News story: The Long View — a lifetime of work in optronics is recognised in annual award

Richard Hollins Senior Fellow, Cyber & Information Systems Department at the Defence Science and Technology Laboratory (Dstl), has been recognised for his outstanding contribution to optronics.

At a special award ceremony earlier this month, Dr Hollins was presented with the lifetime achievement award from OPTRO — the international symposium on optronics for defence and security — which recognises a significant contribution in the field of optronics.

Optronics covers all the technologies that use light for information and processing — it includes lasers, detectors, cameras, sensors, optical communications.

Richard brought new insights to the search for protection measures against lasers of any wavelength — a requirement which becomes ever more important as the variety of available laser wavelengths continues to increase. Some of his work has contributed to the revision of international laser safety standards, which control the use of lasers in laboratories around the world.

It was the senior fellow's work in this and other areas which have contributed to innovation in optronics over several decades. Optronics provides what the eye can't see; imagery at a longer range than the eye can master, thermal images, infrared, radar, even camera images from low level light like star light — all vital for gathering information about an area or accurately identifying a target.

Richard said:

I'm very pleased to have the recognition of my career - I certainly didn't expect to get it - I expect I'll be retiring soon and I don't know how many more chances I'd have for an award like that. I've been fortunate to work with many colleagues at Dstl, in industry and academia, and in foreign government organisations, and I'm grateful for all their contributions to the work.

Things have changed a huge amount — in the days when I started, lasers were inefficient, we were trying to develop them into things that we could use, but they've needed to change considerably to the efficient compact devices we know today. I used to have to build 50,000 volt power supplies and today's devices use 10 volts or less.

Lasers have found their way into many much smaller devices. Cameras

themselves have also become much better and smaller — I have recollections of when you saw a TV camera or a thermal imager, it was a big thing with scanning optics that had to be wheeled around, and today all that complexity has been replaced by a small handheld camera, and costs have come down.

The future of optronics continues to evolve — as a communications channel, optics is starting to offer secure directional communications with much higher bandwidth to open up new possibilities. It's always been difficult communicating with submarines as most electromagnetic wavelengths don't go through sea water — but lasers are now sufficiently good that progress is being made in this direction.

Richard is still actively involved in physics at Dstl.

He said:

I don't get into the lab much these days but I still inspire people as a mentor and help to work out how we should address new challenges. I take a lot of interest from understanding new scientific challenges through simple calculations. I produce simple theoretical models that are written on a few pieces of paper, and which relate the inputs to the outputs via the underpinning physics — and to me that's a really powerful way of understanding. More complex computer-based models can be useful too, but everybody should try my simple approach first.

Dstl provides opportunities for a career with plenty of challenge: providing the science and technology required for our security and defence. We can't do all the work internally, but we select and work with the best partners. Our own work must be of the highest standard in order to understand the problem, to define the requirement and identify solutions, to manage the work as it proceeds, and to evaluate the products. My own career has enabled me to find ways to harness new developments in electro-optic technology to meet new military challenges.

My award demonstrates the respect with which Dstl science is viewed within the scientific community.

Speech: The World Order Today: Is it fit for purpose?

When I first met my husband, in 2002, I was doing my Masters in international relations at the London School of Economics. He came to my housewarming

party, and his chat up line, his opening gambit, was about Francis Fukuyama and the end of history: had liberal democracy really won the battle of ideology? To be honest I didn't know, I thought it quite odd as a chat up line — but I liked him anyway.

And when I think back to that time, there was a real sense of optimism about the world order. It was after the UK's successful intervention in Sierra Leone, after NATO's intervention in Kosovo — and before the misadventure in Iraq. Humanitarian interventionism was riding high; the Responsibility to Protect principle was gaining traction.

Yes -9/11 had been a shock, a reminder of the threat posed by non-state actors - but there seemed to be a broad consensus amongst state actors on the direction of travel. And that was:

- greater democratisation,
- increasing globalisation, and
- a sense of universal values and rights that would and could be protected even across borders.

Today that optimism has gone. The world feels more insecure and less stable and we are all — rightly — concerned: about resurgent nationalism, about whether "America First" signals a US retreat from the liberal world order; China's ambitions in the South China Sea, Russia's invasion of Crimea, hostile states using cyber to interfere in other countries' democracies. Terrorism, nuclear war, water security. Our collective failure to stop the devastating conflict in Syria. The worst migration crisis since the second world war; five famine alerts.

