

NST Part II, History and Philosophy of Science Senior Examiner's Report 2018

Twenty-eight candidates sat the HPS Part II examinations in 2017-18, four more than the previous year, but considerably fewer than the period from 2011 to 2014 when around forty students sat this Tripos. Like last year, six Part II papers were offered.

A considerable majority (19/28) took Option A, writing three papers, primary source essays and a dissertation, but the proportion of students (32%) who chose not to write a dissertation and take Option B was unusually high, approaching that in the years 2012 and 2013. The class was also unusually successful with 57% achieving firsts, unprecedented in recent years.

<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>
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, 2011-18

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. One candidate sat the paper 'Early Medicine' (Minor Subject 113), and six candidates took the paper 'Modern Medicine and Biomedical Sciences' (Minor Subject 114). Two of these seven candidates received strong firsts, and both dissertations written received firsts.

Eight students completed the Philosophy and Ethics of Medicine (PEM) BBS Minor Subject 107, in the second year it has been offered in succession to the History and Ethics of Medicine paper. This remains well short of the larger numbers taking HEM in 2011 and 2012. Two of these students received firsts, and one of the two dissertations written by BBS students also received a first, the other receiving a strong upper second.

<i>Year</i>	<i>First</i>	<i>Upper Second</i>	<i>Lower Second</i>	<i>Third</i>	<i>Fail</i>	<i>Total</i>
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 a good first, and two PBS candidates borrowed paper 5 (Philosophy of Science). Two candidates from Human,

Social and Political Sciences (HSPS) borrowed paper 6 (Ethics and Politics of Science and Technology).

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 eight (Paper 2) to 25 (Paper 4), with a substantial portion of the class sitting papers 4 and 6. While paper 1 saw candidates clustered around the first/upper second border, examiners showed a willingness to use the full range of marks, and 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)	13	13	2	0	0	28	77	68.9	68.75
Dissertation	12	6	1	0	0	19	79	71.2	70
P1 Early Science and Medicine	4	6	0	0	0	10	71	69.2	69
P2 Sciences in Transition	4	4	0	0	0	8	75	70.4	70
P3 Science, Medicine and Empire	7	7	1	0	0	15	75	68.6	69
P4 Science, Medicine and Technology since 1900	11	11	3	0	0	25	79	67.3	68
P5 Philosophy of Science	6	7	0	1	0	14	76	67.5	68.5
P6 Ethics and Politics of Science, Technology and Medicine	12	7	2	0	0	21	76	68.8	70

Table 3. Class distributions per paper. Note: BBS, PBS and HSPS candidates sitting P5 (2) and P6 (2) are not represented here. In consideration of individual privacy minimum marks are not listed.

Considering class distributions by gender, men and women candidates performed comparably. As Table 4 shows, slightly more women than men (15/13) took HPS Part II. The overall performance was very even, with the mean for women at 68.92 marginally above that for men at 68.76.

	<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	
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; Dr Anna Alexandrova is to be thanked for serving as Senior Examiner for this period, while Dr Staley was on sabbatical leave. 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. Teaching in Lent term was disrupted by the extensive strike in support of pension provisions called by the University and College Union. To ensure that students received sufficient choice to answer questions on the materials for which they had received lectures and supervisions, but also to allow those who had prepared for work that had not been taught, examiners set extra questions in all papers. Part II HPS candidates wrote on one of three section A questions, and three of twelve section B questions (an increase from nine last year). The BBS single paper in Philosophy and Ethics of Medicine increased questions from six to seven in both section A and B (an increase from twelve to fourteen questions overall). BBS single papers in Early Medicine, and Modern Medicine and Biomedical Sciences, each increased questions from twelve to fifteen. It is a mark of the success of this strategy that on several papers most questions were addressed by candidates, and the Department is to be thanked for navigating the strike period in a way that addressed the needs of students. Examiners are also to be thanked for discharging their examining duties in the shortened period of time available while meeting a tight schedule.

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. In all cases but one agreement was reached without difficulty; in that case a third examiner read the paper and helped the original examiners resolve the mark. 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.

We concur with last year's observation about the desirability of checking the relative calibration of different pairs examining primary sources, by comparing the average marks of different examining pairs prior to the final examiners meeting. This year the fact that the majority of examiners assessed at least three sources and all the more popular sources were assessed by at least three examiners helped achieve the appropriate calibration.

The examinations went very smoothly with no significant problems reported in their conduct or the collection of scripts. However, History Specified Subject 11 papers were printed with the heading for BBS 113, a potential source for confusion that the starting Assessor Dr Kassell was able to address. In future years the distinct nature of these papers should be recognized. As observed last year, 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. As Table 3 shows, the dissertation was the most successful component of the course this year; and Option A students also got an average of 69.18, slightly better than Option B students (no dissertation), who obtained an average of 68.14. The marks of the majority of those writing dissertations was improved by their dissertation mark, and it is notable that the Frances Willmoth Prize for excellence in the dissertation was shared by three candidates.

