

BANKNOTE CHARACTER ADVISORY COMMITTEE (1)

MINUTES

Bank of England, Threadneedle Street

13.45 - 15.00: 14 March 2018

Advisory Committee Members: Ben Broadbent (Chair), Sir David Cannadine, Victoria Cleland, Sandy Nairne, Baroness Lola Young

Also present:

██████████ Head of Banknote Resilience

██████████ Programme Manager, Banknote Transformation Programme

██████████ Senior Manager, Banknote Development

██████████ Secretary to the Committee

Minutes

1 Introduction and background

1.1 The Chair welcomed the Committee. He reminded members that their discussions should remain confidential.

1.2 Following the successful launch of the £5 and £10, the Bank was considering plans to launch a polymer £50. Governors and Court had approved a polymer £50 and the Banknote Character Advisory Committee had been re-convened.

1.3 The Chair advised that the Chancellor's Spring Statement the previous day had announced a call for evidence relating to the future of cash. The results of this exercise could impact the future of the £50 and it would be inappropriate for the Bank to press forward with a polymer £50 while the Government was considering the future denominational mix.

1.4 The closing date for receipt of evidence is 5 June and a decision might be expected around the Autumn budget. If HM Treasury decided to continue with the denomination and the Bank chose to develop a polymer £50, the Bank could presumptively make an announcement in early 2019 to avoid the public nomination process spanning Christmas 2018.

2 Equality considerations for selecting the field

2.1 The Bank reminded the Committee that equality considerations need to be consciously considered during the character selection process. Banknote issuance is a public function and is therefore covered by the Public Sector Equality Duty (PSED). Equality considerations should be taken into account by the Committee during its deliberations on selecting the character field but there is no requirement to take disproportionate action on equality and there does not need to be a particular outcome. The obligation to have due regard is to consider the relevant factors and characteristics but the weight given to these is a matter of discretion.

2.2 The Committee would be reminded of the specific equality considerations each time it met.

3 Selection criteria/principles for field and for characters

3.1 The Bank proposed that the same selection criteria and principles for the field and character used for £20 should apply. The three main principles were: to celebrate individuals who have shaped British thought, innovation, leadership, values and society; take account of past decisions, and so diversity, on note characters; and avoid selecting an individual who would be unduly divisive.

4 £50 character fields suggested by Committee members

4.1 The Chair advised that the most popular fields selected by Committee members were Philanthropy, Sport, Social Sciences, Performing Arts and Science. The Chair asked whether other fields merited further consideration. Members felt that the five proposed fields offered sufficient breadth and appropriately reflected the principles so there was no need to consider further options. The Chair requested that a further discussion take place regarding each of the popular categories.

4.2 The Committee agreed that Philanthropy met the field criteria in the areas of thought, innovation, leadership, values and society, was integral to enriching life, provided historical resonance and was a field worthy of consideration. However, the Committee expressed reservations that Philanthropy did not offer a broad enough field.

4.3 The Committee discussed the field of Sport and noted the important role that the UK had played in codification of many sports played internationally today. However, sport almost inevitably resulted in strong

affiliations which created potential issues of divisiveness and currently offered quite limited scope for diversity.

4.4 Social sciences had featured recently on banknotes with Adam Smith featuring on the current £20.

4.5 The Committee discussed the field of Performing Arts and agreed that it was very positive from a diversity perspective but acknowledged there might potentially be an issue with public engagement. Furthermore, there were considerations around the balance of Series G banknote characters: two of which (Austen and Turner) were from the broader Arts category.

4.6 Several Committee members had nominated individual sciences using the agreed taxonomy. However, the Committee proposed consideration of a broader category of Science that would encompass both pure and applied sciences, including mathematics. The objective should be a wide definition that encouraged a broad range of nominations beyond mainstream figures. As for £20, the Bank should clarify the range of disciplines that should be included at the time of announcement.