All suggest that the world order is not equipped to deal with the problems of the modern age.

But to assess whether that is really the case, we need to know what we mean by the world order.

I take it to comprise of three things. First, the architecture of the international system. That is, international organisations with truly global representation: the UN, the WTO, the IMF, the World Bank; and also quasi-international organisations with sub-global representation: NATO, the EU, the Commonwealth, APEC; and so on.

Second, the laws, and rules that govern international affairs, sometimes, but not always, enforced by international courts like the ICJ, the ICC, the Permanent Court of Arbitration.

And third, but less easily defined, the shared values that underpin that international architecture and international law. They are, I suggest:

- A shared commitment to reward cooperation and negotiation and to punish aggression and hostility;
- A shared belief that human life should be protected and human dignity respected;
- a recognition that our mutual prosperity depends on our mutual engagement

and mutual trade;

- AND a recognition that we live on a shared planet with finite, common resources that must be managed for the benefit of all.

So: architecture, law, values. It is a system which emerged from the aftermath of the Second World War and the horror of genocide. It is designed to prevent a third global war, and to reduce bloodshed from international conflicts. But it is also directed at raising living standards and enhancing life chances globally.

On those most basic indicators, it has been a resounding success.

There are proportionately fewer violent deaths today than there have ever been in history.

Levels of education are steadily increasing.

More and more countries are becoming democratic, and global extreme poverty tumbled from 44% in 1981, to less than 10% in 2015. Every day, 137,000 people come out of extreme poverty. No one tweets that, but it's an amazing statistic.

And that is the success of the world order: international architecture; international law; and shared values all contrive to prevent a Hobbesian state of nature, and instead encourage dialogue and co-operation for the better.

But that is — in large part — the success of the 20th century. What about the 21st?

In some respects, the challenges for the World Order in 2018 are the same as those in the 20th century:

- Hostile and belligerent states such as DPRK remain a threat to peace and stability.
- And the Rohingya crisis shows us how hard it is to respond, internationally, to sudden and systematic ethnic cleansing.

But there are also very real differences between the post-war world, and the world today.

First, there are new and emerging threats to the world order: from non-state actors like ISIS; from climate change; water scarcity; mass migration; cyber.

Secondly, the global balance of power is shifting. We are moving from a unipolar to a multipolar world: the singular dominance of the United States is diminishing; Russia is back as an assertive presence in what it considers its neighbourhood, including the Middle East; and China is gaining global reach in terms of economic and political influence, and is aiming at vastly increased military capability.

And thirdly, ideas that we thought were shared and settled are once again up for grabs. For instance, resurgent nationalism and populism challenge the

assumption that globalisation and free trade, and the multilateral institutions that support them are necessarily good: the Brexit vote and the vote for President Trump had multiple roots. But they were as much votes for the nation state as they were against anything else.

And there are certainly signs to suggest that the World Order is no longer functioning as it should.

- In the UN, Russia's cynical use of the veto on Syria has undermined the most basic task of the UN system: the provision of humanitarian aid, and the investigation of the use of chemical weapons.
- And on global trade, the Doha round beyond stalled; and the US has withdrawn from TPP and wants to renegotiate NAFTA.

So is the world order broken?

We need to be careful not to add 2 and 2 to get 5. Just as Fukuyama was wrong to believe in a global narrative which irresistibly led to liberal democracy, it is also wrong to tell a story of decline or collapse of the world order today.

In addition to the peace and prosperity gains of the 20th century, there have been real, tangible successes of international co-operation of late.

In the security field, the Joint Comprehensive Plan of Action on Iran has made the world a safer place; and co-operation on aviation security since 9/11 has denied terrorists the grand spectacle they crave.

On climate change, the Paris Agreement has shown that the world's nations can come together to tackle its most pressing challenge. Importantly, the US withdrawal did not spell the collapse of the agreement; if anything it emboldened others to meet their commitments and show leadership.

So the world order is clearly not broken. But if it is to survive in an era of resurgent nationalism, and a shift in global power, it needs three things: reform of its architecture; an update to its law and rules; and a reinvigoration of the values that underpin it.

