CAMBRIDGE UNIVERSITY
REPORTER

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UNIVERSITY OF CAMBRIDGE

PUBLISHED BY AUTHORITY

NOTICES

Calendar

2 December, *Friday*. Full Term ends.

6 December, *Tuesday.* Discussion by videoconference at 2 p.m. (see below).

19 December, *Monday*. Term ends.

25 December, *Sunday.* Christmas Day. Scarlet Day.

5 January, *Thursday*. Lent Term begins.

Issues of the *Reporter* for the remainder of the Michaelmas Term will be published on Wednesday, 7 and Thursday, 15 December 2022. The first issue in the Lent Term is due for publication on Wednesday, 11 January 2023.

Discussion on Tuesday, 6 December 2022

The Acting Vice-Chancellor invites members of the Regent House, University and College employees, registered students and others qualified under the regulations for Discussions (*Statutes and Ordinances*, 2021, p. 111) to attend a Discussion **by videoconference** on Tuesday, 6 December 2022 at 2 p.m. The following items will be discussed:

1. Report of the Council, dated 7 November 2022, in response to Grace 1 of 21 April 2022 on the Universities Superannuation Scheme (*Reporter*, 6675, 2022–23, p. 112).
2. Report of the General Board, dated 7 November 2022, on the introduction of the degree of Master of the Conservation of Easel Paintings in the Faculty of Architecture and History of Art (*Reporter*, 6675, 2022–23, p. 114).

Those wishing to join the Discussion by videoconference should email UniversityDraftsman@admin.cam.ac.uk from their University email account, providing their CRSid (if a member of the collegiate University), by 10 a.m. on the date of the Discussion to receive joining instructions. Alternatively contributors may email their remarks to contact@proctors.cam.ac.uk, copying ReporterEditor@admin.cam.ac.uk, by no later than 10 a.m. on the day of the Discussion for reading out by the Proctors,[1] or may ask someone else who is attending to read the remarks on their behalf.

In accordance with Grace 3 of 12 January 2022, the Chair of the Board of Scrutiny or any ten members of the Regent House[2] may request that the Council arrange for one or more of the items listed for discussion to be discussed in person (usually in the Senate-House). Requests should be made to the Registrary, on paper or by email to UniversityDraftsman@admin.cam.ac.uk from addresses within the cam.ac.uk domain, by no later than 9 a.m. on the day of the Discussion. Any changes to the Discussion schedule will be confirmed in the *Reporter* at the earliest opportunity.

General information on Discussions is provided on the University Governance site at https://www.governance.cam.ac.uk/governance/decision-making/discussions/.

[1] Any comments sent by email should please begin with the name and title of the contributor as they wish it to be read out and include at the start a note of any College and/or Departmental affiliations held.

[2] https://www.scrutiny.cam.ac.uk/ and https://www.admin.cam.ac.uk/reporter/regent_house_roll/.

Amending Statutes for King's College

28 November 2022

The Acting Vice-Chancellor begs leave to refer to his Notice of 24 October 2022 (*Reporter*, 6673, 2022–23, p. 77), concerning the text of a Statute to amend the Statutes of King's College. He hereby gives notice that in the opinion of the Council the proposed Statute makes no alteration of any Statute which affects the University, and does not require the consent of the University; that the interests of the University are not prejudiced by it, and that the Council has resolved to take no action upon it, provided that the Council will wish to reconsider the proposed Statute if it has not been submitted to the Privy Council by 27 November 2023.

Notice of benefactions

28 November 2022

The Acting Vice-Chancellor gives notice that he has accepted with gratitude the following benefactions:

(*a*) a benefaction of £1 million from the Trustees of the Kay Kendall Leukaemia Fund to endow a postgraduate studentship, to be called The Kay Kendall Scholarship in Leukaemia Research;

(*b*) a bequest of £2,701,512 from Mrs Wendy Aspden in memory of her husband Dr Harold Aspden to endow a Professorship in Fundamental Physics in his name at the Cavendish Laboratory. The Council and the General Board, on the recommendation of the Head of the School of the Physical Sciences and the Head of the Department of Physics, have agreed to propose the retitling of the Professorship of Physics (2006) in the Department of Physics in recognition of the bequest, which will endow the Professorship. The current holder of the Professorship has given consent to the alteration of its title.

The Council is submitting Graces to seek approval for the establishment of a Kay Kendall Leukaemia Scholarship Fund and an Aspden Fund and for the retitling of the Professorship of Physics (2006) (Graces 1, 2 and 3, p. 148).

Elections to the Council

29 November 2022

The Acting Vice-Chancellor announces that the following candidates have been nominated in accordance with Statute A IV 2 for election to the Council in class (*c*), and that it has been certified to him that the candidates have consented to be nominated:

Class (*c*): Three from among the other members of the Regent House

Candidates:	*Nominated by*:
Ms Margaret (Milly) Amelia Bodfish	Mr A. C. B. Drury and Ms R. E. Deadman
Dr Louise Margaret Joy, *HO*	Professor N. Singal, *HH*, and Dr S. C. N. Read, *CHR*
Mr Scott Howard Mandelbrote, *PET*	Professor Sir Christopher Clark, *CTH*, and Dr Z. L. Adams, *K*
Professor Robert John Mayhew,[1] *PEM*	Dr M. Frasca-Spada, *CC*, and Professor C. J. Young, *PEM*
Mr Matthew Christian Moon	Professor J. L. N. Wood, *W*, and Professor J. M. Dobson
Dr Lionel Julien Paolella	Professor P. J. Tracey, *HH*, and Dr K. Sayegh, *W*

It is necessary to hold an election to select three from among the six candidates. Those elected will serve for four years from 1 January 2023.

Voting will open at 10 a.m. on Friday, 9 December 2022 and close at **5 p.m. on Monday, 19 December 2022**.

[1] Professor Mayhew holds an Honorary Professorship at the University and is therefore eligible in class (*c*), not class (*b*).

Ballots of the Regent House: Voting open until 5 December 2022

The following ballots are currently open for voting by members of the Regent House:

- Elections to the Council in class (*b*)
- Election to the Board of Scrutiny in class (*c*)(i)

Voting closes at 5 p.m. on Monday, 5 December 2022 and members who were listed on the Roll of the Regent House promulgated on 5 November 2022 are eligible to vote. Voting information, including candidate statements and links to the voting portal, is available online at https://www.governance.cam.ac.uk/ballots/voting/ [Raven access only].

NOTICES BY FACULTY BOARDS, ETC.

Mathematical Tripos, Part III, 2022–23: Additional paper

Further to the Notice of 9 November 2022 (*Reporter*, 6675, 2022–23, p. 109) and in accordance with Regulations 16 and 17 for the Mathematical Tripos, the Faculty Board of Mathematics gives notice that there will be set in 2023, if candidates desire to present themselves therein, an additional paper for Part III as follows:

Paper 133 Reading course: Geometric group theory 2 hours

Natural Sciences Tripos, Part III (Physics) and Master of Advanced Study in Physics, 2022–23

The Head of the Department of Physics gives notice that the following Major Topics, Minor Topics, and types of further work will be available for examination in Physics in Part III of the Natural Sciences Tripos and for the degree of Master of Advanced Study in the 2022–23 academic year.

Major Topics

These papers will be taken at the start of the Lent Term. Candidates are required to take a minimum of three papers. The titles of the papers are as follows:

Paper 1/AQC.	Advanced quantum condensed matter physics
Paper 1/BIO.	Biological physics
Paper 1/RAC.	Relativistic astrophysics and cosmology
Paper 1/PP.	Particle physics
Paper 1/PEP.	Physics of the Earth as a planet
Paper 1/TQM.	Theories of quantum matter
Paper 1/AOP.	Atomic and optical physics

Candidates may replace one Major Topic with the paper *Quantum field theory* (Paper 1/QFT) from Part III of the Mathematical Tripos (examined in June).

Minor Topics

These papers will be taken at the start of the Easter Term. Candidates who are not replacing Minor Topics by other work, as specified below, are required to take a minimum of three papers. The titles of the papers are as follows:

Paper 2/ASM.	Advanced statistical mechanics
Paper 2/CP.	Colloid physics
Paper 2/EXO.	Exoplanets
Paper 2/FSU.	Formation of structure in the Universe
Paper 2/GFT.	Gauge field theory
Paper 2/MP.	Medical physics
Paper 2/PT.	Phase transitions
Paper 2/NOQL.	Non-linear optics and quantum states of light
Paper 2/QI.	Quantum information
Paper 2/QS.	Quantum simulation
Paper 2/SQC.	Superconductivity and quantum coherence

Further work

Each paper or piece of further work listed below may replace one Minor Topic:

- *Innovation and entrepreneurship for physicists* (2/ITI), examined by coursework.
- The papers *Advanced quantum field theory* (2/AQFT), *Quantum computation* (2/QC) and *Topological quantum matter* (2/TQM) from Part III of the Mathematical Tripos, examined in June.
- *Nuclear power engineering* (2/4M16) from Part IIB of the Engineering Tripos, examined at the start of the Easter Term.
- The Interdisciplinary papers in *Materials, electronics, and renewable energy* (2/IDP3), *Atmospheric chemistry and global change* (2/IDP1) and *Climate change and the carbon cycle*: *An Earth history perspective* (2/IDP2), all examined in the second half of the Easter Term.

Where candidates take more than three Major Topics, the examiners will use the best three results in determining the class; where candidates take more than three Minor Topics, the examiners will use the best three results in determining the class: all marks will appear on the transcript.

GRACES

Graces submitted to the Regent House on 30 November 2022

The Council submits the following Graces to the Regent House. These Graces, unless they are withdrawn or a ballot is requested in accordance with the regulations for Graces of the Regent House (*Statutes and Ordinances*, 2021, p. 111), will be deemed to have been approved at **4 p.m. on Friday, 9 December 2022**. Further information on requests for a ballot or the amendment of Graces is available to members of the Regent House on the Regent House Petitions site.[§]

1. That a Kay Kendall Leukaemia Scholarship Fund be established in the University, to be governed by the following regulations.[1]

KAY KENDALL LEUKAEMIA SCHOLARSHIP FUND

1. The benefaction received from The Kay Kendall Leukaemia Fund, together with such other sums as may be received or applied for the same purpose, shall form an endowment fund called the Kay Kendall Leukaemia Scholarship Fund to support Ph.D. students studying leukaemia in the University.

2. The Managers shall be responsible for the administration of the Fund and the application of its income and shall comprise:

(*a*) the Head of the Department of Haematology, or his or her nominee, who shall be Chair;

(*b*) the Director of Postgraduate Education in the School of Clinical Medicine; and

(*c*) one member of the academic staff of the Department of Haematology appointed by the Faculty Board of Haematology, who shall serve for three years from 1 January next following the appointment.

3. Subject to Regulation 4, the income of the Fund shall be used to provide awards, which shall be called The Kay Kendall Scholarship in Leukaemia Research. Arrangements for awards, including the number, tenure and conditions of studentships to be awarded in any given year, the expenses to be covered by an award, and the form of the application and selection processes, shall be at the discretion of the

[1] See the Acting Vice-Chancellor's Notice, p. 146.

[§] See https://www.governance.cam.ac.uk/governance/key-bodies/RH-Senate/Pages/RH-Petitions.aspx for details.

Managers and may provide for applications by persons who are not yet members of the University and for the financial circumstances of candidates to be taken into consideration.

4. Any unexpended income in any financial year may, at the discretion of the Managers, be awarded to support Ph.D. students studying leukaemia in the University in accordance with Regulation 3 in any one or more subsequent financial years.

2. That an Aspden Fund be established in the University, to be governed by the following regulations.[1]

ASPDEN FUND

1. The bequest received from Wendy Aspden in memory of her husband Harold Aspden, together with such other sums as may be received or applied for the same purpose, shall form an endowment fund called the Aspden Fund to advance research in the field of Physics by supporting a Harold Aspden Professorship of Fundamental Physics.

