

NST Part II, History and Philosophy of Science Senior Examiner's Report 2016

Thirty one candidates sat the HPS Part II Examination in 2016, six more than in 2015 but significantly fewer than in the years from 2011 to 2014 when classes were at or close to the limit of 40 students. This may represent a trend towards decreasing numbers of Part II candidates, but if so it should be noted that numbers of Part IB students have also fallen in the past two years while the proportion of those IB students who go on to take Part II has remained similar, so the quality of teaching and students' experiences of HPS courses do not seem to be the principal factors involved. In 2015, several papers had been attended by only a handful of students; this year the department offered 8 papers and 8 or more students were examined in each of them. The department should continue to consider both class sizes and the breadth of expertise represented by its faculty in determining the number and character of papers offered in future years.

The majority of students (81%) chose to write a dissertation (option A), while 6 candidates sat a fourth examination instead of a dissertation (option B). The final results were very strong. As Table 1 shows, 39% achieved Firsts, 55% Upper Seconds, and two candidates received a Lower Second.

<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>
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, 2011-16

The HPS Part II Examiners also mark the papers for BBS candidates, and pass the results to the BBS Examining Board where the candidates are classed. Paper 2 (Early Medicine) was borrowed by 3 candidates as BBS Minor Option 65, and 5 candidates borrowed Paper 5 (Modern Medicine) as BBS Minor Option 66. This is somewhat fewer than last year (with 8 P2 and 3 P5) but still represents an increase over 2011 (1 P2, 3 P5) and 2012 (2 P2, 1 P5). Performances were spread with 2 Firsts, 5 Upper Seconds and 1 Lower Second, which indicates that these candidates were able to perform as well as peers doing the full HPS Part II.

Five students completed History and Ethics of Medicine (HEM), BBS Minor Option 45, significantly fewer than have taken the subject in previous years (see Table 2). Their performances were excellent however, with three Firsts and two Upper Seconds.

<i>Year</i>	<i>First</i>	<i>Upper Second</i>	<i>Lower Second</i>	<i>Third</i>	<i>Fail</i>	<i>Total</i>
2016	3	2	0	0	0	5
2015	3	7	2	0	0	12
2014	2	10	3	0	0	15
2013	7	11	2	1	1	22
2012	5	26	2	0	0	33
2011	7	18	5	1	0	32

Table 2. Distribution of HEM marks, 2011-15

Two Psychological and Behavioural Sciences Tripos candidates borrowed papers, one taking Paper 5 and one Paper 10 (Human and Behavioural Sciences). In addition, one candidate from Classics borrowed Paper 6 (Metaphysics, Epistemology and the Sciences). The examiners passed their marks directly to the PBS and Classics Examiners for incorporation into their processes.

Class and mark distributions

The class and mark distributions for each paper are given in Table 3. The number of candidates sitting each paper was fairly even, ranging from eight (Paper 8) to 19 (Paper 7). There was a good spread of marks across the papers, and a bigger range than last year, when candidates were clustered around the First/Upper Second Border and when six of 10 papers had fewer than six students. The penultimate section of this report offers a more detailed discussion of students' performances in response to the particular challenges that each paper raised.

<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>Min</i>	<i>Mean</i>	<i>Median</i>
PS Essays (combined mark)	10	18	3	0	0	31	81	54.5	68.694	68.5
Dissertation	12	10	3	0	0	25	85	50	69.2	69
P2 Early Medicine	5	3	3	0	0	11	80	54	66.36	66
P3 Sciences in Transition:	4	4	1	1	0	10	77	48	66.1	66.5
P4 Science, Industry and Empire	4	6	1	0	0	11	75	57	66.45	67
P5 Modern Medicine and Biomedical Sciences	6	8	2	0	0	16	76	58	66.19	66
P6 Metaphysics, Epistemology and the Sciences	7	4	1	0	0	12	77	58	68.75	70
P7 Ethics and Politics of Science, Medicine and	10	8	0	1	0	19	77	49.5	68.55	70
P8 History and Philosophy of the Physical Sciences	4	1	3	0	0	8	75	55	66	66
P10 Human and Behavioural	3	9	0	0	0	12	74	63	68.33	68

Table 3. Class distributions per paper. Note: BBS, PBS and Classics candidates sitting P2 (3), P5 (6), P6 (1) and P10 (1) are not represented here.

