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Science, not 'Sir Humphrey': Fixing Whitehall's 'tepid bath'

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EXECUTIVE SUMMARY

- Weaknesses in the Civil Service are holding back the use of science and technology to improve the United Kingdom's (UK) prosperity. There is a lack of scientific and technological knowledge within most government ministries and departments.
- This undermines the Civil Service's strategic analysis of Britain's scientific and technological aims and capabilities, which stymies economic growth.
- His Majesty's (HM) Government should: rethink or refresh the role of Chief Scientific Advisers; create a 'net assessment' office focused on science and technology capabilities; establish a 'What Works' centre to retain institutional memory; reform Civil Service recruitment to prioritise expertise; review promotion pathways and incentives to discourage excessive movement between departments; increase the salary of high performing civil servants (funded by reducing the size of the Civil Service); and better address underperformance.

Since the agricultural and industrial revolutions, science and technology have been central to efforts to boost British prosperity. In 1963, Harold Wilson, then Prime Minister, pledged to harness the 'white heat' of a scientific revolution to forge a prosperous Britain. Recent prime ministers have echoed this, promising to channel British technological excellence for national benefit.

The United Kingdom's (UK) Civil Service plays an essential role in the science and technology ecosystem by formulating and implementing policy, managing research and development funding, fostering innovation and establishing regulatory frameworks. Its effectiveness directly affects Britain's scientific and technological ambitions and national prosperity.

Over the last few centuries, the UK's policy and administrative structures have helped the country to navigate big changes gradually and ensure stability. But this resistance to change can be a hindrance, with institutional inertia reducing Britain's ability to take advantage of new technologies.

The Civil Service's ability within central departments of His Majesty's (HM) Government to engage with scientific experts and implement science and technology policy faces several significant challenges.

There is a lack of scientific knowledge within Whitehall, which impacts how the Civil Service understands and uses data, and means central government departments often have a vague understanding of new technologies and how they can promote national prosperity and security. This makes civil servants reliant on external advice, and makes it difficult to assess that advice properly.

Yet, there are systemic inefficiencies within the Civil Service which affect how officials in central government departments receive advice, with significant implications for science and technology.

This Primer outlines a few specific challenges within the Civil Service, particularly in central government departments, and how these hinder Britain's national endeavour in science and technology. The Primer then offers ten recommendations to address these challenges.

A priority for HM Government

Civil Service reform has become a focus for successive administrations, including the current government. Sir Keir Starmer, Prime Minister, has been forceful in his language about this:

> Too many civil servants are comfortable in the tepid bath of managed decline. [...] we must be careful about the promises we make. But across Whitehall and Westminster, that's been internalised as "don't say anything", "don't try anything too ambitious", "set targets that will happen anyway".[1]

[1] 'Starmer accuses Whitehall of being comfortable with failure in landmark speech', *The Guardian*, 05/12/2024, https://www.theguardian.com/ (checked: 14/05/2025).

Other Labour figures have expressed frustration about the Civil Service, with one stating: 'The biggest disappointment of going into government has been the quality of the Civil Service', and another arguing:

> Dominic Cummings was right about Whitehall. But I blame him and the Conservative Party for 14 years of low pay, bad leadership and demoralisation which means we don't have the right people in the right places.[2]

This (largely) bipartisan consensus underscores the significant and widely acknowledged need for meaningful change within Whitehall.

Political challenges

Many civil servants would no doubt (and with good reason) point to challenges on the political side which result in poor governance – that is, in the churn, quality and risk appetite of government ministers.

For example, over the last two decades, the UK has had 17 science ministers – almost one per year on average – each wanting to leave their own mark on the department, and each with their own vision and priorities. In that time, the role of science minister has also been renamed or had its remit changed eight times (see: Table 1).