2. The Managers shall be responsible for the administration of the Fund and the application of its income and shall comprise the Head of the Department of Physics, who shall be Chair, and two persons appointed by the Faculty Board of Physics and Chemistry for such periods as the Faculty Board shall determine.

3. Subject to Regulation 4, the income of the Fund shall be applied towards the payment of the stipend, national insurance, pension contributions, and associated indirect costs of the Professorship payable by the University.

4. Any unexpended income in any financial year, including income accrued during a vacancy in the Professorship, may, at the discretion of the Managers:

(*a*) be applied to support the work of the Professor;

(*b*) with the approval of the Council of the School of the Physical Sciences, be applied to support research in the field of Physics in the University in such manner as may be recommended by the Managers; and/or

(*c*) be carried forward for use as income in accordance with Regulation 3 in any one or more subsequent financial years.

3. That the Professorship of Physics (2006) in the Department of Physics be retitled the Harold Aspden Professorship of Fundamental Physics.[1]

[1] See the Acting Vice-Chancellor's Notice, p. 146.

ACTA

Congregation of the Regent House on 26 November 2022

A Congregation was held at 10 a.m. All the Graces submitted to the Regent House (*Reporter*, 6677, 2022–23, p. 142) were approved.

The following degrees were conferred:

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This content has been removed as it contains personal information.

E. M. C. RAMPTON, *Registrary*

END OF THE OFFICIAL PART OF THE 'REPORTER'

REPORT OF DISCUSSION

Tuesday, 22 November 2022

A Discussion was held by videoconference. Deputy Vice-Chancellor Professor Simon Franklin was presiding, with the Registrary's deputy, the Junior Proctor, the Senior Pro-Proctor and seventeen other persons present.

The following item was discussed:

Report of the Council, dated 25 October 2022, pursuant to Special Ordinance A (ii) 7 concerning an initiated Grace relating to fossil fuel industry ties

(*Reporter*, 6673, 2022–23, p. 84).

Professor G. R. Evans (Emeritus Professor of Medieval Theology and Intellectual History):

Deputy Vice-Chancellor, the Council notes that the Regent House Grace set out at the beginning of this Report was 'framed as a request'. A Grace initiated by the Regent House does not come with a Report and its Recommendations, which enable 'consequences' to be pointed to and considered before a Grace is put to the Regent House. It comes ready-made for the Council to submit as it sees fit.[1] In this case the Council has not seen fit and it asks the Regent House to approve that decision.

This request it bases, not on the constitutional question whether as a mere 'request' this is a Grace at all, but on its content, its 'breadth and scope' and 'the reputational, financial and legal consequences of adopting the course put forward by the Grace'. The Council did not deem it submissible without the University having 'a thorough debate and a full understanding of the implications for the University of the changes it proposes'. In any case, it saw difficulties 'about the ability of the Grace's proposals to be implemented as presented'.

So when is a Grace a Grace? The *Statutes and Ordinances* are not entirely consistent. Statute A VIII (*c*) introduces a confusing synonym when it speaks of 'Graces (that is, resolutions)'. 'Resolution' occurs 137 times in the current *Statutes and Ordinances* and it seems to be used far more variously than serving as a possible synonym for 'Grace'. However, Statute A X 2(*g*) provides a definition implying that it is the finality of the approval of the Regent House which makes a Grace a Grace: 'the term 'Grace' shall mean an act, vote or decree of the Regent House or the Senate'.[2] Statute A III 8, also implying finality as the characteristic of a Grace, says that:

> Whenever it is provided that an act or thing shall or may be done or determined by the University, it shall be done or determined by Grace of the Regent House unless it is expressly stated that it is to be done or determined otherwise.

A 'request' might presumably qualify as an 'act' or 'thing' but the Council seems doubtful whether this one does.

Then there is the question when a Grace *becomes* a Grace. Council describes this as an 'initiated' Grace. This stage is provided for:

> The Regent House shall have the power of initiating Graces to the Regent House and of initiating proposals for the amendment of a Grace already submitted to the Regent House but not yet approved, as prescribed by Special Ordinance. (Statute A III 4)

The Council may also 'initiate' a Grace and must authorise the submission of a Grace if it is not its own creation. (Special Ordinance under Statutes A III 4 and A IV 1(*c*) and (*d*)).

Special Ordinance A (ii) 8 helps a little with this question of identity. It stipulates that 'any proposal to be placed before the Regent House or the Senate for approval shall be in the form of a Grace'. That places 'proposal' before approval but only 'in the form of a Grace', not as yet a Grace. Submission by the Council does not make a proposal a Grace. It becomes a Grace only when it is approved by the Regent House.

So what can an approved Grace do? The *Statutes and Ordinances* list a good many 'things' the Regent House may 'do' or 'determine' by Grace. Of these the most important and historic task is to create and adjust the University's internal legislation (with Privy Council approval needed in the case of Statutes):

> The powers of enacting, issuing and amending Special Ordinances, Ordinances and Orders, shall be exercised by Grace of the Regent House except so far as such powers are assigned by Statute to any other authority. (Statute A III 3)

But there are many other 'things' which have to be approved by Grace. For example, Boards and Syndicates may be created by Grace (Statute A VI 2); eligibility for Regent House membership is determined by Grace; Septemviri are appointed by Grace; Professorships need a Grace to approve them; 'approval by Grace of the Regent House shall be required for the erection of a new University building or for the demolition or substantial alteration of an existing University building' (Statute F II 3). Statute G requires Graces for the recognition of an Approved Foundation or an Approved Society for 'the advancement of education, learning, and research within the precincts of the University'; even the 'stipends of the High Steward, the Deputy High Steward, the Commissary, the Proctors, the Orator, the Esquire Bedells, the University Advocate, and the Deputy University Advocate shall be determined by Grace'. There is more. However, in all these instances a Grace settles 'things' decisively.

The sole example of a Grace being in some way provisional or a mere 'statement of intention' appears in a Notice by the Council,[3] which says the Council may use a Grace to 'consult the Regent House on questions of policy which in the Council's judgement are likely to prove controversial'.

> They will do this by submitting a Grace to the Regent House for the approval of a provisional decision or statement of intention; where appropriate, such a Grace will allow for the expression of a preference between alternative options. The Council will give consideration to remarks made at any Discussion of such matters and to the outcome of any vote on them.

That is of course a proposal of the Report we are discussing. However, this legacy of the Wass settlement has never been tested or made an Ordinance. And it does not provide for a Regent House Grace to behave in this way. The Notice does of course see a Grace of this kind as decisive, but only a stage in the act of approving something. This seems to require further thought, and it would surely get it if that Notice was put to the Regent House in a legislative Grace?

Among the possible consequences of the 'initiated Grace' pointed to by the Council is a potential risk to 'academic freedom and other freedoms associated closely with academic life'. I am reluctant to conclude without pointing to the importance of that concern.

[1] *Statutes and Ordinances*, 2021, p. 111.

[2] Though untidily, Statute A IV (*d*) says that 'the procedure for the submission of Graces shall be prescribed by Special Ordinance'.

[3] *Statutes and Ordinances*, 2021, p. 117.

Professor L. M. Delap (Faculty of History and Murray Edwards College):

Deputy Vice-Chancellor, we are all very aware of the backdrops to which this Grace speaks and I just wanted to say a few words on those backdrops. I think there are perhaps three contexts that we might want to keep in mind.

The first is the very fast-paced change that we are experiencing globally and the frightening extent of the loss of biodiversity, of climate change, and of the planetary degradation that we are seeing on a vast scale in the current model of world affairs. And it feels as though the forecasts of what was going to be a future that was comfortably held off by some time period, has now become the present.

This is allied to the second context, which is growing scientific understanding of not only the fast-paced change but also the dangers of tipping points and feedback mechanisms which have emerged much more clearly in the scientific publications in this field, including publications of September 2022, which identified tipping points that had been deemed possible but are now deemed likely given the anticipated degree of global warming that we are now facing. These are tipping points, which I'm sure colleagues will understand as well as I do, that are likely to produce cascades of further warming.

The third context that we might bear in mind is the spectacle of COP27. Of its efforts to move debate along being stymied by the lack of political action and commitment on energy transitions, and the very shamefully visible fossil fuel lobbyists who came to dominate discussions there and ensured that no further commitments were taken at this crucial global gathering, leading to what is – I would argue – catastrophic inaction.

I dwell on this because this is the outcome that is central to the lobbying tactics of fossil fuel states and companies who talk of energy transitions but whose actual practice and whose investment profiles really belie their commitment to their rhetoric of transitions. They are the masters of the tactics, of delay, of obfuscation and of dilution. They show a very shallow commitment to change.

How do we know this? In the context of the Ukraine war we have seen growing profits to be made in the exploitation of fossil fuels and an immediate response from that sector of a scaling up of their exploration and their extraction of fossil fuels. So even though they have spoken of the need for change they are entirely committed to profit-seeking activity where opportunities present themselves.

That aligns to a deliberate strategy to cultivate universities, to burnish their reputations as research leaders and as being 'committed' to this field of energy transition. In accepting their investments or their research sponsorship we are complicit in those strategies.

I want to take a moment to point to the success of the campaign to divest, in investment terms, from the fossil fuel sector, which has now seen commitments from 100 universities across the UK – that represents 65% of the higher education sector (not enough, I would say). It is also worth pointing out that that process, that campaign of divestment took eight years from the first university committing to it to today's preponderance of institutions, including our own, that have divested. Why so slow? Because not only do we face headwinds in terms of very deliberate strategies to make these kinds of changes as difficult as possible from within very powerful players of our establishment, but also because the universities themselves are prone to delay.

Some of that is to our credit: that we want to discuss and seek – as the Council has suggested in their response to this Grace – evidence-based solutions. I think we would all want that and yet the collective outcome is a shamefully slow response to a fast-paced emergency, a climate emergency, where we seem to be on the side of those who are seeking to dilute or delay.

It is not far-fetched to see parallels in this case with the acceptability and the presence of tobacco companies in our history. I am old enough, and have been at Cambridge long enough, to remember the very visible presence of tobacco companies in their sponsorship of activities – research and social – at the University. To remember May Balls, which were flooded by tobacco products in ways that we would now think of as totally unacceptable.

So I think we have some examples there that we can use to think back, of the process by which we would want to distance ourselves from some sectors. We might ask ourselves 'what is practical?'– and I think this is an important question on this occasion – but I would like to urge us to think about what is practical through a process not of delay and further consultation, but of implementation. Implementation is a phase at which we could think about the advisory policy shift embedded in this Grace; to ask how we could make that practical in ways for which there would be enthusiastic support across the collegiate University.

So to sum up, last year in response to a Freedom of Information request around the presence of fossil fuel investments, our own institution estimated that just 0.5% of our research and philanthropic income was linked to fossil fuel infrastructure. So I would argue that this is not an existential question; this is actually a very small part of our income portfolio. Secondly, I want to conclude to say this Grace was very well supported and I, as I'm sure my colleagues do, value the spirit of democratic accountability and participation that our Regent House represents. I would urge Council not to hive off this process of consultation into a report but to have the debate about how to implement the Grace as part of a process of endorsing what it asks for. I think that that represents our ethical ambition and has very wide support amongst staff and students.

Professor J. E. Scott-Warren (Faculty of English and Gonville and Caius College):

Deputy Vice-Chancellor, there are two issues here, one of protocol and the other of morality.