This year a minority of students (6 of 31) took Option B and wrote four examination papers. Two of them received Firsts, and on average they performed better than their peers who wrote dissertations. This also occurred in 2015 and it is in contrast to an observation from previous examiners, that since the Department introduced Option B those who write dissertations have tended to perform better. However, completing a dissertation improved the marks of the majority of those who took Option A. Overall performance on set essays was also marginally better than performance on unseen examinations. The overall mean for the full cohort was 67.85, and as Table 3 shows the mean mark for dissertations was 69.2 while that for Primary Source Essays was 68.694.

Considering class distributions by gender, men and women candidates performed

comparably. As Table 4 shows, more women than men (17/14) took HPS Part II, and proportionally they received more Firsts than men did. However, the overall performance was very even, with the mean for women at 67.95 and that for men at 67.72.

	<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	
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.

In 2013 the Senior Examiner observed that in recent years the performance of men had been more stable than that of women, and asked whether this represented an underlying trend or a small sample fluctuation. This year's results indicate that relative to men, women's performance has stabilized over the past couple of years and indeed improved still further (like this year, in 2015 women received more Firsts, but closer examination then showed that women achieved a slightly lower median grade than men). Gender distributions, the success of candidates writing dissertations, variable performances across papers, and clustering of marks at the First/Upper Second border should continue to be monitored.

Examining practice

Examination questions were set at the examiners' meeting in Lent Term, following consultation with supervisors, lecturers and paper managers. In previous years examiners have requested paper managers to suggest questions that synthesize material and themes from across the paper and to refrain from soliciting lecture-specific or supervision-specific questions. In several papers this year a number of questions proved highly popular with similar answers being offered by a large number of candidates, suggesting that this advice has not been followed. The phenomenon was observed more clearly with philosophical topics than with historical topics, and it is possible that philosophical topics have encouraged mastery of defined materials (risking standardised answers), while historical topics have attempted to probe matters at the limits of what was taught (risking variable responses). Some convergence would be helpful, and we suggest that in future, paper managers be asked to submit a list of the supervision questions that students have addressed at the same time as they submit potential examination topics. We maintained a fixed number of questions (3 Section A, 8 Section B) across the papers and did not set any disjunctive questions. The External Examiner also provided useful comments on the draft papers.

One examiner left their post in Lent Term. The Senior Examiner assessed the remaining workload and decided that while high it was consistent with those of Part II Examiners in 2013-14, and so did not appoint a replacement examiner. However it became apparent over time that this load stretched the examiners. Given the different character of examining loads in Part IB and Part II, the Part II examining load should be monitored particularly carefully.

Our External Examiner resigned on 27 May, participating in the University and College Union industrial action in support of fair pay. In order to ensure consistency of results a third Examiner was asked to read all disputed marks, and the Senior Examiner

assumed some of the review tasks usually conducted by the External Examiner.

All elements of the course were blind double-marked. Where examiners diverged significantly in their initial marks a third Examiner was used as an adjudicator. This occurred with 9 primary source essays and three dissertations. The Senior Examiner also selected for scrutiny and review the highest and lowest performance for each paper, dissertation and primary source essay; marks on boundaries between classes (especially where significant for the candidate's overall class); and cases where candidates had performed unevenly across the examinations.

To streamline the procedure, Examiners were not asked to submit written comments on Dissertations or Primary Source Essays, but were asked to pass their notes on any disputed marks to the Senior Examiner and the Examiner selected to adjudicate in consultation with them. Communicating these notes will also help External Examiners understand the terms of discussion on such performances. Following last year's recommendations a fully formatted mark book was circulated prior to the unseen examinations to simplify the collation of marks, and all but two examiners used it. We recommend that these be used and that they be made available to the External Examiner in order to allow an overview of performance on each question of each paper.

The Examiners and External Examiner were models of efficiency and good judgment, and should be congratulated on their work.

All of the examiners were grateful for the administrative support of Tamara Hug and David Thompson in ensuring that procedures ran smoothly.

Examination administration

In the light of strike action called by the UCU we were not able to provide Examiners to start three exams on 25 and 26 May. The Chairman of Part IB/ Part II/ Part III Examiners (NST) performed this task, allowing students to sit examinations as planned.