TABLE 1: THE ROLE OF 'SCIENCE MINISTER' OVER THE LAST TWO DECADES

Years	Title	Department
1998-2006	Parliamentary Under-Secretary of State for Science and Innovation	Department of Trade and Industry (1970-2007) Department for Innovation, Universities and Skills (2007-2009) Department for Business, Innovation and Skills (2009-2016) Department for Business, Energy, and Industrial Strategy (2016-2023) Department for Science,
2006-2010	Minister of State for Science and Innovation	
2010-2014	Minister of State for Universities and Science	
2014-2015	Minister of State for Universities, Science and Cities	
2015-2020	Minister of State for Universities, Science, Research and Innovation	
2020-2022	Parliamentary Under-Secretary of State for Science, Research and	

[2] Henry Zeffman, 'Starmer and Dominic Cummings now agree on one thing – the Civil Service is a problem', *BBC News*, 05/12/2024, https://www.bbc.co.uk/ (checked: 14/05/2025).

	Innovation	Innovation and Technology (2023-)
2022-2023	Minister of State for Science and Investment Security	
2023-	Minister of State for Science, Research and Innovation	

Even if ministers do not change policy direction substantially, they will want to be *seen* to be making a difference – so can end up using valuable Civil Service time and resources, essentially to rebrand or repackage existing policy. The same is true of the churn in policy papers and strategies, which also makes it difficult for the Civil Service to work effectively and make long-term decisions.

In Britain, Members of Parliament (MPs) are elected not for their expertise in specific policy areas, but to represent the interests of their constituents. Their role is primarily to advocate for the people they serve, not to have deep knowledge in every field. Politicians are now increasingly required to navigate very different roles – from having large constituency case loads, to being lawmakers, to being policy experts. Trying to navigate these varied roles means that ministers do not have the time or space to develop a deep understanding of systemic problems facing the country or department.

So if expertise in areas of science and technology does not sit – and indeed is not *expected* to sit – in the House of Commons, then surely such expertise should sit in Whitehall, within the Civil Service.

Ministers and civil servants: Differing roles

As Margaret Thatcher famously said: 'Advisers advise and ministers decide.'[3] That is, the role of ministers is to make policy decisions, with advisers providing them with the necessary expertise. But, a problem arises when the Civil Service within central government departments also lacks the technical knowledge required to support informed decision making. This is especially crucial in fields such as science and technology, where decisions can have long-term implications for national competitiveness, prosperity and security.

Senior civil servants are often selected for their managerial experience rather than their subject matter expertise, which can hamper HM Government's ability to navigate the complexities of these areas effectively.

This concern is not new. John Manzoni, Chief Executive of the Civil Service from 2014-2020, stated that the 'cult of the gifted amateur; of highly intelligent

[3] 'Thatcher pays tribute to Walters', *BBC News*, 05/01/2009, http://news.bbc.co.uk/ (checked: 14/05/2025).

generalists' has eroded the Civil Service's experience and skills in managing projects, rebuilding services and applying new technologies.[4]

In 2013, the Government Office for Science (GO-Science) published a report titled *The future of the Civil Service: Making the most of scientists and engineers in government*. This report found that scientists and engineers within the Civil Service were often not given the responsibility or authority their expertise warranted, being viewed primarily as advisers rather than potential leaders.[5] As Liam Fox, former Secretary of State for Defence, later commented:

> The educational backgrounds in both politics and the Civil Service are far too narrow [...] The historical dominance of arts, history and law degrees is ill-suited for an era where science and technology are key to shaping the world around us.[6]

It is unsurprising, therefore, that in background conversations conducted for this Primer, stakeholders outside of government expressed surprise at the lack of technical expertise in Whitehall in a wide range of critical science areas, including within the Department for Science, Innovation and Technology (DSIT) on quantum computing.

If ministers, parliamentarians and civil servants lack the expertise in specialised fields, such as in nuclear, artificial intelligence (AI) and quantum computing, then the following question arises: where *do* experts fit into the decision making process?

The British science advisory ecosystem

HM Government's system of scientific advice consists of many interconnecting – sometimes overlapping – organisations and roles. At its core is GO-Science, led by the Government Chief Scientific Adviser (GCSA), who reports directly to the Prime Minister and Cabinet Secretary. GO-Science supports key advisory bodies, such as the Council for Science and Technology and the Scientific Advisory Group for Emergencies.