To take the question of protocol first: the University has chosen not to authorise a Grace that it has judged to be valid, and that was signed by 84 academics, including a number of Fellows of the Royal Society and the British Academy. It has made this decision on questionable grounds. As the Council freely admits, we already actively restrict our collaborations with fossil fuel companies and with other dubious parties (*Reporter*, 6590, 2020–21, p. 15). CBELA, the committee on benefactions, currently employs a 'traffic light' system that classifies potential partners as red, amber or green, based on their alignment with the University's climate goals. The Grace merely asks the University to make some simple changes to that system and to its deployment. It invites the University to admit that fossil fuel companies that are exploring for new reserves of oil and gas and that lobby to strike down progressive climate legislation – including the likes of Shell and BP – are not aligned with our climate goals and so should be classified as red. It also asks the University to delete the get-out clause that allows us to partner with companies that might become aligned with our climate goals in the future, for the simple reason that there may be no recognisable future beyond 1.5 degrees of warming. Finally, the Grace asks the University to restrict other collaborations with fossil fuel companies, in the same way that it already restricts collaborations that

might bring it into disrepute, such as with tobacco companies. There is nothing particularly new in this Grace: no threat to academic freedom nor – given that the sums we receive are not great – to the University's funding. Had it been authorised, the implications of the Grace would have emerged in a Discussion like this one, which could have been called by any ten members of the Regent House; and the academic community could then have voted as it saw fit. Instead, a Grace that deplores a democratic deficit has been answered with another democratic deficit.

On the question of morality: we should not be in any doubt by this stage that the fossil fuel industry is immoral; or that it is, to all intents and purposes, evil. The UN Secretary General, António Guterres, recently awarded an honorary degree by this University, has been uncompromising in his efforts to alert us to this fact. As he says, 'fossil fuel producers and financiers have humanity by the throat'.[1] He continues:

> For decades, […] the fossil fuel industry has invested heavily in pseudoscience and public relations – with a false narrative to minimize their responsibility for climate change and undermine ambitious climate policies.

And he goes on to draw direct comparisons between fossil fuel producers and the tobacco companies whose behaviour also led to millions of deaths:

> They exploited precisely the same scandalous tactics as Big Tobacco decades before. Like tobacco interests, fossil fuel interests and their financial accomplices must not escape responsibility.

We should also heed the warnings of Caroline Dennett, who recently resigned from her job as a senior safety consultant at Shell, accusing the company of causing 'extreme harms' to the environment.[2] Dennett claims that Shell has a 'disregard for climate change risks', and points to the palpable disconnect between what Shell says and what it does. As she puts it:

> I can no longer work for a company that ignores all the alarms and dismisses the risks of climate change and ecological collapse. Because, contrary to Shell's public expressions around net zero, they are not winding down on oil and gas, but planning to explore and extract much more.

Both BP and Shell are building fossil fuel infrastructure that will take the world beyond 1.5 degrees of warming, according to assessments by the IEA and the IPCC.[3] These are among the many 'carbon bombs' that currently threaten the viability of life on earth.

If we do not readily recognise fossil fuel producers as evil in the ways that Guterres and Dennett suggest, that is in large measure down to the way in which they operate. As we know, fossil fuel companies engage in extensive campaigns of advertising and disinformation to promote their products, and almost all of them, including Shell and BP, are members of (and large-scale donors to) industry lobby groups that exist to distort democracy, stifling environmental legislation and keeping us hooked on their highly addictive products. They have behaved in this way for many decades and there is no evidence that they are changing their ways. The marginal investments of these companies in 'green' or 'renewable' technologies are part of this process; they buy them the legitimacy they need to continue expanding their fossil fuel operations long into the future. But, just as nine cream cakes followed by a salad does not add up to a healthy diet, so you cannot trash the planet with 90% of your activity and save it with 10%. Just as it would not be acceptable for a tobacco company to sponsor a hospital, it is not acceptable for a fossil fuel extractor to sponsor a university.

Given what we know, the way forward ought to be clear: we must cut all ties with these companies that are causing mass death around the world. But it is clear from the Council's response that it does not wish to do this. The Council says that it 'does not wish to raise expectations about the ability of the Grace's proposals to be implemented as presented'; clearly, it doubts that the Grace could ever be acceptable, however many members of Regent House might support it. We can therefore expect the report that emerges in the new year to be toothless. We can infer that our University has thrown in its lot with the fossil fuel companies' desire for a protracted and lucrative energy transition, rather than pressing for deep near-term emissions cuts. It would rather explore doubtful technological solutions such as carbon capture and storage, zero carbon flying and domestic hydrogen than address the extremely dark reality of the situation and take the necessary ethical lead. We could choose to fund our renewables research by other means, preserving our academic independence in the process. But we would prefer to dance to the tune of companies that are ripping up the Paris Agreement, even as the glaciers collapse, Greenland melts, Siberia smoulders, East Africa starves, Europe burns, and South Asia reels from catastrophic heatwaves and flooding. For all that the University continues to teach the world about the science of climate collapse, we seem to be incapable of acting on that science and demanding transformative change.

[1] https://www.un.org/sg/en/content/sg/statement/2022-06-17/secretary-generals-virtual-remarks-major-economies-forum-energy-and-climate-delivered

[2] https://cleantechnica.com/2022/05/24/shell-consultant-quits-citing-disregard-for-climate-change-risks/

[3] https://www.wri.org/insights/ipcc-report-2022-mitigation-climate-change; https://www.iea.org/news/pathway-to-critical-and-formidable-goal-of-net-zero-emissions-by-2050-is-narrow-but-brings-huge-benefits

Ms E. Doherty (King's College and Cambridge Climate Justice):

Deputy Vice-Chancellor, the role of our University in the global community is fundamental to this Grace. Our impact goes far beyond our students or the confines of this institution. The high-quality research that is conducted by the students and fellows here shapes society, technologically, economically, and morally. And so too do we, the students, have a role to play as we carry the reputation of the University with us. It is for this reason we must be aware of how we influence the community. In many ways, we are a positive force for good, but continued investment in fossil fuel proliferation is not one of those ways. By failing to act on our responsibility in planetary collapse and climate catastrophe, we risk not only the future of students and the University, but the lives and livelihoods of people around the world.

The University's long history is filled with examples of acting too late, of damaging society and the destruction of the lives of others: from those incarcerated in the 'Spinning House' to the investment in and benefaction from colonialism and the slave trade. A fact of which the University is aware; a fact which, in the University's own words: 'encourages us to work even harder to address current inequalities'. This is one such moment where we must work harder to address worldwide inequality caused by our actions; we can use this institution's influence and academic excellence to work towards a just transition. We

may not be able to change the actions of the past, but we can change our future actions. This is one such moment where we can make a difference, take a truly positive action. This Grace offers a chance for us to end our academic support of the fossil fuel industry, which does so much harm to so many millions, right now.

The climate crisis is a human rights issue. As I speak, people are losing their lives due to companies engaged in oil infrastructure. In 2021, the UK Supreme Court approved legal action against Shell for human rights violation against the Ogale and Bille communities in Nigeria. Earlier this year, 33 million people were displaced due to raging floods in Pakistan, linked to the climate crisis. To understand the fossil fuel companies the University is working with, it is important to listen to people directly affected by them. To listen to people dying and losing their communities because of them.

At COP26 we heard from Tasneem Essop of the Climate Action Network, who said

> What the dash for gas in Africa says is that the lives of people in Africa are displaceable. So certainly the narrative that oil and gas is good for people has no evidence.

Bhavreen Kandhari, a mother and activist in India told us:

> My twin girls are now 18 and I have been battling for two decades. But I've not been able to help them and they have damaged lungs. So that urgency and desperation of mothers is the reason that we are here.

And finally, from the Pacific Warriors, a representative said 'We are fatigued from constantly telling our stories of how the climate crisis impacts us'. It is time we listened. It is time we as an institution fully reject the industries responsible for this crisis and suffering.

The crisis impacts this country too. This summer there were wildfires in London. This winter people will be freezing due to unaffordable energy costs as oil and gas companies raise prices. BP tripled their underlying profits between April and June this year, among record-high fuel prices. And as we head into winter, people will be unable to heat their homes. Meanwhile, rising sea levels and more frequent flooding will soon become an everyday burden. Yet, we shy away from addressing the issue of fossil fuel funding, particularly for research.

BP and Shell have decades of recorded human rights violations, of damage to climate and to ecology. These continue on to this day, at the expense of billions of people. The University cannot ignore the catastrophic impact of these companies.

The University has a responsibility. Our partnerships with the fossil fuel industry facilitate the crimes that they commit. BP is aiming to access ~2 billion barrels of oil from 'high risk or unconventional sources' in the next ten years, while the International Energy Agency stated that no new oil and gas could be exploited from 2021. BP, a group so closely tied to our University that until two months ago we had a research institute named after them.

This Grace would end ties with companies engaged in new fossil fuel production. It would prevent access to new research and technology for companies that manipulate the outcomes for planetary destruction. Cambridge can and will continue to have a strong influence on the energy sector, but it must make a clear stand. A stand against organisations expanding their fossil fuel infrastructure and taking dangerous risks with human life. A stand against organisations that downplay warnings by the IPCC and IEA. A stand against the human rights and human lives abuses from an industry that values profits over people.

The rejection of the opportunity for this Grace to be debated, and instead the proposal of a report on this issue is deeply disappointing, and indicates that the University is not taking the climate crisis or the influence of these fossil fuel companies seriously. Students see this as a delay tactic, as the University denying its academics the chance to fully have their voices heard on this issue. We know that these companies and industries are responsible for this crisis, yet our University continues to work closely with them. To see the chance for this Grace to be voted on rejected by the University's leadership was deeply disheartening and, for the University to truly be a leader in delivering a liveable future, an urgent change in direction is called for.

With this Grace, our University could instead focus efforts into developing energy sources that do have a future. Students could be sent into research projects that are focused on achieving equitable, sustainable power – without the fear that they will contribute to research that aids the production of fossil fuels, without supporting the reputation of disingenuous and dangerous companies. This institution could boldly push the government towards a meaningful net zero plan. We have an opportunity to join the right side of history, to be part of the climate crisis solution. This House cannot accept the decision that denied the Regent House the opportunity to vote on the Grace. I urge the University to take that opportunity without delay and to provide the Regent House the opportunity to implement this Grace.

Professor A. C. Copley (Department of Earth Sciences and Robinson College), read by the Junior Proctor:

Deputy Vice-Chancellor, my comments regarding the proposed Grace are focused on the negative consequences of severing ties with a wide range of organisations outside the University, with tangible harm to the University's research and impact in a variety of topics not related to hydrocarbons.

Effecting meaningful impact often involves engaging with the large organisations that dominate many fields, whether commercial or non-commercial. For example, as earthquake scientists, as part of our research my collaborators and I work with large engineering companies to improve the resilience of buildings and large infrastructure projects to earthquake-induced ground shaking, thereby reducing the risk of death and destruction. Such work would no longer be possible under the terms of the proposed Grace, because as part of the usual variety of large engineering projects, many of the globally important engineering companies are involved in designing or building hydrocarbon infrastructure. Equivalent logic will apply to all other subject areas who produce research impact by collaborating with the large companies that dominate the design, construction, and safety of the global built environment.

The transition to an energy sector based upon renewable energy requires minerals that must be mined, for the production of energy infrastructure such as wind farms, solar panels, batteries, and other electronic components. There is a pressing research need to establish how to find and sensitively extract such resources (e.g. copper, lithium, rare-earth elements, and other critical metals), without which renewable energy production will reach a plateau limited by the global mineral supply. There is significant overlap between extractors of economically important minerals, the producers of renewable energy, and those involved in hydrocarbon extraction. The proposed Grace would prevent us from working with these companies on

the topic of mineral resources and renewable energy, thereby preventing Cambridge from playing a role in the research that must underlie any efforts to produce an economy based upon renewable energy.

These examples are specific facets of a wider concept, which is that the global economy is interconnected enough that the proposed Grace would prevent Cambridge from engaging with many of the organisations which can effect positive change. The important issue is one of scale: the organisations that are large enough to drive significant change are also those who are involved a wide range of activities with a large number of partners and clients. To remove our ability to collaborate with them based on just one component of their operations will result in a severe restriction of Cambridge's ability to contribute to positive global change in a range of societally important topics including, but not limited to, natural hazards and renewable energy.

