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Civil Service

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Civil Service Quarterly opens up the Civil Service to greater collaboration and challenge, showcases excellence, and invites discussion. If the Civil Service is to be truly world-leading it needs to collaborate more, learn from experts outside the Civil Service, listen more to the public and front-line staff and respond to new challenges with innovation and boldness.

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Editorial

» Civil Service Quarterly: open, consistent, professional

Chris Wormald

Welcome to the seventh edition of Civil Service Quarterly.

At the start of a new year, we're looking ahead. In this edition we examine some of the tools and techniques that can help us excel as civil servants. Within the Policy Profession, we have been championing three big aims. The first of these is to be more open, in line with Civil Service Reform's plans on open policy making. The second is consistency, so that the quality of policy advice and policy delivery meets the highest standards. The third of these is to be professional; emphasising the skills, learning and development that policy makers and others need to do their jobs as effectively as possible. This issue of CSQ highlights all three of these aims.

In upcoming editions of Civil Service Quarterly, we will be running a Data Science series to explore the potential of this new discipline to bring benefits to government and citizen. HMRC kicks off, by explaining how better use of data is helping the department to target non-compliance more effectively.

Another growing trend is the potential of design to inform and improve policy making and delivery. In "Designing a Better A&E" we find out how a collaboration between the Design Council and NHS England has reduced threatening body language and aggressive behaviour in A&E departments by 50%.

David Halpern sets a new challenge to policy makers in the new year. In "What works? The rise of 'experimental government'" he makes the case for following the example of the GB cycling team: achieving radical improvement by systematically testing small changes in all areas. Meanwhile, in "Command and Control" Mark Grimshaw offers an alternative approach to dramatic improvements. Read how his leadership approach turned around the struggling Rural Payments Agency.

We're also highlighting innovative approaches to opening up departments to the outside world. The era of making policy in a black box is over. For example, the Department for Education has opened its doors to a Fellowship of Experts, drawn from a range of sectors across the world, to bring new perspectives and expertise to the department. Meanwhile, the Department for Health is giving its senior civil servants and policy-makers frontline experience in health and social care delivery organisations.

Two different approaches, but the same goal: to deepen the insights, skills and experiences of those involved in policy making.

GCHQ staff are also getting out of the office and in to local communities, but with the aim of inspiring young people to learn some of the languages that are most crucial to the organisation, but in shortage throughout the country. Read about the success of their outreach programme in "Learning the language of intelligence".

Collaboration was also central to the outstanding successes achieved by the cross departmental Syria Chemical Weapons Team. 'Destroying Syria's Chemical Weapons' explores how exemplary cross-governmental work led to the destruction of 97% of Syria's declared chemical weapons programme in less than a year.

I hope you enjoy this edition of Civil Service Quarterly. Share your thoughts by commenting on the online articles at quarterly.blog.gov.uk (where you can also subscribe for free updates), or use #CSQuarterly on social media. We look forward to hearing your views.

Chris Wormald
Permanent Secretary,
Department for Education

Destroying Syria's chemical weapons programme

» In less than 12 months, 97% of Syria's declared chemical weapons programme has been destroyed. Ben Merrick, Head of Arms Control and Proliferation in the Ministry of Defence (MoD), explains how cross-governmental co-operation made this possible.

Amid the gloom of the Middle East over the past few years, one of the many dark moments was the use of Sarin by the Assad regime in Damascus in August 2013. This caused some 1400 deaths, mainly of civilians.

But, largely as a result of this action, the international community has been able to achieve one undoubted success: the destruction – now largely complete – of Syria's declared chemical weapons programme. In less than 12 months, of the 1300 tonnes of chemical weapons that Syria admitted to possessing, more than 97% was destroyed, as well as the associated munitions and production equipment. This has reduced the risks that these weapons will be used again to cause large scale casualties in the region, and has further strengthened the international ban on chemical weapons: only 6 states have yet to accept the ban.

This outcome required an exceptional international effort, involving the UN and other international organisations, national governments, and their armed forces, scientists and industry. The UK contribution has been called *"A triumph of cross-government co-operation and a signal achievement in the fight against WMD. An exemplary partnership"* by Rear Admiral John Gower, Assistant Chief of Defence Staff, MOD, and has seen the cross departmental Syria Chemical Weapons Team short-listed for the Civil Service International Award.

But there have been significant challenges to be overcome along the way.

Gathering evidence

Whilst never admitted by Syria, the existence of Syria's chemical weapons programme had been strongly suspected for many years. The outbreak of civil unrest in Syria in early 2011 raised concerns that the Assad regime might use chemical weapons against its own population, and that security failures could lead to these weapons falling into the hands of terrorist groups in the region. But at this stage there was no international agreement to take any action to deal with these risks. The task of UK analysts and policy, military, scientific and technical staff was therefore to assess potential options for reducing these risks, including political messaging to deter Syria from using chemical weapons, and technical options for destroying these weapons.

During 2012-13, increasingly credible reports were received that Syria was using chemical weapons on a small scale against the opposition. When soil analysis by the Defence Science and Technology Laboratory (Dstl) confirmed these reports, the UK led pressure for an international investigation. After the subsequent UN investigation obtained conclusive evidence that the Assad regime had used Sarin in Damascus in August 2013, the international community had little option but to consider military action against Syria.

Syria and the Chemical Weapons Convention

The threat of military force led Syria to a very rapid decision to join the Chemical Weapons Convention (CWC). In September 2014, the UN Security Council and the Executive Council of the Organisation for the Prohibition of Chemical Weapons (OPCW) – the international body responsible for implementing the Convention – unanimously agreed that Syria would have to destroy its entire chemical weapon programme against a series of deadlines. The weapons themselves were to be destroyed by 30 June 2014. Other states have taken

up to 20 years or more to destroy their chemical weapon stockpiles. But the short timescale imposed on Syria reflected unprecedented circumstances. It had an active chemical weapons programme up to the moment of joining the Convention, had only just used chemical weapons, and was still in the midst of a bitter civil war.

Planned destruction

A new and urgent phase of UK and international activity then began. Syria provided detailed information ("declarations") about its chemical weapon agent, munitions and production, and OPCW began planning inspections of storage and production facilities, and the destruction of all associated chemicals, munitions and equipment.

Within a few months, chemical weapon production equipment and unfilled munitions were destroyed inside Syria, with on-site monitoring by OPCW inspectors. However, the security situation and the pressing destruction deadlines meant that most of the 1300 tonnes of declared chemicals needed to be destroyed outside Syria.

The UK role in this process was significant: HMG deployed a military officer to support OPCW planning, provided armoured 4x4 vehicles to enable the OPCW to carry out their mission in Syria, and contributed £2M to an international Trust Fund. UK analysts assessed the Syrian declarations for accuracy, while technical experts assessed the options for destroying the declared chemical weapon agent and precursors.

Implementing removal and destruction of chemical weapons

Unusually, the chemical weapon stockpile that Syria declared comprised almost entirely precursor chemicals (rather ▶

Photo: Syrian chemicals being unloaded at Marchwood port prior to destruction in the UK. © MoD

Destroying Syria's chemical weapons programme

than immediately usable warfare agent). This meant that the chemicals could be removed from Syria and destroyed in commercial incineration or other facilities, although there were nonetheless security, safety and environmental concerns which had to be addressed. The removal operation was completed over a period of several months by an international maritime task force, which included the Royal Navy.

The US committed to destroying about half of the chemicals removed from Syria: the small quantity of intact chemical warfare agent and the other most proliferation sensitive chemical. The UK provided essential equipment to aid this, and in December 2013 also took responsibility for destroying 150 tonnes of priority precursor chemicals.

Later on, the UK committed, at very short notice, to destroy an additional 50 tonnes of chemicals to minimise risks and costs to the international community. The timeframe was so short that the contract for destruction of the final set of chemicals was signed just hours before they were landed at the MOD port at Marchwood in July 2014, following completion of negotiations overnight.

The UK had destroyed most its chemicals by the beginning of August. By September 2014 over 97% of the declared Syrian stockpile had been destroyed, with the remainder to be destroyed by around the end of the year.

Parliament and media

It was essential to ensure that the process of importing and destroying Syrian chemicals met UK public safety requirements. Ministers regularly updated MPs with a constituency interest to

▶

Photo: of HMS Diamond (foreground), seen here escorting the merchant ship Ark Futura carrying Syrian chemical weapons. © MoD

reassure them and the public about safety and security.

"An exemplary partnership"

The UK has played an important part in this international success, which has depended on effective co-operation both amongst UK diplomats, policy officials, scientists, analysts, military and commercial staffs, and between the UK and international counterparts. The core team has consisted of staff from Cabinet Office, FCO and MOD, but with important contributions from a range of other government departments and agencies at various stages, including the Defence Science and Technology Laboratory, Department for Energy and Climate Change, Home Office, Department for Environment, Food and Rural Affairs, Environment Agency, Department for Transport, Health and Security Executive, Department of Health, Public Health England, as well as the civil police and industry, who have had responsibility for completing the destruction of the chemicals safely and effectively.

> *Outstanding cross-governmental work on a matter of great importance. The team worked seamlessly to grip, assert UK leadership and see a process through.*
>
> - Peter Jones, Director Defence and International Security, Foreign and Commonwealth Office (FCO).

Destroying Syria's chemical weapons programme

KEY LESSONS

- Existing cross-departmental and international structures for coordination on counter-proliferation and Chemical Weapons Convention issues proved an invaluable basis for developing and implementing policy.

- The cross-departmental policy and decision-making groups had to be flexible to respond to evolving priorities. The frequency and make-up of meetings, including the chair and the seniority of attendees, was varied to ensure that there was appropriate authority and expertise for the specific task.

- Cross-departmental funding mechanisms, such as the Conflict Pool, were invaluable in providing funds to meet high priority, short notice, cross-departmental requirements, which no single department could readily meet.

- Policies, plans and activities relating to chemical weapons had to be firmly linked to HMG's overall Syria policy, and not addressed by experts in isolation.

- The integrated civil-military relationships within MOD and close cooperation across government enabled expert advice on political-military, technical and other issues to be quickly shared, resulting in timely, coordinated and well-informed decision-making.

- International collaboration was key, and the extensive networks of the FCO (including overseas FCO posts and regional expertise) and MOD were of huge support to the task. The FCO's long-established close working relationship with the US Department of State, and MOD's with the US Department of Defense were especially important.

- Overall, success depended crucially on the willingness of dozens of staff across departments to work flexibly and cooperatively across boundaries, take on additional tasks and work extra hours unpaid to deliver within urgent, real-world deadlines.