Comments on performance

Dissertations

A majority of candidates chose to write dissertations. Their performances ranged from a sophisticated, revisionary study that earned 85 marks, to a lowest mark of 50, with an unusually high proportion of excellent work exhibiting independent and imaginative research – across a wide range of subject matters. The mean mark was 69.2 and for nearly two thirds of those who wrote them, the dissertation mark raised their average, indicating that the intellectual demands that it posed proved a highly rewarding aspect of their degree. Less successful studies showed difficulty integrating the original research that they had undertaken within an organised framework that clearly linked specific points to a consistent overarching argument, and they also showed some evidence of writing problems and lack of discipline. Good work usually offered valuable and detailed insight into source materials as well as clear arguments, while many studies went still further in demonstrating a nuanced appreciation of the strengths and limits of the author's interpretation in the light of previous scholarship.

Primary Source Essays

Performances on the Primary Source Essays ranged from high Firsts to Low Seconds (see Table 3). The Essays carry a single, combined mark, and the spread of marks for individual essays was broader, from 83 to 52. The number of candidates writing on a source ranged from 0 to 13 (see Table 5).

	<i>Firsts</i>	<i>Upper Seconds</i>	<i>Lower Seconds</i>	<i>Total</i>
2 Casebooks	4	1		5
3 Longitude	4	1		5
4 Colonial India	8	2		10
5 Population Bomb	6	5	2	13
6 Hume				0
7 Doha and Novartis	4	6	2	12
8 Galileo	1	3	1	5
10 DSM-5	4	6	2	12

Table 5. Primary Source Essay Distributions

Primary Source Essays were on the whole highly successful, exhibiting a wide variety of admirably close engagements with primary materials. This was true of studies of Forman’s casebooks, where the best essays handled numerical data very well, though some answers seemed uncertain about their significance. The essays on the Board of Longitude (mostly excellent) were refreshingly free of standardized responses, while those on Colonial India displayed an intelligent and varied choice of topics and were based on close and extensive critical reading (a joy to read). Ehrlich’s *Population Bomb* roused strong opinions and some well argued essays on a good range of topics. The best of them found nicely focused ways of engaging with the source, including through its reception, and used the full range of relevant secondary literature to make careful, well-supported claims. The most sophisticated essays on Doha/Novartis dug deeply when developing historical arguments; bioethical expertise was less in evidence. Studies of Galileo showed some good engagement with recent philosophical issues, but with a few exceptions relatively little engagement with historical and literary context. The most effective studies of DSM-5 used a range of resources to develop nicely nuanced accounts of philosophical, ethical and/or clinical issues.

Unseen papers

Performances on unseen examinations were very strong, ranging from high Firsts through Lower Seconds with two Thirds and no Fails, with a greater spread than in 2015 and with an encouraging number of scripts offering both strong and subtle arguments exemplified by interesting approaches to concrete examples. Students’ performance on Section A questions this year was encouragingly good, indicating the attention paid to broader themes and an ability to offer comprehensive yet pointed perspectives across course material. This was not so evident in Paper 6, and in some historical papers would be still further improved by tightening up appreciations of period and locality. While excellent work was offered in all papers, historical essays exhibited some unevenness particularly responding to rather open topics, in which it is nevertheless advisable to pay close attention to the specific nature of the question being asked rather than to remain satisfied with providing generally relevant material. In contrast, some philosophical topics received rather similar answers, where recognizing nuance in examples, providing a subtle and comprehensive treatment of secondary sources and considering counter-examples might prove critical to demonstrating the independence of the candidate’s perspective.

The quality of handwriting continues to decline; many candidates would benefit from practice writing under examination conditions.

Comments on specific papers

Please read in conjunction with the question papers and alongside Table 3 above.

Paper 2

Answers were evenly distributed in both sections, although question 5 seems much more narrowly focused than any of the others, and was not chosen by any candidates. The average performance was good, with some memorable scripts. Some answers on the 'medical marketplace' question 3 displayed confusion, while others effectively criticized the relevant literature. Big-picture questions produced some answers that were vague with respect to locality and period; and there was some fence sitting over the comparative questions 4, 6 and 7.

Paper 3

Answers on this paper showed a refreshing lack of standardization. The distribution of answers in Section B was uneven, with eight candidates answering question 4, one questions 5 and 8, five questions 6 and 10, six question 7, and two questions 9 and 11. The quality of the performances was equally uneven, ranging from excellent to poor. The big-picture questions in Section A, especially question 1, also produced some answers that were vague with respect to locality and period. Questions 2, 7, 9 and 11 on natural history elicited good to excellent answers, showing a tendency to classificatory answers. The responses to natural philosophical questions were likewise generally very good, though answers to question 4 varied from highly intelligent to confused.

