

NATURAL SCIENCES TRIPOS

SENIOR EXAMINER'S REPORT

SUBJECT: History and Philosophy of Science, Part II / History and Ethics of Medicine

Senior Examiner: Richard Staley

Examiners: Anna Alexandrova, Salim Al-Gailani, Jeffrey Hughes (External Examiner), Marion Godman (Assessor), Clare Griffin, Valentina Pugliano

Structure of the examination:

Written paper/s: 10 offered, with Option A candidates writing 3 and Option B candidates writing 4

Practical components: 2 Primary Source Essays, Dissertation (optional)

Number of candidates: 25 HPS, 12 HEM, with 1 Classics student borrowing Paper 1, 8 BBS students sitting Paper 2, and 3 sitting Paper 5.

Number sitting the exam/s outside the main exam hall/s: 1 HPS, 9 BBS SpLD

Conduct of the Examination:

- *Candidates sitting papers in the Titan Suite on the morning of 27 May experienced considerable information technology disturbances. Students were granted extra time, but in the light of procedural irregularities, the Registry asked Chairs to look at the full portfolio of marks for those candidates present and to consider any anomaly against this background. The one candidate sitting Paper 8 under these conditions appears not to have been adversely affected.*
- *The timetabling of the examinations was appropriate.*
- *In accordance with previous practice we did not collate data on the number of candidates answering specific questions on each paper, but did offer comments on trends in the Senior Examiner's Report to the HPS Board (which follows this report).*

Marking/Scaling:

- *All elements of the course were blind double marked with reference to the published criteria. In the one case in which there was no initial agreement, the terms of discussion were set out for an adjudicator and the discussion resolved (examiners had focused on different aspects of the marking criteria). Each case of an initial divergence was also considered by an adjudicator, and all were scrutinized by the External Examiner.*
- *First Class: 48%, Upper Second: 48%, Lower Second: 4%. Average: 68.56, Standard Deviation: 4.388.*
- *There was no significant variation of performance between papers.*

Subject Examiners' Meeting:

- *Preliminary examiners meetings were held to set papers on 23 February (all present) and to prepare for the final examinations on 15 May (without Marion Godman, Assessor). The Final Examiner's Meeting was held on 9 June (all examiners present).*
- *At the Final Meeting each candidate was considered. High, low and borderline candidates were discussed, as well as one case where dissertation performance was markedly better than written examinations. Those candidates falling on the First/Upper Second border were scrutinised particularly closely.*

Administration:

- *Spreadsheets downloaded from CamSIS grade rosters are difficult to read, since x is easily taken to indicate participation. (This was something that two different people experienced.)*
- *It proved surprisingly difficult to upload the completed mark book efficiently, apparently due to an inability to deal with the appropriate alphabetisation of one two part last name.*

Conclusions and Recommendations:

- *For the Final Senior Examiners meeting: The Board of Examiners is urged make sure that scripts are returned to examiners with yellow cover sheets and a copy of the examination paper; and in the light of information technology disturbances in the Titan Suite on 27 May, to ensure that there are no foreseeable disruptions in the administration of the examinations.*
- *For future Subject Examiners: 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. (This year a formatted mark book which provided space for comments on each question was circulated as a template, but most examiners did not use it. A modification of the sample template IB1.7b checklist formulae and template.xlsx would be slightly simpler and may prove more useful.) We also have several recommendations for the HPS department and students, indicated in the Senior Examiner's Report for the HPS Board.*
- *We have no recommendations to be included in the Chairman's report for taking forward either to the NST Management Committee or to the Board of Examinations.*

Date: 26 June 2015

See also the Senior Examiner's Report for the History and Philosophy of Science Board.

NST Part II, History and Philosophy of Science Senior Examiner's Report 2015

This year an unusually small class of 25 candidates sat the HPS Part II Examination. The majority (80%) chose to write a dissertation (option A), with only 5 candidates sitting a fourth examination instead of a dissertation (option B). The final results were very strong. As set out in Table 1, 48% achieved Firsts, 48% Upper Seconds, and one candidate 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>
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, 2011-15

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 8 candidates as BBS Minor Option 65, and Paper 5 (Modern Medicine) was borrowed by 3 candidates as BBS Minor Option 66. This represents a continuation of the levels in 2014 (7 P2, 3 P5) and 2010 (7 P2, 2 P5) and an increase over 2011 (1 P2, 3 P5) and 2012 (2 P2, 1 P5). Performances were spread across the upper marks—3 Firsts, 8 Upper Seconds—suggesting that these candidates performed competitively alongside their peers doing the full HPS Part II.

The number of candidates for History and Ethics of Medicine (HEM), BBS Minor Option 45, continued to fall (see Table 2). This year, performances on HEM continued the pattern of being bunched in the Second Class range, with some Firsts and no Thirds or Fails.

