

NST Part II, History and Philosophy of Science Senior Examiner's Report 2019

Thirteen candidates sat the HPS Part II examinations in 2018-19, considerably fewer than previous years and an unusually low number. Like last year, six Part II papers were offered. A great majority (10/13) took Option A, writing three papers, primary source essays and a dissertation. The class was also unusually successful with 62% achieving firsts.

| <i>Year</i> | <i>First</i> | <i>Upper Second</i> | <i>Lower Second</i> | <i>Third</i> | <i>Deserved Honours</i> | <i>Total</i> | <i>A</i> | <i>B</i> |
|-------------|--------------|---------------------|---------------------|--------------|-------------------------|--------------|----------|----------|
| 2019 | 8 | 5 | — | — | | 13 | 10 | 3 |
| 2018 | 16 | 10 | 2 | — | — | 28 | 19 | 9 |
| 2017 | 12 | 11 | — | 1 | — | 24 | 19 | 5 |
| 2016 | 12 | 17 | 2 | — | — | 31 | 25 | 6 |
| 2015 | 12 | 12 | 1 | — | — | 25 | 20 | 5 |
| 2014 | 15 | 23 | 2 | — | — | 40 | 33 | 7 |
| 2013 | 7 | 29 | 4 | — | — | 40 | 27 | 13 |
| 2012 | 16 | 19 | 1 | — | 1 | 37 | 23 | 14 |
| 2011 | 11 | 25 | 3 | — | — | 39 | 28 | 11 |

Table 1. Distribution of HPS Part II marks, 2011-19

The HPS Part II Examiners also mark the papers for BBS candidates and pass the marks on to the BBS Board where the candidates are classed. No candidate sat the paper 'Early Medicine' (Minor Subject 113), and four candidates took the paper 'Modern Medicine and Biomedical Sciences' (Minor Subject 114). One of these candidates received a strong first.

Eleven students completed the Philosophy and Ethics of Medicine (PEM) BBS Minor Subject 107. Two of these students received firsts; the two dissertations written by BBS students received upper seconds. Table 2 shows that class performances are comparable with previous years, and also compares student numbers with the History and Ethics of Medicine paper it succeeded.

| <i>Year</i> | <i>First</i> | <i>Upper Second</i> | <i>Lower Second</i> | <i>Third</i> | <i>Fail</i> | <i>Total</i> |
|-------------|--------------|---------------------|---------------------|--------------|-------------|--------------|
| 2019 (PEM) | 2 | 8 | 1 | 0 | 0 | 11 |
| 2018 (PEM) | 2 | 6 | 0 | 0 | 0 | 8 |
| 2017 (PEM) | 4 | 7 | 0 | 0 | 0 | 11 |
| 2016 (HEM) | 3 | 2 | 0 | 0 | 0 | 5 |
| 2015 (HEM) | 3 | 7 | 2 | 0 | 0 | 12 |
| 2014 (HEM) | 2 | 10 | 3 | 0 | 0 | 15 |
| 2013 (HEM) | 7 | 11 | 2 | 1 | 1 | 22 |
| 2012 (HEM) | 5 | 26 | 2 | 0 | 0 | 33 |
| 2011 (HEM) | 7 | 18 | 5 | 1 | 0 | 32 |

Table 2. Distribution of HEM/PEM marks, 2011-18

One Psychological and Behavioural Sciences Tripos (PBS) candidate also took the Modern Medicine and Biomedical Sciences Paper, receiving an upper second, and one PBS candidate borrowed paper 5 (Philosophy of Science), receiving a good first. One Bioanthropology candidate from Human, Social and Political Sciences (HSPS) also borrowed this paper, receiving a strong upper second.

Class and mark distributions

The class and mark distributions for each paper are given in Table 3. The number of candidates sitting each paper ranged from five in Papers 1 and 2 to 9 and 10 people in Papers 3 and 6 respectively. Examiners showed a willingness to use the full range of marks, however performances were unusually even, with many very good performances and only a few outstanding scripts. Mean and median marks across the six papers are in broad agreement.

| <i>Paper</i> | <i>First</i> | <i>Upper Second</i> | <i>Lower Second</i> | <i>Third</i> | <i>Fail</i> | <i>Total</i> | <i>Max</i> | <i>Mean</i> | <i>Median</i> |
|--|--------------|-------------------------|-------------------------|--------------|-------------|--------------|------------|-------------|---------------|
| PS Essays (combined mark) | 6 | 7 | 0 | 0 | 0 | 13 | 72.5 | 68.5 | 68.5 |
| Dissertation | 6 | 4 | 0 | 0 | 0 | 10 | 80 | 71.6 | 71 |
| P1 Early Science and Medicine | 2 | 3 | 0 | 0 | 0 | 5 | 72 | 69.6 | 69 |
| P2 Sciences in Transition | 4 | 2 | 0 | 0 | 0 | 6 | 71 | 69.83 | 70.5 |
| P3 Science, Medicine and Empire | 3 | 6 | 0 | 0 | 0 | 9 | 73 | 68.11 | 68 |
| P4 Science, Medicine and Technology since 1900 | 2 | 3 | 0 | 0 | 0 | 5 | 73 | 69.3 | 68.5 |
| P5 Philosophy of Science | 4 | 3 | 0 | 0 | 0 | 7 | 78 | 71 | 70 |
| P6 Ethics and Politics of Science, Technology and Medicine | 4 | 5 | 1 | 0 | 0 | 10 | 74 | 67.4 | 68 |

Table 3. Class distributions per paper. Note: PBS and HSPS candidates sitting P5 (2) are not represented here. In consideration of individual privacy minimum marks are not listed.