First, reform the architecture. The international architecture is anachronistic — it reflects mid 20th century power structures, rather than the reality of the world today. So:

- (1) the UN needs reform. The Security Council should be expanded the UK supports permanent seats for Germany, Brazil, India and Japan, as well as permanent representation for Africa. And the existing P5 must agree to exercise veto restraint if the integrity of the UN system is to survive..
- (2) NATO needs to reform. NATO members need to respond to President Trump's challenge by meeting the 2% spending target of the Defence Investment Pledge. Decades of unprecedented peace in Europe is testament to NATO's success; but it has also given rise to a complacency that the current security situation does not warrant.
- (3) The international system of globalised free trade must also reform, from

the WTO down. Trade is a global good — and not just in economic terms; it also enhances bilateral relations and ensures a level of cooperation and interdependence that reduces the risk of conflict. But we must not ignore the rise in populist parties across the Western world, and elections which have broken the traditional centrist consensus. Many feel uncomfortable with the pace of change, they feel left behind. There is a perception that free trade, open borders, and multilateralism work for the elite but no-one else. So: free trade agreements of the future must champion progressive principles; ensure adequate worker and environmental protections; and reflect the continuing relevance and needs of the nation state.

Other organisations also need to adapt and evolve. We need to reinvigorate the Commonwealth. And although the UK is leaving, I would argue that the EU, too, needs to reform. It needs to think carefully, reflecting on the Brexit vote, about how much more pooling of sovereignty its members and citizens will accept.

Moving now to international law, we must ensure that it keeps pace with change in international affairs. Two areas in particular are in need of clearer international law:

- a. Cyber. The UK wants to see the full application of existing international law including the UN Charter to cyberspace;
- b. The environment. The impacts of climate change, marine pollution and other environmental hazards all require urgent and collective action: and international law has a key role to play.

And, finally, our shared values.

The principles of that we hold dear -democratisation, multilateralism, and human rights — are under threat in the global system: in the west and elsewhere.

So we need to increase our efforts to make the case for the norms and values which underpin the international order. We should never assume consent.

First, in the face of growing protectionism, we need to make the case for International Trade, emphasising that our mutual prosperity depends on it — while taking seriously the needs and concerns of those who feel left behind.

Secondly, we need to reemphasize our belief in human dignity and the importance of protecting our shared resources. The global goods as we see them — human rights, tackling climate change, protecting the taonga of our wildlife and natural resources, gender rights, tackling poverty, tackling modern slavery — are not just good things to do in an altruistic, fluffy kind of way: they make sense in terms of the economics, and national self-interest of a country. If you don't educate and empower women then — as Obama once said- you are leaving half your team on the bench. If we don't tackle climate change now, it will cost us far more in life and treasure to respond to it later down the track.

And finally, we need to reinvigorate a belief in multilateralism. International terrorism, climate change, nuclear proliferation, cyber attacks all require global multilateral solutions. But those solutions will only be achieved if we can base them on shared values: and if we can demonstrate the benefits of such co-operation to our citizens.

To conclude: the international order has delivered peace and prosperity beyond the imaginings of my grandparents. But if it is to endure, it must adapt and evolve. And it is for countries like the UK and New Zealand — close friends with shared values, and a shared stake in the international system — to work together to make the case: for reform of the architecture, an updating of the law, and a reinvigoration of the values underpinning the world order.

Thank you.

<u>Press release: PM welcomes Western</u> Balkans Heads of Government to London

At a reception also attended by the Foreign Secretary, Home Secretary, Minister for Europe and the Chancellor of the Duchy of Lancaster the Prime Minister briefed the visiting leaders on the UK's objectives for the upcoming Summit. She also sought their views on achieving our shared goals for the region.

Speaking at the reception the Prime Minister said:

Our relationship endures because all of us in this room share the same vision for the future of the Western Balkans. We want a peaceful, prosperous and democratic region — one anchored to European values and systems and contributing to European security.

The countries of the Western Balkans have tremendous potential. And it's the people here in this room tonight who have a crucial role in harnessing that potential. By putting in place the governance, rule of law and institutions to support prosperity and by building relations between your countries that shape a promising future for all.

The UK will support you in that. Your challenges are our challenges. European security, serious and organised crime, illegal migration, terrorism and extremism; these are all threats that go beyond borders. So I want to deepen further our security partnership to address these shared threats.

