mathematician Kit Yates that "*if taking action is political, then so is failing to act*".

Next, Ric Crossman (Durham) discussed *QuantCrit*, a framework combining quantitative research and critical race theory (Gilborn, Warmington & Demack 2017) and its potential for decolonising mathematics. He argued that racism itself can often be regarded as a confounding variable in analysis of racial data. This understanding is important in order to avoid making false, racist claims from data.

Sue Johnston-Wilder (Warwick) rounded off the morning session by presenting the harms of colonial views of mathematics, including learner exclusion and mathematics anxiety. She discussed how such anxiety can be overcome, including adopting the African philosophy of *Ubuntu* (often translated as "*I am because we are*") into the classroom (Ngomane 2019).

¹ <https://warwick.ac.uk/services/dean-of-students-office/inclusiveeducation/>

2.2 Diversifying the curriculum

Rae Shaw (Warwick) discussed their experience of teaching mathematics to children from ages 5 to 18 in Zambia, and their research into diverse number systems used around the world (Shaw 2023). Rae explained how teaching in base 10 impacts children's ability to learn mathematics in the primary years in Zambia, given that in their native language, counting is in base 5. In many countries, mathematics education is given entirely in English, which may present a barrier to learning, and challenges our assumption that mathematics is a universal language.

Jason Ho Ming Yip (Middlesex) reported on an experimental pedagogical intervention at a school in Milton Keynes, which involved teaching mathematics alongside historical, cultural and societal insights, with biographies and anecdotes of the mathematicians involved. This humanises the topics and triggers students' curiosity. Data from the enhanced class compared with a control group showed significant improvement in the enjoyment of studying mathematics.

2.3 Diverse history of mathematics

Brigitte Stenhouse (Open) presented a number of student summer projects on a diverse range of historical mathematicians, which ties into the *Diverse History* theme of the conference.

Dr. Stenhouse worked with undergraduate interns (level 2 or 3 at the Open University) on fifteen sources which cover mathematics across five continents, and over 2000 years, and it is continuing to grow. In this project, entitled *Contextualising the Curriculum through the History of Mathematics*, students were encouraged to use "primary source material to build [their] awareness of the historical development of mathematics, from a global perspective". Dr. Stenhouse provided some case studies from the project. The case of Chike Obi in particular, created a discussion about the role of a history of mathematics: on the one hand, he was a source of inspiration for many young mathematicians, on the other, he engaged in antisemitic and authoritarian rhetoric. Hence the critical question: "What tone should be used [...] to ensure these studies aren't seen as 'celebrations' but as historical treatments of ideas and the people who had them?" The talk closed with Dr. Stenhouse reminding us that "history is not just facts and biographies, but can enable a meaningful engagement with mathematical ideas, *in context*". The resources from this project will be shared via the OpenLearn platform in the near future.

Prof. Della Dumbaugh (Richmond) explored the lives of Caroline Bamberger Fuld — a department-store magnate — and Clare Booth Luce — a playwright and activist. She made a case for their surprising influence on the development of mathematics and science in America in the twentieth century through the establishment of funds for women to study and carry out research in mathematics. These stories sparked a discussion of the funding differences between the US and European contexts.

Nicholas Jackson (Warwick) offered a re-appraisal of *Hypatia of Alexandria*, tracing the scant historical sources we have for her life and work, and warning that much of our "popular" understanding of this figure stems from later, inaccurate and fictionalised accounts. He ended his discussion with a number of thought-provoking questions, such as whether "her adoption as a role model/paragon/totem/etc. are entirely helpful" in discussions of diversity in mathematics.

Clemency Montelle (Canterbury) was scheduled to deliver the talk *Doing Mathematics Differently - An Exploration of Mathematical Practices from the Indian Subcontinent*, but was unfortunately unable to travel. Her talk aimed to discuss some of the mathematical highlights of this scientifically dynamic

tradition and account for some of the challenges faced by historians of mathematics in the task of accounting for the scientific legacy of this extensive and rich culture of inquiry.