Continuing challenges

In addition to completing the destruction of chemical weapon production facilities in Syria, other challenges remain. An OPCW Fact Finding Mission is investigating compelling evidence that the Assad regime is continuing to use chlorine as a chemical weapon. Moreover, there are still concerns about gaps in the information that Syria has provided about its programme, which could allow it to retain chemical weapons or reconstitute the programme in future.

The core HMG team is therefore continuing to work closely together and with international partners to ensure that Syria provides full transparency of its chemical weapons programme, and that it is completely destroyed, as required by the UN Security.

The Syrian chemicals and destruction in the UK

The declared Syrian stockpile included only a small quantity of actual chemical weapon agent – some 20 tonnes of mustard agent. All the rest comprised a range of "precursor" chemicals: these varied from basic chemicals such as hydrochloric acid, used in early stages of the manufacture of chemical weapons, to more complex chemicals which could be used in the very final stages of manufacturing agent for immediate use on the battlefield. The US destroyed the mustard and one key precursor for nerve agent on board a specially adapted vessel, using equipment and technology developed for destruction of their own chemical weapons. The precursor chemicals brought to the UK all have application in commercial processes and are routinely produced or used in the UK. Most of the chemicals were destroyed by incineration at the Veolia plant in Ellesmere Port, in accordance with its existing environmental permits; the remainder, a small volume of hydrogen fluoride, is being mixed with calcium hydroxide to form calcium fluoride and disposed of as land fill in accordance with environmental regulations.

Learning the language of intelligence

» **The decline in young people studying languages at university could have serious implications for GCHQ, and its ability to protect the UK from international threats. The organisation's language analysts are striving to combat this by inspiring school pupils to learn some of the most needed languages.**

There is a hubbub of excited chatter in the Y9 language classroom as the pupils await the arrival of a special guest speaker - after all, it's not every day a British Intelligence officer visits your school! And yet, this is exactly what the Language Analysts from Government Communications Headquarters (GCHQ) have been doing over the past 8 years, visiting secondary schools up and down the country, talking to pupils about the value of learning a foreign language and explaining how vital languages are to GCHQ's work.

GCHQ is one of the UK's 3 intelligence agencies, working closely with MI5 and the Secret Intelligence Service (SIS). The UK faces a range of established and emerging threats that challenge our national security. These include cyber attacks, international and domestic terrorism, organised crime, and the spread of nuclear, biological and chemical weapons.

GCHQ specialises in gathering and analysing digital and electronic signals from all corners of the world, many of which are in foreign languages. It is the job of GCHQ's Language Analysts to use their expert linguistic and cultural knowledge to translate and analyse these communications to produce intelligence reports for Whitehall customers. The content of these reports can influence high-level decision-making and make a real-world impact on the security of the UK, such as helping to neutralise a terrorist threat or prevent a shipment of Class A drugs from reaching the streets. Language skills therefore underpin the work of the organisation.

Language education in crisis

But the number of students taking a language at GCSE has declined dramatically since 2004, when languages became optional rather than mandatory. There has been an inevitable consequent fall in numbers studying languages at A-level and at university. According to a British Academy report published in 2013, 44 universities have closed their language degrees since 2000. This is not good news for British business, which desperately needs more speakers of foreign languages to compete in global markets, and it is not good news for GCHQ, which finds it increasingly difficult to recruit the high-calibre linguists it needs to carry out its vital intelligence work.

Over the past year GCHQ has run recruitment campaigns for Language Analysts in Arabic, Persian, Chinese, Russian, Korean and African languages – and is still recruiting. The recruitment tests are tough as the standard required is high. But, once they join the department, all Language Analysts benefit from GCHQ's strong internal continuing professional development programme, which recognises the critical value of languages to the work of the organisation. All new Language Analysts benefit from mentoring and coaching from a senior linguist from Day 1, and
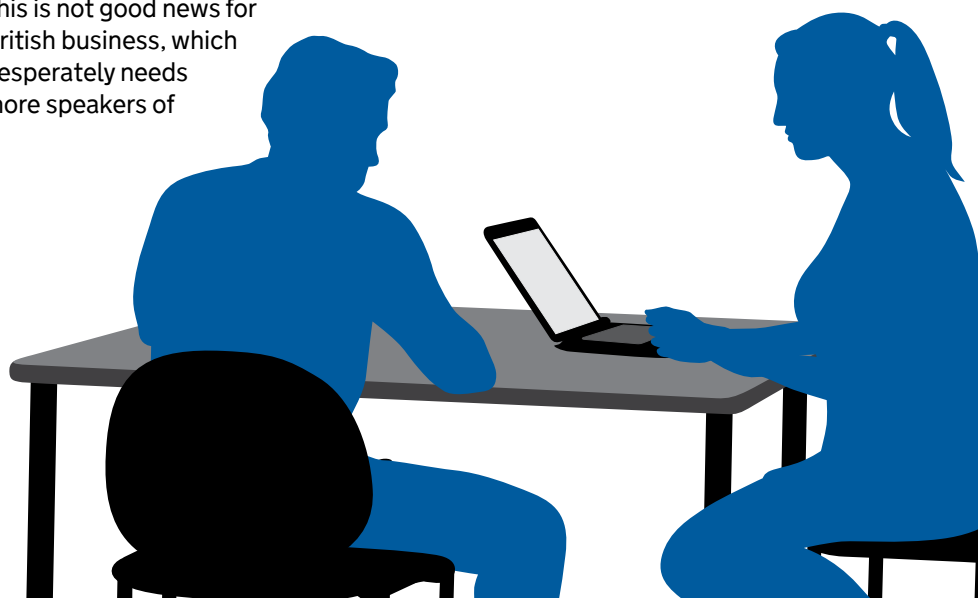
Learning the language of intelligence

have opportunities for language enhancement and retraining programmes.

The GCHQ Language Outreach Programme

GCHQ has been running its Schools Language Outreach programme since 2006, initially visiting secondary schools close to its Gloucestershire base, but now operating across the country. The outreach visits usually start with talks to Year 9 students who are considering their GCSE choices, but A-Level students are also offered "taster classes" in languages like Chinese, Arabic, Persian or Russian , to inspire them to apply for a more unusual language at university. All of these languages can be studied at university with no previous knowledge required.

The top secret nature of GCHQ's work means that GCHQ staff are not usually able to talk about what they do. Those Language Analysts who take part in the Language Outreach programme therefore enjoy getting out into the community to engage with the young people they meet in schools, to share with them their love of languages and hopefully inspire them to continue their language studies. They also gain great satisfaction from opening students' eyes to the huge range of exciting language opportunities available beyond French, German or Spanish usually taught in schools. GCHQ Language Analysts are proud to represent GCHQ and welcome the opportunity to raise awareness of the important work done by the department.

GCHQ-ALL Schools Language Challenge

In 2014, GCHQ teamed up with the West of England branch of the Association for Language Learning (ALL), the professional body for language teachers, to run a language competition for Year 9 pupils – the GCHQ-ALL Schools Language Challenge. Pupils worked in small teams to research a town, region or country where the language they were studying is spoken, and then to create and deliver a PowerPoint presentation to showcase their findings – entirely in the foreign language. The best 10 entries were invited to GCHQ for a Finals Day, where the pupils delivered their presentations live to the joint GCHQ-ALL judging panel. Finalists learnt more about the vital importance of languages to GCHQ's mission and attended language "tasters" in Arabic, Chinese, Persian, Russian, Somali and Urdu. "There was a real buzz around Finals Day," says the Outreach Coordinator, "and such enthusiasm from the young people attending."

Teachers were effusive in their praise for the event, welcoming the "real-life context it gave for using language skills." They reported improvements in students' language skills, especially improved pronunciation, and said the Challenge stretched the students' ability to speak spontaneously, undertake research and present to

Photo: The winners of the 2014 GCHQ-ALL Schools Year 9 Language Challenge, Sir Thomas Rich's School, Gloucester, with representatives from the ALL West of England branch. © Crown Copyright

an audience. It also fostered greater interest in the country chosen and gave students "a chance to see how exciting speaking a language can be." The pupils attending the Final were equally enthusiastic:

"Languages are fun. I want to learn more."

"The experience has really opened my eyes to how influential languages are."

"It's made me reconsider my GCSE options."

"It has made me think about taking a language at A-level."

The Threlford Memorial Award

In November 2014, the GCHQ Language Outreach team was awarded the prestigious Threlford Memorial Cup by the Chartered Institute of Linguists Educational Trust. The trophy recognises an organisation, individual or project which has made a significant contribution towards fostering the study of language and was presented to the GCHQ team by the Institute's patron, HRH Prince Michael of Kent, at the Institute's annual awards ceremony in November at the Barbican Centre in London.

Schools' feedback

Evaluations carried out before and after GCHQ visits invariably indicate an increase in the number of students considering studying at least one language at GCSE (on one occasion an increment of 25%), at A-level or at university and, where language tasters have been given, a raised level of interest in considering

Photo: HRH Prince Michael of Kent presents the Threlford Memorial Cup to GCHQ's Language Outreach Coordinator. © Chris Christodoulou

a degree in a non-Western European language.

Feedback from pupils attending GCHQ language outreach events speaks for itself:

- "At the beginning of the day I wasn't sure if I was going to do languages as a GCSE, but now I think I will."
- "I hadn't considered non-European languages until today."
- "It makes me want to learn Chinese and Russian."
- "A fun enjoyable and informative day."
- "Subsequently, 77% of the cohort opted to take languages at GCSE, of which 40% are dual linguists." – Head of Modern Foreign Languages. Twyford School, Ealing
- "20% increase in those considering taking a language at GCSE as a result of the event." Cheltenham Independent State Schools Partnership Language Day.

Additional GCHQ Outreach

GCHQ also promotes the uptake of STEM (Science, Technology, Engineering and Maths) subjects and careers for students. It establishes early contact with the potential future technology workforce by helping with After School STEM related clubs, Career Days, and ad-hoc local school projects/business sponsored events.

As part of its education outreach, GCHQ has launched its first free app – Cryptoy. The app was designed by students on an industrial year placement at GCHQ for use by secondary school pupils and their teachers as part of a project at the Cheltenham Science Festival. The app enables users to understand basic encryption techniques, learn about their history and then have a go at creating their own encoded messages.

Predictive analytics: the science of non-compliance

» **Data science is an emerging discipline which combines analysis, programming and business knowledge and uses new techniques and technologies to work with complex data. A group across Cabinet Office, Government Office for Science, and ONS is exploring the potential of data science to improve policy making and operational delivery across a range of departments. Meanwhile, HMRC is using it to tackle non-compliance. In the first of our Data Science series, Jonathan Athow, Claire Potter and John Lord from Knowledge, Analysis and Intelligence at HMRC, explain how better use of data is changing the way the department works.**

Analytics is a word on everyone's lips and the Harvard Business Review carried an article titled 'Data Scientist: The Sexiest Job of the 21st Century.' But what is analytics and who are the data scientists? And what does this all mean for HM Revenue and Customs and government more widely?