4.7 The Committee agreed that the broader definition of Science would meet diversity considerations, would offer options around engaging with relevant academic institutions to promote diversity in science and would offer potential outreach opportunities to engage schools and educational establishments.

4.8 The Committee proposed publishing a long list of 20 characters. This could be useful to explore diversity considerations and raise awareness. The Bank would consider how best to achieve this.

4.9 Based on the discussion on potential character fields, the Committee agreed that the field for the £50 Character would be Science.

4.9.1 The Bank summarised the activities expected to take place in advance of a further update from HMT in the Autumn as follows:

4.9.2 Advisory Committee members to propose 3-4 suitable experts in the chosen field to join the Committee in order to assist with the character shortlisting process. Field Experts should be chosen based on the criteria provided and will serve as full Committee members until the character(s) has been chosen for the £50 note.

4.9.3 Advisory Committee members to provide their suggestions for specific institutions related to the field of Science that the Bank might build a positive relationship with to publicise the field and the process.

4.9.4 The Bank would research potential venues related to the field of Science, with a focus on regional venues, for consideration for the public announcement.

5 AoB

5.1 The Chair thanked members for their continued participation and reminded them of the confidential nature of the discussions. The minutes of the meeting, including actions required of Committee members, would be circulated in due course.


Notes Directorate
21 March 2018

BANKNOTE CHARACTER ADVISORY COMMITTEE (2)

MINUTES

Bank of England, Threadneedle Street

15.00 - 16.15: 10 September 2018

Advisory Committee Members: Ben Broadbent (Chair), Sir David Cannadine (by audio), Sarah John, Sandy Nairne, Baroness Lola Young

Also present:

██████████ Head of Banknote Resilience

██████████ Programme Manager, Banknote Transformation Programme

██████████ Senior Manager, Banknote Development

██████████ Private Secretary to Deputy Governor (Monetary Policy)

██████████ Secretary to the Committee

Minutes

1 Introduction and background

1.1 The Chair welcomed the Committee. He reminded members that their discussions should continue to remain confidential.

1.2 The Chair advised that a steer has been provided that the Bank should press forward with a polymer £50 with an official public announcement likely in the Autumn.

1.3 The Bank advised that once the public announcement on the £50 has been made, the current planning assumption (which may be subject to change) was that the public character nomination process would be completed in advance of Christmas. Following the completion of the public consultation, a character shortlist would be developed for further discussion between the Committee and the Governor and the character announced in mid - 2019.

1.4 The Committee were advised that now that it had been agreed that the character field was Science, the next stage in the process was to nominate potential field experts to be co-opted onto the Committee to provide detailed input and have a leading role in the selection of the character for the £50 note.

1.5 The Chair noted that if possible he would like to explore the possibility of celebrating in some way a shortlist of up to 20 potential character names once this element of the process had been completed. The Committee agreed that this would be considered by the Programme team.

2 Agree definition for the field of Science

2.1 The Bank advised that a clear definition of the field of Science would be particularly helpful during the public consultation process to provide clarity, avoid confusion and ensure that the public nominations received met the field criteria as intended.

2.2 The Bank proposed a wider definition of the field of Science to attract a more diverse field of candidates with the definition of 'within the field of pure and applied science' - mathematicians, physicists, chemists, biologists, bio-technicians, engineers, medical researchers and technologists'. The Bank recommended social sciences be excluded from the definition as that would make the subject area very broad. The Committee were asked to comment on the definition of the field of Science provided.

2.3 The Committee agreed with the wider definition suggested with one amendment, to replace bio-technicians with astronomers.

3 Framework for selecting field experts

3.1 The Bank has considered how best to ensure an optimum mix of field experts and proposed using a framework to ensure (i) a wide representation of field experts and (ii) a good mix of skills which will enable maximum outreach and publicity.

