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COLLECTIVE INTELLIGENCE AND GOVERNANCE

Imagining government as a shared brain

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Introduction

The early writings on collective intelligence said little about government. The theorists of the Internet imagined it as a collective exercise that was very much rooted in society, not the state, and in equality rather than hierarchy (despite the Internet's origins in two public agencies: Defense Advanced Research Projects Agency (DARPA) and European Organization for Nuclear Research (CERN)). Writings on fields such as crowdsourcing and citizen science likewise emphasised bottom-up collaboration, sometimes with an explicit or implicit hope that these new forms of cooperation would somehow obviate the need for governments, particularly in works linked to the US traditions of libertarian thought.

Yet government is and was the most powerful, and sometimes dangerous, tool available for any society to harness its collective intelligence, solve problems and prepare for the future. No plausible picture of the next century can ignore government, and whenever serious crises hit, whether wars, financial shocks or pandemics, the central importance of government quickly becomes clear.

I have been interested in the links between **government** and **collective intelligence** for several decades, from running strategy teams in governments where we tried to tap into citizen intelligence as well as formal evidence and data; then through work in Australia in the 2000s linking collective intelligence to **social innovation** and government; and then in the 2010s through work with individual governments and the United Nations, using collective intelligence methods to accelerate progress on the **Sustainable Development Goals**.

In this chapter, I share perspectives on how to think of government as part of societal collective intelligence – making it more like a **shared brain** that can combine observation, prediction, judgement, creativity and imagination in the way that individual brains do. Seeing governance through the lens of collective intelligence encourages a focus on issues such as how to mobilise data and citizen insights; how to open up problem solving far beyond traditional bureaucracies; and how to embed rapid learning from those involved in and affected by policies. These are in many ways radically different approaches to traditional public administration and they are still very rare in most governments. They have only

become technically feasible very recently. But they open up ways for governments to become much better servants of society, and more capable at dealing with big tasks and challenges.

Background

The idea of **government as a brain** is very old. The earliest symbol of governance, the Sumerian symbol of the ruler, was the rod and line – a symbol of a surveyor not a warrior: analytical, cognitive and controlling. And for millennia government was often imagined as a head, with the ruler's head put on coins.

But we know little about what could be called the neuroscience of the state or, more broadly, the science of how government thinks. How does it remember or forget? How does it create? Does it suffer delusions and fantasies? What makes some governments amplify the intelligence of their society while others do the opposite? To answer these questions, we can usefully draw on recent understandings of intelligence in the brain. Our understanding of the individual brain has been transformed over the last generation, from an assumption that it contained a single source of decision-making, a control centre, towards seeing it as a distributed system of multiple modules, effectively voting on what to do and how to interpret a signal. In other words, individual intelligence turns out to be a lot more like collective intelligence than used to be understood.

This transformed metaphor for intelligence at the individual level is also helpful for thinking of how governments work since although they appear to have a tight hierarchical structure, with a President, Prime Minister or Mayor at the top, in reality they are also less like a formal hierarchy and more like a flotilla of different departments, agencies and interests, with varying powers to act or block action by others. It becomes even more relevant if we recognise that governments are embedded in their societies and economies, dependent on flows of information and influence, with the most democratic also being most embedded, without any clear external boundary to the state.

Government as intelligence

The next useful starting point is to look at how governments think: how do they observe, analyse, predict, remember and create in order to guide their actions. In my book ***Big Mind***, I showed that all forms of collective intelligence can be analysed in terms of their capacity to undertake these core functions of intelligence, and then in terms of how they organise a series of loops which either use new data to make decisions, or in some cases generate new categories, or in some cases lead to the creation of new models of cognition.

As I will show, the application of collective intelligence methods to the practical work of government helps them to become more open, engaged and hungry for information, insights and ideas from any source.

So we start, first, with **observation** as the foundation of government intelligence. From the Domesday book – which recorded the 'Great Survey' of much of England and parts of Wales completed in 1086 – to the 18th-century pioneers of statistics to intelligence agencies today, this has been core to how governments work, and coronavirus disease (COVID-19) has reinforced how vital it is to observe the right things – with some governments incredibly energetic in testing and tracking, and others wholly lax. Taiwan's 'digital fences' and Singapore's use of mobile phone data to trace contacts show just how helpful the right kinds of observation can be.¹ In India, for example, mass serological testing (done outside

government) showed far higher levels of past infection than the government realised, while testing of sewage provided a novel measure of infection rates.

What government observes changes over time, with isolation and loneliness being a good example that in the recent past was not measured at all, but is now seen as hugely important to physical and mental health. But in parallel, how governments observe changes too, for example, now with scraping the web or using images from microsatellites.

Just as citizen science has started to transform science by bringing in new sources of observation, so is something similar potentially happening to governments, as citizens' own observations are gathered as a real-time complement to the classic methods of surveys and statistical offices.