Analytics can be defined as identifying meaningful patterns in data. It is an approach that has become common place for many businesses, who use analytics to run or improve their operations. Online retailers use analytics to predict the goods and services you might be interested in, by examining your past behaviour and personal characteristics and comparing these to how people with similar characteristics have behaved in the past. That understanding of past behaviour can be gained by analysing millions, or even billions, of previous transactions.

Predictive analytics

Analytics has a long history in some industries. In the financial sector, banks and other financial institutions have used analytics to undertake credit risking. Who should be given a loan and who should be denied one? Looking at your personal circumstances such as income, employment type and past credit history, can enable a financial institution to predict how risky a proposition you are, based on past experience with people in similar circumstances.

This approach is called 'predictive analytics' and is one of the main categories of analytics. This means using the patterns of past behaviour to predict behaviour in the future. There are other ways in which analytics can be used, from understanding customers to optimising a business process. Analytics itself uses a number of mathematical and statistical techniques to help sort through large amounts of data.

Data scientists

The term 'data scientist' is even more recent than analytics. It is the data scientist's job to turn data into useable information, often doing the 'heavy lifting' with complex or even unstructured data that reveals new customer insights. The chief skills of a data scientist comprise being comfortable with both large data sets, and the IT systems and tools used to manipulate them. The data scientist is also able to apply the knowledge gained from the data to improve the way a business is run. The term is now expanding to cover some traditional areas of analysis and boundaries are becoming blurred.

In government, we have very few data scientists across departments and

professions. They are usually found within the statistics and operational research professions who have the closest baseline skills needed for data science. However, the combination of statistics, maths, coding and business knowledge used alongside new tools, techniques and data sources is how data scientists in the private sector and academia are gaining new insight. The backgrounds of this wider community of data scientists are eclectic, from palaeontology to particle physics.

Analytics and HMRC

Having good analytics, with the right people and technology, is important for HM Revenue and Customs (HMRC). The problem solving skills and approaches of analytics help the department understand how to deploy its resources most effectively. At a working level, analytics is used to help focus our compliance activities on those we think most likely to be non-compliant, be that making errors in their tax returns or deliberately trying to evade tax.

Using similar techniques to those used in credit scoring, we are able to build models to identify which taxpayers are likely to be understating their incomes. This can be used, alongside other information, to target our compliance interventions.

Predictive analytics: the science of non-compliance

How predictive analytics works: decision trees

In HM Revenue and Customs we have used a number of techniques to develop analytics models. One technique we have found particularly useful is decision tree analysis, which presents operational colleagues with a diagram showing how characteristics affect the risk of non-compliance.

The following is a stylised example of how decision trees can be used to identify non-compliance in the tax system. The process works broadly as follows:

- We start by collecting information about whether taxpayers have been compliant or non-compliant in the past – **the outcome**.
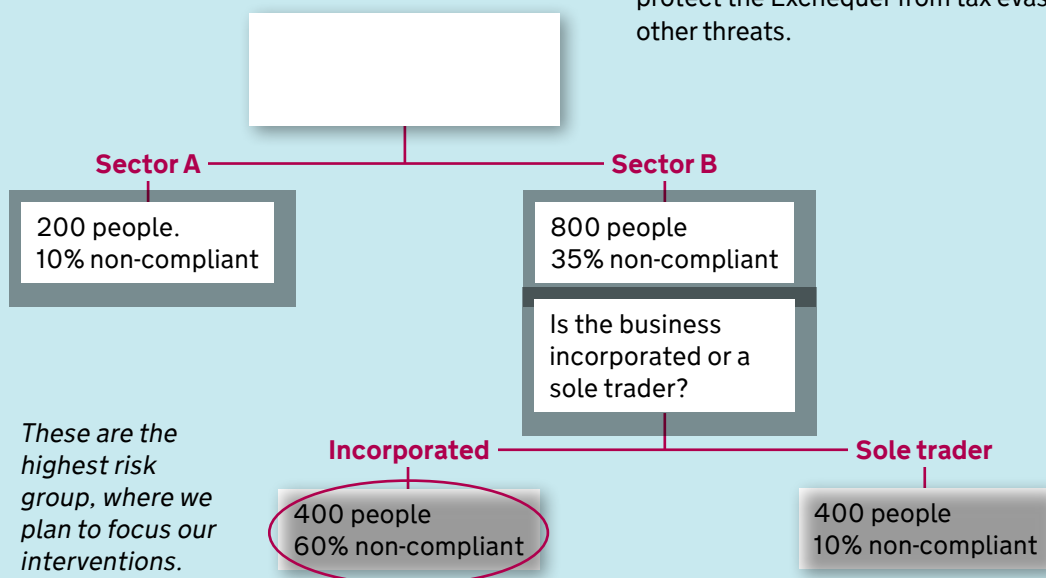- We add to this information we know about the customer from their tax return such as their income, age and occupation – **the inputs**.
- We use decision tree algorithms to sort customers based on their known characteristics (inputs) so we can derive the **probability of the target outcome** (the risk non-compliance).
- The resulting tree can be used to create rules which assign our customers to each final 'leaf' of the tree and so give the likelihood of each customer being non-compliant.

The decision tree below shows how the approach works. There is a population of 1,000 taxpayers of whom 30% are non-compliant. They work in two sectors of the economy, either sector A or sector B. In addition, we know that some taxpayers are incorporated businesses while others are sole traders. We can use the relationship between their characteristics – that is the sector of the economy they work in or the nature of their business – and their likelihood of being non-compliant to help target which taxpayers we investigate.

Following through the decision tree, we find that people in sector B of the economy are more likely to be at risk of non-compliance than those in sector A. Further, among those in sector B of the economy, it is the incorporated businesses who are the most risky group of all. This information could be used to target our compliance efforts on the part of the population presenting greatest risk – doubling the chance of identifying the non-compliant taxpayers while needing to investigate less than half of the population.

This is a stylised example and characteristics discussed are not the real ones we use to identify the non-compliant. It does, however, illustrate the overall approach. In reality we are able to use a wide variety of data to help identify the categories of people who present most risk. As our data grows, so does our ability to better protect the Exchequer from tax evasion and other threats.

Sector A —————— **Sector B**

200 people.
10% non-compliant

800 people
35% non-compliant

Is the business incorporated or a sole trader?

These are the highest risk group, where we plan to focus our interventions.

Incorporated —————— **Sole trader**

400 people
60% non-compliant

400 people
10% non-compliant

A variety of analytics techniques are currently used in HMRC, alongside other approaches, to help realise substantial sums for the Exchequer. Underpinning the new contract with the private sector to tackle error and fraud in the Tax Credit system are analytics models based on the 'decision tree' approach. We are expecting this measure to help bring in up to £1 billion in the next four years.

Elsewhere in the department we are using analytics models to help tackle VAT evasion, where we estimate the improved targeting will bring in around £200 million a year in additional revenue. We are currently extending our modelling to include new populations such as Self Assessment taxpayers. The early indications here are promising with initial trials of the new model suggesting it will double the amount of revenue collected from each caseworker.

Giving a nudge

The world of analytics is constantly changing and new challenges and opportunities present themselves. HMRC wants to use data and analytics to shape more of its work. Can we find ways of nudging customers into changing their behaviour either to increase the chances of taxpayers being more compliant in the first place or acting in a way that saves the department money?

The answer is yes. As a department we have already successfully tried a proof of concept aimed at those who could switch to filing their Self Assessment return online rather than more expensive paper filing. We were able to identify some of those most

likely to change and, working with customer insight experts, tailor communications to those taxpayers to encourage them to move from paper to online filing. Evaluation showed a shift from paper to online filing of around 10%.

Joining the dots

Analytics is, however, only one part of the picture. In the case of the Self Assessment proof of concept, it needed to be combined with accurate and up-to-date information about our customers. Analytics rests on the foundation of data and the IT systems needed to make the most of that data. The new digital services that HMRC is developing will be a significant step forward in enhancing the richness and timeliness of the data available for analytics.

As a department, we must also use tools such as analytics carefully. People trust HMRC

with personal data and rightly expect us to use that data appropriately. Our use of data and analytics therefore needs to be properly considered and proportionate.[1]

The future for analytics in HMRC is bright. It is a very useful tool to help us tackle tax non-compliance, improve customer service and reduce costs. Analytics will provide us with even greater benefits as we continue to build our capabilities in terms of people, skills, technology and data.