3.2 The framework proposed includes four specific categories to be used when selecting field experts, categories to be used include i) **science populist**; to ensure the field expert can play key role in the public nomination publicity campaign ii) **science institution**; field expert holds a position of seniority at an easily identifiable, well known body or institution to enable engagement in outreach activities, iii) **scientific expert**; field expert represents a specific area of scientific endeavour but can also comment on significance of other areas, and as a consequence add field expertise to the Committee iv) **Science historian**; field expert should be a well-respected historian of science and can assess historical significance of characters.

3.3 Based on the field expert framework categories outlined above, and including diversity considerations, using the potential field expert nomination list provided, the Committee discussed the potential field experts and agreed candidates who would be contacted by the Programme.

3.4 The Bank advised that the field experts selected would be invited to join the Committee. An update on progress will be provided to Committee members in due course.

4 Overview & Update

4.1 The Bank provided an overview on current planning assumptions for the £50 character selection process going forward. A slot for the launch of the public consultation has been provisionally booked in the Governor's diary for 2 November. If this date is confirmed, the public consultation is due to complete on 14 December. If the 2 November date is confirmed then this is likely to have an impact on the location for the launch event due to the Inflation Report being released on the 1 November and the requirement that the Governor needs to be in London on the following day. Initial, tentative discussions regarding the availability of the Science Museum to host a public launch event in London on 2 November were currently taking place.

4.2 The Bank advised that based on the response received from potential field experts to the invitations to join the Committee, and confirmation of timelines for the public launch event and consultation process, the scheduling of future Committee meetings would be taken forward and Committee members contacted with details.

5 AoB

5.1 The Chair thanked members for their continued participation and reminded them of the confidential nature of the discussions. The minutes of the meeting, including actions required of Committee members, would be circulated in due course.

BANKNOTE CHARACTER ADVISORY COMMITTEE (3)

MINUTES

Bank of England, Threadneedle Street

14.30 - 17.00: 15 January 2019

Advisory Committee Members: Ben Broadbent (Chair), Sir David Cannadine (audio), Emily Grossman, Baroness Lola Young, Maggie Aderin-Pocock, Sandy Nairne, Sarah John, Simon Schaffer, Simon Singh

Also present:

██████████ Head of Banknote Resilience

██████████ Programme Manager, Banknote Transformation Programme

██████████ Private Secretary to Deputy Governor (Monetary Policy)

██████████ Secretary to the Committee

1 Introduction and Objective of the meeting

1.1 The Chair welcomed the new members of the Committee. He reminded members that their discussions should continue to remain confidential.

1.2 The Chair advised that an earlier meeting of the Committee had decided that the field from which the £50 character would be chosen was Science. This had subsequently been announced and a public character nomination process launched.

1.3 The public character nomination process had now completed, having run for a period of six weeks from 2 November to 14 December. The total number of nominations received during the process was over 227,000 (compared to around 30,000 nominations received during the public nominations for the £20 character) and reflected the significant media coverage of the character selection announcement and the widespread support of the Science community. Committee members had received pen portraits of the eligible characters identified by the public nomination process.

1.4 The Chair advised that the £50 character selection process would involve a three stage process:

1.4.1 Longlist - The objective of this Advisory Committee meeting was to develop a longlist of characters from the 989 eligible nominees. Following the meeting, the Bank would develop more detailed research (including public focus group feedback) and portrait imagery for each of the characters selected.

- 1.4.2 Shortlist characters – On 4 March 2019, the Committee would be asked to identify a shortlist, from which a sub-set would be chosen to develop more detailed biographies and concept design.
- 1.4.3 Character selection – The Governor will select the character, based on advice received from the Committee, at the May meeting.

2 Equality Considerations

- 2.1 The Committee were fully briefed on their obligations to consciously consider equality considerations throughout the selection process, based on advice received from the Bank's Legal Directorate, which had been circulated to all members in December.