Professor J. S. Dennis (Head of the School of Technology, and Selwyn College), read by the Junior Proctor:

Deputy Vice-Chancellor, I support the Council's measured approach to investigating thoroughly the consequences of the Grace, were it to be adopted.

Clearly, the Earth's climate is in a parlous state, with the use of fossil fuels being a primary cause. Globally, total use of primary energy per capita has remained remarkably constant over the last ten years (*c*. 74.0 GJ in 2011 to 75.6 GJ in 2021). Given the growth in the global population, the commensurate rise in total energy use has increased from 520 EJ (2011) to 595 EJ (2021),[1] with an inexorable increase in the use of coal, oil and natural gas. The impact of renewable sources of energy has grown strongly over that period, now accounting for *c*. 13% of the total energy consumed, but the rate of adoption is insufficient to counter the increasing rate of demand for energy, let alone to make deep cuts in the use of fossil fuels. Over the last ten years, the concentration of CO_2 in the atmosphere has increased steadily from 392 ppm to 418 ppm,[2] with worrying increases in other global-warming gases, particularly methane. In short, there is very little evidence of an 'energy transition' and the Earth is in crisis.

In the light of these depressing facts, the role of the University must be to allow our academic colleagues freedom to research all aspects relating to such a huge problem. Our research must embrace (i) radical scientific and technological approaches to the generation and efficient use of renewable energy, and (ii) critical investigation of the political, economic, societal and ethical factors driving demand. Ultimately, legislation will drive significant change. To enact it, policymakers need the University's ability to furnish dispassionate, evidence-based models and research, thereby creating substantial leverage for the University's activities.

The phrasing of the Grace is such that it would diminish the capability of the University to lead substantial change and would detract from the global effort needed to bring about rapid decarbonisation. The reasons for this are set out below.

Collaboration and the effect of scale of operation

Making a major scientific or technological breakthrough in a university laboratory does not guarantee that it can be successfully implemented commercially in a timely way. Furthermore, what appears to be a major discovery at the laboratory scale might well not result in a substantial change at the industrial scale, because the innovation might not, in fact, be tackling a factor limiting improvement at the larger scale. Frequently, it is only by interaction with industry that some of the practicalities of our research can be judged. Conversely, it is only by working with companies that one can ensure that our research is focused on the technical issues that matter.

A specific example of essential collaboration is in the improvement and development of the Fischer Tropsch (FT) process for converting CO_2 and hydrogen to renewable fuels. For instance, the CO_2 might be derived, e.g. by direct capture from the air, and the hydrogen produced renewably, e.g. by the electrolysis of water using renewable electricity. The FT reaction is central to all schemes to make renewable synthetic fuels, for example, for aviation. Unfortunately, despite decades of work (dating back to the 1914–18 war), many of the real problems with implementing the technology are associated with the large scale of the operation and cannot be forecast on the basis of laboratory work. This is, therefore, an area where we must rely on partnering with operators of large facilities to ensure our research is focused and makes the impact required. However, companies such as BP and Shell already operate large FT facilities for conventional fossil fuels, so understanding their operating experience at scale is essential for any new approaches to using FT for renewable synthetic fuels to be viable. In essence, one needs a whole-system approach to design and operation – essential for commercial realisation.

Another important example is provided by research in the Whittle Laboratory, which is working closely with leading companies in developing technologies for aircraft powered by sustainable fuels, batteries and hydrogen. A major project is its Aviation Impact Accelerator, involving also the Cambridge Institute for Sustainability Leadership (CISL). The team has developed a model to predict, for example, the environmental impact of a given flight based on predictions from a suite of models running in concert and describing the interacting systems involved. Those systems include realistic models of the behaviour of specific types of aircraft, the nature and length of flight, the payload, the types of renewable fuels being considered, the environmental impact of manufacturing those fuels and of the feedstock needed to make the fuel etc. This work is unique and is rapidly becoming very influential in government circles because of its ability to help set policy for transition in the aviation sector, based on a comprehensive and balanced consideration of all relevant factors. However, that influence hinges on parts of the systems models being underpinned by data sets and operating experience from industry and industry experts, e.g. supply-chain information only available to large petroleum companies operating in the aviation sector. Without that industrial input, the model would have no grounding in practicality; without that grounding, it would have limited traction with policy-makers, thus delaying sensible decisions in the formulation of aviation policy.

The scale issue also arises with carbon capture and storage (CCS), a technology which will have to play its part in the transition because, at some stage, we shall have to prevent CO_2 from entering the atmosphere on a very large scale to help contain the global rise in temperature.

Some fossil fuel companies are exploring biotechnological routes to chemicals and fuels: large-scale biotechnology has taken a long time to emerge in these companies. At their current state of development, such manufacturing routes are often far from economic and, again, technical issues emerge at large scale, involving, for example, considerations of heat and mass transport, undetectable in laboratory apparatus. Companies need

University involvement and expertise in how to intensify these fledgling biological processes to ensure that they reach maturity and are not abandoned because of cost, as has happened frequently in the past.

These few examples illustrate that a partnership is essential to ensure rapid and influential transfer and adoption of our research and technology.

The supply chain

The Grace proposes having no dealings with companies involved in facilitating the construction of new fossil fuel infrastructure or facilitating the exploration for new reserves of fossil fuel. This would have major, and, I assume, unintended consequences, because it ignores the complicated supply chains in global business. It would, for instance, rule out a number of major engine manufacturers being involved in the Whittle effort to decarbonise aviation, because those companies also supply land-based turbomachinery needed for various types of fossil-fuel processing, such as in refinery operations or the conveying of natural gas. Similarly, our work on advanced photonics with communications companies would also be affected because equipment and instruments from those companies will be employed in some measure by the fossil-fuel industry. In passing, research on advanced photonics is essential in the drive to reduce the carbon footprint of the current generation of data centres – a footprint roughly equal to that of the global aviation industry. Presumably, manufacturers of batteries and essential catalysts would also be affected.

Clearly, the knock-on effects on the supply chain would have very far-reaching consequences for our research.

Influencing the transition

Disallowing any interaction with the industry would remove the University's power to influence thinking in these companies. Clearly, our research and innovation are important mechanisms for influence. However, one should also emphasise the significant transformation that we are currently seeing in our education provision. The express aim in the Schools of Technology and of the Physical Sciences is to equip the next generation of scientists and engineers to deliver the technology for carbon zero, and, no doubt, many of them will be employed by companies involved in fossil fuels and the energy transition. Examples include a major redesign of the undergraduate offering in Earth Sciences, which will be launching a new second-year Natural Sciences course on Quantitative Environmental Science, and Chemical Engineering and Biotechnology, which has undertaken a root and branch review of the Chemical Engineering Tripos to concentrate on sustainable production powered by renewable energy and materials. An exercise is in progress in Physical Sciences to launch new Masters-level courses in Climate Science and Sustainability.

Beyond this, CISL undertakes major programmes of education and convening of those with influence on fossil fuel operations, such as financing houses, banks and insurance companies. CISL has been in the vanguard of championing sustainability and social equity in these sectors, and, in turn, on the industries they finance and support. Such 'multiplying' influence, *viz*. the ability of certain institutions to affect the behaviour of many companies in a sector, is essential in the drive for energy transition.

Clearly, the modelling concepts being developed by the Aviation Impact Accelerator, noted above, have applicability in other sectors, e.g. road transport. The ability of these approaches to influence the thinking of governments – both UK and elsewhere – is, as noted earlier, another important 'multiplying' influence, because, ultimately, governments have to legislate for change. It is unreasonable to expect sufficient change based solely on free-market operations.

Finally, I believe there are huge prospects presently for the University to use its global convening power to bring together groups of influential scientists, engineers and thinkers to press for radical change. It is only by acting in concert, and by generating very radical solutions, that we can influence the global industry and halt the rapid degradation in the Earth's climate.

Funding

In the Schools of Technology and of the Physical Sciences, there has been a significant shift in research related to fossil fuel companies in recent years, with a strategic ending of all interactions away from extractive and upstream operations and towards sustainable energy resources and new green technologies. Current projects with major oil companies now focus on areas such as control of greenhouse gas emissions; battery research for improved storage (a key University strategic research area); support for the MRI laboratory in Chemical Engineering and Biotechnology (where the focus on catalysis has recently been directed to developing net-zero aviation fuel using the FT process); and CCS (with major research efforts in several departments across both Schools focusing on the fluid mechanics, chemistry and geology of underground carbon storage). To illustrate this dramatic change in our relationship, it should be noted that all new BP projects since 2020 focus on renewable energy resources, CCS, batteries and environmental applications (with the latter including methods to be applied in the development of clean cities), while with Shell there have been no new projects focused on upstream (e.g. on exploration or extraction) since 2015, and with their funding of MRI technology on flow through porous materials now directed to CCS.

Funding from companies on projects centring on energy transition is an important part of supporting the University's research effort in these fields. Experimental research is expensive and requires exacting measurements made by the latest instruments (e.g. recent donations by Shell to fund sensitive, multi-million pound MRI equipment used for imaging the passage of CO_2 through rock cores for CCS). A gap left in financial support by divestment would not be filled by extra UKRI funding (partly because such funding is often predicated on the involvement of potential beneficiary companies in the research). It would also not be filled by philanthropy, because it is very difficult to persuade donors to support very specific areas of research on the urgent timescale needed to initiate and run timely research projects. The premise that funding could be replaced by philanthropic giving is unworkable.

Accordingly, the Grace would destroy research momentum irreparably.

Recruitment, retention and academic freedom

Many of our talented researchers could readily seek posts at other institutions, particularly those in the USA and Singapore, often accompanied by higher salaries and generous research packages. However, our colleagues choose to stay in Cambridge because of the exceptional research culture, based on complete academic freedom, which makes initiating new research ideas, often with other researchers from across the University, easy to do. There is also the opportunity to interact with high-quality students, both at the undergraduate and postgraduate level.

The damage caused to our ability to undertake research in energy transition and related subjects, should this Grace be enacted, would be profound. We would not only lose senior academics and researchers but we would also have extreme difficulty in replacing them: why would a high-quality researcher come to a Cambridge where academic freedom to pursue research in energy has been trammelled?

Conclusion

We share the common goal of decarbonisation as rapidly as possible. However, I do not believe the strategy of divestment, as outlined in the Grace, will have the slightest effect on that ultimate goal. In fact, it will make things much worse, because the reach and influence of the University will be rapidly diminished as the lifeblood is drained from its energy research.

If we do not work with responsible fossil fuel companies, it will not affect their university operations. Instead, they will shift their funding to other universities. If we do work with them, and we are more forceful with setting the research agenda with them, then we are in a good position to influence their direction and accelerate the rate of withdrawal from fossil sources.

Consequently, I urge rejection of the Grace, because it essentially destroys our influence over the energy transition. It might achieve limited media coverage, but that would have zero effect on the real-world operations of multi-national businesses.

So, what other things should the University be doing to help avert the climate crisis? I believe the following are worthy of consideration.

(1) Use our global reputation to convene interactions with leading thinkers from around the world, and engage in all relevant disciplines (from science, to human behaviour, to policy etc.) to refresh thinking about radical ideas to decarbonise. These debates would give added force to our contacts with relevant companies, to the type of research they do, and to their need to plough much more money and resources into that research.

(2) Ensure that leading thinking on complex 'system of systems' models, of the type emerging from the Whittle Laboratory, noted above, are disseminated widely to policy-makers. By influencing policy using rigorous, evidenced-based tools, we exert much larger influence on the problem, because policy needs to drive change: free market operations will never be enough.

[1] exajoule (EJ) = 1.0 × 1018 joule (J) = 1.0 × 109 gigajoule (GJ).

[2] ppm: parts per million on a molar basis.