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1. The issue of ethics in analytics is multifaceted and a high-level summary of some of the main issues is available on the IBM Big Data Hub (http://www.ibmbigdatahub.com/sites/default/files/whitepapers_reports_file/TCG%20Study%20Report%20-%20Ethics%20for%20BD%26A.pdf)
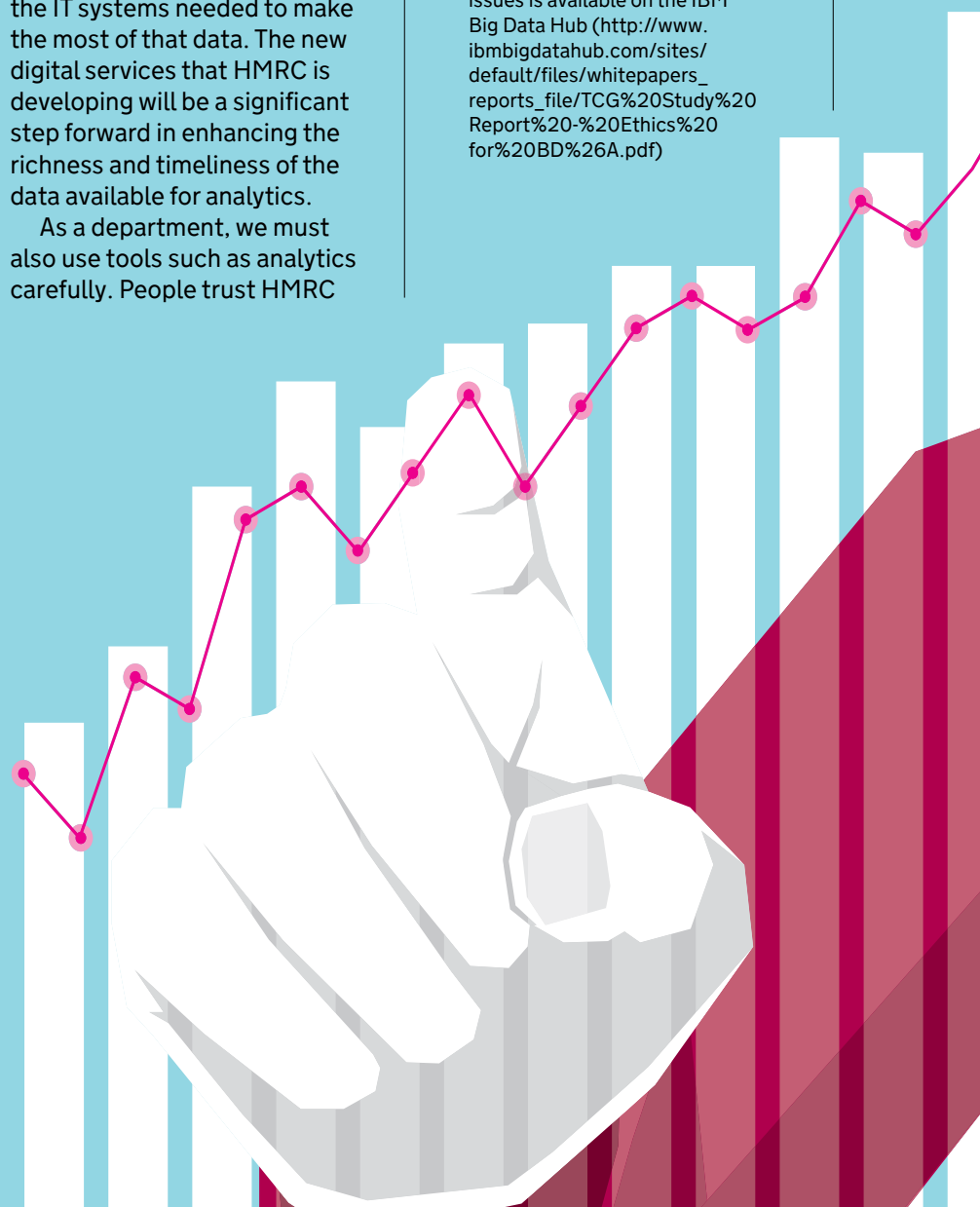
Designing a better A & E

» **Government interest is growing in the potential for design to improve policy. Miles Ayling, Director of Innovation at NHS England, and Catherine Makin, Project Manager for Health at the Design Council, explain how a partnership between NHS England and the Design Council has reduced aggression by 50%, improved staff morale and led to better patient experience across A&E departments.**

A&E departments in England deal with more than 21 million patient attendances every year. Ever increasing patient numbers have put A&E departments under strain in the delivery of services. This can negatively affect the experiences of both patients and staff.

Patients, who are already feeling vulnerable, can become frustrated and hostilities can easily arise. A&E staff, many of whom are working 12-hour shifts in this pressured environment, often bear the brunt of these tensions. Perhaps unsurprisingly, staff wellbeing in A&E departments can be particularly low.

However, for patients encountering a complex system, human contact is the best way to provide guidance, help and reassurance. Improving staff morale and engagement therefore has a multitude of benefits - both for patients and for the system at large. Increased staff satisfaction will reduce turnover, absenteeism and their associated costs, and leave staff more able to deliver the core values of the NHS Constitution: compassion, dignity and respect.

Recognising this, the Department of Health partnered with the Design Council to explore how design could be used to alleviate tensions in A&E departments through the *Reducing violence and aggression in A&E: Through a better experience* programme.

The value of design and behavioural science in a policy context

Drawing on insights and methods from psychology, economics and neuroscience, behavioural science challenges the view that people always behave in a rational self-interest, arguing that people often make decisions with little conscious awareness.

This has major implications for how governments can achieve their objectives beyond incentives, legislation and information. In the context of A&E, there is a natural assumption that people who behave aggressively towards staff have made an active decision to do so. We assume they are unwilling or incapable of changing,

Diagram: Design Council - People Project

Photo: Chesterfield_A&E_
before solutions implemented.
©ESRO/Andy Smith 2011

which leads to standard approaches of more security or threats of punishment.

However, if we know that people's intentions do not always translate into action, and that emotion plays an unconscious role in decision-making, we need to provide practical help for people to overcome these barriers or go with the grain of making better decisions. This means designing solutions that are grounded in what people really want and need.

Much has happened recently in UK central government to introduce new methods to policy teams, including those offered by design. *The Reducing violence and aggression in A&E: Through a better experience* programme offers a practical example of how design and behavioural science can help governments become more open, ambitious and

collaborative in how they make and test policies.

Design solutions for A Better A&E

The group partnered with 3 NHS Trusts considered broadly representative of A&E departments across the country (Chesterfield Royal Hospital NHS Foundation Trust, Guy's and St Thomas' NHS Foundation Trust, and University Hospital Southampton NHS Foundation Trust) to research, develop and test solutions in operational A&E departments.

The Design Council first examined existing reports on recent aggressive incidents in UK A&E departments, and reviewed previous attempts to control and reduce this type

of behaviour in other public-facing services. This research was supplemented by ethnographic research, with more than 300 hours spent conducting observations and interviews in A&E departments.

This identified 6 'perpetrator characteristics' of individuals who commit acts of aggression or violence, and 9 sets of 'triggers' of violence and aggression. These included the waiting experience, the effect of the environment on people's behaviour, and how the intense emotions that play out in A&E create a 'melting pot' of anxiety. This research informed design briefs for multidisciplinary teams to

Designing a better A & E

Check in   Assessment   Treatment   Outcome

Resuscitation
For people with
life-threatening
injuries or illnesses.

Handover

Ambulance

Major Injuries
For people with
very urgent injuries
or illnesses.

Hospital
People who need
further treatment
will be admitted
to a hospital ward.

Tests
We may need to
find out more about
your injury or illness.

You will be
treated in order
of urgency.

You may have
to wait while
we process your
test results and
decide on the best
treatment.

Check in
The receptionist
will check you in.

You will be
seen by a nurse in
order of arrival.

Assessment
A nurse will assess the
urgency of your injury or
illness.

Walk in

Minor Injuries
For people with
less urgent injuries
or illnesses.

Leave A&E
Most people will be
able to leave A&E
after treatment.

See & Treat
For people whose
injuries can be assessed
and treated in one step.

Your journey through A&E

Diagram: Design Council - Process Map

design new systems, services, products, communications, buildings or experiences.

A team, led by design studio PearsonLloyd, worked with specialists in organisational dynamics and clinicians to create ideas for new communication systems, staff support services and secure spaces. The design team sought to identify major areas and triggers of anxiety and aggression, and create solutions that would bring the process closer to an 'ideal' patient experience. For patients this meant being better informed at every stage of their journey through A&E and remaining in control of decisions.

The design team created computer models, mock-ups and initial prototypes to test their ideas in real A&E departments and get feedback from staff and patients. Feedback on these prototypes helped develop the designs and establish criteria for evaluating the success of programme's interventions.

The final recommendations provide physical changes within the A&E department as well as creating behaviour change among patients and staff. The **Guidance solution** aims to reduce anxiety levels by using signage, leaflets and digital platforms to provide information about the department, waiting times and treatment processes. The **People solution** supports frontline staff in their interactions with frustrated, aggressive and sometimes violent patients. Staff are given opportunities to discuss issues and concerns, with the aim of boosting morale and reducing staff absence. An induction booklet introduces new staff to the working culture and dynamics of the department.

Future opportunities for A Better A&E

A Better A&E's Guidance solution signage has been independently purchased and installed by a further 3 Trusts beyond the initial pilot sites. PearsonLloyd works with each Trust to customise the solutions to the requirements of each department, reflecting the different processes and cultures that exist, and are also offering a template package to allow Trusts

to install the Guidance signage at a lower cost. Five Trusts are currently trialling the template package and the first template installations will be completed early in 2015. A further 20 Trusts from across the UK and as far afield as Australia are interested in installing the solutions.

The evaluation findings from *Reducing violence and aggression in A&E: Through a better experience* further strengthen the evidence that cost-effective design solutions, informed by a deep understanding of human behaviour, can play an important role in improving patient experience. NHS England is exploring options to increase the uptake of these solutions. It is also hoped that learnings from this programme can be applied beyond healthcare, with the potential to demonstrate benefits in other public settings.

Photo: Design Council - Newham A&E after solutions installed

Proving the impact of design

The Guidance and People solutions were installed and piloted at 2 A&E departments: Southampton General Hospital (University Hospital Southampton NHS Foundation Trust) and St George's Hospital (St George's Healthcare NHS Trust). Comparator control sites, with similar characteristics were also selected for the respective pilot hospitals.

Evaluators, Frontier Economics and ESRO, robustly tested the impact of the design solutions by collecting primary patient and staff data through immersive methods; collecting secondary A&E data; and undertaking cost-benefit analysis. Pre- and post-implementation data from the pilot hospitals were contrasted with one another, and to comparable A&E departments where the design solutions were not implemented.

Improved patient experience
Clarifying the A&E process and improving the physical environment has improved patients' experiences, and reduced the potential for escalation into hostility. 75% of patients said the improved signage reduced their frustration during waiting times, and complaints about information and communication fell dramatically.

"I'm waiting for my mother-in-law. We're all very worried… but I think it's helpful to have the information. It suggests they understand a bit more about what you might need to know. You feel very 'out of it' sitting out here, the signs definitely help." - **Visitor, Waiting Room**

"When you work here for a long time you forget how strange the environment is to patients. It's easy to get annoyed when

people don't understand things. The signs are clear and easy to read, they definitely help." - **Nurse, Minor Treatment Area**

Reduced hostility and non-physical aggression
Both patients and staff observed significant reductions in acts of non-physical aggressive behaviour. Threatening body language and aggressive behaviour fell by 50% post-implementation. Associated improvements in staff morale, retention and wellbeing have also been reported.

"The signs… helped me understand what's going on behind the scenes. They should put these in the A&E where I'm from. It'd stop everyone from kicking off. People seem a bit calmer here." - **Patient, A&E**

Good value for money
Installing the design solutions represents considerable value for money. The benefits of the solutions outweighed the costs of implementation by a ratio of 3:1, meaning that for every £1 spent on the design solutions, £3 was generated in benefits, with the greatest cost savings coming from reductions in aggressive behaviour.

This is a conservative estimate of the potential benefits which could be realised from implementing the design solutions in A&E settings. Other potential benefits, such as reductions in stress-related absences, increased staff turnover and changes in litigation costs, were not included in the value for money assessment as they could not be reliably measured within the short time that has elapsed since implementation.