3 Advisory Committee Character Nominations & Agreement on Longlist

- 3.1 The Bank noted that there were no set criteria that eligible characters needed to meet to appear on the £50, but as a guide it might be expected that to feature on the longlist, a nominee should have:
- 3.1.1 Made a significant contribution to the field of Science;
 - 3.1.2 Made a broader contribution to society outside the immediate field of Science; and
 - 3.1.3 Made a lasting contribution to UK society as a whole.

The weight placed on each of these (and other) criteria would be for the Committee to decide.

- 3.2 The Committee chose to discuss 44 characters in total (the longlist). These are listed in annex 1.
- 3.3 The Committee discussed the degree to which particular characters had participated in original scientific research versus being skilled practitioners or technicians and whether certain characters were skilled communicators of scientific theory as opposed to scientific 'game-changers'. There were also discussions regarding the ability to gauge the relative significance of particular characters when the character had died very recently.
- 3.4 In response to a question about multiple characters appearing on the note, the Bank advised that multiple character combinations could be considered where there was a link between their work and that a pair of characters appears on the current £50 banknote. The Bank explained that there were design limitations of using more than two characters given the amount of space available on a note and the requirement to incorporate security features.
- 3.5 The Committee also considered the longlist of eligible characters from a diversity perspective. They noted that it was important for them to look at the protected characteristics of those on the list (recognising that not all protected characteristics would be known for some historic characters), but it was equally important that there was no tokenism - each candidate needed to have a strong case to be on the list based on their

contribution to science and broader society. Committee members agreed to consider this point carefully before signing off the final longlist.

3.6 The Chair advised that the agreed longlist would be sent to Committee members for final review and comment.

3.7 The Chair advised that the Bank was keen to publicise the longlist of characters in order to show the breadth of coverage of the characters chosen, and that this was planned to take place on or after the chosen character is announced. There was some discussion regarding the merits of communicating the longlist before, with a view to maximising outreach and education opportunities, or after the £50 character announcement.

ACTION: The Bank agreed to revert to the Committee in due course with their proposed plan for how and when to publicise the £50 longlist.

4 Next Steps

4.1 The Chair requested that Committee members reviewed the longlist of characters when received and to provide any comments in due course.

ACTION: The Bank to circulate the longlist of characters to Committee members for final review. Committee members to revert back to the Bank with comments and, where appropriate, confirmation that they are content with this list of characters. [COMPLETED]

4.2 **Post Meeting update:** On reflection, the Advisory Committee raised a concern as to whether all of the characters on the proposed longlist demonstrated a similar level of scientific achievement. After further consideration, the final longlist of characters was agreed on 1 February.

4.3 Committee members were advised that the next Committee meeting was scheduled for Monday 4 March.

5 AoB

5.1 The Chair thanked members for their continued participation in the process and reminded them of the confidential nature of the discussions. The Chair advised that the minutes of the meeting, including actions required of Committee members, would be circulated in due course.

Annex 1: Longlist characters nominated by Advisory Committee members.

Nominee	Field
Ada Lovelace	Mathematics
Alan Powell Goffe	Biology
Alan Turing	Mathematics
Alexander Fleming	Medicine
Alfred Russell Wallace	Biology
Anne Laura Dorinthea McLaren	Biology
Bernard Lovell	Astronomy
Charles Babbage	Mathematics
Dorothy Hodgkin	Chemistry
Edmund Halley	Astronomy
Edward Jenner	Biology
Ernest Rutherford	Physics
Francis Crick	Biology
Frank Whittle	Engineering
Frederick Sanger	Chemistry
Henry Fox Talbot	Chemistry
Hertha Ayrton	Engineering
Humphry Davy	Chemistry
Isambard Kingdom Brunel	Engineering
James Clerk Maxwell	Physics
James Lind	Medicine
Joe Charles Farman	Physics
John Logie Baird	Engineering
John Snow	Biology
Joseph Thomson	Physics
Joseph William Bazalgette	Engineering
Marie Stopes	Biology
Mary Anning	Biology
Mary Jane Seacole	Medicine
Michael Francis Atiyah*	Mathematics
Paul Dirac	Physics
Peter Mansfield	Medicine
Richard Trevithick	Engineering
Rosalind Franklin	Chemistry
Sarah Guppy	Engineering
Srinivasa Ramanujan	Mathematics
Stephen Hawking	Physics
Thomas Walter Kibble	Physics
Thomas Young	Physics
Wendy Sheila Atkin	Medicine
William Harvey	Biology
William & Caroline Herschel	Astronomy
William Rivers	Medicine