<i>Year</i>	<i>First</i>	<i>Upper Second</i>	<i>Lower Second</i>	<i>Third</i>	<i>Fail</i>	<i>Total</i>
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

One candidate from Classics borrowed Paper 1 (Ancients and Moderns), and the examiners passed their mark directly to the Classics Examiners for incorporation into their processes.

Class and mark distributions

The class and mark distributions for each paper are given in Table 3 below. The numbers of candidates sitting each paper ranged from one (Paper 6) to 17 (Paper 7). There was a good spread of marks across the papers, and very good performances were also achieved in more popular papers. The candidates' performances reflect the challenges particular to each paper, as set out in the detailed comments on these in the penultimate section of this report.

<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>Media n</i>
PS Essays (combined mark)	10	14	1	0	0	25	72.5	58.5	68.26	69
Dissertation	10	9	1	0	0	20	80	54	68.8	69
P1 Ancients and Moderns	1	1	0	0	0	2	72	60	66	66
P2 Early Medicine	2	2	0	0	0	4	71	64	68.5	69.5
P3 Sciences in Transition:	2	1	0	0	0	3	74	63	70	73
P4 Science, Industry and Empire	6	6	1	0	0	13	82	58	69.38	69
P5 Modern Medicine and Biomedical Sciences	6	8	1	0	0	15	77	58	69.2	69
P6 Metaphysics, Epistemology and the Sciences	1	0	0	0	0	1	76	76	76	76
P7 Ethics and Politics of Science, Medicine and	6	9	1	1	0	17	80	49	66.29	68
P8 History and Philosophy of the Physical Sciences	3	1	0	0	0	4	74	64	69.5	70
P10 Human and Behavioural	3	2	0	0	0	5	72	60	67.8	71
P11 Science and Technology Since 1900	8	7	1	0	0	16	75	59	69.25	69.5

Table 3. Class distributions per paper. Note: BBS candidates sitting P2 (8) and P5 (3) and Classics candidates sitting P1 (1) are not represented here.

This year students who wrote a dissertation tended to perform better than those who did not, continuing a pattern that examiners have noted since the Department introduced Option B, a fourth examination paper instead of a dissertation—with the exception of last year. A minority of candidates (5/25) chose not to write a dissertation this year and of these, one achieved a First.

In terms of gender distributions, men and women candidates performed comparably. As detailed in Table 4, more women than men (14/11) took HPS Part II, and proportionally they received more Firsts than men did. However, a more fine-grained analysis of their marks indicates that women performed marginally less well overall than this suggests. The mean mark for the full cohort is 68.56, with the mean for women at 68.43 and for men at 68.73.

	<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	
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.

These results suggest that women’s performance may have stabilized somewhat, given the 2013 Senior Examiner’s observation that men’s performance had been more stable than women’s in recent years, and the question they raised whether this was a matter of small sample fluctuation or represented an underlying trend. Gender distributions, 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 accord with recent practice we suggest that paper managers are asked not to solicit lecture-specific or supervision-specific questions, and instead to suggest questions that synthesize material and themes from across the paper. 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.

All elements of the course were blind double-marked. Where examiners diverged significantly in their initial marks and in the one case in which they did not agree a mark, a third examiner was used as an adjudicator. This occurred with 8 primary source essays. In all cases of divergent marks, the External was asked to scrutinize the piece of work. The Senior Examiner also selected examination scripts on which there was a 10+ point discrepancy between examiners; 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 or examiners flagged them for consideration); and cases where candidates had performed unevenly across the examinations. The External was asked to scrutinize particularly closely the large number of cases of overall marks falling on the First/Upper Second boundary.

To streamline the procedure, Examiners were not asked to submit written comments on Dissertations or Primary Source Essays, adjudicators were made aware of the marks the original examiners had given and agreed on, and in the one case where examiners had not initially agreed on a mark the terms of the discussion were set out in notes for the examiner who adjudicated in consultation with them, and these notes were also made available to the External. Next year we recommend that the terms for discussion be set out for adjudicators and the External in all those cases in which marks diverge significantly. Following last years recommendations a fully formatted mark book was circulated prior to the unseen examinations to simplify the collation of marks; we recommend that these be used and made available to the External Examiner in order to enable a better overview of performance on each question of each paper.

A single Assessor was appointed, as her expertise was necessary but she was not available to attend the final Examiners' Meeting. The Examiners, Assessor 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. Note that spreadsheets downloaded from CamSIS grade rosters are difficult to read, since x is easily taken to indicate participation. I appreciate my colleagues' flexibility in responding to the miscalculation of numbers that resulted.

Examination administration

There were some irregularities in the ways in which the University administered the examinations.

