

Teaching Committee report to the Faculty Board

Examinations for Parts IA, IB and II of the Tripos, 2014

1 Introduction

The Committee met three times, for two hours each, to consider the 2014 undergraduate Tripos examinations. We looked, for each part of the Tripos, at:

- the examiners' report;
- the external examiners' reports;
- the examiners' comments on their questions;
- the examination statistics;
- the examination papers;
- the analysis of the paper lecture questionnaires;
- the responses to the on-line questionnaires;
- the report from the CATAM assessors (Parts IB and II).

We noted with pleasure that as usual the external examiners, without exception, commented favourably both on the examination process and also on the performance of the candidates. The six external examiners' reports include comments such as:

The Department retains its leading role in university level mathematics education in the UK. Marking of examination scripts and moderation of marks was done fairly, with great attention and care. (Part IA)

Over each of these [3] years I have been very impressed with all aspects of the examining procedure, and points/suggestions I have raised in previous reports have been addressed satisfactorily. The distribution of degree classes is an accurate measure of student achievement. In particular the award of a larger than usual number of II.i awards reflects the quality seen in examination answers. (Part IB)

Considerable effort went into setting the questions, marking the scripts, transcribing the marks and deciding on the borderline candidates. The examinations were generally of an appropriate standard, allowing a wide range of marks to be obtained distinguishing between the excellent candidates at the top and the weak candidates at the bottom. (Part IB)

The sheer number and range of courses offered in Part II of the Mathematical Tripos in Cambridge is very impressive, and possibly unique for the final year of undergraduate programmes anywhere. (Part II)

Overall the standards were appropriate for a top university. It should be noted that the first class standard is very high: significantly higher than anywhere except Oxford. (Part II)

Intellectual standards on Part II of the Mathematical Tripos are very high, comparing favourably even with those at other departments in Cambridge and with other leading UK universities. This is a course that is of the highest level of intellectual rigour, covering a broad range of topics. (Part II)

There follows a summary of the points raised in the examiners' reports which the Committee believe need the attention of the Faculty Board. We have not generally highlighted points of a purely administrative nature: that is for the Chairs of this year's examiners to pick up rather than the Faculty Board.

2 General Matters

2.1 Errors

This year only seven errors were reported, in a total of about 280 questions: one error in Part IA; two errors in Part IB; four errors in Part II. This is a smaller number than in each of the previous five years. Two minor clarifications were issued in Part IA.

The final page of Paper 4 in Part II, containing one question, was omitted during the process of mass reproduction. Fortunately, this omission was detected very early in the examination, and the missing page was obtained from the Faculty Office, copied and distributed to all candidates within 45 minutes of the start. We **recommend** that proof copies of the printed papers are sent to the Chair for checking before the exams, and that examiners be asked to turn up 10–15 minutes before the examination and check that everything is in order.

2.2 Communication of Errors

Any corrections must be written on the board of each Mill Lane examination room and must be transmitted to the Student Registry, who nowadays have responsibility for forwarding corrections (electronically) both to the central facility provided for straightforward extra-time candidates and to the colleges where mathematicians are sitting examinations in college. Rapid communication is clearly important.

The Part II examiners had problems with the fax machine in the Mill Lane Lecture Theatres, and found it just as convenient to take the correction by hand to the Student Registry, which is just across the road. The Part IA examiners **recommend** a division of labour, whereby one duty examiner prioritises getting the correction to the Student Registry, while the other starts writing the corrections in Mill Lane.

We were uncertain about whether faxing or hand delivery was more robust. We **recommend** that the Memorandum to Examiners mention the option of hand delivery to the Registry should the fax machine break down.

2.3 Timetabling

The examination timetable for 2014 was different from that used in previous years: examinations in the three Parts of the Tripos were spread out more over the 9 day examination period, with the effect that Part IA finished later and Parts IB and II started earlier than usual. Unsurprisingly, the IB examiners approved of the extra time for marking, whereas the IA examiners bemoaned the lack of time for marking Paper 4. The convenience of examiners was not the primary motivation for the amended timetable, and the Teaching Committee's review of the timetable will be presented in a separate paper.