* Michael Atiyah died on 11 January 2019, after the end of the nomination period and therefore did not appear on the published list of eligible candidates.

BANKNOTE CHARACTER ADVISORY COMMITTEE (4)

MINUTES

Bank of England, Threadneedle Street

15.00 - 17.00 4 March 2019

Advisory Committee Members: Ben Broadbent (Chair), Sir David Cannadine (audio), Emily Grossman, Baroness Lola Young, Maggie Aderin-Pocock, Sandy Nairne, Sarah John, Simon Schaffer, Simon Singh

Also present:

██████████ Head of Banknote Resilience

██████████ Programme Manager, Banknote Transformation Programme

██████████ Private Secretary to Deputy Governor (Monetary Policy)

██████████ Senior Manager, Banknote Development

██████████ Banknote Design

██████████ Secretary to the Committee

1 Introduction and Objective of the meeting

1.1 The Chair welcomed the Committee. He reminded members that their discussions should continue to remain confidential.

1.2 The Chair advised that at the previous meeting, held on the 15 January, the Committee had discussed a longlist of 44 characters (chosen by the Committee from the 989¹ eligible nominees nominated by the public). Further, the Committee were advised that the details of this longlist would be made public at the same time as the £50 character(s) announcement planned for mid-July via the publication of the Committee meeting minutes. The Chair advised that he anticipated that the Governor would refer to names from the longlist in his remarks at the character launch event to highlight the breadth of the candidates chosen and that a number had been citizens of different countries to demonstrate the openness of British science.

1.3 The Chair advised that the meeting has two specific objectives. The first was to agree a shortlist of c.10 characters which would form the focus of public outreach and engagement activities, potentially involving specific Science institutions. This would be the list from which the Governor would make his final decision. The second objective was for the Committee to agree which characters from the shortlist, should be progressed to the next phase for the development of graphical materials. The next Advisory Committee meeting was planned for 8 May [later moved to 22 May] when the Governor and Committee members would review 'Character Mood Boards' (Graphical Reference Material including choice of portraits and other

¹ With the exception of Michael Atiyah who became eligible after the nomination process had closed following his death in January 2019.

iconography/imagery) and undertake a discussion of each character to inform a decision by the Governor on the character to be featured on the new polymer £50.

2 Public Focus Group Report

2.1 The Bank provided a summary of the report on the Public Focus Group process. The process used qualitative research undertaken by Ipsos Mori to supplement the Bank's biographical research into eligible characters and to provide insight into how these characters resonated with the public. The research involved 15 focus groups across eight regional locations in the UK. The groups all had a broad demographic mix. Women made up half the participants and BME attendees one-third.

2.2 There was a positive reaction from Focus Group participants to characters who had had an impact on UK society and whose scientific contribution was: inspirational; significant; relatable; and displayed a tangible benefit to society. Opinion was split as to whether the character chosen should be well known or whether the character selected should seek to raise the profile of less well known scientists.

2.3 Focus Group participants exhibited a positive interest in characters that are accessible with strong links to the UK and/or those who had international connections or had spent time overseas. There was a positive reaction to characters that were more contemporary and whose impact was still relevant.

2.4 Focus Groups reacted positively to characters from wide spectrum of diversity: disability, ethnicity, gender, sexual orientation and those from less affluent backgrounds. In addition, characters who had overcome adversity resonated strongly.