- 1) Some scripts arrived without yellow cover sheets and/or without a copy of the examination paper. This made the work of the Examiners more difficult.
- 2) There were considerable information technology disturbances for candidates sitting papers in the Titan Suite on the morning of 27 May. Students were granted extra time, but in the light of procedural irregularities, the Registry asked Chairs to look at the full portfolio of marks for those candidates present and to consider any anomaly against this background. I reported on this at the Final Examiners' Meeting; the one candidate sitting Paper 8 under these conditions appears not to have been adversely affected.

The Examiners wish to underline the importance of the conditions under which examinations are administered and urge the Board of Examinations to take the necessary steps to ensure that such disturbances do not happen again.

Comments on performance

Dissertations

As noted above, a majority of candidates chose to write dissertations this year. Performances ranged across the classes, with marks from 80 to 54, though the mean mark was 68.8. For a bit more than half the students who wrote dissertations, this mark was the same as, or raised, their average; but for just under half the students the dissertation carried their overall mark down. It thus remains a challenging but intellectually rewarding aspect of the programme. The range and originality of work undertaken this year was impressive. The very best dissertations tended to combine strong, clear arguments with a subtle sense for the range of interpretations possible on different points, thereby integrating a novel interpretive approach or empirical basis convincingly with earlier scholarship. Where appropriate they incorporated telling images and tables as part of their argument. Less successful dissertations often showed some signs of excellent work—such as empirical novelty, a rich conceptual structure or interesting investigative framework—without achieving a consistently sophisticated approach to the material discussed.

Even very good students were very bad at footnoting. It is worth noting that the current HPS guidance on citation styles focuses on author-date citation: <http://www.hps.cam.ac.uk/students/referencing.html> It might be worth expanding this page further to explain the differences between the two kinds of citation styles and clarify when and how to use footnotes. We recommend that students continue to receive clear guidance on the need for complete and consistent citation of sources.

Primary Source Essays

Performances on the Primary Source Essays ranged from high Firsts to Low Seconds (see Table 3 above). The Essays carry a single, combined mark, and the spread of marks for individual essays was broader, from 78 to 55. The number of candidates writing on a source ranged from 0 to 14 (see Table 5).

	<i>Firsts</i>	<i>Upper Seconds</i>	<i>Lower Seconds</i>	<i>Total</i>
1 Chaucer				0
2 Casebooks	1	1	1	3
3 Longitude	1	3		4
4 Mach	2	2		4
5 IVF	2	5	2	9
6 Stanford	1			1
7 Scientific authorship	4	6		10
8 Galileo	3			3
10 Mill	1	1		2
11 Carson	7	6	1	14

Table 5. Primary Source Essay Distributions

Primary Source Essays offered a wide range of approaches with a pleasing diversity of topics, although somewhat more standard approaches were occasionally offered (especially in the more popular sources 7 and 11), and students often did not focus as closely on the primary source as could be hoped. Examiners once more considered the extent to which the task requires a close-grained focus on the content of the source or might provide an opportunity to develop a more broad-ranging contextual argument. We concur with previous Examiners in thinking that taking an overly prescriptive approach towards the task is inappropriate in such a broad discipline. However, we wish to note a minor tension between the explicit discussion of the range of appropriate approaches currently given in the Part II students' guide on Primary sources, on the one hand, and the Amplifications to the Marking criteria, which emphasizes the need for a close engagement with the primary source somewhat more narrowly. It might be helpful if the Marking criteria more explicitly combined both aspects. This could be achieved by extending the first sentence of the Amplifications for Primary sources for an Upper Second to read "[While a range of contextual, comparative or analytical approaches are appropriate,] an essay in this class and above will always be judged to have engaged closely with the source." (For the current texts compare <http://www.hps.cam.ac.uk/students/partii/primary.html> with <http://www.hps.cam.ac.uk/students/partii/examining.html>.)

Unseen papers

Performances on unseen examinations were very strong, ranging from high Firsts through Lower Seconds with one Third and no Fails.

Students tended to perform much better on Section B than on Section A questions, which perhaps suggests that they have trouble identifying big pictures or discerning general paper themes. The ability to answer well Section B questions covering more than a single lecture topic distinguished the strongest scripts from the weaker ones. The best essays drew on an impressive range of examples, often incisively used, engaging confidently with the secondary literature. Among weaker students, many did not address the question as directly as they could have. Students answering questions of the variety "how important was X to Y" tended to answer them in a very one-sided way, only telling us about the importance of X, rather than

situating its importance in the context of other factors. Compared to previous years, there were conspicuously few incomplete scripts, perhaps a result of noting this issue last year.

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 1

Essays in this paper were generally strong, with most students demonstrating clear grasp of and engaging well with relevant historical writing. Students answered a range of the Section A questions. All three students (including one Classics student) answered questions 6 on different textual formats used by Greco-Roman authors and 10 on ways in which nature became important in early modern European society. Two students answered 11 on the extent to which artistic products approximated and one answered 5 on the place of the traditional gods in ancient Greek and Roman explanations of nature.