Designing a better A & E

Growing interest in design within the civil service

Driven by the Civil Service Reform agenda, interest in the potential for design to improve the policy development process has grown significantly in the past two years. Building on the momentum created by Government Digital Service and the recently spun-out Behavioural Insights Team, external organisations, including the Design Council, and other design leaders have been closely involved in sharing skills and expertise with civil servants and policy teams.

Policy Lab, based in Cabinet Office, encourages civil servants to experiment with new approaches, particularly design and data science, and runs projects that focus on specific policy challenges with departments. The aim is to bring new insights to old problems and to put the user at the centre of policy-making through ethnographic research, co-design and prototyping potential solutions.

75%
of patients said the improved signage reduced their frustration during waiting times

25%
drop in raised voices or being shouted at (including hostile or aggressive tone)

50%
drop in threatening body language and aggressive behaviour

£3
For every £1 spent on the design solutions, £3 was generated in benefits.

www.designcouncil.org.uk/AandE
www.ABetterAandE.com

From Whitehall to hospital ward

» The Department for Health (DH) is pioneering a new Connecting programme to equip its staff with a better understanding of frontline experience. Peter Howitt and Kate Dewit explain why encouraging staff to spend time in delivery organisations is bringing benefits for citizens, delivery organisations and DH staff.

In the wake of the Francis Report into the failings at Mid-Staffordshire NHS Trust, all levels of the NHS have reflected on their own practices and cultures. As the system steward of the health and care system, the Department for Health (DH) is no exception.

Robert Francis QC's suggestion that "DH officials are at times too remote from the reality of the service they oversee" chimed with the DH's growing desire to expose staff more directly to the realities of patient experience.

The Connecting programme, established in June 2013, aims to do this by bringing senior civil servants and policy-makers closer to health and social care delivery organisations. It aims to facilitate a better understanding of "what do the people who matter think?" (one of DH's 6 policy tests) and increase staff motivation and commitment by highlighting how DH contributes to patient care.

The programme

The Connecting programme requires DH senior civil servants to spend a mandatory 20 days per year connecting, in a range of health and care organisations. Policy officials are also encouraged to (voluntarily) spend an average of 5 days connecting per year. Placements are selected depending on an individual's own personal interests and managed centrally, but an increasing number of staff are now beginning to set-up their own visits, with support and guidance from DH.

Since the start of the programme, the Department has arranged almost 4,000 Connecting days and made partnerships with over 130 care providers, ranging from acute trusts to care homes and homeless outreach teams. During these visits, they shadow staff, observe the day-to-day work that goes on, and spend time with patients and people using services. Peter Howitt, Deputy Director for Legislation and Policy, is one of many DH officials seeing the impact of their work:

"In a year of Connecting, I've seen the challenge of providing mental health services inside Wandsworth Prison, talked to people recovering from strokes, served meals to the homeless and much more. For me, Connecting has highlighted the complex interaction of services for those most at need. I was serving a meal to a mental health service user who had been discharged following a course of treatment on his alcohol problem. However, news that his flat might be taken off him by the Local Authority had led him to start drinking again. His mental state had deteriorated and he was threatening self-harm. I put him in touch with the mental health out of hours service. A housing problem became a health problem. This emphasises the need for the joining up of public services, something which will hopefully be facilitated by the Better Care Fund."

Siobhan Jones, Deputy Director, who cites Connecting as "a fantastic opportunity to remind me why I joined the department" had a similar experience to Peter, spending a week in a mental health trust:

"I had been keen to visit a mental health organisation as I knew there were a lot of people who misused alcohol or drugs (the area of policy I work on) who also had mental health problems. However, I was overwhelmed by just how many people were struggling with both conditions and the challenges in accessing support. Working with my team, we have already started to apply this learning to what we do back in the Department. We are talking to the

From Whitehall to hospital ward
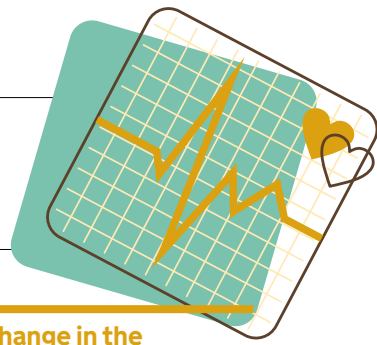
mental health team to see if there is anything more that can be done to make it easier for drug and alcohol teams and mental health teams to work together. I will also be taking my experiences into conversations with other departments, for example with the department for Work and Pensions about patients' experience of applying for benefits."

A debrief process, in which experiences are shared with the department, collects learning and focus groups are organised on certain themes, such as mental health. More are being arranged to include a mixture of voices from both civil servants and Connecting partners. A recent survey of 99 DH staff who had connected revealed 86% had a better understanding of the health and care system as a result of their experiences.

The NHS view

Hosting Connecting visits inevitably relies on the time and goodwill of a busy frontline workforce. However, an evaluation of the impact on health and care staff has revealed that almost all (96%) of respondents found their experience of DH staff connecting with their organisation enjoyable, and the majority (86%) also found their experience useful.

Many staff felt that Connecting helped to demystify the DH, commenting that civil servants are no longer 'faceless'. David Flood, Adult safeguarding lead nurse at St George's Healthcare NHS, agreed: "I think it's really important to engage with people to try and close the gap. We [NHS staff] are the first to say 'they don't know'

so it's good for us to have DH come in - it's about changing perceptions."

Frontline staff felt Connecting gave them an opportunity to highlight issues and best practice, and reassured them that policy-makers understood the reality of the NHS. David echoed this: "Connecting gave me an opportunity to marry up all the documentation and long reports with what we do on the shop floor, and the reactive elements of my role. It gave me a chance to show the tension between the differing systems: for instance health, which works with risk and aims to learn from mistakes; and social services, who may be more averse to risk. The use for me was trying to explain that impact on practice and the competing demands of the role."

Almost two thirds of DH staff say that Connecting increased their number of useful contacts. These relations with health and care staff – from porters and care workers to consultants and receptionists – enable ongoing communication and ideas exchange. As David said, "Feedback is always useful - to know what they are putting on their action plan, whether they've had their eyes opened about something; and to carry on closing the loop."

Health and care staff report feeling more valued following the experience, and civil servants felt a renewed sense of purpose and more inspired to do their best for patients. Despite the significant time commitments the programme demands, 90% of civil servants and 96% of health and care staff state they would recommend it to their colleagues.

Culture change in the department

After only one year, Connecting is beginning to help shape the way business is done. A quarter of those asked reported that connecting had already changed the way they worked, with people using their new contacts as informal sounding boards, developing better dialogue with partners, and having a greater focus on the patient experience and unintended consequences of policies.

Catherine Pearson, Deputy Director of the Maternity and Starting Well team at DH spent 4 days with her team at Kingston Hospital NHS Foundation Trust, following which they have hosted some of the Kingston team in visits to the department:

> *Our team's experience of Connecting has been incredibly positive. We've been able to reflect on how our policies feel in practice and to understand some of the issues and challenges facing clinicians and managers. Above all, it has helped us understand how women and families experience maternity services. It's brought a new dimension to our day to day work, and helped us keep a focus on what's really important to patients and staff.*

Peter echoes this, "In my experience, Connecting helps to ground your policy making and enable you to look behind the statistics. For instance, I've been considering how surplus NHS land can be released for new housing. Connecting has revealed that the "surplus" label can be misleading; for instance at the Bethlem hospital site land can't be built on due to archaeological remains or being protected parkland. And having taken on responsibility for dental policy recently, by visiting dentists I have seen first-hand the motivating effect that RAG-rating people's oral health can have on them - siblings compete to have healthier teeth than each other."

By broadening engagement, Connecting contributes to the civil service movement towards open policy making. Experiences are gathered in a real-time, personal and informal manner, and are far more wide-ranging than could be achieved by relying solely on traditional and more formal stakeholder representation (such as the Royal Colleges, unions, and patient groups).

The future of Connecting

Connecting is generating a large amount of ethnographic data: insights into the experiences of patients and staff; and observations of policies in action. The department is developing tools and systems to allow them to collect and use this data and share the learning more widely.

Staff on both sides are keen to extend Connecting in the other direction, and so far the DH have held several days introducing policy making and the parliamentary process to

health and care staff. Ensuring Connecting is sustainable and manageable post-election will also be important.

In the longer term, it is anticipated that Connecting will help the department to better understand their changing relationship with the frontline, in a health and care landscape that is increasingly devolved. Already over a third of DH staff reported that Connecting made them feel differently about DH's role in the system, for example by "exploring the complexity of stewardship" (the range of functions carried out by governments as they seek to achieve national health policy objectives).

To embed learning, staff will be encouraged to reflect on Connecting as part of their appraisal process and address their own individual development needs. Connecting will also be integrated into the induction process for Fast Streamers and new starters, and the range of health and social care partners engaged with the programme will be broadened over time.

The aim is for Connecting to become an everyday part of how the DH does its business.

Photo: Kate Dixon in scrubs

Photo: From BMI The Princess Margaret Hospital CQC

Photo: Jeremy Hunt visiting HQ

1. Michael Hallsworth (2011) System Stewardship, Institute for Government. Available online: http://www.instituteforgovernment.org.uk/publications/system-stewardship

2. Robert Francis QC (2013). Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry, paragraph 1.110. Available online: http://www.midstaffspublicinquiry.com/report

3. Katie de Wit (2014). Connecting programme: the views of frontline staff in our partner organisations. Unpublished data.

4. Department of Health (2014). Evaluation of the experience of DH staff – One Year On Connecting Survey. Unpublished data.

Raising the bar

» A team of Policy Fellows is bringing new insights and challenge to policy making in the Department for Education (DfE). Nicole Berry and Bridie Tooher, from the DfE's Strategy Unit, explain how embedding seven 'outsiders' is raising capability across the department.

The Department for Education (DfE) has had a unique response to the Civil Service Reform Plan's goal to make open policy-making the default across Whitehall. Engaging directly with the Institute for Government's recommendations to 'bring outsiders in', it has created a Fellowship of Experts within the department.

Seven high-calibre professionals from across the world, and with a range of backgrounds, experiences and skill sets, have been embedded in the department with the overall aim of raising capability. Within this, the Fellows have 3 main objectives:

1. To contribute to specific policy and delivery problems or challenges;
2. . To expose the whole department to new ways of thinking and insights through a range of learning opportunities;
3. To benefit personally from their experience in the department.

Half-way through the programme, its benefits - and valuable lessons - are becoming clear.