Alongside this, the GCSA also heads the network of departmental Chief Scientific Advisers (CSAs). These CSAs, embedded within most major government departments, are supposed to ensure that policy making is informed by robust scientific evidence, acting as 'critical friends' or 'licensed dissidents', and overseeing departmental science capabilities. Arms-Length Bodies (such as UK Research and

[4] Matt Ross, 'Beyond the gifted amateur: building a professional workforce', *Global Government Forum*, 15/05/2020, https://www.globalgovernmentforum.com/ (checked: 14/05/2025).
[5] 'Review of Science and Engineering in the Civil Service', Government Office for Science, 01/2013, https://gov.uk/ (checked: 14/05/2025).
[6] Liam Fox, 'As a long-serving minister I learnt just how much the Civil Service needs reform', *The Telegraph*, 12/03/2023, https://www.telegraph.co.uk/ (checked: 14/05/2025).

Innovation) and Public Sector Research Establishments (such as the UK Space Agency) exist to contribute expertise and research capabilities.

Keep calm and carry on

Despite the UK's rich network of scientific expertise and advice, there is a limited capacity for this scientific expertise to be integrated into decision making. This stems from organisational design, incentives and lack of scientific expertise within Whitehall.

While the role of CSAs is supposed to entail being a licensed dissident, they are also tasked with bringing science into the policy making process – which means they may not be the best people to challenge institutional thinking. This tension was highly visible during the daily televised Covid-19 pandemic briefings, when Chris Whitty and Patrick Vallance, CSA for the Department of Health and Social Care and GCSA respectively, flanked Boris Johnson, then Prime Minister. While there were clear benefits of having CSAs present at those meetings, it also underscored the difficulties in straddling their advisory capacity on the one hand and their role as licensed dissidents on the other. Alongside this, such experts can lack the strategic nuance or interdisciplinarity, which should characterise good governance.[7]

To address problems in the Civil Service, however, there first needs to be an acknowledgement that there *is* a problem. But, there is no incentive for civil servants in ministerial departments to reform or change how they work. The Civil Service often lacks the incentive to innovate or challenge the status quo, or sometimes even the will to believe that problems *can* be solved. Instead of seeking solutions to urgent problems, the default response is to continue on with 'business as usual', which stifles progress.

A selection pressure against the doers

The Civil Service can face heavy scrutiny. Errors are sometimes met with intense criticism, resulting in a high-pressure environment. As such, the cautious and often hesitant approach within the Civil Service is not only a product of bureaucratic inertia, but also a natural human response to the considerable risk associated with mistakes in such a position.

Yet, the Civil Service's tendency to avoid making big decisions is a fundamental problem. In a rapidly moving world, decisive action is often necessary. The reluctance to take risks or make decisive moves often leaves HM Government lagging behind. A case in point is the UK's incredibly slow approach to developing Small Modular Reactors (SMRs), while countries such as Czechia have been taking decisive action by partnering with British firms.

[7] Geoff Mulgan, *When Science Meets Power* (Cambridge: Polity Press, 2024).

According to James Phillips, former Science and Technology Adviser to the Prime Minister:

> There are many brilliant people in the Civil Service, many not-so-brilliant people. Instead of saying, "Let's do more stakeholder consultations, let's do more reviews", the brilliant people say, "Actually, it's pretty obvious what the answer is. Let's just get on and do it." Of course, this is oversimplifying somewhat. But my experience was that there was a general selection pressure against those doers.[8]

The Covid-19 pandemic response highlighted some of the shortcomings in the Civil Service. For example, a red-teaming process found that the speed and scale of Covid-19 testing mattered just as much as the sensitivity; that is, testing one person in the UK with a 99%-sensitive test was far less useful than testing everyone with a 50%-sensitive test. But, as Phillips recounts, civil servants were slow to understand and reluctant to embrace this wisdom:

> Once we'd seen [the importance of testing more people with less sensitive Covid-19 tests], it took four or five months just to get the system to recognise it. The people in the bureaucratic positions who could change this weren't really scientifically literate in the necessary ways.[9]

Civil servants' lack of scientific expertise tends to nurture a system where caution and process are valued over decisive action and problem solving.

