

THIS WEEK

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Stand up for UK research freedom

A proposed higher-education and research bill would demolish the agreements that protect British universities from political interference. It must be opposed.

As publicly funded employees, British academic scientists are fortunate. They surfed the high-spending wave of the Labour government years, starting in the late 1990s. When the 2008 financial crisis hit, they were protected from the deep public-sector budget cuts that followed. Public libraries closed. Some of the poorest people lost welfare benefits, and university students faced trebling tuition fees. But for established researchers it was, on balance, business as usual. Now, that relative stability is set to change.

A draft law, the Higher Education and Research Bill, is making its way through the House of Commons. The bill amounts to the biggest shake-up in the sector for more than a generation. It is designed, among other things, to make it easier for private companies to set up universities, and to enable more researchers to commercialize their work. If it passes, existing funding bodies will close and replacements will be created. But in the process of change, the bill rips up an 800-year-old settlement between the nation's scholars and the state. It opens the door to unacceptable political interference. It must be resisted.

At the moment, scientists have a right in law to choose what to work on without unwarranted steering or instruction from government. This protection for the integrity of scholarship is enshrined in a centuries-old legal instrument called a royal charter. First used before the United Kingdom's parliamentary system was established, royal charters keep public bodies (including the BBC) at arm's length from meddling ministers, and so shield their activities from the prevailing — and changeable — political winds. Many scientists may not know it, but the royal charters of their universities help public funds for research and teaching to come with few strings attached.

The University of Cambridge received its royal charter in 1231, and dozens of other universities have been granted them since. Royal charters also govern each of the seven discipline-based research councils.

The UK government's proposed law would change that. The bill would dissolve the seven individual research funding councils; the body that would replace them, called UK Research and Innovation, would have no royal charter.

The bill also proposes to override the royal charters of universities. This would happen with the establishment of another governmental body, the Office for Students. This would regulate the expected flood of new private universities, as well as existing publicly funded ones. So even for those universities that have a royal charter, the creation of the Office for Students would effectively make that document worthless.

Why does this matter? As the draft legislation makes clear, ministers would then be able to suggest courses for universities to teach. Furthermore, the government would give itself the direct right to create and dissolve whole areas of research funding. At present, the risk to the autonomy of science and research is theoretical — but the implications for academic freedom are troubling.

So far, there has been little sign of resistance from members of Parliament (MPs). The opposition Labour Party is engulfed in a

divisive civil war and has not been able to focus properly on the bill, despite the best efforts of its science and higher education team. The government, meanwhile, has convinced its own rebellious MPs to support the bill.

Organizations representing scientists, along with pressure groups such as the Campaign for Science and Engineering in London, have largely maintained public silence. That is understandable to an extent,

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because they are used to having a positive relationship with ministers and are more experienced at advocating for their causes in private meetings.

But a government that is determined to have its way needs to be dealt with differently. It needs to be confronted in public.

That could happen as soon as this month, when the bill will be discussed in the House of Lords. Several research and higher-education leaders who now sit in the Lords plan to give the bill more forensic scrutiny than it has received in the Commons. However, without wider and more vocal support from the science community, their efforts will be no more than an inconvenient blip in the bill's journey into law.

Make no mistake. Britain's first all-Conservative government in 20 years sees science and higher education as vestiges of the big state. If its proposals become law, the government will upend globally accepted norms that protect independence and self-determination in science and higher education. If scientists and their representative organizations don't want that to happen, they need to speak up — and do it now. ■

A good prize

Nobel awards week shows the value of a strong brand identity.

As befits someone who made his fortune from dynamite, Alfred Nobel was worried about a premature death. The will that set up prizes in his name is most well known for his much discussed — if vague — intention that the awards should recognize work with a benefit for humanity. Less well known is that the will concludes with an instruction from Alfred for a doctor to open his veins, allow him to bleed out, and then, unusually for the time, to burn his remains in a new-fangled crematorium. This was a man determined to avoid being buried alive. (Given his fear of being wrongly diagnosed as deceased, it must have been a shock for him to read his

own obituary, published in error on the death of his brother almost a decade before his own death.)

Nobel prize week is a time when some showbiz glamour is sprinkled on the world of science and research. For a few days each year, the names and photographs of scientists are presented to the public, alongside — sometimes surprisingly detailed — descriptions of their discoveries and the benefits they provide. Already this week, analyses of the cellular mechanism of autophagy (or how cells digest and recycle their components) and of exotic states of matter that may pave the way for quantum computers have been laid out for public consumption (see page 18).

In a world of increasing competition for eyeballs, attention and web clicks, it's worth remembering that the Nobel prizes are a global, regular and almost-universally admired advertisement for the career that many of *Nature's* readers dedicate their lives to — and frequently lament that the wider public does not appreciate.