2.4 Lived experiences

Jordan Marajh (Queen Mary) discussed Queen Mary's "*A Mathematician Like Me*" project, which produced a booklet, posters, and online resources¹ about a wide range of diverse figures in mathematics.

Nira Chamberlain (Loughborough) gave a highly motivational talk about his own experiences of overcoming prejudice to become a mathematician. He also spoke about black mathematicians generally, and how they are often overlooked in the usual discussions of the history of mathematics. Prof. Chamberlain gave many examples of important work by black mathematicians such as Francis William, Benjamin Bannekar and Euphemia Lofton Haynes, as well as prominent contemporary black mathematicians.

Michael Cavaliere (Warwick) discussed his contribution to Warwick's *Inclusive Education* project. In particular, he shared the findings from his summer project on understanding the experience of Warwick maths students with disability and neurodivergence (autism in particular). Contrary to the stereotype of "all mathematicians being a little bit autistic", maths students diagnosed with autism do often face serious barriers during their university study. He discussed what maths departments could do better to identify and accommodate disabled and neurodivergent students.

Ashleigh Ratcliffe (Leicester) spoke about the work of the Piscopia Initiative², which aims to create a community and provide support for women and under-represented genders in mathematics. She described the resources, events and projects that they run, and the aims of the initiative. She also presented what the Piscopia Initiative have learned about the current challenges facing women and under-represented genders; in terms of attracting students into PhDs, and issues these students faced during the PhD itself.

Elliot Vincent (Warwick) shared information about the QEDnetwork³, a recently launched network aimed at supporting, advocating for, and creating a community for LGBTQ+ researchers in mathematics. They raised awareness of some of the major issues currently facing LGBTQ+ people in academia and shared about historical and present-day victories which have been achieved by the advocacy of similar individuals and organisations.

Daniel Ratliff (Northumbria) discussed an upcoming project which aims to create a report on the experience of queer people working in mathematics. He presented data found in similar studies in physics and the physical sciences, which have revealed statistical and experiential inequalities in the workplace experiences of LGBTQ+ people. He emphasised the importance of collecting these data in mathematics too, so that the issues in this field can be properly identified and addressed. The report will be disseminated via the QEDnetwork website.

¹ <https://www.qmul.ac.uk/maths/our-community/equality-diversity-and-inclusion/a-mathematician-like-me/>

² <https://piscopia.co.uk/>

³ <https://sites.google.com/view/qednetwork/home>

2.5 Sharing teaching practices, interventions, and resources

Many speakers at the workshop shared examples of specific practices, courses, and interventions in which they topics relevant to this workshop into mathematics teaching, and resources that the community at large can draw on to make similar interventions.

Andrew Potter (Open) reported on the development of an Inclusive Curriculum Tool, designed to assist the review of STEM curricula at the Open University, with the aim of informing revisions, as part of the Open University's Access and Participation Plan. The tool consists of a series of prompts, used by Associate Lecturer reviewers to critically examine distance learning materials. For example, reviewers are invited to enquire whether the materials reflect the diversity of characteristics of students and society more generally, whether they are fully inclusive and intersectional, whether colonial views are highlighted and challenged, etc. Themes identified during the reviews were collated and the work integrated into a 'staircase' model of inclusivity. The development and use of the Inclusive Curriculum Tool is described in Veuger et al (2023).

Martyn Parker (Warwick) presented an initiative at the Department of Statistics wherein students were recruited to co-create projects around decolonisation and inclusion, specifically within the Statistics department. This initiative was launched to address the lack of specific, actionable examples of decolonisation and inclusion within a mathematical Higher Education department. The projects resulted in action plans implemented by the Department of Statistics to increase student engagement, support and community-building, as well as curriculum and assessment changes. The framework for these co-creation projects will be released publicly later this year. Readers should look out for a collection of co-creation projects on the Warwick Statistics website.