Institutional memory and organisational mobility

Another problem which hampers the Civil Service is the erosion of institutional memory.[10] Frequent movement of personnel between departments results in the loss of valuable expertise and experience. When civil servants move departments, they take with them learning and institutional knowledge. This cannot be replaced easily, or may take time to relearn. While this is a problem in large organisations in general, it is a particular challenge in the Civil Service because of the 'unusually high rate of churn'.[11]

A big driver behind this movement – and one of the most important aspects of Whitehall which needs reforming – is the Civil Service's internal promotion structure. The limited opportunities for advancement and pay increases within a

[8] Santi Ruiz and James Phillips, 'How to Build the British ARPA', Statecraft, 05/09/2024, https://www.statecraft.pub/ (checked: 14/05/2025).
[9] Ibid.
[10] Susan Allott, 'Why the Civil Service should do more to protect its institutional memory', *Civil Service World*, 27/01/2025, https://www.civilserviceworld.com/ (checked: 14/05/2025).
[11] Ibid.

single role, together with the value placed on broad experience for senior positions, actively incentivise civil servants to seek new roles and to move between departments. That means that the very system designed for career progression undermines the retention of deep subject matter expertise and bright officials more broadly.

Related to this is the Civil Service's success profile. Its use across Whitehall creates a narrow, one-size-fits-all profile for civil servants, focusing more on ticking boxes than on assessing competence and experience. It means that civil servants broadly have the same strengths and the same weaknesses, leaving systemic holes in Whitehall thinking. It is curious that when there is such a focus on diversity, equity and inclusion, civil servants are all required to fit through such a narrow door.

Background conversations with some recently-hired civil servants for this Primer revealed that many said they were hired only because they had help from current civil servants to write their applications – which suggests the system is less accessible to those without contacts inside Whitehall. This means a system designed to level the playing field may be making it less meritocratic to join the Civil Service.

Outsourcing capabilities

To counter the problem of organisational 'groupthink', and to fill gaps in expertise and implementation within the Civil Service, there has been a growing reliance on consultants and external advisers. Undoubtedly, there is an important place for consultants to bring innovative thinking into government, but the British system suffers from an overdependence on a relatively small number of large organisations, leading to a group of repeatedly engaged individuals. This institutionalised relationship limits the introduction of truly novel ideas.

Alongside this, this outsourcing of some capabilities undermines the Civil Service's capacity to develop in-house expertise and experience. This overreliance on consultants has infantilised HM Government unintentionally.[12] Moreover, when it comes to delivery, outsourcing not only weakens accountability, but also deprives HM Government of the opportunity to learn through doing, to be accountable for work delivered, to learn from past experience and to improve for the future.