Ambitious recruitment and deployment

To attract a wide-range of high-calibre candidates, positions were advertised internationally and through a variety of media. The department was keen to select Fellows based on their merits, rather than to fill vacant posts. Consequently, contracts were flexible and requirements deliberately broad: simply, strong examples of analysis, innovation and an interest in education. After almost 130 applications were received - from people in the private, voluntary, academic, and education sectors – the Fellows were selected. Finally, the matching process took place; after Directors identified team priorities, Fellows were allocated to teams, based on their skills and aspirations.

This first round of the Fellowship is a live trial; an iterative and changing programme that has been adapted as the department works towards its core objectives. To ensure consistent oversight, cross-departmental collaboration and wide-reaching benefit, the Fellows report through both the department's central strategy function as well as project managers in their assigned areas. Centrally, qualitative and quantitative feedback is gathered regularly from the Fellows, their project managers and others they have worked with, to maximise their impact and enjoyment.

> *I have been hugely heartened by what I have found in the DfE. The most laudable features of the department's work are, I think, its overt willingness to question its own conventions, its desire to invite provocative challenge, and its forthright approach to engaging with external expertise. My role as a Policy Fellow could, in a different incarnation, be totemic and simply pay lip-service to open policy-making; my experience in the role suggests that the DfE truly wishes it to be quite the opposite. The opportunity to learn about and contribute to the policy sphere has been rewarding, and working with committed, intelligent people is a joy.*
> -Stuart Kime, Policy Fellow.

The DfE Policy Fellows

Brian Daly
Brian joined us from a 25 year long career in investment banking including stints with JP Morgan, Morgan Stanley and Goldman Sachs.

Jonathan Clifton
Jonathan is on secondment from the Institute for Public Policy Research (IPPR), where he worked as a Senior Research Fellow focused on schools and education.

Marta Pascual Barea
Marta joined us from education-technology business Amplify Education in New York. Prior to that she helped set up Teach First in Spain.

Anton Collyer
Anton is retired Vice President of worldwide IT at GlaxoSmithKline, where he was responsible for an annual budget of $1bn and a direct staff of 3500.

Stuart Kime
Stuart is a former teacher and is currently studying for a PhD in teacher evaluation at Durham University. He is co-author of the Education Endowment Foundation's DIY Evaluation Guide and advises schools on the use of baseline and progress data.

Bill Holledge
Bill is former head teacher of Great Yarmouth Primary Academy, which he led out of special measures. Bill now works for Paradigm Trust, a Primary Multi-Academy Trust in London.
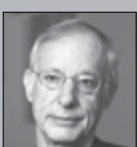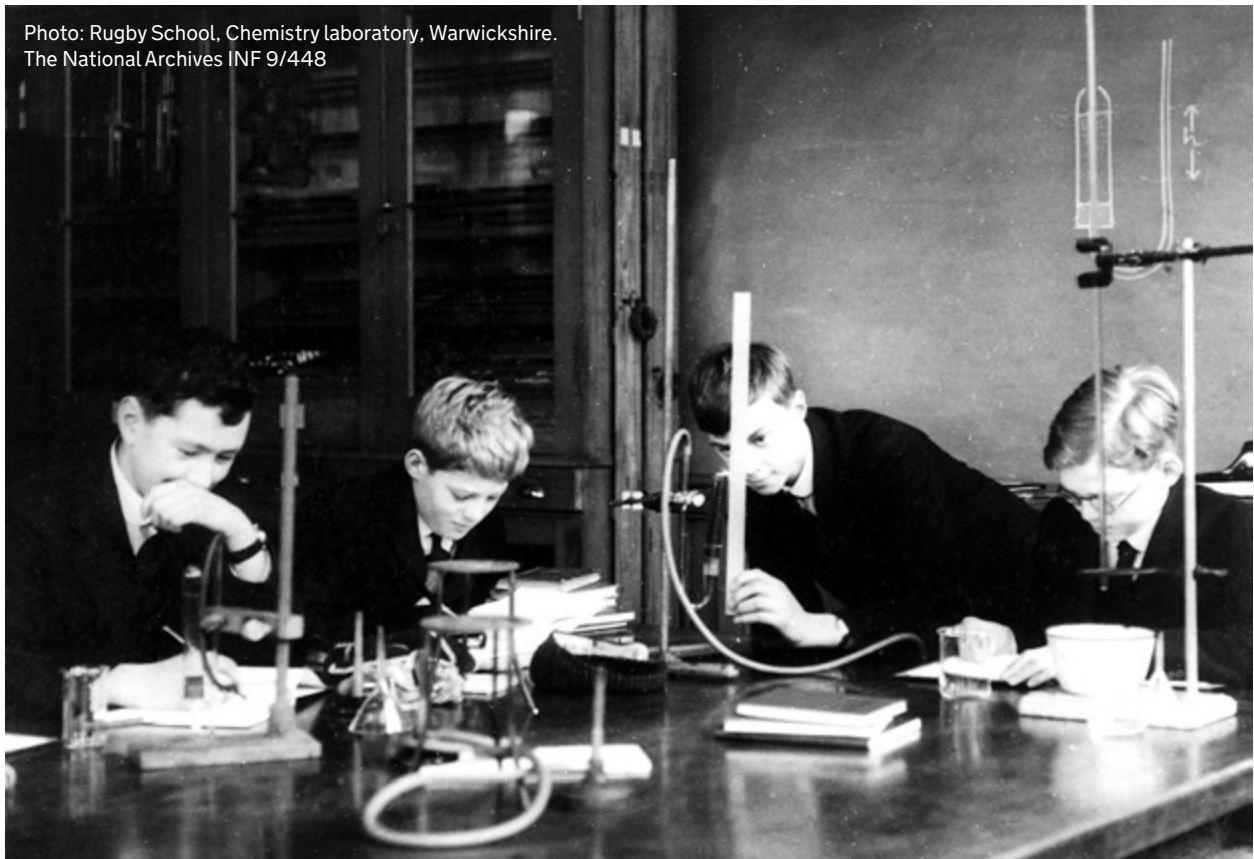
Dr Paul Cappon
Paul is formerly President and Chief Executive Officer of the Canadian Council of Learning which takes responsibility for developing the national voice of education in Canada.

Raising the bar

Photo: Rugby School, Chemistry laboratory, Warwickshire.
The National Archives INF 9/448

Open policy making in action

❝ I am absolutely delighted that the Policy Fellowship has lived up to our ambitions, being much more than the sum of its parts and benefiting both the department and the Fellows themselves. ❞
- Tom Jeffery, Head of Policy Profession December 2014

Early assessments indicate this programme will be a very worthwhile commitment. Individuals that may not have had access to traditional civil service recruitment channels have brought new perspectives, skills and experiences to challenge the status quo. Case studies highlight the value added by the Fellows so far, and are expected to bring benefits as the programme continues (6 Fellows continue with the department until March 2015).

Reciprocal learning

Beyond their contributions to specific project teams, the Fellows have contributed to a range of other initiatives in the department aimed at raising awareness of the Policy Profession and improving overall capability. Events have included a seminar organised by Jonathan to commemorate the 70th anniversary of the 1944 Education Act ("the Butler Act") and a seminar run by Bill on the realities of working in a failing school. Stuart has run a podcast series on the use of evidence in education, which highlights the importance of becoming a more data-driven department.

❝ An understanding of the history of the education system is the sort of thing civil servants often don't have time to do given the pressures of their day job – but as a Policy Fellow I can arrange talks and lectures from academics using my contacts. I was able to organise a fascinating session with Sir Michael Barber, Professor Alison Wolf and Professor Peter Mandler on how the school system evolved after the Second World War and the many things we can learn from this which are still relevant today. ❞
- Jonathan Clifton

New insight on a regular basis

The team managing the Fellows will continue to support the programme to maximise the contribution of the Fellows. Following a full evaluation at the end of this round, the Board will decide whether to continue this programme as a regular way to bring new insight into policy making. However, valuable lessons have already emerged from this trial.

Firstly, the induction process needs to extend beyond that of a normal new starter, as Fellows bring varying degrees of knowledge about the DfE and the UK education system. Equally, the Fellows' roles extend beyond that of their individual project teams; it is hoped that Fellows will be visible across the department, so that everyone can have access to their input (an 'ask the Fellows' email box enables everyone to benefit from their input on an ad-hoc basis). Therefore, all Fellows and the staff they work with need to be clear about objectives and expectations, and the nature of the Fellows' roles.

Secondly, guaranteeing a match between a Fellow's skills and the projects they should work on isn't an exact science. Effective monitoring and collaboration with teams is required to ensure that the Fellows' skills are consistently maximised, and that Fellows are able explore ideas beyond their designated projects to allow for real innovation.

Along with the department's development of a Policy Curriculum, which aims to provide the knowledge and skills needed to answer the policy tests, this initiative is helping to build capability in the department and DfE staff have embraced the learning and insight it offers. Each Fellow is supporting the department to build its capability to answer its 5 policy tests to ensure policy is purposeful, necessary, evidence-based, yet radical, creative and deliverable.

Working full time on projects examining the challenges within the current school system, **Marta** *has drawn on her experience of setting up the accountability system for charter schools in the New Jersey DfE to input into this important piece of work.*

Bill *has drawn on his experience as a head teacher to suggest how clarifying expectations and good practice around annual reporting to parents and carers can save teacher time. Working one day a week in the department, he provided excellent external challenge and an additional perspective to a range of school policy areas that the department would have been unlikely to receive otherwise.*

Brian *challenged assumptions about how the post-16 education sector will differ in 2022 and how financing arrangements could work. He helped to open doors for DfE colleagues with private sector organisations and use these links in a way that may not otherwise have been possible.*

Paul *joined in October and will be using his significant experience as a leader in the education sector in Canada to do a research project about how to best prepare young people for adult life. His interim findings have already influenced the department's strategic thinking.*

Anton's *experience as a senior leader in a large multinational organisation has enabled him to act as a 'sounding board' and 'critical friend' to the Education Funding Agency as it seeks to improve its payment function.*

Stuart's *teaching experience and understanding of evidence-based approaches in the sector has helped the department to understand the barriers to more widespread evidence-based teaching, and how working with other parts of the system might overcome these. He has also opened doors to academics and teachers, and acted as a sounding board for wider teacher quality work.*

Drawing on his research experience, **Jonathan** *has led a horizon scanning project to identify the trends that will shape the early years education and care system. His input has helped the department to consider the sector's future, which has undergone significant change at a time of fiscal constraint.*
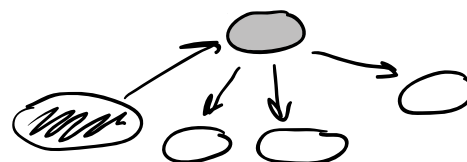
Command and control: reforming the Rural Payments Agency

» Once considered the black sheep of the Defra family, the Rural Payments Agency (RPA) has advanced from disparate, struggling silos to a unified example of best practice in government. Chief executive Mark Grimshaw outlines the approach behind this four-year transformation.