Paper 4

In Section A, question 2 was popular but received a wide range of answers with some tendency towards lists of examples; and question one was answered by only one candidate. All section B questions were answered and while answers to question 4 were not so strong, most attracted some good to excellent work. The two most popular questions in Section B received rather diverse responses. While some students were able to address persuasively the ambitiously open question 6 on cities, it attracted uneven answers and some failed to develop an argument or substituted more general views on centre/periphery relations. In contrast students were better prepared for question 9, offering focused, diverse answers rich in detail.

Paper 5

This popular paper produced a wide spread of marks, but these included several excellent performances and most candidates appeared well informed. Answers were evenly distributed across the three rather challenging Section A questions. The strongest answers carefully considered the scope of the questions and provided a clear rationale for the development of an argument that was well located in time and space. In answering question 2, candidates might have considered the matter of audience: advantages and disadvantages for whom? All Section B questions were answered, with 4 and 5 the most popular, followed by 11 and 9. Answers to question 4 might have considered discontinuity as a characteristic of revolutions. Questions 6, 8 and 10 were generally poorly answered, with question 10 revealing large gaps in knowledge and reinforcing unreflective distinctions between the social and the technical. In most other respects, however, candidates were well prepared. The average mark of BBS students was close to that for the paper as a whole.

Paper 6

The popular questions, 5 and 9, produced decent essays, which, however, had a tendency to reproduce standard lecture material. The best of these essays used

examples to make their points and considered objections to their views. There were no essays on questions 8 and 6 and only a few on 7, 11 and 2. When questions are very general and broad such as questions 4 and 5, students would do well to acknowledge the breadth but to take the essay into a specific focused direction and explore the issue in more detail, avoiding superficial generalizations.

Paper 7

Questions 5, 7 and 11 were very popular, there were no essays on question 6. In the popular questions students were generally good at defining terms and exploring their consequences; the strongest answers considered objections to their preferred view and took an even-handed approach to defending their thesis. In question 9 students did not consistently explain what was novel about the Anthropocene. In question 8 the best answers considered reasons for the controversy about the purity of science instead of just describing the controversy.

Paper 8

These questions, usually well-focused (with the notable exception of question 2) generally produced answers of pleasing quality. A number of answers failed to discriminate between the different senses in which key notions of reduction, underdetermination and unity have been used. On question 8 some candidates addressed Einstein without attending closely to the nature of the question asked. In many of these questions it can be important to distinguish carefully between the epistemological standards of a particular period, and current positions; candidates who recognised this often did well.

Paper 10

The most popular questions were on philosophy of social science and cognitive science, but answers on the history portions of the exam were no weaker. The best answers on rational choice modelling took the time to show they understood the basics of what a rational choice model is. The best answers on the cognitive science material went beyond the lectures and engaged closely with the literature. Overconfidence in one's conclusion, lack of clarity and nuance, and failing to consider the opposing point of view characterized the weaker answers.

HEM

The five scripts were divided between three Firsts and two mid- to high Upper Seconds. Answers were fairly evenly distributed across the questions, except that question 3 was most popular and no one answered questions 4 or 10.

Summary of recommendations

- 1) Students should continue to be advised that writing a dissertation provides an opportunity to undertake rigorous, focused research that conveys significant intellectual benefits but also carries some risk and requires long-term time management. Working with their Director of Studies and with Part II and Paper Managers to secure a suitable supervisor will help students shape a viable topic.
- 2) Noting the tension between demonstrating mastery of defined materials and attempting to probe matters at the limits of what was taught, we recommend that Paper Managers, Lecturers and Supervisors seek some convergence across philosophical and historical approaches to topics. To avoid close duplication of taught material in examination questions they should also provide lists of supervision topics taught when providing potential examination topics to

Examiners.

- 3) The Department, Paper Managers and Directors of Studies are urged to consolidate on their work addressing the character of Section A questions in particular, and to continue to provide an examination revision supervision for this purpose in Easter term.
- 4) Given the different character of examining loads in Part IB and Part II, the Part II examining load should be monitored particularly carefully.
- 5) We recommend that a fully formatted mark book be a) circulated prior to the unseen examinations and b) used, in order to simplify the collation of marks and to provide as much information as possible on the response to each question on each paper.
- 6) 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.

RS

9 September 2016