Financial incentives

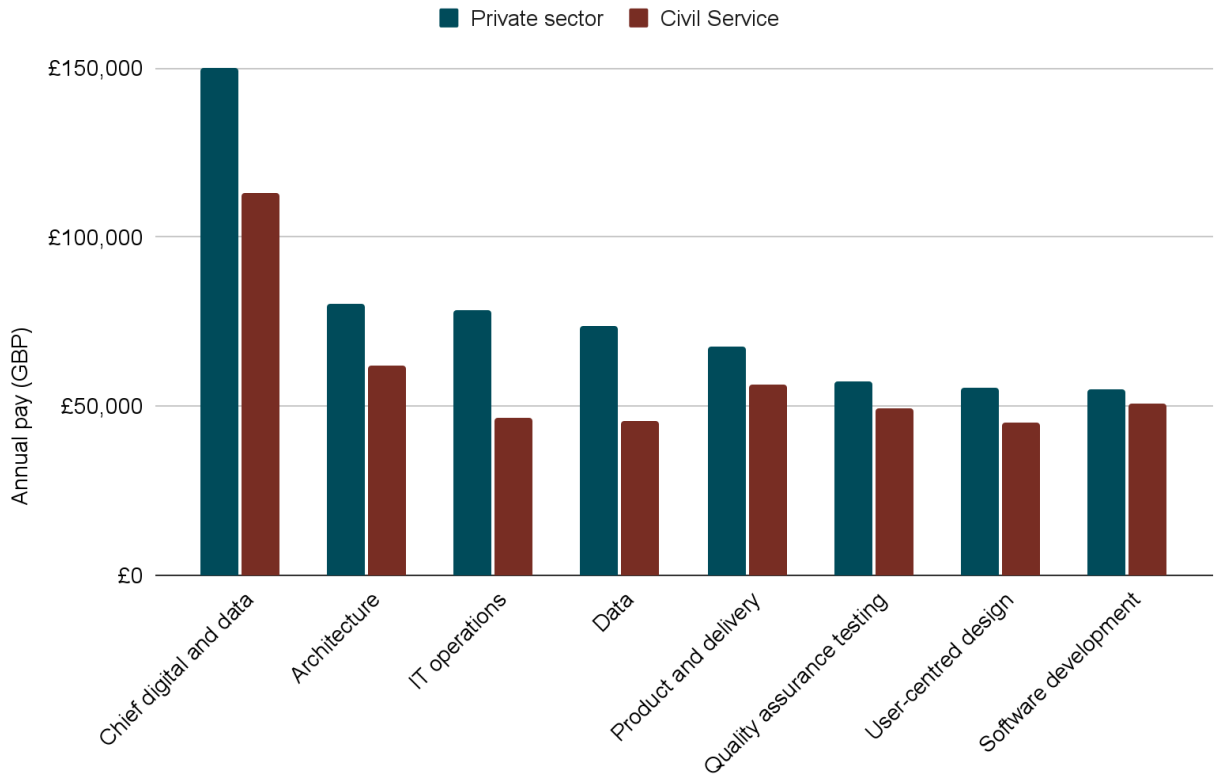
One of the critical barriers to attracting and retaining top talent in the Civil Service is low pay, particularly in roles relating to science and technology. Unsurprisingly,

[12] Mariana Mazzucato and Rosie Collington, *The Big Con: How the Consultancy Business Weakens our Businesses, Infantilises our Governments and Warps our Economies* (Allen Lane: London, 2023).

without competitive salaries, many of the brightest minds choose to work in the private sector, where the remuneration is far higher.

The Centre for British Progress has highlighted specific examples of this (see: Graph 1).[13] As such, HM Government struggles to entice experts from the private sector, and Civil Service positions are often filled by individuals with less relevant experience or expertise, further contributing to the problems of expertise shortage within Whitehall.

GRAPH 1: COMPARISON OF ANNUAL PRIVATE SECTOR PAY AND CIVIL SERVICE PAY FOR TECHNOLOGISTS IN SPECIFIC ROLES



[13] Joseph Jarnecki and Natasha Buckley, 'Recruiting and Retaining Civil Service Technologists', *Centre for British Progress*, 22/01/2025, https://britishprogress.org/ (checked: 14/05/2025).

Conclusion

If Britain is to harness the potential of science and technology for national prosperity, significant reforms are needed within the Civil Service. Whitehall needs to be as comfortable with the language of science, technology, maths and engineering as it is with the intricacies of political theory, for – as one senior civil servant put it – 'We were all more qualified to talk about Rousseau than RNA'.[14] Or, to quote the political satire *Yes, Prime Minister*: 'I don't think Sir Humphrey [Cabinet Secretary] understands [...], Prime Minister; he did read classics, you know'.[15] Sir Humphrey was created to parody the Civil Service, but his name has since become a synonym for Whitehall officials. The caricature of inefficiency and lack of expertise is often close to reality.

HM Government recognises some of these challenges, and has been working to address a few specific areas.[16]

This Primer highlights several areas where the Civil Service could be reformed to help Britain harness science and technology for national prosperity. Challenges identified include:

- Limited Whitehall expertise in science and technology;
- Difficulties in incorporating science into policy decisions;
- A lack of internal drivers for Civil Service reform;
- An environment which favours caution over decisive action;
- A system where CSAs are required to advise and challenge simultaneously;
- An overreliance on the same, select group of individuals and organisations for external advice, stifling the introduction of truly novel thinking;
- An increasing dependence on consultants, which risks undermining Civil Service learning through doing;
- A high level of movement between departments, incentivised by the current promotion structure, which leads to a continual loss of institutional knowledge; and
- The challenge of attracting and retaining excellent talent, exacerbated by uncompetitive salaries.