At the Summit we will take forward a bold agenda. One that promotes economic stability and fosters co-operation on the security and

political challenges that the region continues to face.

We will continue the good work begun by previous Summits, taking forward initiatives countering corruption, serious and organised crime, and other issues that deter investment and economic growth.

I look forward to working with you to shape a positive, productive, prosperous future for the Western Balkans, for the UK and the whole of Europe.

Heads of Government from the region who attended included:

- Edi Rama, Prime Minister of Albania
- Denis Zvizdic, Chairman of the Council of Ministers of Bosnia and Herzegovina
- Ramush Haradinaj, Prime Minister of Kosovo
- Zoran Zaev, Prime Minister of Macedonia
- Dusko Markovic, Prime Minister of Montenegro
- Ana Brnabic, Prime Minister of Serbia

News story: Syria resolution: explanation of vote

The United Kingdom welcomes the adoption of Resolution 2401 and in particular we applaud your work, together with Sweden as penholders.

But this is not a moment for self-congratulation. It's taken us far too long to agree this resolution. While we have been arguing over commas, Asad's planes have been killing more civilians in their homes and in their hospitals, imposing unbearable suffering. And despite the amount of time we have spent in this chamber over many years discussing the devastating humanitarian crisis, we have still not been able to achieve the peace and security that the Syrian people so desperately need.

As the conflict enters its eighth year, the situation in Eastern Ghouta and elsewhere in the country is far worse than we ever thought imaginable. The barbarity and depravity of the Asad regime shows no limits.

We must never lose sight of the fact that the pictures we see and the stories we hear from this comfortable chamber are the agonising reality for hundreds of thousands of civilians. For men, women and children who are being forced to eke out an existence underground to avoid being killed by a regime that commits daily atrocities against its own people.

I've heard some say that the information about the situation in Eastern Ghouta is propaganda. A doctor in Eastern Ghouta, having heard these

comments, said this morning: "amid the chaos and the bombs, it is the not being believed that almost hurts the most. We are dying here every day and when people say that they do not believe us, that is pain upon pain."

This isn't propaganda; it is a living hell for hundreds of thousands of residents of Eastern Ghouta.

As we have repeated many times, the intentional and systematic targeting of civilians and civilian objects not only violates international humanitarian law, it is a war crime. And the UK will be unrelenting in our campaign to ensure accountability.

By voting in favour of this resolution today, we are standing up and saying that we will not stand by and let this happen. In the face of escalating violence, devastation and suffering, we must all now take practical steps to improve the situation for those living and dying in a hell of one man's making. This resolution demonstrates our resolve to put a stop to the brutal violence. It demands all parties cease hostilities without delay. That means right now; immediately.

The role and responsibility of this Council does not end with the passage of this resolution. Quite the opposite. All UN Member States, but particularly Council Members, must now take responsibility for ensuring that this resolution is implemented in full, without delay.

The resolution calls for the Council to review implementation within 15 days, but we must all be active in supporting and monitoring implementation from the moment we step out of this room.

If we see any of the parties violate the terms of this resolution, we must bring it back to the Council immediately.

Those with any influence over the Syrian regime — Russia, Iran — have a particular responsibility to ensure that this ceasefire is respected in full and without delay, that all sieges are ended and that humanitarian aid is delivered. This is the absolute minimum that the people of Syria deserve.

As much as we welcome the passing of this resolution today, it is only a small step.

Just as one aid convoy in three months to a besieged area cannot even begin to address the humanitarian crisis, one resolution alone cannot solve the situation in Syria. We must do everything in our collective power to ensure that this resolution is effective in delivering for those whom we have failed to date. And we must all send a clear message to the Asad regime: abandon your attempt to pursue a military strategy; stop fighting and engage seriously in UN-led political talks in Geneva.

In conclusion, let me reiterate the words of my Foreign Secretary. The entire world is looking at the Asad regime, Russia and Iran: you hold the keys not only to the end of this obscene conflict, but to the safety, humanitarian aid and basic medical treatment that is being denied to millions of people right now in Syria. For the mother giving birth underground in Eastern Ghouta, for

the child unable to learn as schools are closed for yet another day, for the doctor battling airstrikes to treat patients in Idlib, all of us sitting here today owe it to the people of Syria to work together, with renewed and unyielding energy, to achieve a political solution that will bring peace to the Syrian people.