When I took the helm of the RPA in January 2011, things weren't looking good. Still mired in the aftermath of the botched introduction of the European Union's (EU's) new Single Payment Scheme (SPS) 6 years before, the Agency was failing in its payment duties with inaccurate data and major IT problems. This resulted in glaring payment errors and delays, stubborn processing backlogs, heavy EU fines and stinging criticism in the media and agricultural industry.

In 2007/8 the Agency had an overall customer satisfaction score of 5.9/10. Three years later in 2010/11, customer satisfaction with the Agency's written communications was just 5.6/10. Media headlines including terms like 'fiasco', 'scandal' 'disaster' and 'calamity' were all too common in the wake of SPS 2005.

As chief executive I realised very early on that the Agency's key targets were flawed, leading to perverse operational behaviour where teams competed to do the easiest work. It was obvious that decision making needed to be brought back to a senior level to drive reprioritisation.

Having dealt with comparable problems as managing director of the Child Support Agency (CSA), I knew large-scale change was required: to the governance processes, structure and ways of working.

Getting a grip

Up to that point the Agency had been subject to multiple reviews of its operations by third-party audits, resulting in £680m paid out in unforeseen operating costs and EU fines. I needed to establish centralised control, to know every detail of our budgets, operations and what was going on around our 6 main sites and scattered satellite offices.

It was clear having the right people with the right skills was critical. I recruited an Executive Team (ET) of 8 senior managers – each a specialist in their own profession – and non-executive directors to provide assurance and challenge.

Sometimes going against the grain and thinking radically is required for large-scale change. Over the course of 3 long days

in early 2011 we shared our insights and perspectives for the future vision for the Agency. We created a framework and roadmap for change, along with a visual representation of our strategic plan that is still on the wall in our boardroom.

Organisational design

Under an organisational restructure which I had previously introduced successfully at the CSA, we created a 5 year plan in which all the components – departments, processes, roles, end goals – are tightly linked to each other, building on strengths and interdependencies across 6 key areas.

It took nearly 4 months to lay the foundations for the necessary roles, processes and structures which would need to be followed in the years ahead. However, in doing so we developed a strong understanding of our strengths and weaknesses, and were able to detail the first 3 years – a Strategic Improvement Plan, consisting of 45 separate projects, 21 of which were public commitments.

Headlines from 2006

Scandal of rural payments

Calamity upon disaster for hard-hit sector

Fresh attack on Beckett over farm payments fiasco

Whitehall comes clean on farm cash blunder

Payments fiasco will remain big challenge

Ministers accused of having 'no idea'

The 19,000 farmers Ministers chose to forget...

Farmer fury at delays in cash

Command and control: reforming the Rural Payments Agency

Proper governance

I made sure there were only two ways to initiate change within the organisation: for new policy requirements to go through an external relations gate and services to go through an internal change programme delivery gate. It was only by effective and rigorous control of what new projects to start that we were able to keep the improvement programme on track. This approach allowed us, as an Executive Team, to properly plan, monitor performance and analyse new programmes to ensure their success.

At this point our SPS figures spoke for themselves. By the end of 2010 scheme year we had only paid 85% of our customers 74% of what they were owed.

We launched the plan in early 2012, overhauling many areas of the Agency and drilling down to cleanse, streamline and improve multiple lines of business – from updating our IT systems and overhauling our complaints and appeals service to correcting inaccurate data and properly equipping our field inspectors with the latest kit.

We needed to operate at maximum efficiency and effectiveness to turn our customer service, operational performance and reputation around - not to mention get ourselves ready for the next round of Common Agricultural Policy (CAP) Reform changes.

Customer relations

One of the main challenges thrown up by the framework was the poor state of our relationships with customers. Where in the past the Agency had focused on the less complex, smaller value claims in order to meet its December targets, our new approach involved allocating the more complex claims to senior caseworkers, resulting in these higher-value claims being paid earlier.

As a result, the percentage of customers paid in December increased significantly. By the end of December 2011, 88% of customers had been paid, compared to 85% in the previous year, and in 2012 the end of December figure had reached 93%. This improvement in performance carried through to March 2013 with 99% of claims having been paid by the end of that month, compared to 95% in 2010.

This focus on more complex claims delivered even greater improvements in the percentage of the fund paid. From our dismal figures of 74% in December 2010, we saw it rise to 82% in 2011, 88% in 2012 and on to 95% in December last year. This change in the first 3 years meant £309m more was paid to the farming sector in one month than would have been the case without the shift in focus.

This shift to putting the customer at the heart of everything we do is now quite rightly seen as fundamental, and our customer satisfaction figures reflect this. Perceptions of the Agency have improved year on year - on a scale of 1 to 10, customer satisfaction was measured at 8.7 in 2013, up from 7.1 in 2011 and 7.5 in 2012. In the UK, a customer satisfaction rating of 8.7 puts the RPA on a level with many of the best performing companies in the private sector.

A culture shift

At the same time we were very clear about the expectations of our people internally, so they would work with us. A culture shift comes about because of leadership actions and the changes you make – we were able to increase our performance by record levels at the same time as a near 25% reduction in our workforce.

In the early phase of our change programme our focus was on sorting the task and getting our business processes in place - then we tried to focus on change at a team level.

It's only been in the last 12 months that we've started to focus down on individuals and driving the change at that very personal level, so I guess the culture shift was about clear expectations, support, reward, recognition of the positives and challenge for the negatives.

Talent management

We were really keen within the RPA to grow our own capability and have less reliance on external resources. Traditionally, talent management schemes are focused on developing your leadership and management capability at quite a senior level. Given our grade profile within the Agency, we decided to approach it from the bottom-up rather than the top-down.

The scheme has gone excellently with a very high interest, and we've operated an assessment centre to select people onto it. The members are really enthusiastic and very positive about their experience on the scheme, and we are starting to reap the dividends across the business because we have identified those people who have a lot to contribute. We are now enhancing their capability as we place them into key roles, and it's having a positive impact in terms of their engagement.

Record performance

The Agency's successes and achievements were highlighted this year in us having the sole remaining qualifications on our accounts lifted by the National Audit Office, and completing the first 3 years' activities of our Five Year Plan in just 2 – one year ahead of schedule.

Our operational performance was record-breaking, with 99% of our SPS customers being paid 99% of the fund value by the end of March. In just 2 years an improvement from 94% and 88% respectively.

In the final year of the SPS we have just delivered our best-ever payment performance for our customers.

Lessons learned

Whilst it could be argued my 'command and control' management style is not the most modern way of doing things, it is crucial in certain circumstances to get on top of a situation quickly and avoid further waste of public money. The RPA needed this when I joined in 2011, and we've seen a very respectable turnaround in the 4 years since.

Being accountable means you can't be reluctant about performance evaluation and statistics. To benchmark success you must track your progress, and data and systems for statistical and analytical information are imperative.

Collective consciousness is also a positive organisational trait. In the RPA, all department heads know what everyone else is doing. While they may not be directly responsible for someone else's outcomes, they support one another, providing input into initiatives to help make sure of the success of the wider agency. Having headline knowledge of all the Agency's operations enables senior leaders to work smarter, not harder, and continually meet our targets and goals.

Next steps: digital applications

With big changes happening this year in the way our customers apply for subsidy payments, our job is to ensure that everyone eligible who chooses to claim is able to do so. This is why we've been working closely with our customers, stakeholders and the industry in developing the new online service.

We shouldn't underestimate the challenges that we face in working together to achieve this, but I'm confident that we have put ourselves in the best place possible thanks to our hard work over the last few years and we are as ready now as we can be for the road ahead.

Farmer overall satisfaction
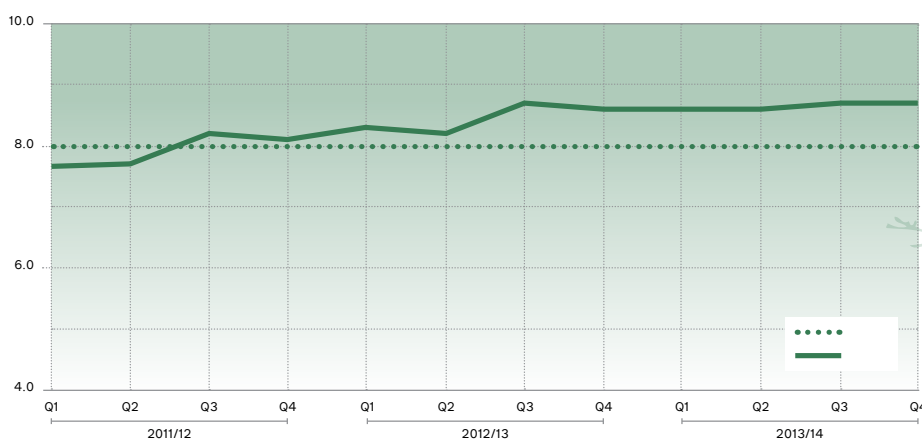
They are always polite and helpful. [You] never feel as though your questions are too much for them. If they don't know the answer they make all the effort to find out.

Their online forms are excellent, their helpline is good and I don't have to wait.

It has improved and it is layman's terms now.

What works? The rise of 'experimental' government

» Public service professions have lagged behind the medical profession in using empirical evidence to guide decision making. David Halpern, National Adviser on What Works & CEO of Behavioural Insights Team, explains how the 'What Works Centres' can change this, and outlines the case for 'radical incrementalism'.

We take it for granted, when a doctor writes a prescription, that there are good grounds to think it might make us better. But what makes us think, when we drop our kids off at school, that the way they are taught is effective? Or when we report a crime, that the way that that the Criminal Justice System responds is likely to lead to less crime in the future? Over the last 4 years, a set of institutions have been created to answer these most basic 'what works?' questions, and their early results are already causing a stir.

A search for evidence

In the 1960s and 70s, the medical establishment was shaken to its core. Realising during his time as a medic during World War II that "there was no real evidence that anything we had to offer [in the treatment of tuberculosis] had any effect", Dr Archie Cochrane began a restless search to improve the evidence base behind medical practice. Despite contemporary criticisms that this was unnecessary, or even unethical, the results often revealed ineffective, and sometimes even counterproductive, medical practice.

Cochrane's approach ultimately led to the creation of the National Institute of Health and Care Excellence (NICE) in 1999, and indeed to the Cochrane Collaboration, a global network of collaborators spread across more than 120 countries dedicated to evidence-informed healthcare. His doubts have extended the lives of millions of people across the world and reshaped the character of medicine itself.