Professor M. Edmonds (Department of Earth Sciences and Queens' College), read by the Junior Proctor:

Deputy Vice-Chancellor, industrial engagement is an integral part of postgraduate training across the University. The Natural Environment Research Council (NERC) Doctoral Training Partnerships (DTPs) are focused on training a generation of postgraduate students in the skills, understanding and knowledge to tackle the critical societal challenges of our time, related to climate, energy, biodiversity and resources. The NERC Cambridge Climate, Life and Earth (C-CLEAR) DTP, hosted by the University of Cambridge and involving seven Departments and the British Antarctic Survey, began in 2019 and followed the five-year Earth Systems Sciences (ESS) DTP (2014–19). C-CLEAR has funded sixteen studentships this past year and provides support for students to take part in 3–6-month internships to prepare them for careers in environmental science. In addition, 3–4 of our studentships every year must be 'CASE' supported, meaning they are sponsored by companies external to the University who contribute to research costs and host the student for an internship.

Our students have undertaken a wide range of fruitful and intellectually stimulating internships, with various consultancies, energy and resource companies over the previous four years of C-CLEAR and the preceding five years of ESS. Some recent examples include a CASE project with an energy company that has acquired large seismic datasets of the ocean floor around Antarctica, which are being used by DTP colleagues to understand the history of glaciation and the potential future impacts of climate change on ice dynamics. Another student has a partnership with a resources company interested in sustainable mining of lithium and geothermal energy from granitic fluids. Many of these forward-looking initiatives are being driven by companies who have traditionally been engaged with extractive industries but are now employing their expertise to generate energy and resources in a sustainable way with minimal environmental impact. These are the companies who are likely to be leading progress and innovation in these areas for the coming decades.

The Grace as described would prevent our, and other DTPs, engaging with a wide sector of industrial entities that are currently active and valued partners in the energy and critical minerals sectors. The benefits to our students to having internships and interactions with these companies are immeasurable. Future DTP programmes will likely require more and not fewer partners in industry; cutting out a vast proportion of them on the basis proposed by this Grace will create large gaps in our postgraduate training and industrial partner portfolio and make the University increasingly uncompetitive in the postgraduate training market.

Professor R. J. Harrison (Head of the Department of Earth Sciences, and St Catharine's College), read by the Junior Proctor:

Deputy Vice-Chancellor, fossil fuels (coal, oil and natural gas) currently provide around 80% of the world's energy. However, the use of fossil fuels (past, present and future) is causing catastrophic climate change that, if unchecked, poses an existential threat to life on Earth. The need to transition the global energy system away from fossil fuels as quickly and as justly as possible is undeniable, necessary, and urgent. The scale and pace of the action needed to achieve this transition, however, is daunting, and the scientific, engineering, and societal challenges that must be overcome are monumental.

The University of Cambridge has a solemn duty to do all it possibly can to support the transition to a sustainable and equitable net-zero energy system for the world. We are well placed to do so – our scientists and engineers are at the forefront of global efforts to develop renewable energy technologies (solar, wind, tidal, geothermal), to locate and provide environmentally responsible access to the critical mineral resources that are needed to create these technologies, and to use our knowledge of the Earth's subsurface to create safe storage of carbon dioxide (reducing emissions from essential-but-hard-to-decarbonise manufacturing sectors) and hydrogen (delivering the energy storage capacity needed to bridge shortfalls in renewable/nuclear sources).

The University cannot – and must not – do this alone, however. Transforming the global energy system with the urgency needed to limit global warming to 1.5°C above pre-industrial levels requires coordinated action by government, society and industry. If the University of Cambridge is to play any significant role in this endeavour, its academics must be at the heart of the conversation between all three of these stakeholders, and afforded the academic freedom to engage with a broad range of partners on projects that will serve the University's and the UK government's stated net-zero ambitions.

The scale of the challenge we face, and the global nature of the solutions that urgently need to be implemented, requires engagement with multinational companies and their subsidiaries. Any limit on the University's ability to collaborate with companies with wide portfolios risks placing us on the sidelines, rather than at the forefront, of the greatest challenge facing humanity. The University has an effective system in place to scrutinise industry collaborations, and to ensure their compatibility with its net-zero ambitions. The Grace goes far beyond this, however, potentially stymying the University's ability to perform the very research that is needed to help achieve the transition to net zero.

Dr N. Holmes (Department of Pathology), read by the Junior Proctor:

Deputy Vice-Chancellor, I am a member of the Council but I am speaking today in a personal capacity. I was one of the nineteen members of the Council who signed this Report. I did not do so lightly; I am a long-standing supporter of the rights of Regent House and I have, myself, been involved in the initiation of Graces under Special Ordinance A (ii) 7.

Of course, the issue is complex but for brevity I want to focus on two primary reasons why I believe that the right course is to commission a study of the implications of this Grace before making a decision on it.

The first is that I do not comprehend the scope of the proposed self-denial envisaged but that I understand enough to realise that it may be profound in its impact on the University and quite a significant number of individuals within our community. During discussion, both outside and within meetings, reference was made to a recent decision by the Trustees of Princeton University to dissociate from companies engaged in climate disinformation campaigns or that are involved in the thermal coal and tar sands segments of the fossil fuel industry. Princeton's much more limited resolution turned out to involve ninety companies but only one of the so-called 'supermajors'. From that I can surmise that the much broader categories encompassed by the initiated Grace would involve dissociation from a much larger number of organisations. These organisations are likely to include many of the world's major financial institutions including banks which hold the University's money, so that we might find ourselves in the rather absurd position of being unable to accept money from HSBC or Barclays, but still contributing to their profits – the Grace does not seem to prohibit purchasing goods or services from the same companies.

Indeed, it is fortunate that the wording limits the prohibition to companies since the British government could certainly be said to be 'facilitating the exploration of new fossil fuel reserves' through its current 33rd offshore licencing round which has a stated aim of developing new production as quickly as possible. Again, the position feels false to be deriving over £400m p.a. from such an active encourager of exploration of new fossil fuel reserves (even if mostly indirectly given) while proclaiming virtuous self-denial from hundreds of entities from whom we receive no funding or collaboration.

The second basic reason why I signed this Report is that I listened to other people who are actively engaged in research aimed at enabling the world's transition to a carbon neutral future. They argue that, aside from any direct funding, collaboration with the major fossil fuel companies is actually essential to find the solutions which we all so desperately desire and need. It is only through a professional study of the implications of the initiated Grace that I can make a judgement about whether these climate and energy researchers are wrong or whether, indeed, the Grace may in fact have perverse consequences which inhibit Cambridge from making its full contribution to ensuring our future.

Therefore, I conclude by urging the Regent House to support the Council in its recommendation that, before taking any steps to prevent our colleagues from collaborating with and accepting funding from oil and gas companies (and others associated with them) we carry out, as expeditiously as possible, a study to define the implications of such a move. Some proponents of the Grace argued that we could have a fully informed debate now and move to vote on the issue this term. The Council decision was taken five weeks ago, but I feel no more certain of the full implications of this Grace today than I did then. Frankly, there is a risk that this Grace may do little to further the cause of carbon neutrality and may even do greater harm to it; this needs to be tested. Once we have the information, then let us have an honest debate.

Professor C. F. Kaminski (Head of the Department of Chemical Engineering and Biotechnology, and Robinson College), read by the Junior Proctor:

Deputy Vice-Chancellor, I am in full agreement with the signatories of the proposed Grace on the urgency to commit all possible efforts in the University to try and achieve the 1.5°C climate goal. Departments in the School of Technology actively pursue this goal through development of technologies, materials, and processes that enable a rapid and efficient shift away from fossil-based energy production and consumption. Cambridge is a world leader in this field, with programs including batteries, solar energy conversion, wind farms, hydrogen technologies and carbon capture technologies. Much of this research is co-funded by companies that would not be allowed to collaborate with the University if this Grace were approved. The proposal fails to recognise the fact that many major oil and gas companies are investing heavily in energy transition research.

Specific examples of current projects that would not be allowed under the proposed policy include funded Ph.D. projects for CO_2 storage; corrosion research to build more efficient turbines for offshore wind farms; development of low carbon synthetic fuels; research to enable fast charging batteries for electric vehicles; low energy building design; and development of green ammonia and green hydrogen. Preventing these projects from running will mean that we lose substantial ground as a driving force for energy transition and will reduce future opportunities.

Under current University policy, research related to fossil fuel extraction is already prohibited – a policy which we strongly support. Mechanisms to ensure this are in place through the requirement for any research proposed in

collaboration with the oil and gas sector to be subject to CBELA approval. Preventing all collaboration with such industries will, however, severely impact our ability to make substantial contributions towards the 1.5-degree goal.

Professor R. M. Owens (Deputy Head (Research) of the Department of Chemical Engineering and Biotechnology, and Newnham College), read by the Junior Proctor:

Deputy Vice-Chancellor, please note my support for the views outlined by my Head of Department, Professor Kaminski, in his statement. I am convinced that the energy transition needs active (and indeed increased) participation from the fossil fuel industry.

Professor M. D. Mantle (Department of Chemical Engineering and Biotechnology and Wolfson College), read by the Junior Proctor:

Deputy Vice-Chancellor, I give my support to the statement from my Head of Department, Professor Kaminski.

Dr L. Di Michele (Department of Chemical Engineering and Biotechnology and Pembroke College), read by the Junior Proctor:

Deputy Vice-Chancellor, I support the remarks of Professor Kaminski and wholeheartedly support the University's commitment to take any action required to mitigate the effects of the climate crisis, and keep global temperature within 1.5°C of pre-industrial levels.

However, I think that in the absence of alternative, secure funding streams to support ongoing decarbonisation research, the proposed Grace risks having a negative impact.

Professor M. Kraft (Department of Chemical Engineering and Biotechnology and Churchill College), read by the Junior Proctor:

Deputy Vice-Chancellor, I would like to express my full support for Professor Kaminski's statement.

Dr T. J. Matthams (Department of Chemical Engineering and Biotechnology and Christ's College), read by the Junior Proctor:

Deputy Vice-Chancellor, I support Professor Kaminski's remarks regarding the Grace relating to fossil fuel industry ties.

Professor G. D. Moggridge (Department of Chemical Engineering and Biotechnology and King's College), read by the Junior Proctor:

Deputy Vice-Chancellor, I support the comments of Professor Kaminski and believe that the proposed Grace would represent a significant infringement of academic freedom.

Professor D. Fairen-Jimenez (Department of Chemical Engineering and Biotechnology and Robinson College), read by the Junior Proctor:

Deputy Vice-Chancellor, I would like to confirm that I support the comments from Professor Kaminski regarding the Grace relating to fossil fuel industry ties.

Professor D. I. Wilson (Department of Chemical Engineering and Biotechnology and Jesus College), read by the Junior Proctor:

Deputy Vice-Chancellor, I would like to express my support the views expressed in Professor Kaminski's statement.

Professor A. J. Sederman (Department of Chemical Engineering and Biotechnology and Trinity College), read by the Junior Proctor:

Deputy Vice-Chancellor, I am in support of the comments made by Professor Kaminski.

Professor M. E. Lamb (Emeritus Professor of Psychology and Sidney Sussex College), read by the Junior Proctor:

Deputy Vice-Chancellor, anthropogenic climate change is one of the defining challenges facing our planet. Already, devastating and irreversible damage has been caused, making urgent the need for further action. Those actions must be both individual and collective. As one of the world's leading universities, it behoves the University of Cambridge to examine and change its own practices, place pressure on fossil fuel-exploiting behemoths, and set an example for other institutions and nations. Council's efforts to avoid voting on a Grace for which there is substantial support within the University represents an attempt to delay placing pressure on ostensible partners. I urge this House, Council, and the University to commit urgently to all the practices, including inconvenient ones, to preserve the continued viability of the planet. In service of that goal, Council should ensure that its promised Report is completed soon and put to a vote in this House.