Primary Source Essays

Performances on the Primary Source Essays ranged from high Firsts to a single Third (see Table 3). The Essays carry a single, combined mark, and the spread of marks for individual essays was broader, from 79 to 41. The number of candidates writing on a source ranged from 5 taking Cybernetics to 15 writing on Franz Boas (see Table 5).

	<i>Firsts</i>	<i>Upper Seconds</i>	<i>Lower Seconds</i>	<i>Thirds</i>	<i>Total</i>
Franz Boas, 'The Mind of Primitive Man', 1911/1938	5	9	0	1	15
The Stanford School	4	5	1	0	10
Reichenbach's 'The Direction of Time'	3	2	1	0	6
Discovery and Visual Culture: The 'Nova Reporta' of Johannes Stradanus, c. 1590	7	2	0	0	9
Medical Reports of the Chinese Imperial Maritime Customs Service	4	7	0	0	11
Cybernetics: The Macy Conferences, 1949-1953	3	1	1	0	5

Table 5. Primary Source Essay Distributions

Primary Source Essays were on the whole highly successful, exhibiting a wide variety of approaches and in the most successful examples showing an original and fresh

engagement that was also tightly focused. This was particularly true of papers on Stradanus, but all sources saw a number of excellent essays.

Unseen papers

Comments follow on particular papers.

Paper 1

Students taking Paper 1 performed well overall, though with no clearly outstanding performances. There was a good spread of questions answered, with only Q9 going unanswered. In Section A, Q3 (Discuss the major sites for the practice of medicine in the medieval and early modern periods) was by far the most popular, generating mostly solid and some outstanding answers. The weaker essays did not focus sufficiently on 'practice', but offered quite general responses discussing, for example knowledge or education.

In Section B, Qs 10, 11, 12 and 15 were the most popular. The strongest answers tended to give detailed responses, with plenty of supporting examples and wide geographic coverage, showing a particularly strong grasp of the historiography. The weaker essays offered less ambitious and more formulaic responses that failed to engage as critically with the questions and secondary literature.

Paper 2

There were some excellent essays in Paper 2, with a few outstanding overall performances. There was a decent spread of questions answered. In Section A, answers were more or less evenly balanced; in Section B, Qs 11 and 12 were especially popular, but no one attempted Qs 4, 5, 13 and 15.

In Section A, weaker essays tended to offer lists of examples without a unifying argument. The stronger responses showed a good grasp of detail, engaging closely and confidently with the secondary literature. In Section B, Q11 on global exchanges of knowledge, produced some particularly sophisticated, thoughtful answers. Many questions in fact invited discussion of 'global' approaches to the history of the early modern sciences and medicine, and in many cases students both demonstrated an excellent command of the historiography and drew on a wide range of examples. Q12, "A time of profound transformation in the science of sexuality" (Londa Schiebinger, 1993). How apt is this description of the early modern period?), tended to invite more formulaic, if competent, answers. This seemed more challenging for students to answer very well without an exceptionally strong grasp of the secondary literature.

Paper 3

Generally, performances in Paper 3 were highly consistent, with one outstanding performance. Just over half of 15 students answered Q3, an open-ended question about professionalization in science and medicine; answers tended towards exemplifications of major arguments in the secondary literature that were somewhat limited in scope. The other 7 students split their Section A essays between Q1, on the role of empire and global trade in the field sciences, which encouraged a comprehensive approach, and Q2 on the role of institutions versus nations in 19th century science, where students struggled to develop an overarching argument

Although there were some excellent Section A essays, in general performance was somewhat better in Section B. The most popular Section B questions were Q12 (8 responses), on whether Humboltian science was just Imperial science, and Q4 (7

responses), on three objects emblematic of medicine in the long 19th century. But only two students responded to both, so this did not cause any particular clustering. Only one student responded to Q12, on whether race was biologized in the 19th century. No two students wrote the same four questions. No questions show large deviations from the mean score that can't be explained by a small sample size – with the possible exception of Q15, on how science influenced conceptions of the future in the 19th century, which gave trouble to a few students who otherwise wrote strong exams, although possibly on account of time.

Exemplifying the breadth of this paper as it was taught this year, it is worth noticing that although it is possible to identify clear 'science routes' or 'medicine routes' through the exam, few students took these routes. The Section A question that addressed only science (Q1) was the least answered, and only 4 of 15 students elected not to answer one of the four questions (Qs 4, 7, 10, and 14) that focused specifically on medicine.

Paper 4

Performances in Paper 4 were broadly of a high quality, although with a somewhat higher variance than in other historical papers, perhaps on account of the larger number of students taking this exam. The majority of students engaged extensively and constructively with lecture materials, the required and much of the suggested reading, however engagement with historiography may have been less strongly marked than in courses dealing with earlier periods.