<u>Speech: Conference for Commonwealth</u> Education Ministers

Thank you Dr Mohamed. And thank you also to those fellow Education Ministers I have had the opportunity to meet over the last few days. I think this has been a very successful conference. I would like to congratulate the Secretary General and the Fijian Government for hosting a very successful conference. It has been wonderful for me to have had so many productive, interesting and warm conversations with fellow ministers, in meetings and at the very successful receptions that have been held throughout the course of the conference. I have really valued the opportunity to learn about other education systems and to discuss so many shared challenges that we all face across the Commonwealth. I am sure that many of us will stay in touch in future and continue to support each other where we can.

The UK government is looking forward to welcoming your Heads of Government to the Commonwealth Heads of Government Meeting in April. We will discuss shared challenges, and move forward — I hope — renewed, and revitalised after that conference.

These international gatherings are helpful in shaping shared policy objectives and working collectively to overcome challenges. For example, the Millennium Development Goals focused minds on universalising access to education. And now, the Sustainable Development Goals are going further.

In recent years, great strides have been made across the world. It should not be forgotten that in 1990 there were 1.8 billion people living in absolute poverty. This has been reduced over those years since by a billion. But, there is still much more to do. As our Foreign Secretary wrote recently:

Look at those countries where population is growing the fastest, where unemployment is highest, and where the tensions are greatest, and without exception you will find a common factor: female illiteracy.

Boris Johnson was correct when he went on to state that this is both a moral outrage and 'contrary to the interests of world peace, prosperity, health and happiness.

Globally, 130 million girls are not in school. So I would urge member states to commit to work together and individually to ensure 12 years of quality education for all by 2030.

But we must be more ambitious than seeking universal access. We must turn our attention to ensuring pupils receive the high-quality education they deserve.

Of those pupils in school in low income countries, 90 per cent are not on track to master the basics of maths, reading and writing by the end of primary school.

Raising school standards for pupils from all backgrounds has been the driving force behind the government reforms in my country since 2010. The government's mission is to provide pupils with the knowledge-rich education that will prepare them for the rigours and opportunities of the 21st century.

Core academic subjects have returned to the heart of the secondary curriculum and we have pursued evidence-based approaches to teaching, raising standards for all. At the same time, the attainment gap between disadvantaged pupils and their more affluent peers has narrowed both at primary and secondary schools in England since 2010.

In education, there is nothing more important to spreading opportunity than ensuring all pupils are taught to read effectively. Figures from the UK show that pupils who are reading well by age 5 are 6 times more likely than their peers to be on track by age 11 in reading, and 11 times more likely to be on track in mathematics.

But, in the years just before we came into government in 2010, we knew something was wrong with the way our primary schools taught reading. England was stagnating in the international league tables and the international data also showed a wider gap between top and bottom performers than in most other countries, leading to England being known for its 'long tail of underachievement'.

And data from 2012 showed that we were the only OECD country where the maths and reading abilities of our 16-24 year olds was worse than that of our 55 to 65 year olds. A misguided move away from evidence-based approaches to teaching children to read was stifling opportunity for too many children.

For decades, the overwhelming weight of international evidence — including the influential longitudinal study from Clackmannanshire in Scotland — pointed to systematic phonics as the most effective way to teach children to read.

Phonics teaches children to associate letters with sounds, providing pupils with the code to unlock written English. And despite the evidence in favour of this approach — a traditional approach — the government's phonics reforms were controversial and met with widespread opposition from teaching unions and other vested interests.

All primary schools in England are now required by law to use phonics as they teach pupils to read. But more controversially, the government introduced the

Phonics Screening Check in 2012. This is a short test comprising a list of 40 words that 6-year-old children read to their teacher at the end of year 1.

The proportion of pupils passing the Phonics Check has increased every year since it was introduced by us in 2012. In 2012, the first year of the Phonics Check, just 58 per cent of 6 year olds reached the pass mark of 32 out of the 40 correctly read words, so 40 per cent were failing. This year, 81 per cent of 6-year-olds reached that standard, with 92 per cent of children reaching that standard by the end of year 2.

This year, 154,000 more 6 year olds were on track to be fluent readers than in 2012. Last year, 147,000 more 6 year olds were on track compared to 2012.