Considering class distributions by gender, women candidates performed better than men. The mean for women was 69.76, that for men 68.89. As Table 4 shows, numbers were very even with one more man than women (7/6) taking HPS Part II.

| | <i>Firsts</i> | | <i>Upper Seconds</i> | | <i>Lower Seconds</i> | | <i>Total</i> | | <i>Total candidates</i> |
|------|---------------|---|----------------------|-------------|----------------------|-----------|--------------|----|-------------------------|
| | M | F | M | F | M | F | M | F | |
| 2019 | 3 | 5 | 4 | 1 | 0 | 0 | 7 | 6 | 13 |
| 2018 | 8 | 8 | 4 | 6 | 1 | 1 | 13 | 15 | 28 |
| 2017 | 3 | 9 | 4 | 7 | 0 | 0 | 7 | 17 | 24 |
| 2016 | 5 | 7 | 8 | 9 | 1 | 1 | 14 | 17 | 31 |
| 2015 | 4 | 8 | 6 | 6 | 1 | 0 | 11 | 14 | 25 |
| 2014 | 7 | 8 | 10 | 13 | 1 | 1 | 18 | 22 | 40 |
| 2013 | 6 | 1 | 12 | 17 | 1 | 3 | 19 | 21 | 40 |
| 2012 | 8 | 8 | 8 or 9 | 11 or 12 | 0 or 1 | 0 or 1 | 20 | 17 | 37 |

Table 4. Distribution of class marks by gender. Note: the 2012 Senior Examiner's Report does not record gender data for Upper Seconds and Lower Seconds.

Examining practice

In accordance with customary practice the examination questions were set in Lent term following consultation with lecturers, supervisors and paper managers. The External Examiner Rachel Cooper provided valuable feedback on all of the questions, and efforts

were made to ensure both that exam questions were properly supported by supervisions and lectures and that they encouraged independence of thought by not closely mirroring questions widely answered in supervisions.

Marks for individual papers were entered into pre-circulated spreadsheets, enabling the ready analysis of data and its collation for final classification. All elements of the examination were blind double-marked with examiners meeting to agree on final marks. The external examiner was asked to verify that the agreement reached was reasonable in cases where there were significant divergences in original marks. The external examiner was also asked to review high and low performances, sample middle-of-class performances, and review marks across borderlines for primary source essays and dissertations as well as unseen examinations. They also considered the overall performance of candidates close to class boundaries and one case of uneven performance.

The examination for Paper 1 was delayed by thirty minutes because of an issue with another examination being held in the same room. One candidate for BBS 114 was mistakenly entered for Paper 3 by their college, something that was not visible on CamSIS. They completed Paper 3 and submitted a representation to record the exam irregularity; the senior examiner and departmental administrator provided information about the respective examinations to the Board of Examiners and were able to assure them that the work submitted fulfilled the requirements of BBS without any allowances. Apart from this the administration of examinations went very smoothly with no significant problems reported in their conduct or the collection of scripts. As observed previously, it is important to avoid the possibilities for confusion, delayed reporting and other mishaps as far as possible by keeping track of the increasing number of single papers on offer, shared in various combinations with other triposes, and in some cases (as in the case of History Specified subject 11) assessed by another department. More generally the examiners acted with great efficiency and we thank Tamara Hug, David Thompson and the external examiner for their excellent work.

Comments on performance

Dissertations

As in previous years the majority of students chose to write a dissertation, and as Table 3 shows, the dissertation was again the most successful component of the course. Overall, Option B students (without a dissertation) received an average of 69.73, performing slightly better than Option A students with an average of 69.16. However, the marks of the majority of those writing dissertations was improved by their dissertation mark, and this year the Frances Willmoth Prize for excellence in the dissertation was the outstanding piece of coursework by some margin.

Primary Source Essays

Performances on the Primary Source Essays were very even, ranging from good Firsts to a low Upper Second (see Table 3). The Essays carry a single, combined mark, and this year the spread of marks for individual essays was similarly narrow, from 75 to 60. Most sources were taken by 4 or 5 students while 9 wrote on the Cancer Drugs Fund (see Table 5).

| | <i>Firsts</i> | <i>Upper Seconds</i> | <i>Lower Seconds</i> | <i>Thirds</i> | <i>Total</i> |
|---|---------------|----------------------|----------------------|---------------|--------------|
| Franz Boas, <i>The Mind of Primitive Man</i> | 0 | 4 | 0 | 0 | 4 |
| The Stanford School | 2 | 2 | 0 | 0 | 4 |
| The Superconducting Supercollider | 1 | 4 | 0 | 0 | 5 |
| Discovery and Visual Culture: <i>The Nova Reporta</i> of Johannes Stradanus | 3 | 1 | 0 | 0 | 4 |
| Cancer Drugs Fund | 3 | 6 | 0 | 0 | 9 |

Table 5. Primary Source Essay Distributions

Primary Source Essays were generally very successful and showed a pleasing range of approaches with the best work supporting clear (sometimes quite bold) arguments with subtle interpretations of source material. Work on the Cancer Drugs Fund struck examiners as generally creative and original, with the students exploring both new and old topics through a really interesting lens.