2.4 Borderlines

The Faculty Board recommends approximate percentages of candidates for each class: 30% firsts; 40–45% upper seconds; 20–25% lower seconds; and up to 10% thirds (presumably meaning thirds or fails). The computer-generated mark list puts the initial class boundaries at the 30th, 70th and 90th percentiles, on the understanding that the 2.1/2.2 and 2.2/3rd boundaries might be moved significantly downwards under the Faculty guidelines.

The IB examiners wondered whether the initial boundaries tempt examiners towards parsimony, and suggested listing the whole range from the 70th to 75th percentiles as 2.1/2.2. Prof Walters (Part II external examiner) suggests putting the provisional 2.1/2.2 boundary at the 72.5th percentile.

The Teaching Committee had some sympathy with the spirit of these suggestions, but did not think there was a sensible and analogous way, within the current guidelines, to mark the 2.2/3rd boundary if either of these changes were adopted at the 2.1/2.2 boundary. The average percentage

of 1sts and 2.1s over 2011–2014 has been 71.1, 73.0 and 72.6 in Parts IA, IB and II respectively, and the examiners in Parts IB and II have used the range available.

The average percentage of 3rds and Fails in the same period have been 8.8, 8.7 and 9.2 in the three Parts, at the upper end of the range available; this accords with the fact that the Faculty Board raised the upper end of the range from 6% to 10% after years of comments from external examiners that a border at the 94th percentile was too low. There is no evidence from recent external examiners' reports that our current guidelines are inappropriate at the lower borders, though Prof Schroers (Part II external examiner) commented that the Board was more generous at the 2.1/2.2 border than the initial inclinations of the three external examiners. (Prof Walters suggests we might be more generous at the 1st/2.1 border.)

The Teaching Committee **recommends**: (i) that the computer-generated mark list have a line of text inserted at the initial class boundaries stating the relevant Faculty Board recommendation for that border; (ii) that the recommendations be rephrased in terms of cumulative percentages e.g. 30% firsts, 70–75% upper seconds and above, and 90–95% lower seconds and above.

Note that (ii) has the effect of narrowing the range of thirds and below, and of clarifying whether fails are to be included in the percentages. If (ii) were adopted, it would be possible to mark these ranges in the mark list in the way the IB examiners suggest instead of (i).

2.5 New CATAM mark scheme

This was the first year in which CATAM projects were not awarded alphas and betas, but instead awarded a greater number of marks, to give approximately the same total contribution as previously to the merit mark. In Part IB there was a total of 160 marks available, and candidates can submit 4 projects each worth 40 marks; in Part II there was a total of 150 marks available, and candidates can submit up to 30 units of projects, where the number of units varies between projects according to their length.

The submission rates in Part IB (88%) and Part II (91%) were at the upper and lower ends of the respective historic ranges. The median marks were 128/160 and 102/150, which are slightly higher when converted to the old mark scheme than has been typical, but again within the historic range. The initial impression is that the new mark scheme has not had a significant effect on either submission rates or the quality of submissions.

The assessors on CPAC mark all projects out of 20 using a mark scheme that includes 1/2 marks. These marks used to be rounded, assigned an alpha or beta if appropriate, and reported to the candidates in that form. In Part IB each project mark is now doubled to give an integer mark out of 40 and added to the examination mark. (In Part II there is a further scaling by the number of units.) For clarity, we **recommend** that all mention of project marks in external documentation and in reporting of project marks to candidates should refer to the mark out of 40. (Assessors can continue to mark out of 20, but this would only be a convenient procedure internal to CPAC.)

2.6 Plagiarism in CATAM

In response to the rise in Unfair Means in 2013, for 2014 all students in Parts IB and II were asked to sign an electronic declaration towards the start of the Michaelmas Term that they had read the guidelines on unfair means.

One case of plagiarism was detected in Part II. The candidate admitted that he had copied material from a project submitted in 2012, and the 5 marks he would otherwise have received for that project were deducted.

During the year, it was discovered that a number of CATAM projects, write-ups and code had been posted online by former students. In each case, these were taken down quickly at the CATAM Director's request, and it is not thought that any of this year's students made use of the material.