3 Detailed Character Nominations

3.1 A detailed discussion took place between Committee members about which potential characters should be included on the shortlist and those who should be progressed to the next stage of the process.

3.2 Based on the detailed discussions that took place, the Committee agreed that 12 nominations (including 2 pairs of characters) should be included on the shortlist. These characters are listed under annex 1.

3.3 The Committee discussed in further detail the various merits of the characters on the shortlist. The Committee considered that the shortlist represented a diverse selection of candidates across a range of disciplines. In particular, the Committee felt that it was a positive display of how scientists are attracted to the United Kingdom from around the globe (e.g. the Herschels, Ramanujan and Rutherford).

3.4 There was some discussion regarding emerging themes from the shortlisting process which could be used as part of the character announcement in July. These included: the global nature of science and Britain's role as a scientific hub; the changing nature of science from individual endeavour to team collaboration; and the importance of symbolism, as well as achievement, in inspiring future generations of scientists.

3.5 The Committee determined that four characters (including one pair) included in the initial shortlist (see annex 1) should be taken forward for artwork development. While discussion at the meeting with the Governor would be expected to focus on these characters, it was noted that the final decision would be taken from the full shortlist of candidates.

4 Next Steps

4.1 The Chair advised that the shortlist would be sent to Committee members for final review and comment in due course.

ACTION: The Bank agreed to revert to the Committee with the agreed shortlist of characters and those chosen for further development for final review and comment.

4.2 **Post Meeting update:** The agreed shortlist of characters are listed within Annex 1. Those chosen for artwork development are highlighted in italics.

4.3 Committee members were advised that the next Committee meeting was scheduled for Monday 8 May (subsequently the date was changed to 22 May).

5 AoB

5.1 The Chair thanked members for their continued participation in the process and reminded them of the confidential nature of the discussions. The Chair advised that the minutes of the meeting, including actions required of Committee members, would be circulated in due course.


Notes Directorate
1 April 2019

Annex 1: Characters nominated by Advisory Committee members for shortlist.

*Names of characters chosen for artwork development are denoted in *italics* in the Table below*.

Nominee	Field
<i>Ada Lovelace & Charles Babbage</i>	<i>Mathematics</i>
<i>Alan Turing</i>	<i>Mathematics</i>
<i>Dorothy Hodgkin</i>	<i>Chemistry</i>
<i>Stephen Hawking</i>	<i>Physics</i>
Ernest Rutherford	Physics
Frederick Sanger	Chemistry
James Clerk Maxwell	Physics
Mary Anning	Biology
Paul Dirac	Physics
Rosalind Franklin	Chemistry
Srinivasa Ramanujan	Mathematics
William & Caroline Herschel	Astronomy

BANKNOTE CHARACTER ADVISORY COMMITTEE (5)

MINUTES

Bank of England, Threadneedle Street

14.00 - 16.00 22 May 2019

Attendees:

Mark Carney, Governor Bank of England (Chair)

Advisory Committee Members: Ben Broadbent (BB), Sarah John (SJ), Maggie Aderin-Pocock (MAP), Emily Grossman (EG), Simon Singh (SS)

Apologies: Sir David Cannadine (DC), Sandy Nairne (SN), Simon Schaffer² (SSc), Baroness Lola Young (LY)

Also present:

██████████ General Counsel

██████████ Head of Banknote Resilience

██████████ Programme Manager, Banknote Transformation Programme

██████████ Private Secretary to Deputy Governor (Monetary Policy)

██████████ Private Secretary to Governor

██████████ Secretary to the Committee

1 Minutes of previous meeting

1.1 The minutes of the 4 March meeting were agreed.

2 Advisory Committee members provide feedback on character documentation and imagery

2.1 Prior to the meeting, Advisory Committee members were shown the character documentation and imagery that had been collated and asked to provide views on the appropriate portraiture and images to be used if the character were selected.³

² Simon Schaffer provided written input to the meeting which was reviewed by the Advisory Committee under agenda item 5.