Professor M. R. Laven (History Faculty and Jesus College), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, in October 2020, the University took the historic decision to divest from all direct and indirect investments in fossil fuels by 2030, as part of the University's plan to cut its greenhouse gas emissions to zero by 2038. With determination and principle, the University promised a rapid withdrawal from investments in 'conventional energy-focused public equity managers' by December 2020. At the same time, the University announced that all research funding and other donations would from now on be scrutinised to ensure that the donor can demonstrate compatibility with the University's objectives on cutting greenhouse gas emissions before any funding is accepted. And yet the University continues to receive donations from major fossil fuel companies, including Shell and BP.

This is scarcely in line with the University's commitment to scrutinising donations. While fossil fuel giants toss breadcrumbs to the scientists of Cambridge, they pay membership fees to industry lobby groups such as the American Petroleum Institute, which promote fossil fuel expansion and lobby against climate legislation. We have seen the adverse effects of lobbying only this week in the failure of COP27 where, according to one NGO, at least 636 of those attending were lobbyists for the fossil-fuel industry.[1] These same lobbyists defend the cause of their paymasters by insisting on their role in the transition to renewables. BP – often considered to be ahead of the game in promoting energy transition – invested less than 3% of its capital expenditure in renewables in the period 2009–20.[2] Donations to the University from fossil fuel companies constitute a microscopic proportion of their grotesque profits and are clearly designed to launder their reputation.

Let us not be fooled: the reality is that these companies, while they continue to invest 97% of their vast resource in fossil fuel extraction, are playing a key role in the devastation of our planet.

The University's position is founded on a fundamental contradiction. If it is wrong to invest in companies that remain overwhelmingly committed to the fossil fuel industry, then it must be wrong to accept donations from them. The fact that the University recently renamed the BP Institute suggests that it is not so unaware of this inconsistency. No doubt, as we reflect on our Legacies of Enslavement report, there is additional impetus to consider the reputational consequences of investing in industries of death. The Grace submitted by 84 members of the Regent House asked the Council to reject funding from companies that continue to invest in the construction of new fossil fuel infrastructure, to engage in exploration for new fossil fuel reserves and to retain membership of groups that lobby against science-based climate legislation. This is not a radical proposal. The Grace simply urged the University to be consistent in its application of its own rules of ethical scrutiny. It is peculiar and disturbing that the University has denied members of the Regent House their right to vote on this Grace. I suppose the lobbyists have shown their strength once again.

[1] https://kickbigpollutersout.org/big-polluters-at-cop27

[2] https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0263596

Professor M. M. G. Lisboa (Faculty of Modern and Medieval Languages and Linguistics and St John's College), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, with regard to the Grace under discussion here and now postponed I wish to raise two points: one procedural and one of substance.

First point: The withdrawal of a Grace counters the University's democratic principles of self-governance as mandated by the Regent House. In this regard attention should be drawn to paragraph 14 of the Twenty-seventh Report of the Board of Scrutiny, which comments:

> The Board's Twenty-sixth Report repeated concern (first expressed in its Twenty-fourth Report) about pressures on the system of academic self-governance within the Governance and Compliance Division and encouraged the Council to satisfy itself that resources were sufficient to discharge the functions expected of it. *The Council did not take up that observation in its response*. The Board's concerns remain with recent evidence of an *ongoing problem including the erratic and often late publication of Special numbers of the Reporter e.g., Special No 5, Members of University Bodies [and] the withdrawal of Graces*. (Emphasis added)

That point applies to the Grace under Discussion here and is producing yet another delay in the tackling of climate destruction, a matter of maximum urgency, as made clear on 7 November by the Secretary-General of the United Nations.

Second point: It is acknowledged that the matter the Grace under discussion addresses is complex and that some important research is conducted in this university, whose primary aim is engagement with global problems of planetary importance regarding climate change as a result of the use of fossil fuels.

Examples of this are cooperation with energy companies which are embarking on the transition from fossil fuel energy supply to renewable power supply, with all the technological challenges which that entails. Another example is research into the inhibition of corrosion in CO_2 pipework infrastructure funded by oil majors. Regarding the latter, it is argued by the lead researchers that without a successful conclusion to work like this, the pumping and storage of large volumes of CO_2 will not be possible due to the presence of highly corrosive contaminants in the CO_2 stream causing excessive corrosion in the steel transport pipework.

There is no intention here of questioning the integrity of colleagues who urge a nuanced approach to what are valid concerns. Parallel expert advice at the highest level, however, urges the need for scepticism and the possibility of an intent on the part of fossil fuel companies to 'greenwash' their main *raison d'être* by funding such academic research.

Whilst the loss of academic freedom is a concern and begs questions about for example the selective blacklisting of some countries but not others (for example, why would the University boycott China but not Saudi Arabia?), it is ever clearer that in the name of global safety, fossil fuel companies should no longer be involved in new oil and gas exploration. They should instead be strongly incentivised to use their very substantial resources to shift from being fossil-fuel based into alternatives based on renewable energy.

We should be able, in an ideal world, to work with those companies who are committed to generating an *ordered, deep and rapid transition* away from greenhouse gas emissions. There is an obvious danger that working with oil company X to help it make that transition in effect helps it use such collaboration to greenwash its business, with no intention of delivering a transition. At present all five major oil companies are guilty of this, and the University risks becoming their 'useful idiot'. When you sup with the Devil, use a long spoon. There may be no spoon on earth long enough for this purpose.

Based on the principle of erring on the side of safety, it is essential that pending proper education of members of University Council and of the Regent House regarding all the above matters, the Grace be put to the vote as it stands.

The matter can always be revisited after a symposium organised and timed *as a matter of urgency* (early in the New Year: ideally in February, after the scheduled public disclosure by the University of the deep penetration of fossil capital into its core business). In this symposium, the various interest groups will have the opportunity to outline their points of view. It is now suggested that the symposium be organised, if agreement could be reached to that effect, in association with the Cambridge Centre for Climate Repair here in the University, with a report produced *also as a matter of the utmost urgency*.

An undertaking should also be included that the symposium will make its conclusions available in the public domain, including in the press and other media organisations. Representatives of the United Nations, the European Union and the UK government should be invited to attend as guests.

Professor A. D. Neely (Senior Pro-Vice-Chancellor for Enterprise and Business Relations), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, I know some colleagues believe that we should break all ties with the fossil fuel industry, but there are three reasons why I believe collaboration with select fossil fuel firms is essential if Cambridge University is to play an active role in enabling the energy transition.

First, we need to educate the workforce of the future – the workforce that will deliver the energy transition. Second, we need world leading research that will support the development of new technologies and provide new insights into how we can enable the energy transition. Third, we need to do this work at scale. The energy transition is a global challenge. Delivering it will require firms with scale and unique engineering and technological capabilities.

Let me frame my remarks by referring to the University's mission, which is to contribute to society through research, education and learning at the highest levels of international excellence. The University can make a positive and important contribution to the energy transition both through research and by educating the workforce that will work on the energy transition in the future. It is clear we all want the same end: to ensure the transition is delivered, we just see different routes to achieving this.

It is important to understand just how difficult the transition is to achieve. To avoid energy poverty, renewable energy supply needs to be massively scaled up. The IEA estimates that by 2030, renewable energy capacity needs to be four times the 2020 levels. 'For solar PV, this is equivalent to installing the world's current largest solar park roughly every day'. By 2050, the IEA proposes that solar PV needs to be 20 times today's capacity, and wind power needs to be 11 times today's capacity. And all of this needs to be done while energy intensity is reduced, meaning that everything needs to become more efficient (bigger economy, but smaller energy demand than today's). On top of this, the transition to 'Net zero by 2050 requires huge leaps in clean energy innovation' and huge investment, as many of the technologies needed post 2030 are still in the prototype or demonstration phase. So the University has a clear research role to play, but we can only effect real contribution to the transition by working with today's main energy suppliers.[1]

The scale of the change is such that we need the capability of today's main suppliers to deliver system-wide change globally. I believe the best route is to work with firms that want to see the transition happen. For example, our research on fast charging batteries could be implemented much more rapidly by working with the companies who are developing EV charging infrastructure. These are the companies that currently have a network of petrol stations, like BP and Shell, and who have an interest in replacing these with EV charging in preparation for a future where cars are mostly electric.

This is only one small example of where firms are changing and where by working with them we are helping them change, and there are many others. We see examples of companies that have totally pivoted from fossil fuel energy to renewable energy production, e.g. Ørsted (formerly Dong Energy). We have an opportunity to influence and help the larger firms that are committed to the transition get there too. To manage the risk, we have a clear policy for engaging with fossil fuel firms: we only work on projects related to the transition, and we are selective about the companies we work with, i.e. we run thorough due diligence and only work with companies that show evidence of transitioning.

There are also examples of important research that we are doing that we simply couldn't do if we were not working with firms like BP and Shell. The Whittle Laboratory, for example, runs an Aviation Impact Accelerator. They have built a model that is being used by the UK Department for Transport to explore options for UK policy on sustainable aviation fuels. That model relies on data provided by fossil fuel firms. If we were to break links with them, the Whittle Laboratory would have no way of continuing this important research. And of course, the Ph.D. students working on associated projects would not be able to continue their work or education.

Across research themes, we often encounter the issue of data, which we need to get from the industry – for example, a student in Astronomy is using the energy industry's data to develop methane monitoring techniques. There are numerous similar examples where access to subsurface data is enabling scientists in Earth Sciences and CEB to make advances on safe and permanent carbon sequestration.

Fossil fuel firms do not just provide invaluable data – they also provide materials. Taking the fast charging batteries example again, some of the research requires access to niche electrode materials that are, in practice, not available to the researchers, but can be provided by these firms. On the flip-side, there is a lot of applied research that cannot be commercialised in the academic lab, and needs the industry's collaboration to demonstrate it in a scalable way, as is the case for much of our energy materials research. For a challenge as big as the energy transition, it is also imperative to share expertise. For example, we have been working on alternative fuels, and firms like Shell have been pivotal in feeding in their deep knowledge of chemical processes to advance these studies, as well as then taking the advances down the supply chain. This is how some of our research trickled down to a demonstrator flight made with synthetic fuel.[2]

All of this has been enabled by academic freedom, and Council has a duty to protect academic freedom. We should think very carefully before introducing policy that limits academic freedom. We have colleagues who have worked with BP and Shell for decades and if we introduce policy that prevents them doing so not only do we risk restricting their academic freedom, but we also run the risk of encouraging them to leave the University.

We absolutely need to keep pressure on firms to change, but the best way to do that is to maintain relationships with them and work with them, so we retain our influence. By focusing on our mission 'to contribute to society', we have to think about how we can scale our impact since we are a relatively small institution (15,000 staff, 20,000 students), while the energy transition is a massive global challenge. We have to work with partners who have the resource, scale and capability to deliver the changes needed, and together we should do all we can to support the transition.

[1] 'Today' refers to 2020 figures. All data and quotes in this paragraph are from IEA (2021), *Net Zero by 2050*, IEA, Paris, https://www.iea.org/reports/net-zero-by-2050.

[2] Netherlands government news item: https://www.government.nl/latest/news/2021/02/08/world-first-in-the-netherlands-first-passenger-flight-performed-with-sustainable-synthetic-kerosene; Video with technical explanation: https://www.youtube.com/watch?v=IJdlZCS3shk

Professor A. C. Ferguson-Smith (Pro-Vice-Chancellor for Research and International Partnerships), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, I agree with the remarks made by Professor Neely.

Professor R. W. Prager (Head of the Department of Engineering, and Queens' College), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, the University needs to use all the means at its disposal to drive forward and facilitate the energy transition. The current climate targets may be tough, but they are set at the minimum possible levels in terms of damage to ecosystems and negative impact on humankind. We cannot allow them to slip either in level or in timing.

All sensible energy companies now acknowledge that they must eventually move to sustainable business models, but many are moving far too slowly and seeking to drag out dependence on fossil fuels through 'interim' solutions, lobbying, and greenwashing.

I say that the University must use all means at its disposal to drive forward the energy transition and there are two main ways we can do this. We can help to develop the science and technology for sustainable energy and we can use our national and international influence to put pressure on fossil fuel companies to make the real changes that are required.