All three Part II external examiners expressed grave concern about the possibility of candidates using unfair means in CATAM, particularly in the context that many candidates obtain a significant fraction (20% is typical) of their overall mark from CATAM. All three are very critical that there is no punitive action when unfair means are detected. Prof Schroers writes '*plagiarism is still not policed and punished as severely as, in my view, it should.*' Prof Walters notes '*even in the*

most blatant cases the candidate only loses the marks for that project; in essence a weak student has nothing to lose by copying.’ Prof Steinberg states ‘It should seem obvious that simply not awarding marks for work done via unfair means is, in fact, no sanction at all and, by any objective standard, a student caught employing unfair means should receive fewer marks than if he had not submitted the work at all.’ and ‘I would expect to see appropriate sanctions for unfair means in place beginning with the academical year 2014–2015.’

Prof Steinberg’s expectation seems impossible to meet on this timescale, other than by escalating cases to the University Advocate, because the Faculty is constrained by University policy. However, we **recommend** that the Faculty Board again discusses the matter with the relevant University authorities, and explores, for example, the possibility that a candidate may have all their marks for CATAM removed when unfair means are proven i.e. that CATAM be treated as a single piece of work.

The Teaching Committee notes that, as a matter of some urgency, the Faculty did put in place over the summer the requirement that CATAM submissions for 2014/15 be made electronically. Hence this year the write-ups can be checked by *Turnitin* software for plagiarism against a wide range of sources, in addition to the existing checks that are made on the code. We hope this will act as a significant further deterrent to plagiarism (from the internet as well as from other students), but believe that stronger sanctions are also desirable.

2.7 Comments on questions

The IA examiners note that the examiners’ post-examination comments on questions are usually only considered by the Teaching Committee, and suggested forwarding them to Directors of Studies so that systematic errors of student understanding are communicated back to teachers. The Teaching Committee thought this suggestion both unnecessary and unrealistic: supervisors (who are usually not the Director of Studies) will be correcting such errors in understanding when they work through several years worth of practice Tripos questions in the Easter Term. Both model answers and the comments are available for supervisors to consult in the Undergraduate Office if they need to. However, we **recommend** that Faculty Board consider whether it might be useful to send the comments to the relevant lecturer. The advantages are that the lecturer might improve their explanation and that Part II lecturers might improve their question setting; the disadvantage is that they might ‘teach to the test’.

2.8 Difficulty of short questions

The advertised description of ‘short’ (Section I) questions is: *Short questions should be accessible to any student who has studied the material conscientiously. They should not contain any significant ‘problem’ element.*

Faculty Board has also recommended that Examiners should aspire to achieve a target success rate of 55–60% betas on short questions. On some courses the success rate fell woefully short of this aspiration. (e.g. 37% on Probability, 23% on Dynamics and Relativity in Part IA; 24% on Complex Methods, 24% on Electromagnetism, 33% on Variational Principles in Part IB.) In all Parts, the short questions are intended to provide an opportunity for weaker students to demonstrate some knowledge of the course. In Part II it is essential for the health of C-courses that the short questions are genuinely short and straightforward, so that they provide an appropriate reward for taking those courses. We **recommend** that the Chair of Faculty Board write to examiners to emphasise the importance of keeping short questions sufficiently short and straightforward.¹

A more radical policy would be to decrease the threshold for a ‘short’ beta from 8/10 to 7/10 and possibly to increase the threshold for a ‘long’ beta from 10/20 to 12/20, on the grounds that many examiners think good short questions are more meritorious than mediocre long questions in the lower part of the class list; such a change would probably have little effect in the upper part of the list.

¹The maximum merit for a short question is 15, whereas the maximum merit for a long question is 35 or 50; the length of question should be proportionate.

2.9 Athena SWAN

As part of the Faculty Athena SWAN action plan, Examiners' Reports should include the percentages in each class broken down by gender, in addition to the totals and comparison to the previous year. This new policy was overlooked in the Part IA report, and we call it to the attention of this year's Chairs.

Dr Willerton (Part IB external examiner) noted that candidates were often referred to by male pronouns during the final classification meeting. Candidates are, of course, anonymous and hence of unknown gender until after they have been classified, and so there is no possibility of bias during classification. Nevertheless, we **recommend** that it is good practice for examiners to try to remember to discuss candidates using gender neutral pronouns, even though they are anonymous, as part of the general Faculty policy of combatting unconscious bias.

2.10 Secretarial and Computer Officer support

The examiners' reports remarked on the excellent support given by Ms Amy Dittrich and Mr John Sutton. We **recommend** that the Chair of the Faculty Board expresses the appreciation of the Board for their hard work.