³ Other members of the Advisory Committee not present at this meeting had been contacted in advance and shown the same information for comment.

3 Welcome and introductions

3.1 The Governor welcomed members of the Committee and thanked them for their involvement in the process so far including the reduction of the list of 989 eligible characters down to the shortlist of 12 (including 2 pairs), from which he would make his decision.

3.2 The Governor reminded the Committee of the key points he would be interested in when considering the suitability of each character to appear on the £50 banknote. The Committee were advised that these considerations should be used when presenting their character advocacy (under agenda item 5):

- Why a particular character should be chosen?
- What is it about their contribution to science that makes them so special?
- Description of the enduring impact and significance of their work
- How do their achievements compare to other nominated characters remaining on the shortlist?
- What is it about their wider contribution to UK society that makes them worthy of being featured and any other diversity considerations of note relevant to the particular character?

4 Equality Considerations

4.1 ■■■ General Counsel was invited by the Governor to advise the Committee that the Bank was committed to adherence of equality considerations throughout discussions and agreement of potential characters to appear on Banknotes. ■■■ reminded the Committee that the main equality considerations to date had been as follows:

- The Bank has taken into account equality considerations throughout the £50 character selection decision making process and this must continue for the final decision.
- The fact that equality considerations include a number of different protected characteristics. The weight attributed to particular factors is based on the judgement of Committee members.
- A key element of the process is that discussions regarding equality considerations during the character selection process should be recorded.

5 Character Advocacy and discussion

5.1 The Governor invited Field Expert Committee members to 'make the case' for one of the characters on the shortlist.

5.2 Field Expert Committee members provided a short summary to the Governor, and the other Committee members, on specific character/s as follows:

- **Alan Turing** - Mathematician considered the father of theoretical computer science and artificial intelligence. His key achievements included: a 1936 paper 'On Computable Numbers, with an application to the Entscheidungsproblem⁴' which is recognised as the foundation of computer science; critically important code-breaking work during World War II; design input on early electronic computers (The Automatic Computing Engine (ACE), the Manchester Mark 1 and Ferranti Mark 1); establishing the foundation of the philosophy of artificial intelligence e.g. the 'Turing Test'; and papers on morphogenesis. In March 1952, Turing was convicted of Gross Indecency for his relationship with another man, refusing to deny his homosexuality. In 2017 the 'Alan Turing Law' was passed that pardoned⁵ men cautioned or convicted under historical legislation which outlawed homosexual acts.
- **Charles Babbage / Ada Lovelace** - Babbage was a mathematician, inventor and mechanical engineer whose achievements were wide-ranging: designing the first known ophthalmoscope for examining the interior of the eye; compiling the first actuarial table; and reform of the postal system. He is best known for conception and design of the 'Analytical Engine' - a machine that could support a range of operations, was programmable by punched cards and included embedded logic. Ada Lovelace was a mathematician and writer. She is chiefly known for translation of a paper written by L.F Menabrea on Babbage's proposed 'Analytical Engine' and the addition of her own notes, which further advanced thinking in this area. A sequence written by Lovelace on how to calculate Bernoulli numbers is regarded by some computer historians as the first computer programme.
- **Dorothy Hodgkin** - the only British woman to have won a Nobel Prize in the sciences. Using crystallography, brilliant structural insight and painstaking methods of computation, Hodgkin was able to determine the three-dimensional structures of protein molecules, discovering the structures of penicillin in 1945, vitamin B12 in 1954 and insulin in 1969. Her astonishing and successful struggle with disabling rheumatoid arthritis, which she contracted when she was 28, reveals much of the quiet heroism of her life. In 1976, Hodgkin became president of the Pugwash Conference (an international organisation that brings together scholars and public figures to reduce the danger of armed conflict and seek solutions to global security threats) and, in 1987, she won the Lenin Peace Prize from the Gorbachev government that recognised her work on peace and disarmament.
- **Stephen Hawking** - A theoretical physicist working on the basic laws which govern the universe focusing on black holes and quantum gravity. He was a hugely influential figure in the world of science and made