Paper 2

Overall, performance on this paper was good. The eight BBS students performed slightly better than the HPS students. Answers on the medieval period tended to be a bit thin on evidence. The understanding of religion and religious healing was also weak. Of the four HPS students, three chose to answer question 1 on the patient's view of illness, and one answered question 3 on what defined a medical practitioner. Questions 4, 7, 10 and 5 proved most popular.

Paper 3

Overall performance on this paper was very good, with two Firsts and one Upper Second. Students answered six of the eleven questions with all students answering question 4 on what was new about discovery in early modern natural knowledge and no one addressing questions 1, 5, 6, 7 or 10.

Paper 4

There were many strong essays in this paper, and a couple of outstanding performances. Students answered a range of questions, but no one attempted question 11 (on Humboldt). Performance on Section B questions was generally much better than on Section A. Some students struggled with period-specific questions, especially regarding pre-1859 evolutionary politics for question 9, where they spent too much time talking about Darwin and the post-1859 period.

Paper 5

This paper saw a good balance of questions tackled across sections A and B, with a range of grades. The most popular in Section A was question 3, which was not especially well answered, with "gender" taken to be merely about women. These questions tended to produce narrative heavy rather than strongly analytical essays. In Section B, questions 4, 6, 8 and 10 were the most popular questions, inviting students to address material over several lectures, with many students producing well-informed answers. However, a number of answers on question 6 only discussed germ theory, without considering the other medical developments that might have been important for the question. Weaker essays tended not to answer the question directly,

reading more like prepared material.

Paper 6

This paper was completed by only one student who gained a First with a highly original performance.

Paper 7

This was the most popular paper of the year and received a greater spread of performances than any other paper, with one Third and one Lower Second alongside the many Upper Seconds and Firsts. Good answers were offered to question 6 on value-laden approaches to inductive risk, while responses to question 7 offered good overviews of theories of well-being but poor attempts to answer how science should use these theories, if at all. Question 8 tended to produce only lists of moral issues with reproductive technologies, rarely making progress on whether these issues are real.

Paper 8

Performances were very good with three Firsts and one Upper Second. Although a reasonably wide spread of eight questions were attempted (with most achieving a good response), there were some clear favourites with questions on scientific realism, reduction and the experimenter's regress each attracting a majority of the class.

Paper 10

Candidates on this paper achieved three Firsts and two Upper Seconds, and wrote equally decent answers on both mind and social sciences parts of the exam. Every question attracted at least one candidate, showing engagement with every part of the paper. On the other hand, students received lower marks in Section A than in Section B, indicating that synthetic questions need more attention during supervisions—something that is no doubt easier when there is a single supervisor across the whole paper.

Paper 11

This was a large paper that showed a very high level of performance. Question 3 on whether twentieth century science is well defined as “what scientists do” was interpreted in very different ways, not always successfully, while especially impressive responses were attracted by question 6 on ecology and environmentalism and question 9 on whether there is a distinctive form of “Cold War science.”

HEM

A large range of grades, but with most reasonably solid Upper Seconds and a couple of strong Firsts. As in previous years, there was a clear preference for ethics questions, with a majority of students choosing to answer one section A (history) and 3 section B (ethics) questions (9 out of 12). Separate revision sessions for history and ethics in Easter term, rather than a single session led by the HEM paper manager may help students to tackle the history questions with more confidence. In history, students tended to answer questions 1 and 4; on the ethics side, questions 7 and 8 were by far the most popular. The weaker answers tended to be descriptive rather than analytical, the stronger ones engaged well with the historical or ethical literature. There was a tendency to list everything a candidate knew about a topic rather than directly addressing questions with relevant evidence.

Summary of recommendations

- 1) Students should be advised that writing a dissertation provides an opportunity to undertake rigorous, focused research that conveys significant intellectual benefits but also carries some risk. 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) The Department should continue to clarify its expectations and marking criteria for Primary Source Essays, providing a consistent treatment of the need to closely address the source while recognising the range of appropriate approaches.
- 3) The Department should consider offering more information on its website on referencing and the use of footnotes, and ensure that the students avail themselves of the necessary research methods resources to ensure that their assessed work is appropriately presented and referenced.
- 4) The Department, Paper Managers and Directors of Studies are urged to recognise the value of addressing Section A questions in particular, and to provide an examination revision supervision for this purpose in Easter term.
- 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.
- 7) The Board of Examiners is urged make sure that scripts are returned to examiners with yellow cover sheets and a copy of the examination paper, and that there are no foreseeable disruptions in the administration of the examinations.

RS
26 June 2015