3 Part IA

3.1 Difficulty of Examination

The examiners' report, and student feedback in the online questionnaire, suggests that the 2014 examination was more difficult than usual. The Chair, Prof Grojnowski, even writes that he 'is still feeling wretched about setting too hard an exam'. (The external examiner, Prof Borovik, raised no concerns.)

The Teaching Committee considered the examination statistics in some detail to determine whether the level of difficulty was appropriate. Faculty Board recommends that examiners aspire to an alpha success rate of 40–45% on long questions. The average alpha rate across all subjects was 49% in 2014. The figures in Part IA from the period 2003–2014 were 41%, 45%, 44%, 48%, 38%, 45%, 40%, 53%, 49%, 56%, 60%, 49%.² We believe that the 2014 examination was at an appropriate overall level of difficulty, consistent with the long-term average, and only appeared difficult because it came as a shock after two abnormally easy examinations in 2012 and 2013. We recommend that the examiners in 2015 attempt to maintain this overall level of difficulty in accordance with the Faculty guidelines.

We note that the 2014 marks on Groups were, in fact, in line with, or slightly higher than, on the other Pure courses, and they were slightly higher than Faculty guidelines (see statistics attached). In our view, Prof Grojnowski's concerns are misplaced. Perhaps these, and the abnormally easy examinations in 2012 and 2013, are an indication that some examiners are still uncertain about what is appropriate, and we **recommend** that the Faculty Board continue to emphasise the importance of maintaining consistent levels of difficulty between courses, and from year-to-year, and the target alpha and beta rates.

The marks for both Probability and Dynamics & Relativity were lower than desirable on long questions, and much lower than desirable on the short questions (see 2.8 above). We call this to the attention of this year's examiners, while cautioning against overcompensation.

²The alpha rate in Part IB over 2003–2014 was 39%, 46%, 35%, 39%, 47%, 40%, 38%, 47%, 59%, 53%, 50%, 52%.

4 Part IB

4.1 Teaching Committee report

The examiners say they would have found it useful to receive the Teaching Committee report on examinations before their first meeting on 7th November 2013. Unfortunately, the report could not have been ready, even in draft form, by then. We are satisfied with the current practice where the Chair of the Faculty Board writes a supplementary letter to all examiners after Faculty Board has considered the Teaching Committee report, highlighting the relevant decisions and issues.

4.2 Difficulty of questions

The examiners made strenuous and largely successful efforts to reduce variations in difficulty between courses. In the cases of Optimisation and of Markov Chains, we believe there was overcompensation for the overly difficult questions in 2012 and 2013, and suggest that this year's examiners aim for something closer to the average.

We were unpersuaded by the rationale behind the examiners' alternative metric of difficulty. More pragmatically, the Faculty is strongly encouraging examiners to think hard about maintaining consistent levels of difficulty between courses, and from year-to-year, and the Faculty's recommended alpha and beta target rates are a simple and easily understood metric to facilitate convergence.

4.3 Complex Methods / Complex Analysis

These courses have three Section I and three Section II questions each, with two of the Section II questions and one of the Section I questions shared. The Examiners comment that it is difficult to set shared questions that are fair to all candidates, and suggest that there could instead be separate questions with the rule that candidates could only do questions from one course or the other.

The Schedules already state that the shared questions may be set in either/or form, the alternatives being one question on each course. We suggest that next year's examiners make use of this possibility if they wish.

4.4 Timing of meetings

The Teaching Committee notes that the IB examiners only have two meetings where they consider the draft questions, whereas the examiners in Part IA and II have three meetings. Though the standard of questions was relatively uniform this year due to the vigilance of the Chair, we wonder whether a third meeting might improve the robustness of the setting process against errors and divergences in difficulty.

4.5 Anonymity in CPAC minutes

Dr Willerton (External Examiner) observed that the CPAC minutes referred to a small number of candidates (who had been given permission for late submission of projects) by name rather than by candidate number, and questioned whether this goes against the principle of anonymity. It is inevitable that late submitters are known by name, since the application for permission is done by email and requires College support. Hence, we consider it preferable that such candidates are identified to examiners by name rather than candidate number, precisely so that classification decisions, which are done entirely by candidate number, might not be influenced either by a candidate number being linked to a name by an examiner who happens to be that College Director of Studies, or by the knowledge that a numbered candidate was given permission to submit late.