⁴ The translation of Entscheidungsproblem is 'decision problem'

⁵ Deceased men were automatically pardoned, and the living could apply for a pardon under the [established] disregard process.

a huge impact in popularising science and raising awareness of disability. Aged 21, Hawking was diagnosed with motor neurone disease and doctors said he had two years to live. Hawking used mathematics and the laws of quantum physics to describe 'Black Holes'. His 'Theory of Everything' challenged existing theories and unlocked secrets of the universe including the development of Black Holes and Worm Holes - both of these continue to be influential in the world of science. Hawking had an astounding ability to communicate and popularise complex ideas in his writing and acted as a gateway for others to be interested and curious about the world of physics and science.

5.3 There followed a further discussion of the characters, in particular exploring the enduring impact of their work, their contributions to society more generally, the relevant diversity considerations around each character and their achievements relative to others on the shortlist. Based on the information provided and the advocacy for the remaining candidates, the Committee offered the following observations:

5.3.1 Hawking could be considered one of the scientific greats with a far reaching influence not only in the theories and ideas that he developed but also in playing a key role in popularising a wider interest in science and not least his role in breaking down barriers and challenging ideas around disability.

5.3.2 The selection of Hodgkin as the £50 character would be significant in the context of creating great public interest in the world of science given that she is the only British woman to have won a Nobel Prize in the sciences and contributed directly to major breakthroughs across the fields of medicine, chemistry and physics. Hodgkin was less well known to a wider public than several of the candidates proposed. In many ways, however, this argued for her selection – she was a brilliant and exemplary scientist whose work has helped transform the modern world in profound ways. Her persistent commitment to equality, to the principles of collaborative research and careful application of laboratory results testify more than most of the other shortlisted candidates to the overwhelming importance of amicable teamwork in scientific life. Further, Hodgkin achieved all of this despite struggling with disabling rheumatoid arthritis which she contracted when 28 years old.

5.3.3 Turing's achievements are significant: his early theoretical work on computing; code-breaking during the Second World War; his design of early computers at the National Physical Laboratory and Manchester; his philosophical work on artificial intelligence; and his later work on morphogenetics. Turing's work continues to influence modern computer design and the development of artificial intelligence, and his legacy compares favourably with the scientific greats including the likes of Newton and Einstein. Turing was convicted of Gross Indecency in 1952 due to his relationship with a man (in 2009, Gordon Brown made an official posthumous apology for Turing's treatment) and his Further, Turings's work and significant achievements - set against his conviction and subsequent inability to consult with CGHQ – serves as a reminder that there is no place for prejudice.

5.3.4 Babbage and Lovelace's contributions and their achievements in the field of mathematics were significant and complementary and they should be considered as a pair. The Committee assessed however, that the legacy of their achievements was potentially not as significant as those of the other candidates, particularly in comparison to Turing whose work was in a similar area.

5.4 The Committee members thought that all of the characters discussed would make an excellent choice for a banknote, so the final decision was difficult. Although one character would eventually be selected for the banknote, the Bank should aim to tell a positive story about the number and diversity of the full array of proposed characters which the Committee had discussed throughout the process, particularly the shortlisted characters.

5.5 The Governor thanked Committee members for their insights, the breadth of information and the passion with which they had presented on behalf of the characters and commented that this would provide a valuable input to his decision.

6 Next steps

6.1 The Governor advised that the planned date for announcing the £50 Character was Monday 15 July and that the Bank would welcome involvement from Committee members at the event. Further information would be provided in due course.

6.2 **Post Meeting Update:** Based on the advice of the Committee, and having consciously considered the equality implications of his decision, the Governor selected Alan Turing to appear on the £50 note. This was communicated to the majority of the Committee members via email on 11 June.



Notes Directorate

23 May 2019