Unseen papers

Comments follow on particular papers; please note that the small class sizes this year make it difficult to draw strong inferences from student choices.

Paper 1

Despite the small class size, it is pleasing to see that students were engaged with the course as a whole; only two questions (9 and 10) were left unaddressed. Each section A topic attracted at least one student, with question 2 considering the providers of cures who were consulted by well-to-do patients receiving particularly good answers that persuasively integrated examples with historiographical perspectives. Question 8 on the roles of women in early modern medicine and 12 on the significance of archival sources in shaping historians' interpretations were particularly popular. Those addressing Question 8 found several different ways of organizing answers around the relationships in which women were engaged. Students seemed particularly interested in the medical dimensions of this course.

Paper 2

This paper was marked with noticeably small variance across the answers, but this was consistent with both examiners' impressions of class responses. Question 1 in Section A was answered by all but one student: subtle appreciations of the diversity of relations between science and empire were more persuasive than blanket agreement that the name 'Science and Empire' is both unsatisfactory and Eurocentric. Questions 6 on the relations between display and production of knowledge and 7 on the role of humans in Darwin's work also proved popular, and received generally high-quality answers.

Paper 3

The average for this paper was quite low (68.11) and just ahead of Paper 6 (67.40). It is notable that these were the two papers with the highest number of students, and it is reasonable to suppose that this is due at least in part to sampling effects given the low number of students taking Part II HPS. Scripts suggested that students had a good range of knowledge, but often struggled to put it together in a way that effectively and/or imaginatively answered the questions. Responses to Section A questions on this paper were particularly low, with one or two standout responses lifting an average that otherwise would have been in the low Upper Second range. Questions 4 on the roles men have played in the history of reproductive technologies, and 8 on the significance of tropical medicine for empire proved particularly popular, and the former received some very thoughtful answers. Three questions went unanswered (1, 6 and 9).

Paper 4

Paper 4 enabled students to choose to focus on a science, which produced scripts of good but variable quality. Whereas some students provided extremely detailed, comprehensive answers, others were more surface-level and did not demonstrate a full understanding of key concepts. Students need to make sure they get the details of the science right for whichever question they choose to answer (for example they need to work on brief but accurate descriptions of, say, rational choice theory). In general, Section B answers were more successful than Section A; students handled question 9 on explanations of the behaviour of non-human animals particularly well.

Paper 5

Paper 5 scripts stood out for their generally high quality. Popular questions included 2 on scientific theories and the unobservable world, and Questions 4 and 7 on the no-miracles argument and intertheoretic reduction. Questions 9 on causal explanations and 12 on agency and the status of generalisations attracted very good work.

Paper 6

This was the most popular paper on the course but was also particularly challenging for students, perhaps because its blend of history and philosophy diffuses any specialist advantage that might lift the averages of other papers. Despite the low average mark, the paper featured both more consistently impressive and consistently poor performances than other papers, which might suggest that some students were able to handle that combination better than others. Poor quality scripts offered superficial explanations of central philosophical ideas and tended to engage with them uncritically.

BBS 107 (Philosophy and Ethics of Medicine)

These scripts tended to answer questions in a way that merely summarized material, and often failed to construct original arguments in favour of nuanced positions. This might be attributable to these students' relative lack of practice with philosophical writing and argumentation.

BBS 114 (Modern Medicine and Biomedical Sciences)

This single paper had a lower average than the full Part II papers, but also a higher standard deviation, which would appear to indicate that its distribution better reflects performance across the Natural Sciences Tripos than it does performance in

HPS, where the distinctive structure of the program relative to other NST courses predisposes it to a different distribution of marks.

Summary of recommendations

- 1) Examiners and College Directors of Studies and administrators need to be clear about the relations between different single papers and core Part II papers, with Examiners noting also their different marking responsibilities (for History Special Subject 11) and diverse reporting responsibilities for BBS, PBS and HSPS single paper options.
- 2) Examiners should continue to consider overlap between questions within and across papers, and endeavour to set questions that encourage independent approaches on the basis of course materials rather than closely repeating supervision topics.
- 3) Performances this year underline the value of addressing the character of Section A questions in particular. Lecturers and supervisors might consider relations between specific lectures and course themes throughout the course, and the Department should continue to provide an examination revision supervision for this purpose in Easter term.
- 4) While generally good, performance on BBS papers suggests the value of focusing these students on how to think and write historically and philosophically, and addressing the differences between supervision essays and successful exam essays. BBS students might also benefit pedagogically from working with a common supervisor throughout the course.
- 5) Candidates are advised to address all elements of what are usually carefully worded questions.

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