The workshop closed with a colloquium *Encouraging Diversity while Teaching the History of Maths and Society*, given by Peter Rowlett (Sheffield Hallam). He recounted his experience teaching History of Mathematics, and Maths and Society content over nine years. His teaching approach is centred around examining the context in which mathematics has and is being created and used. Dr. Rowlett gave examples of topics taught in his courses, including a) how myths and storytelling in mathematics could lead to a narrow view of how it is created, b) who gets to be a mathematician, c) bias in AI technology which can present a distorted view of history as unrealistically diverse. He outlined how assessment is carried out by means of small-group projects on topics chosen by students and shared some findings of these projects. Dr. Rowlett's reflections on his approach are presented in Rowlett (2025).

3. Feedback and future directions

3.1 Feedback

After the event, a feedback form was sent to all those who registered, with three questions. An additional question then allowed respondents to identify themselves with their name and email address. We received feedback from 16 respondents. Of these, 11 chose to identify themselves; 10 of whom attended the conference, and 1 who was unable to attend.

Q1 Tell us something positive about the event. (e.g. the most impactful talk? the most memorable experience?)

The three most common themes throughout these responses were: the sharing of ideas; space to engage in constructive discussion and problem solving; and the range and depth of content that was covered.

Many respondents benefited from the sharing of tangible resources (e.g. books, course material), in addition to ideas and experiences. Hearing about the challenges other institutions have encountered, as well as the relative challenges and successes of initiatives and course content that have been trialled, is something that attendees found valuable to take away and reflect on in their own institutions.

Many responses also reflected positively on the space to have thoughtful and challenging discussions about the issues in question. Several expressed that they felt the conference provided a safe opportunity to express constructive criticism and challenges within the topics of diversity and decolonisation, while working towards solutions.

Finally, many also appreciated that the programme covered a wide range of content. This was both with respect to the identities/themes covered by the talks, or with respect to the area of work (teaching, practice, research). One respondent felt that the conference benefited from the fact that speakers were able to assume both prior knowledge of, and belief in the importance of diversity issues. They felt that this allowed for discussions to go deeper than they are often able to in more general settings.

Q2 Tell us how we could do better for the next event. (e.g. more talks? longer conference? more specialised scope?)

The most major suggestion from respondents was that explicit space for a roundtable discussion would have been beneficial. Some felt that they would have liked such a space to discuss how these initiatives and ideas could be expanded within departments, or implemented into curriculums; while others mentioned this in the context of feeling like many discussions spilled over into break- and lunch-times, and thus were a little more constrained.

Q3 Any other comments? (e.g. what impact will the conference have on your institution? should this conference to take place annually? how could your institution contribute?)

Every respondent either explicitly or implicitly endorsed the suggestion that this conference should happen annually or at least happen again. Notably, 8 of the 16 respondents expressed an interest in helping to host, organise, or contribute to a future iteration.

Five respondents noted that they have shared, or intend to share, a report about the conference with relevant members of staff at their institution (EDI lead, Head of Department etc), and one additional person who was unable to attend the conference also reached out to the organisers to say that they would be very interested in circulating a report on the conference.

Five respondents also said that they have gained concrete 'take-away's from the conference either in the form of new ideas for teaching material, or new awareness of initiatives and resources that they can share with students and colleagues.

3.2 Discussion and Future directions

A major outcome of the conference was the chance for participants to share resources, initiatives, and ideas for course content. Having the dedicated space to discuss challenges that have been encountered and ideas that have been trialled in different institutions has the potential to prevent the duplication of effort nationally. This is especially important since much of the EDI and decolonisation work in each institution is voluntary and taken on out of personal desire. Providing the space for people working on these issues across institutions to share can reduce the amount of time and work that needs to be put in by the relatively small number of staff.

Overall, the feedback we received reflected a great enthusiasm for the outcomes of the conference, and for the continuation of this event on an annual basis. Many respondents voiced a willingness to help contribute to the running of future iterations of the conference and to share their experience of the conference with colleagues at their home institutions. As such, we have plans for this event to take place again next year, possibly hosted by a different institution and organising team.

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