That's not to say that the Nobel prizes are immune from criticism. Do Alfred's original categories truly reflect the span of modern science? And why limit the number of prizewinners to three? Readers with a taste for Counter-Reformation baroque Flemish art can enjoy a lengthy defence of the three-prize limit that was published in the journal *Cell* last month (J. L. Goldstein *Cell* 167, 5–8; 2016), in which the author eagerly draws on the triptych paintings of Peter Paul Rubens (and later Francis Bacon) for inspiration. More tangibly perhaps, the

untimely death of physicist Deborah Jin has refocused debate on the extent to which the annual decisions of the Nobel prize committee should be swayed by whether deserving candidates will be alive to receive an award in future years. (The rules laid out in Alfred's will state that prizes cannot be awarded posthumously.)

The proliferation of academic prizes in recent years — some of which are much more lucrative than the Nobels — has increased the pressure on the Nobel Foundation to move with the times. It's what corporate brand consultants call a clash between identity — what an organization chooses to do — and reputation, or how that action sits with what people on the outside think it should do.

But as one Nobel official puts it: “I don't think the reputation of the Nobel prize was built by people caring about the reputation of the prize.” And, for good measure, he adds: “It is not necessarily a remit to go out and find out what the world thinks of the Nobel prize and try and adjust our behaviour because of that ... It is interesting to know what the world thinks of the Nobel prize, but should that change our behaviour?”

There is a motto at the Nobel Foundation: a good prize one year will be a better one the next. So far, it is difficult to argue with the benefit. ■

Dance with death

The search for eternal life could be scuppered by the limits of the human body.

Why do animals grow old and die at characteristic ages? Even if maintained in peak condition and not eaten by your cat, your hamster is unlikely to make it much past its second birthday. And your cat might live for ten times that. Yet neither cat nor hamster will ever match the average healthy human for longevity.

A study published online in *Nature* this week uses demographic data to reveal a lifespan that human beings cannot exceed, simply by virtue of being human (see X. Dong *et al. Nature* <http://dx.doi.org/10.1038/nature19793>; 2016). It's like running, as an accompanying News and Views article points out (see S. J. Olshansky *Nature* <http://dx.doi.org/10.1038/nature19793>; 2016). Elite athletes might shave a few milliseconds off the world record for the 100-metre sprint, but they'll never run the same distance in, say, five seconds, or two. Human beings are simply not made that way. The same is true for longevity. The consequences of myriad factors related to our genetics, metabolism, reproduction and development, all shaped over millions of years of evolution, means that few humans will make it past their 120th birthdays. The name of Jeanne Calment, who died in 1997 at the age of 122, is likely to remain as long in the memory in the Methuselah stakes as that of Usain Bolt on the Olympic track.

Maximum lifespan is a bald measure of years accumulated. It is not the same as life expectancy, which is an actuarial measure of how long one is expected to live from birth, or indeed from any given age. Life expectancy at birth has increased in most countries over the past century, not because people have longer lifespans, but mainly because infectious disease does not kill as many infants as it once did. Factors such as poverty and warfare conspire to decrease life expectancy. Although life expectancy at birth has risen steadily for both men and women in France since 1900, for example, there are dramatic and poignant drops that coincide with the two world wars.

In Britain in the early twentieth century, many children still died from infectious diseases, and men would die shortly after retiring from physically demanding jobs. The National Health Service was the political response. It has become, in some ways, the victim of its own success. People live longer than they did even a few decades ago, and die (eventually) of different (and more expensive) complaints. As any beginning medical student is soon taught, gerontology is far from a dying discipline. So if we owe our increases in life expectancy to better public health, nutrition, sanitation and vaccination, is it not fair to ask whether more-effective treatments for diseases such as cancer, Parkinson's disease and Alzheimer's might also yield dividends in maximum lifespan? Will 120th birthday parties become routine, outmatched by a small yet increasing number of sesquicentenaries? The demographic data say no. People are living longer, and the population as a whole is greying, but the rate of increase in the number of centenarians is slowing, and might even have peaked.

Could it be possible, in some science-fictional future, to break free from the bonds of human life expectancy and increase lifespan indefinitely? An unquenchable desire for eternal life has preoccupied humanity from the earliest times, as attested by the earliest passages of the Bible, the Gilgamesh epic and many other stories from our past. Perhaps the chilliest evocation of mortality comes in Bede's seventh-century *Ecclesiastical History of the English People*, in which a chief-tain remarks that the ‘few moments of comfort’ offered by human life are as the brief flight of a sparrow through a warm and lighted mead hall, in through one door, and out through the other, back into a dark, storm-tossed and demon-haunted night of which we know nothing. No wonder we'd all like a little more light. Technological solutions might one day transcend the limitations of the human body, but transcend them they must — mere extension is already yielding diminishing returns.

The risks of transcendence are twofold. First, it might be that to extend our lives beyond our normal span, we must somehow become other than human. After all, what would a 50-year-old hamster be like? The unintended consequences of immortality are graphically and grimly illustrated in Aldous Huxley's 1939 novel *After Many A Summer*, in which people fed on a life-extending diet of carp intestines live for centuries — at the cost of turning into witless apes. Second, there is a risk that life wouldn't really be that much longer — it would only feel like it. ■