But, as Jeremy Heywood asked at his first public speech as Cabinet Secretary: if NICE made sense for medicine, why didn't we have a 'NICE' for all the other public service professions – or even for the civil service itself?

More than 200,000 good empirical studies have been published on the relative effectiveness of alternative medical treatments. Conversely, equivalent studies in welfare, policing, social and economic policy and practice run only into the few hundreds combined. Can we really argue that the life-death outcomes of medical treatments make systematic testing ethically acceptable, but that it is wrong to test the efficacy of welfare or education?

Fortunately, things are starting to change – and fast. NICE is now the most mature of 7 independent 'What Works Centres', operating across a range of policy areas.

> Orthodox rites.) I remember at that time reading one of those propaganda pamphlets, considered suitable for POW medical officers about 'clinical freedom and democracy'. I found it impossible to understand. I had considerable freedom of clinical choice of therapy: my trouble was that I did not know which to use and when. I would gladly have sacrificed my freedom for a little knowledge. I had never heard then of 'randomized controlled trials', but I knew there was no real evidence that anything we had to offer had any effect on tuberculosis, and I was afraid that I shortened the lives of some of my friends by unnecessary intervention.

Image: Cochrane, A.L. (1972) Effectiveness and Efficiency: Random Reflections on Health Services

Figure 1: Approximate cost and effect size for 34 education interventions.

Estimated cost per pupil per year is based on a class size of 25. Text highlighted in bold signifies interventions for which the evidence on effectiveness is extensive or very extensive according to the Toolkit definitions.

Source: The Sutton Trust – EEF Teaching and Learning Toolkit and Technical Appendices: http://educationendowmentfoundation.org.uk/toolkit/about-the-toolkit/
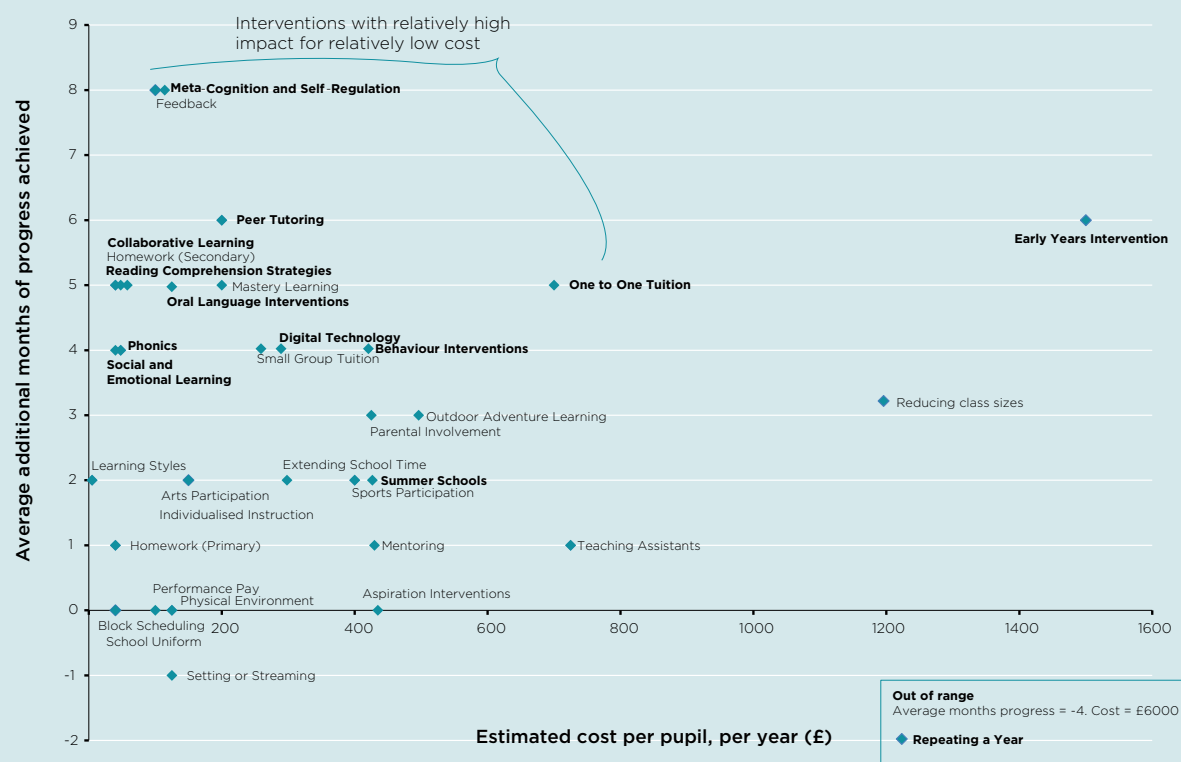
What works in education?

In 2011, the Educational Endowment Foundation (EEF) was created. As Kevan Collins, its CEO, recently explained, the EEF has 'laid to rest the idea that you cannot do randomised control trials (RCTs) in education'. It has already funded more than 90 large-scale trials – all but 5 of which are RCTs - across more than 4,000 UK schools and involving more than 600,000 children.

In collaboration with Durham University and the Sutton Trust, the EEF has produced a toolkit aimed at schoolheads, teachers, and parents. This summarises the results of more than 11,000 studies on the effectiveness of education interventions, as well as the EEF's own world-leading studies (http://educationendowmentfoundation.org.uk/toolkit/). For each educational approach, such as peer-to-peer learning or repeating a year, the toolkit summarises how much

difference it makes (measured in months of additional progress); how much it costs (assuming a class of 25); and how confident they are of the effect, on the basis of the evidence so far (see figure 1 above for a summary plot).

Headteachers can therefore base spending decisions on robust evidence about their impact on pupils. For example, it turns out that extra teaching assistants are a relatively expensive and in general not very effective way of boosting performance,

What works? The rise of 'experimental' government

whereas small group teaching and peer-to-peer learning are much more cost effective. Repeating a year is expensive and, in general, actually counterproductive.

The growth of What Works Centres

Other What Works Centres are starting to provide similar guidance across most areas of domestic policy and practice. The What Works Centre for Local Economic Growth (LEG) provides advice for Local Enterprise Partnerships. It has concluded, for example, that relatively short skills training is a cost effective way

of boosting local employment and growth, especially when local employers are involved. It has also ruffled feathers by highlighting that local areas spending money on major sporting and cultural events is a rather less effective way of boosting growth (though it may be justified on other grounds).

The Early Intervention Foundation is working with 20 Local Authorities to provide advice on the most effective ways of intervening early in life to prevent later costs, from nurturing social and emotional development to reducing domestic violence. Recent work by the EIF with 13 of its 'Pioneering Places' revealed that 47% of the interventions

being delivered had little or no evidence in an established clearing house to support them. This information is helping the Places to allocate resources towards more cost effective interventions.

The What Works Crime Reduction Centre, hosted with the College of Policing, releases its toolkit shortly. This will include the established but still little known finding that interventions which aim to prevent young people committing crime by taking them to visit prisons are on average ineffective and sometimes actually increase the risk of criminal behaviour. The toolkit is built to guide the decisions facing Police

Figure 2: Some early What Works findings

What Works: Some of our findings...

Crime	Education	Local Growth	Health	Early Intervention
'Hot spot' policing - patrolling in small areas where crime has been concentrated - reduces crime and does not simply move it round the corner.	Peer tutoring approaches, where learners work in small groups to provide each other with explicit teaching support, have, on average, a high impact on attainment at a low cost.	Whilst they have intrinsic social value, the local economic impacts of major sporting and cultural projects tend not to be large and are more often zero.	More lives would be saved or improved if people with acute heart failure were routinely treated by specialist heart failure teams.	The Family Nurse Partnership programme has been shown to be effective in the US for improving children's health and development, with the benefits outweighing the costs by around four to one.

These are just a small selection of the Centres' findings to date. Visit the websites listed on the second page for further findings.

and Crime Commissioners, and other professionals across the Criminal Justice System.

The What Works Network is growing. The Centre for Ageing Better is under development, and a new What Works Centre for Wellbeing was launched at the end of October. The Public Policy Institute for Wales and What Works Scotland have also recently joined the Network as associate members.

Implications for all of us

Often the What Works reviews reveal just how little we know about the cost-effectiveness of many policies and operational practices. Just as Archie Cochrane and his colleagues helped turn medicine into the empirical discipline we recognise today, we need to push the same restless empiricism into every other area of public policy and practice. Experimental studies have shown that we are we all strongly prone to overconfidence; we need to follow in the footsteps of Archie Cochrane, recognising how much we don't know.

Think of how your policy and operational choices to date could have been aided by experimentation or variation, rather than plumping for your best informed guess. You could have explored different options - varying the intensity of the intervention, trying different routes to delivery, or randomising the roll-out across the country to test its impact.

Building deliberate experimentation into policy from the outset is the single best way that we can strengthen the evidence base on which the What Works approach is built. In a world of digital-by-default, the opportunities for experimentation are

greater than ever, and the costs lower. Visit a Google or Amazon webpage and you will almost certainly be viewing one of a number of variants as they endlessly test 'what works' best, so-called A/B formatting. The Behavioural Insights Team (BIT), the world's first government institution dedicated to the application of behavioural sciences, took a similar approach when working with Public Health England, testing 8 variations of webpage to encourage more people to sign up as organ donors when arranging their car tax, and more than 20 variations in a quit-smoking site. How many variations are you trying on your web-estate?

In a postscript to what would become a landmark test, Cochrane wondered if he'd been too harsh on his medical colleagues, who were in many ways ahead of other professions:

> What other profession encourages publications about its error, and experimental investigations into the effect of their actions? Which magistrate, judge, or headmaster has encouraged RCTs into their 'therateuptic' and 'deterrent' actions? [Cochrane, 1972, p87].

Fortunately, albeit 40 years later, that is changing. Be a part of it.

'Radical incrementalism' is the idea that dramatic improvements can be achieved, and are more likely to be achieved, by systematically testing small variations in everything we do, rather than through dramatic leaps into the dark. For example, the dramatic wins of the British cycling team at the last Olympics are widely attributed to the systematic testing by the team of many variations of the bike design and training schedules. Many of these led to small improvements, but when combined created a winning team. Similarly, many of the dramatic advances in survival rates for cancer over the last 30 years are due more to constant refinements in treatment dosage and combination than to new 'breakthrough' drugs. Applying similar 'radical incrementalism' to public sector policy and practice, from how we design our websites, to the endless details in jobcentres to business support schemes, we can be pretty confident that each of these incremental improvements can lead to an overall performance that is utterly transformed in its cost-effectiveness and overall impact.

You can read the Centres' recent report at **https://www.gov.uk/ government/publications/what-works-evidence-for-decision-makers**.