4.6 Geometry

Dr Willerton (External Examiner) comments that there were again few attempts at Geometry questions, though these were more straightforward this year. Student feedback in questionnaires suggests that part of the explanation may be that the lecturer was pitching the presentation at slightly too sophisticated and notation-heavy level. There is a new lecturer this year.

5 Part II

5.1 Late submission of questions

The examiners note that late provision of draft questions by lecturers can cause considerable inconvenience to the responsible examiner and checker. Prof Schroers (External Examiner) thought the number of errors and typos in the draft questions for some theoretical physics courses was too high, and got in the way of his assessment of level, syllabus coverage and clarity of questions. He writes '*perfecting the internal checking mechanism and timetable should remain a priority*', with which we completely agree.

If the internal examiners are to have time to get the draft questions into reasonable shape before sending them to the external examiners, then it is essential that lecturers provide drafts on time. We **recommend** that Faculty Board make more robust use of the threat of 'naming and shaming' those who are late.

5.2 Courses in need of attention

Prof Schroers comments that Geometry and Groups, Cosmology and Partial Differential Equations have persistently low uptakes and appear to need attention. Geometry and Groups has indeed been suppressed as a course this year, and Cosmology should be considered by a committee formed to review the current range of C courses. We wonder, as we have for a number of years, whether Partial Differential Equations might fare better as a Part III course and **recommend** that this be considered by the Curriculum Committee.

5.3 CATAM again

The external examiners were much exercised by CATAM, but we hope that many of their concerns will be greatly alleviated by the introduction of electronic submission, and the strengthened checks against plagiarism by the use of *Turnitin*. We note again that the question of real penalties is not under Faculty control. Among their secondary concerns are the following:

Vivas: Prof Walters suggests more proactive use of vivas to target students whose CATAM marks are anomalously high in some way. We are doubtful due to possible legal complications if vivas were used for investigative fishing without warning the student and allowing for representation. Nevertheless, we refer these suggestions to the CATAM Director to consider whether they could have any practical utility.

Anonymity: Prof Walters notes that it was possible to identify the candidate found cheating from discrepancies between the marks awarded and the work in folders. Indeed, the candidate's number was mentioned in the final meeting. We believe this to be an unfortunate anomaly and restate the principle that candidates found cheating should not be identified to any examiners, other than those necessarily involved in the plagiarism hearing.

Review: Prof Walters would like the opportunity to comment on projects, for example on their relative difficulty, believing that they should be subject to external review. The projects are currently sent to the external examiners in October, which is long after they have been released to the students at the start of the long vacation. We do not think it is feasible to obtain comment prior to release to the students (unless the previous year's examiners were willing to review the following year's projects). We **recommend** that the external examiners are invited to comment, if they wish, on the projects in October. While this is too late to change the project for that year, it

might influence the mark scheme, and any comments received should be responded to if the same or similar projects are set in future years.

Schedules: Prof Walters comments that the wording in the Schedules does not reflect the removal of alphas and betas from CATAM. Prof Schroers comments that it is hard to compare students near the 2.1/2.2 border, some of whom compensate for relatively poor examination scripts with good project marks, while others miss out on a higher classification despite good examination scripts because they did not submit projects. Both comments indicate slight uncertainty over policy, though we believe that the correct policies were in fact implemented: The Schedules state in various places that the credit obtained on CATAM is added directly to credit gained in the written examination, and that no distinction should be made between marks obtained on the Computational Projects and marks obtained on the written papers; moreover, the primary classification criteria express the relative weight that Faculty Board has agreed should be attached to marks, alphas and betas at each border. We **recommend** that the intentions of Faculty Board might be clearer if these statements are made explicitly in the section of Classification Criteria. We also **recommend** that the verbal descriptions of the various classes (which are hoped-for results rather than criteria) be prefaced by a comment that good performance on CATAM can compensate for weaker performance on the written papers and vice versa.

Total credit: Two examiners comment that the proportion of the total merit mark obtained on CATAM is higher than that commonly associated with project work in other universities. We believe comparisons to the modular examination systems operating elsewhere can be misleading. The total credit available from CATAM is equivalent to that available from a 16-lecture course and requires at least as much work, arguably more, to obtain. If high take-up rates are to be maintained it is essential and appropriate that the credit available reflects the effort required. We agree with Prof Schroers that CATAM provides a very welcome broadening of the range of skills being assessed in Part II, and consider it to be an important part of our undergraduate education.