Both these actions require that we have carefully structured engagement with fossil fuel companies. Only through industrial links can we access the data and materials necessary for us to deliver the technical innovations that will enable the transition to a zero carbon solution. And we can only exert influence on industry by being engaged with them, well-informed and acknowledged as experts internationally.

I have been on the management board of the Cambridge Institute for Sustainability Leadership for some years and have experienced at first-hand the response from the senior leadership of an extraction company when membership of a prestigious initiative was withdrawn from them because of their actions. The Institute for Sustainability Leadership is greatly respected nationally and internationally because of its practical engagement in supporting the move to zero carbon and a circular economy, as is the university as a whole. Its actions and by implication the actions of the wider University therefore carry much more weight than if it never engaged or lacked real knowledge and experience. Indeed this could be said to show how the university can withdraw specific aspects of collaboration, while continuing other strands of engagement with the same company, and hence have a positive impact in the external world.

We can only continue to exert influence in this way if we have a nuanced approach to industrial engagement where each project is judged on what it will achieve in totality, not just the single dimension of funding. The University has already begun doing this through the 'Advisory Group on Research Purpose' (AGRP) for which I serve on the Reviewer Pool. When a project is proposed that involves a fossil fuel company, the AGRP writes an independent report on the extent to which the work is genuinely intended to make a significant contribution to the energy transition. It is the role of the AGRP to provide the scientific and technical background so that CBELA can make an informed decision.

If this approach is to be successful, we need to have well accepted values across the University that are well understood by CBELA. This is not as easy as it sounds because we are, or at least we should be, in a time when the norms of our society are changing rapidly in order to address the climate emergency. What society regards as appropriate now is not what it will regard as normal in three years' time. In order to lead the University effectively, our central democratic processes should focus on winning hearts and minds for the right vision of the future. Getting the overall vision right and uniting the collegiate university behind it, will be a major achievement, indeed I would argue that it is *the* major achievement that the Council should focus on delivering.

Dr J. H. Richens (Gurdon Institute), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, I would urge the Council to not allow the perfect to be the enemy of the good. While it may be difficult and time-consuming to identify all sources of funding linked to fossil fuels, there will be many sources of funding that are already identified and could be removed. We should not allow the University's reputation to be used to greenwash the image of companies seeking to expand and continue fossil fuel use. If humans are to have any hope of avoiding complete climate catastrophe then we cannot seek new sources of fossil fuels, or make new infrastructure to extract fossil fuels, and the University should not associate with companies who are doing just that. The only way that these companies will wake-up and act responsibly is if we force them, and this includes refusing to accept sponsorship. I urge the Council to do all they can to cut ties with the fossil fuel industry and help to secure a more stable planet for future generations.

Ms C. C. Shine (Director and CEO of the Cambridge Institute for Sustainability Leadership), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, it is imperative that climate change is addressed.

Transformative action at all levels of society and the economy is needed to keep average warming to 1.5 degrees. We are not on track, as recent high-level reports and discussions at COP27 have highlighted. In line with its mission to society, the University has a unique opportunity and responsibility to drive forward and facilitate the necessary global energy transition, drawing upon its world-leading capabilities in research, teaching and innovation. It is well positioned to develop scientific and technological breakthroughs for sustainable energy and leverage its policy and economic expertise and influence to accelerate this transition.

While many major fossil fuel companies publicly acknowledge the need to transition, they continue to delay progress to a pace that is economically viable for them – a pace much slower than science indicates is necessary for climate stability and human security.

The crux of the debate is therefore whether the University will have a greater impact in accelerating the transition by disengaging from fossil fuel companies completely, or by continuing to deploy its core activities through engagements with fossil fuel companies in a highly strategic and thoughtful way.

As Director and CEO of the Cambridge Institute for Sustainability Leadership, I believe that Cambridge should take an evidence-based approach to this decision. The conclusion should be reached after careful consideration of:

(1) the University's impact to date on energy transition through its work with fossil fuel companies;
(2) a review of the growing body of evidence on the impact of divestment and disengagement globally; and
(3) the University's ambitions, capabilities and potential for impact on this acute global challenge.

Strategic implications for the University

A solid evidence-based position and strategy for the University's contribution to addressing the climate challenge is essential to leverage Cambridge's research and innovation for positive global impact and to protect its long-term reputation and resilience. On such an important issue, it is critical that the University adopts a joined up, leadership response that considers all 'levers for change' and all associated risks for the society and environment we all depend on and are part of. The Grace under debate focuses on what the University should *not* do and who it should *not* work with, both of which are important questions.

It is recognised that sometimes the University's most powerful contribution is to disengage. However, there is an equally important need for agreement on ambitious action across the University on how it *will* deploy its resources to address the climate challenge, who it *will* work with and under what circumstances. It would arguably be a dereliction of responsibility for the University to simply withdraw from the fray without a wider plan.

It is noted that the breadth of the Grace could create confusion about what is within or outside its scope, as well as creating a precedent for future application to other problematic sectors and complex issues. Greater specificity of the scope of this Grace is therefore recommended. More broadly, it is also recommended that the University develops a clear view on its role in society and a framework for making difficult decisions about how it can best contribute to tackling the grand challenges of our time. Without these steps, Cambridge could be at risk of fragmented and contradictory positions, unintended consequences and – most importantly – failure to optimise its positive impact in line with its mission.

Specific considerations on engagement with fossil fuel companies

I am not arguing for or against the Grace, but for careful consideration of a complex and multi-layered issue with major implications for society, policy and the economy.

If the Grace is not approved, the following points should be considered to inform the University's future engagement with the fossil fuel sector:

To bring clarity and alignment to such engagement, the University should affirm its overall role and proactive plans for deploying the full breadth of its resources towards tackling global sustainability challenges such as climate change. As indicated, this should include rigorous analysis of:

(i) the impact to date of Cambridge's research and innovation in driving and enabling the fossil fuel sector to transition;
(ii) the extent to which its future engagement or disengagement with the fossil fuel industry, and with specific companies and projects, will demonstrably contribute – directly or indirectly – towards achieving rapid progress on net zero; and
(iii) the implications for the University's reputation and integrity in terms of its mission and commitment to global goals.

A strategic and transparent approach to engagement would require the University to:

(*a*) be clear on its position on what is untenable activity by fossil fuel companies and their value chains;
(*b*) terminate activities that are counter-productive to the speed of transition to net zero, including activities that could extend the social licence of laggard companies and sectors;
(*c*) terminate activities that generate only minor environmental or efficiency improvements to systems or processes with no credible path to net zero; and
(*d*) develop a strategy to clarify the outcomes it seeks to achieve and the mechanisms it will deploy to achieve them, including divestment and disengagement as well as research, education, innovation, convening, and policy influence, to both drive and enable transition to net zero.

Ms A. Traub (Executive Director of Development and Alumni Relations), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, in line with the University's desire to address the climate emergency, Development and Alumni Relations has for the last five years been raising funds for research and initiatives related to energy transition and global decarbonisation.

More than £200m was raised for climate-related priorities in the recently-concluded £2 billion *Dear World… Yours*, *Cambridge* campaign, including Cambridge Zero funding, the Cambridge Conservation Initiative, zero-carbon flight research, posts and Ph.D.s in climate law and climate repair, public policy and the Whittle Laboratory. Additionally, one of our latest gifts and the third largest of the campaign, worth £82.5m, specifically focuses on climate resilience and sustainability in Africa.

To suggest that corporate-sponsored research funding can simply be replaced by fundraising and development activities is unrealistic for the following reasons:

Firstly, philanthropy is a lengthy process with multi-year priorities set by the University, relationships built over years and gifts that align with academic purpose co-created with academics and donors. It is not an appropriate tool for deployment as a short-term fix to plug funding gaps that arise.

Secondly, corporate research grants are often for very specific purposes aligned with that organisation's business interests. It is rare for such projects to directly align with a certain donor's interests in a way that could enable funding to be directly replaced by a philanthropist.

Development and Alumni Relations is committed to supporting the University's efforts to tackle climate change and fundraising for our climate initiatives including decarbonisation and the energy transition will continue to be one of our top priorities for the foreseeable future. We just need to be mindful about the role of philanthropy in this endeavour and how it differs in timescale and purpose from other sources of funding.

Dr O. Weller (Department of Earth Sciences and Sidney Sussex College), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, while the proposed Grace is well intentioned, I wish to highlight the negative consequences of the broad and restrictive wording of the Grace. Specifically, the proposed restrictions on collaborations would have a detrimental impact on the University's ability to be a leader in achieving the climate goals at the heart of national and international agreements, such as the UK's net zero target and the United Nations' Sustainable Development Goals. To illustrate this point, I provide a case study below, but note that this scenario could apply to any researcher at the University.

I speak from my position as a UKRI-funded 'Future Leaders Fellow'; a scheme designed to tackle ambitious, multidisciplinary questions of societal importance. My research investigates the geological processes that lead to the formation of rare-earth element (REE) deposits. REEs are critical for the decarbonisation of energy and transport infrastructure, through their use in high-powered magnets in wind turbines and electric vehicles. Therefore, to meet climate goals, society will need to substantially increase global supply of REEs, along with other energy critical raw materials.

Historically, demand for REEs was low, so we lack a detailed theoretical understanding of how they become concentrated in nature. With a Future Leaders Fellowship, I am driving this understanding forward. To maximise the impact of this research, it is essential that our team can exchange data, ideas and results with companies in the mining sector. This exchange enables us to benefit from their long-term expertise in this domain, to use their proprietary datasets, and most importantly to test and implement our approaches. However, the proposed Grace would limit such interactions, as many large mining companies have departments with interests in the fossil fuel industry. Consequently, the proposed Grace would stymy vital research focused on achieving a low-carbon future. Such an outcome is contrary to the assumed motivation of the Grace to mitigate anthropogenic climate change; an aim that I share, and indeed am dedicating my research career to trying to combat.

Mr L. Westwood Flood (Jesus College), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, it is not my impression that undergraduate members of the University regularly take part in Regent House discussions. I suspect that the average undergraduate is not subscribed to the Wednesday evening *Reporter* mailout either. Thankfully, I am.

It was, therefore, to my disappointment that the Council has recommended that the Grace on funding from the fossil fuel industry does not progress. More accurately, the Council has recommended that the Regent House not make its views heard on the matter of morally bankrupt companies, which often act against the interests of the academic and wider human community, funding research.

I argue that the Regent House could still adopt this Grace in its current form, without damaging or necessarily terminating existing agreements. Instead, the Grace should be seen as looking forwards, allowing our shared institution to say with its full chest: we walk the talk.

I do not doubt the sincerity of the Council as to recognising the severity of the crisis we face as a species. This makes it especially disappointing that their Report deploys the usual justifications to prevent implementation. These are:

One: that 'academic freedom' could be under threat because of the 'breadth and scope' of the proposed Grace. 'Academic freedom' is an interesting concept to raise in response to the proposed Grace. Its wording, if (and it's a big if) adopted wholesale as policy, would impose a blanket ban on the University accepting *new* funding or sponsorship from organisations which either get fossil fuels out of the ground, store it, and are members of organisations which deny climate science in their lobbying activity.

There is nothing in the Grace which calls for the activities of academics to be curtailed, nor which compels the University to rid itself of research into fossil fuels or their alternatives.

To the contrary, requiring the University to face up to the urgency of the climate crisis and those who perpetuate it furthers academic freedom. It rids the University of its troublesome connections to those who promote baseless conspiracies about climate science (along the lines of 'we are tired of so-called experts'), including those fossil fuel companies who have definitively known of the connection between fossil fuels and harms to human health for decades.[1]

The 'breadth and scope' of the Grace is one of its features – it is a statement. It calls on the University to declare, as humans and academics, that we will not continue to greenwash those causing the destruction of our fragile home.