Responses to Section A questions were fairly evenly balanced among the three questions, with Qs 1 and 3 about even, and slightly more popular than Q2. This was a challenging question that asked whether there was a coherence to the twentieth century – and risked incoherence in its answers, which often focused on political context. Excellent answers identified a particularly important feature and investigated relations with other major factors, showing an awareness of tensions. At least three students answered each Section B question. Q12, on the relationship between science and medicine to Imperialism in Africa, was the most popular overall question, with 11 responses, reflecting the appetite among this cohort of students for global perspectives.

The 'science route' through this exam was popular. Out of 25, 8 students (32%) elected not to answer any of the five Section B questions that covered medicine exclusively (Qs 4, 8, 11, 13, 15). One student took the 'medicine route', selecting three of those five questions.

Paper 5

Paper 5 saw generally high-quality answers to well-formulated questions, with some strong first-class performances but a tendency for many of the answers to popular questions to be very similar. In Section A, the most frequently answered question was Q3, about the unity of science; answers in this section were not as strong as those addressing more specific aspects of the paper. In Section B, the most frequently answered questions were Q4, on the relative merits of the No Miracles Argument and the Pessimistic Meta-Induction, and Q7, on randomised controlled trials as the gold standard of evidence, with 14 and 8 responses respectively.

Paper 6

On the whole students writing this paper provided solid answers to the questions, with several outstanding performances. Strikingly, in Section A only one of 21 students

answered Q1 on the social history of truth; Q2, which addresses science and values, was by far the most popular choice. Many of the answers given were similar, and surprisingly few students took up the obvious possibility of drawing from both historical and philosophical parts of the paper in addressing this question. It should also be noted that there is significant overlap between Qs 2 and 11 about inductive risk; however, only two students who answered Q2 also answered Q11. Answers to Q3 on whether scientists should care for society tended to receive lower marks, with one exception.

In Section B, although uptake of the questions was fairly even, the more general philosophical questions 5, received only one answer (like Q1). Qs 8, 9 and 12 were most popular; most of the 8 answers to question 9 had little or nothing explicit on the dialectical materialism mentioned in the question.

BBS 107 (Philosophy and Ethics of Medicine)

A good balance of questions were tackled across both halves of this paper, but very few obviously excellent scripts were produced. Q8 and Q9 were the most popular questions, producing some intelligent and thoughtful answers. Among weaker scripts, there was a tendency to misuse or misunderstand certain concepts, draw on a very narrow range of material, or offer very descriptive answers without much reference to the secondary literature. These weaker essays also tended to list everything a candidate knew about a topic rather than directly addressing questions with relevant evidence. No student answered Qs 2, 4, or 5, while each of the other questions received between one and five responses. However, since only eight students wrote this exam, this holds little statistical significance.

BBS 113 (Early Medicine)

Only one candidate took this paper, which was shared with History Special Subject 11, and it would be inappropriate to comment on performance on different questions.

BBS 114 (Modern Medicine and Biomedical Sciences)

The seven students who sat this exam fared well overall, with a couple of outstanding performances. There were some very strong answers to individual questions, showcasing a good knowledge of the secondary literature, and of the major issues in the historiography. Since there were 15 questions on offer, with students needing only to answer three, there was inevitably a narrower range of questions attempted. Qs 1 and 3 were especially popular (both are considered 'core' topics in the history of modern medicine and students had received relevant supervisions). The answers to these were in many ways excellent, but also highly standardized and in a few cases rather formulaic. The best answers developed examples in an exceptional level of detail and engaged with the historiography.

Summary of recommendations

- 1) Examiners need to be clear on the relations between different single papers, noting also their different marking responsibilities (in the case of History Special Subject 11) and diverse reporting responsibilities, in the case of BBS, PBS and HSPS single paper options.
- 2) Examiners should continue the endeavour to set questions with a strong basis in lectures and supervisions that nevertheless encourage independent approaches, and to pay attention to the question of overlap between questions within

individual papers, and across papers.

- 3) The Department, Paper Managers, Supervisors and Directors of Studies are urged to continue their work to address the character of Section A questions in particular, and to continue to provide an examination revision supervision for this purpose in Easter term.
- 4) BBS 113 and 114 currently ask candidates to answer 3 Section B type questions, and the Department might consider introducing more general questions, challenging these students to consider material across more aspects of the course.
- 5) We note that both ensuring that marking assignments are diversified within and across primary source essays, and statistical analyses of marks before the final examiners meeting may be used to ensure that examiners marks on primary sources are appropriately calibrated.
- 6) We recommend the continued use of formatted mark books to simplify the collation of marks and to provide as much information as possible on the response to each question on each paper.
- 7) The Department is urged to continue to monitor gender distributions; success of candidates writing dissertations; variation in performances across papers; and clustering of marks on the First/Upper Second boundary.
- 8) Candidates are advised to pay close attention to the wording of questions and to address all elements of a question.

Richard Staley
8 October 2018