These factors all contribute to the current malaise – Sir Keir's 'tepid bath of managed decline' – in Whitehall. But, by addressing these issues, HM Government

[14] Liam Fox, 'As a long-serving minister I learnt just how much the Civil Service needs reform', *The Telegraph*, 12/03/2023, https://www.telegraph.co.uk/ (checked: 14/05/2025).
[15] 'A Real Partnership', *Yes, Prime Minister*, BBC Two, Last aired: 04/02/2024, https://www.bbc.co.uk/ (checked: 14/05/2025).
[16] Alex Thomas, 'Pat McFadden is right: the Civil Service needs to lose poor performers', Institute for Government, 09/03/2025, https://www.instituteforgovernment.org.uk/ (checked: 14/05/2025).

can better position itself to understand, navigate and harness current technological opportunities, as well as those on the horizon.

Recommendations

To overcome the challenges identified, HM Government should initiate a series of reforms to improve the Civil Service's science and technology capacity:

1. **Rethink the Chief Scientific Adviser role and structure**. The traditional CSA model is in need of a refresh. Complex, interdisciplinary challenges require deep scientific expertise. However, effective science advice also demands strategic nuance, or a broader understanding of the context in which decisions are made. The protocols which empower CSAs to exercise their crucial 'challenge function' are in need of review; figures such as CSAs may be too institutionalised to carry out this function adequately.

2. **Create a Secretary of State's Office for Net Assessment and Challenge (SONAC)-style entity within DSIT**. SONAC exists to enhance the quality of strategic decision making in the Ministry of Defence by providing robust, independent evidence-based analysis and challenging current thinking and perspectives. The UK could benefit from the creation of such an institution with a focus on British scientific and technological aims, capacity and capabilities. Doing so would help to test current and emerging thinking and strategies on science and technology across HM Government.

3. **Establish a 'What Works' centre which helps to organise institutional memory for science and technology in Whitehall**. Doing so would help HM Government to learn from past successes and failures. Such a centre should be a repository for data and documents – specifically ideas and proposals which have been tried, and why they worked or failed.

4. **Facilitate movement between government, universities and the private sector**. To address the science skills gap in the Civil Service, there needs to be more fluidity between HM Government, universities and the private sector. However, this should be done cautiously to avoid the risks associated with the revolving door phenomenon. This can be done by streamlining the administrative processes for recruitment and secondments, improving the visibility and strategic matching of opportunities through a centralised platform and strengthening formal partnerships with universities and industry bodies.

In addition, a number of systemic reforms are required:

5. **Scrap the Civil Service success profile**. The success profile system used across Whitehall means that instead of evaluating the skills and capabilities of civil servants (or potential civil servants), the system is instead focused on checking boxes. This results in a workforce which can suffer from groupthink – with the same strengths and the same systemic weaknesses.

6. **Discourage excessive movement between departments by tackling the limited opportunities for advancement and pay increases within a single role in the Civil Service**. While some cross-departmental movement is beneficial, the current system encourages a very high rate of turnover, resulting in the constant erosion of institutional knowledge.

7. **Streamline the process for addressing underperformance**. The current system makes it very difficult to remove individuals who are not performing adequately. It is not uncommon to hear of cases taking years, with protracted legal battles. As a result, in some cases, underperformers are simply transferred sideways, or even promoted, so that they can become another team's problem. This lack of accountability or consequences leads to complacency and weakens the Civil Service's ability to deliver.

8. **Have clearer job descriptions and ownership of work**. Many poor performers in the Civil Service are not identified because it is not clear – to themselves, to their teams or to their seniors – what exactly their remit is, and what exactly they are responsible for delivering.

9. **Increase the salary of high-performing civil servants, funded through a reduction in Civil Service headcount**. Civil servants need better financial incentives to make their roles more competitive with the private sector. Pay increases for high performers should be funded through reductions to the size of government departments.

10. **Reduce reliance on external large consultancies and build internal capability**. HM Government needs to rethink how and why it engages external expertise. Specifically, HM Government should prioritise diversifying its external experts beyond a small group of large organisations who are repeatedly called to give the same viewpoints.

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