And the success of this policy has been confirmed by the international PIRLS results (Progress in International Reading Literacy Study). The international study of 9-year-olds' reading ability in 50 countries showed that England has risen from joint 10th place in 2011 to joint 8th place in 2016, thanks to a statistically significant rise in our average score.

But more importantly, these tests show that we are dealing with the 'long tail of underachievement' that has stifled opportunity. The PIRLS results show that reading has improved for pupils from all backgrounds, but it is the low-performing pupils who are gaining most rapidly.

The report found that performance in the Phonics Check was strongly predictive of PIRLS performance, vindicating the government's drive to universalise this evidence-based approach to teaching. The PIRLS national report for England states that, and I quote:

Pupils who scored full marks in the phonics check were also the highest scoring group in PIRLS 2016, with an average overall PIRLS score of 617. In contrast, pupils who did not reach the 'expected standard' in the Year 1 phonics check perform below England's overall average, with lower phonics check scores being associated with decreasing average PIRLS scores.

So that is why our government is determined to go even further and see more pupils reach the expected standard at age 6. And if I could just quote the New Zealand Minister's earlier quote:

We have gone so far, we're going to go further still.

The government has also faced-down much opposition to the drive to increase the proportion of pupils studying core academic GCSEs at age 16. The English Baccalaureate, that we introduced as a performance measure, requires pupils to study GCSEs in English, maths, at least two sciences, either history or geography, and a foreign language.

Schools are measured now on the proportion of their pupils entering GCSEs in

all 5 categories, and on the attainment of their pupils in these subjects.

Since 2010 — following a long-term decline in pupils taking these core academic subjects — there have been sharp increases in most of these subjects. For example, the proportion of pupils taking the science component of the EBacc has risen from 63 per cent to 91 per cent, and the proportion studying history or geography has risen from 48 per cent to 77 per cent.

Nationally, nearly two-fifths of pupils are entered for the EBacc. This is up from just over one-fifth in 2010. But again there is still much more to do, to reach the government's ambitious target of 90 per cent of pupils studying towards the full suite of EBacc GCSEs by 2025.

Since 2010, the proportion of pupils studying a language to GCSE has risen from 40 per cent to 47 per cent and we are determined to raise participation in languages much further in the years to come, particularly as Britain raises its eyes to the opportunities that await post-Brexit.

Evidence supports the government's desire to drive up participation in these core academic subjects. Evidence from the Sutton Trust found that pupils in a set of 300 schools that increased their EBacc entry, from 8 per cent to 48 per cent, were more likely to achieve good English and maths GCSEs, more likely to take an A level, or an equivalent level 3 qualification, and more likely to stay in post-16 education.

And these findings were corroborated by work carried out by the Institute of Education in London examining the effect that GCSE choice has on education post-16, and I quote:

Students pursuing an EBacc-eligible curriculum at 14-16 had a greater probability of progression to all post 16 educational outcomes, while taking an applied GCSE subject had the opposite effect. There were no social class differences in the advantages of pursuing an EBacc-eligible curriculum which suggests that an academically demanding curriculum is equally advantageous for working class as for middle class pupils.

And this year more pupils from disadvantaged backgrounds entered the EBacc than at any point since the measure was created.

Again, there is still much more to do. Disadvantaged pupils remain almost half as likely to be entered for these subjects than their more affluent peers. But it is essential that all pupils, particularly those from disadvantaged backgrounds, are given access to the core academic subjects that widen opportunities at post-16.

But the government is making progress in widening opportunities, whilst raising standards for all. Recent figures from national assessments that are published on a school by school basis taken at 11 and 16 reveal that the attainment gap has closed since 2011 at both primary and secondary schools, by 10.5 per cent for primary and 10 per cent for secondary.

Despite the controversy and claims from many in my country that the government's standards-raising policies would hurt the performance of pupils from disadvantaged backgrounds, in fact universalising access to evidence-based teaching methods and widening opportunities to study core academic subjects has been to the benefit of all, particularly those most in need.

There is more to do of course. There are still too many pupils not reading at the expected standard by age 6; and there are too many pupils — particularly from disadvantaged backgrounds — not being entered for the full suite of core academic GCSEs. But much progress has been made since 2010 and the government — in step with teachers — is ambitious and determined to go further in the years to come.

Thank you very much chair for listening. I am very happy to answer any questions you may have on what has been a very controversial seven years of education reform in England.