Two: that the aforementioned 'breadth and scope' of the proposed Grace entail 'reputational, financial and legal consequences'. One can but wonder what these consequences are.

The Council notes elsewhere in the Report that they have reserved powers in these areas (Statute A IV 1(*a*)), and therefore it is up to the Council to determine implementation. I imagine they have in their minds concerns as to their obligations as a partner in extant funding agreements and sponsorship contracts with the very same companies this Grace condemns. If that is the case, I don't think any member of the University with a comprehension of the issues at hand supposes that the Council would simply up and terminate these agreements on the spot. Rather, the proposed Grace calls for the University to not accept any *further* funding from such organisations.

Now, if the Council fears that the University's reputation with those same organisations will be damaged, then I fear it may have missed the point. The point *is* to send a message to those organisations.

That message is simple: a pioneering and world-leading research university like Cambridge takes seriously its obligations to the global community, and it will no longer take money from any organisation which perpetuates our shared crisis.

Three: that to make sweeping changes to the current policies[2] on the acceptance of funding from groups associated with the fossil fuel industry should not be made by such a Grace.

Sensitivities as to the power of the Regent House to pass policy are understandable coming from the Council, especially in light of the failure of the Endowment Fund Supervisory Board establishment Grace in 2021.[3]

The Acting Vice-Chancellor said in his address upon taking office that University governance 'relies ultimately on members of its Regent House engaging, discussing and voting on the issues that matter most to them'. Rightly so, it is one of the things which sets Cambridge apart, at least to some extent, from the many universities sadly in the grip of self-selecting management. With that in mind, I want to register my distaste with the implication in the Council's

Report that 'deep discussion' cannot occur regarding the Grace as presented, instead preferring to kick the can down the road.

Those reading or listening to these remarks may be confused as to my direction here. The Council's Report is clear that they will engage the Regent House in consultation and discussion on 'alternative formulations' in light of a study they will bring to the Regent House in Lent Term. My concern is that this is an attempt to distract from the forest by focusing on the trees. Ironically, neither the forest nor the trees have much time left, so you will have to forgive the analogy. The trees in this instance are all of the minutiae of implementation that the Council hints at in their Report. The forest is the University taking a firm stance against the forces which have little interest in preserving life as we know it.

In getting lost in such details, I fear that the Regent House would forgo a unique chance to say 'enough is enough' and express a very important type of academic freedom. The freedom to steer the direction of the institution they call home. This is especially important given Cambridge's worldwide reputation. By saying that this University isn't afraid of rejecting such money, we send a message to our global academic partners that we will not stand idly by – and neither should they. It is an institutional-level move to rid ourselves of the problematic and all-pervasive influence of anti-science forces.

I am sure the Council – and Board of Scrutiny – would report on the implementation of the proposed Grace, and would find it within themselves to make the necessary implementation decisions to ensure the will of the Regent House is carried out, keeping in mind the various obligations which they must weigh up. Perhaps a provision could be inserted into the Grace requiring the Council to report on the different implementation paths following a report, while still allowing the Regent House's voice to be heard. Crucially, this would ensure the Grace is still put to the Regent House. Steering the Regent House away from making such a statement is, I fear, a counter-productive move at best. At worst, it will allow a generation of scholars to enter a University which makes only lukewarm commitments to tackling the climate crisis.

Four: that the Grace might threaten the 'University's ability to be financially sustainable'. My remarks on this matter will be short: if the University is reliant upon fossil fuel funding to be financially sustainable, then the University needs to sort out its house. And urgently.

With slightly less rhetoric: as I have stressed above, only a reductive reading of the proposed Grace would suggest existing sponsorships should be terminated. Surely the University is not at risk of bankruptcy if it doesn't accept further such agreements?

I will close my remarks by registering my disappointment that the undergraduate student member of the University Council backed the Report. Naturally, as a member of the Council, he is entitled to an opinion that he believes reflects his constituency. I would invite him to reconsider that assessment. While the issue of the University's governance may not be of daily interest to students, we remain deeply invested in what the institution we remain life members of does and asserts.

Fantastic progress has been made in recent years, in no small part thanks to the Regent House, and I humbly encourage the members of the Regent House to consider whether such a strong statement of intent – which the proposed Grace represents – should be allowed to be kicked into the grass of bureaucracy and endless circular debates over implementation.

The Regent House sets the mission. The Council implements the mission. Or perhaps times have changed. I suggest that the Regent House declines the Council's recommendation and puts the proposed Grace to a vote.

[1] https://www.theguardian.com/environment/2021/mar/18/oil-industry-fossil-fuels-air-pollution-documents

[2] https://www.admin.cam.ac.uk/reporter/2020-21/weekly/6590/section1.shtml#heading2-7

[3] https://www.admin.cam.ac.uk/reporter/2020-21/weekly/6615/6615_public.pdf#page=5

Professor N. J. White (Department of Earth Sciences and Emmanuel College), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, together with colleagues at the Department of Earth Sciences, I am carrying out fundamental research on a range of topics that are directly connected with the global energy transition and other environmental concerns. This groundbreaking research is often carried out in close collaboration with a combination of global and national industrial enterprises with whom we have long and fruitful links. In my 40-year experience, funding provided by these organisations and companies has been both generous and flexible. For example, two thirds of my eighty plus Ph.D. students were funded by companies who invariably agreed to support open-ended and curiosity-driven research. It is very much in the long-term interests of the University of Cambridge that these links continue to be safeguarded and nurtured.

Topics that are of direct interest to my research and that of my colleagues in the Department of Earth Sciences include:

(*a*) development of geothermal energy – exploring global links between mantle convection, geothermal gradients and exploitation of natural heat sources;

(*b*) mineral resources – using a global understanding of cratonic regions and their edges to identify loci of rare elements that are fundamental to modern electronic technologies;

(*c*) carbon dioxide storage – developing a quantitative fluid dynamical understanding of CO_2 sub-surface flow by processing, interpreting and modelling time-lapse volumetric acoustic surveys while sub-surface injection takes place;

(*d*) mapping oceanic circulation – high resolution mapping of thermohaline patterns in unprecedented detail by exploiting legacy time-lapse volumetric acoustic imagery;

(*e*) glacier retreat – analysing relationships between dynamic topography, mantle convection, heatflow and ice flow (Greenland and Antarctica);

(*f*) earthquakes and volcanism – investigating global relationships between mantle convection, dynamic topography and plate thickness with a view to enhancing our understanding of the distribution of earthquakes and volcanoes through space and time; and

(*g*) ancient climate aberrations – exploring the links between events of rapid climate change and mantle plume activity during the last 65 million years.

In summary, the University of Cambridge must not introduce restrictions, such as the proposed Grace, which will act to impede, or even to prevent, fundamental research into these topics which are of direct societal concern. To do so would be to restrict fundamental science and engineering research in a damaging way.

Professor A. W. Woods (Institute for Energy and Environmental Flows (IEEF) and Department of Earth Sciences), read by the Senior Pro-Proctor:

Deputy Vice-Chancellor, fossil based fuels generate heat or power directly (as in gas or oil for heating, or petrol in internal combustion engines for transport) or generate electricity at power stations, which is then delivered to customers through the electricity grid. In the UK, approximately 42% of energy consumption is generated from natural gas, about 31% is generated from oil and the remainder is generated by nuclear, biofuels or renewables.[1] Industry also uses fossil fuels as feedstock in the generation of fertiliser, plastics and iron and steel.

Renewable energy sources, such as wind and solar directly generate electricity. This different form of energy requires totally different systems for heating (e.g. heat pumps) and transport (e.g. electric vehicles), but is a direct replacement for the present systems which use electricity. To replace the energy associated with the direct use of natural gas and liquid fuels, we need a substantial increase in the total supply of electricity.

Renewable generation of electricity is intermittent as it depends on the wind or sunlight. To buffer the fluctuations in supply we require a major energy storage system, perhaps using a mixture of hydrogen and batteries; such storage is driving fundamental changes in the operation of the electricity grid. As well as energy sources, there will be a substantial increase in the need for raw materials such as copper, nickel and lithium to produce the batteries, cars and other electric systems for the energy transition.

In addition, to mitigate the effects of climate change, CO_2 already present in the atmosphere needs removal: biofuels and direct air capture of CO_2 represent two approaches for this. As the carbon capture industry grows, we need storage for a very large mass of CO_2. Geological storage of CO_2 in deep saline aquifers is a proven technology and by 2050, the IPCC and the International Energy Agency projections suggest 7–8 GT of CO_2 (about ⅕ of present CO_2 emissions) need storage every year to achieve the 1.5°C target.

The role of industry

A wide range of industries are involved in developing and delivering the emerging renewable energy and carbon storage system. Many international energy companies are rapidly transitioning from the supply of fossil fuels to the generation and supply of renewable energy. They are developing GW (gigawatt) scale floating offshore wind turbine arrays; building electrolysers to store renewable energy as hydrogen; developing new carbon storage projects; building superfast electric vehicle charging systems; developing geothermal energy projects, and transforming refineries to generate sustainable jet fuels. For example, BP's planned renewable developments, including investments in wind and solar farms, will have capacity to generate 50 GW of renewable electricity by 2030. To give a scale for this, the total UK electricity use at present is about 40+/-10 GW. Also, before the end of this decade, the Net Zero Teeside project will capture and then store (under the North Sea) CO_2 produced from a cluster of industries in Hull and the Humber: the mass of CO_2 which is planned to be stored each year is comparable to the emissions from about three million homes.

These companies need novel technology, underpinned by innovative science, to build this new energy industry. This is being achieved in partnership with government, universities and other companies. Given the enormity of the challenge, and the novelty of the new energy systems, we require strong collaborations across the industrial–academic knowledge base to ensure we can decarbonise as rapidly and effectively as possible.

Cambridge and energy transition

Cambridge has world leaders in the science and engineering underpinning many of the challenges of energy transition. For this expertise to have impact, we need the freedom to work with the energy industry and government, so that breakthroughs in our science and technology are aligned with the critical operational, technological and policy issues of the emerging new energy systems, and so that we will have access to data from trials and field experiments. We are not involved in new research related to oil or gas recovery, but we are working with some of the major international energy companies on renewable energy and carbon storage projects as they transition to renewable energy generation: our influence through our science and engineering will ensure that there are technical solutions to the emerging challenges, so these companies can transition as effectively and rapidly as possible.

Cambridge has had enormous impact over centuries through its enlightened spirit of academic freedom. Restricting access to some of the key industries pioneering the energy transition will only limit the impact Cambridge science and engineering can have in driving forward energy transition. Companies will develop the new energy industry irrespective of whether Cambridge is involved, but through collaboration, our science and technology has the power to enable, transform and accelerate the transition.

[1] https://www.gov.uk/government/statistics/uk-energy-in-brief-2021

COLLEGE NOTICES

Elections

Hughes Hall

Elected to a Fellowship in Class A from September 2022:

Professor Jorge Eduardo Pinto de Silva e Conceição Santos, B.A., *Lisbon*, M.A., Ph.D., *HH*

Elected to a Research Associateship from November 2022:

Dr Timothy Scott, B.Sc., Ph.D., *Melbourne*

Dr Daoping Wang, B.Sc., *Xi'an*, M.Sc., *Shandong*, Ph.D., *Shanghai*

EXTERNAL NOTICES

Oxford Notices

Faculty of Asian and Middle Eastern Studies and St Antony's College: His Highness Sheikh Hamad Bin Khalifa Al Thani Professorship in Contemporary Islamic Studies; tenure: from 1 October 2023 or as soon as possible thereafter; closing date: 16 January 2023 at 12 noon; https://www.recruit.ox.ac.uk/, vacancy ID: 161849

Faculty of History and Mansfield College: Jonathan Cooper Professorship of the History of Sexualities; tenure: from 1 October 2023 or as soon as possible thereafter; closing date: 9 January 2023 at 12 noon; https://www.recruit.ox.ac.uk/, vacancy ID: 160943

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