Compulsory CATAM: Prof Schroers suggests making CATAM compulsory, perhaps with the addition of essay projects. This is a matter that has been discussed many times by the Faculty. In practice, ‘compulsory’ must mean that some threshold must be achieved (25%, say) and that if this is not achieved, since there is no provision for re-takes, the candidate fails the examination. There is little or no dissent to the view that it would be undesirable for CATAM to be given this very special status.

5.4 Classification criteria at the 3rd/Fail Boundary

The examiners report that they had difficulty making decisions at the 3rd/Fail boundary because apart from the primary criterion ($15\alpha + 5\beta + m$) there are no guidelines on how to class a performance that includes some reasonable answers, but on only a small number of questions and perhaps on only a very small number of courses.

Prof Walters asks *should a student be able to pass with only 2 courses? Should a student be able to pass with only a few odds and ends and a computer project?* The examiners’ report asks *‘would it be appropriate to award a degree in mathematics to a candidate who has gained their marks by fairly good answers on only one course?’* and requests Faculty Board to provide more specific guidelines.

Such requests have been made before by examiners, and the Faculty has stuck to the formula *‘At the third/fail borderline, individual considerations are always paramount.’* We **recommend** that Faculty Board attempt to provide a better description of the minimal requirements for a 3rd. Our feeling is that it should be based on a combination of merit mark as the primary quantitative criterion, and replacement of the traditional formula by a statement that examiners may consider the number of courses on which marks have been obtained as a secondary criterion.

5.5 Format of mark list

The external examiners comment that it is difficult to identify from the list of question numbers attempted by each candidate, which subjects those questions correspond to and hence, for example, which candidates were specialising in statistical subjects. We **recommend** that the Computer

Officers be asked, if possible, to produce an alternative list in which the question numbers and examiner letter are replaced by a two or three letter subject code. Both lists would be available on an experimental basis next year, and might also be useful in Part IB.

5.6 Scheduling of final meeting

Last year one of the external examiners objected to the scheduling of the final meeting on a Monday, which requires the external examiners to do their work of considering scripts on a Sunday. This year, Prof Walters commented on the inconvenience – the CATAM Director and the Chair have to come in specially to brief the external examiners, the cafeteria is not available for refreshments or lunch. We note that the timing for the announcement of results does allow the final meeting to be on the Tuesday, and we **recommend** that this become the default scheduling henceforth.

5.7 Hospitality and refreshment

We note and agree with Prof Schroers comments regarding the desirability of some refreshments during the final four-hour meeting. Small details like this, as with helping the examiners find lunch on the day before, are easily overlooked but worth getting right as a matter of hospitality.

6 Summary of recommendations

(The exact recommendation is described in the section indicated.)

- 2.1 Chair to check examination papers after reproduction. Examiners to arrive early.
- 2.2 Revise Memorandum to Examiners regarding communication of errors.
- 2.4 Rephrase Faculty recommendations for class borders to be cumulative. Include recommendations on the mark-list output.
- 2.5 All CATAM marks on projects to be reported out of 40.
- 2.6 Explore penalties for plagiarism in CATAM (again).
- 2.7 Consider whether it is useful to send (post-exam) comments on questions to the relevant lecturer.
- 2.8 Chair to write to examiners about short questions.
- 2.9 Use gender-neutral pronouns in meetings if possible.
- 2.10 Thank Ms Amy Dittrich and Mr John Sutton for their efforts last year.
- 3.1 Maintain the average level of difficulty in IA from 2011 and 2014.
- 3.1 Emphasise the importance of maintaining consistent levels of difficulty (all Parts).
- 5.1 Be more robust with Part II lecturers who do not submit draft questions on time.
- 5.2 Refer Partial Differential Equations to the Curriculum Committee.
- 5.3 Invite external examiners to comment of CATAM projects when they are sent them in October.
- 5.3 Clarify the Classification Criteria with regard to the equal treatment of performance on CATAM.
- 5.4 Reconsider the Classification Criteria for a 3rd.
- 5.5 Experiment with use of subject codes in the mark list.
- 5.6 Change the default day of the final Part II meeting.

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