Second, **models** – a big lesson of recent neuroscience is that models precede observations; they determine what we see as well as what sense we make of it. So the mark of smart government is that it has many models, and constantly refines and improves them. Again COVID-19 has reemphasised this. It saw the use of hundreds of epidemiological and economic models but also showed the risks of over-dependence on single models to make predictions. As Scott Page put it in his brilliant book *Model Thinking*, for any complex phenomenon we need many models that can challenge each other, including in this case not only epidemiological ones but also economic and social ones.

Third, **creativity** – COVID-19 prompted an extraordinary acceleration of innovation, from India turning 10,000 train carriages into ambulances; Bogota quintupling bike lanes; Rwanda introducing hand sanitisers in urban centres; and extraordinary efforts to accelerate production of ventilators or development of vaccines. The rapid adoption of digital learning in schools and universities across the world happened alongside rapid innovation in welfare and income support. In much of business innovation and research and development (R&D) are serious activities, with big investments of money and time. Governments are far less systematic and even in the best cases innovation is piecemeal, ignored in public finance and rarely linked to strategic priorities like solving the care crisis. The UAE remains the only government with a significant budget allocation for its own R&D. Some public agencies – like National Aeronautics and Space Administration (NASA) – have embraced collective intelligence, opening up innovation tasks like designing space suits or writing code to anyone anywhere, they are very much the exception.

The most radical uses of collective intelligence methods open up this kind of innovation so that it is part of the operation of public services rather than the exception: for example, encouraging schools to test and experiment with new teaching methods, or using test beds and living laboratories to explore new models of welfare or care for the elderly.

Fourth, **memory**, one justification for a permanent civil service. This used to be organised in files of all kinds. One odd effect of digitisation is that in some governments it appears to have led to a deterioration in memory. However, a counter trend is to externalise memory, notably through the dozen or so What Works Centres that act as a common store of memory for fields like healthcare, policing, education and children's social services. I have recently helped run the International Public Policy Observatory for COVID, which links over 100 countries to synthesise evidence and experience in real time, one example of many that are attempting to organise knowledge at a global scale.²

Fifth, **empathy**. Robert MacNamara, once the boss of Ford, the Pentagon and the World Bank, commented that the lack of empathy – the ability to feel and see from the perspective of another country or people, whether a villager in Vietnam or an unemployed 55-year-old, often lay behind the biggest failings of governments. Empathy can be organised deliberately,

for example, by getting civil servants out and about, engaging beneficiaries in the design of policies and ensuring listening to lived experience. I've long advocated triangulation: that civil servants and advisers should never believe anything the system claims unless it has been checked first-hand, in a local school, business or GP's surgery. Sitting in an office and relying on papers and emails, unfortunately, guarantee a distorted view of reality.

Finally, there is **judgement and wisdom** – which, as in other fields, draws on experience, ethical sensitivity and the ability to take a long view, and is often best cultivated by being quite explicit about what you expect to happen and then having open ways to assess why things turn out differently.

This very cursory description of the core functions of intelligence provides a starting point for understanding government as a system for thought and action. It also provides a diagnostic framework as well as a way for thinking about how new data tools or AI can be applied. There are of course many other aspects to government cognition – the types of learning that are vital; the ability to repel and confront misinformation or to resist groupthink, particularly at the centre of government where there are the biggest risks of error due to lack of sleep, the delusions of spin and sycophancy. Four key issues follow on immediately.

1. Open or closed?

The first is whether these intelligences are open or closed, shared with the wider society or hoarded within government, or within the higher levels of hierarchy in government. Hoarding was certainly the traditional approach. Intelligence was a scarce resource and had to be guarded carefully. But over the last century much innovation in governance has opened it out. Statistics and data are increasingly open and shared, with machine readable code. Interpretations and models are open. Policy deliberation can be opened up too, including through the use of democratic innovations like Citizens Assemblies.

2. Assemblies or silos?

A second issue is connectivity. A vital lesson from any analysis of intelligence is that – as with the human brain – the elements of intelligence work best if linked together, in real time. This kind of 'intelligence assembly', which we take for granted in our personal lives, will be critical for the future of government. COVID-19 has forced faster action to create such assemblies (connecting multiple data sets) and in time comparable arrangements will be needed for other much slower burn crises like climate change or ageing – linking observation, models, memory and creativity in coherent ways that help the system as a whole to think.

3. Evidence and impact

A crucial aspect of applying new intelligence methods to government is feedback. This is part of the justification for innovations in democracy, such as citizen engagement on platforms like vTaiwan, participatory budgeting or citizen score cards. It also relates to the more systematic gathering of evidence on outcomes achieved, and its use in the allocation of resources and setting policy priorities. A recent paper sets out how finance could be reformed in the future to make the most of data and intelligence on long-term results.³

4. Strategy and collective intelligence

A fourth point is the relationship between **collective intelligence** and **strategy**. I became interested in government's thought processes through a career that included spells in local government and the European Commission, and then in the UK Prime Minister's office. A first attempt to apply these ideas came with setting up the Social Exclusion Unit. To develop better solutions for poverty and social exclusion we created mixed teams of insiders and outsiders, working on very clearly defined problems, and using cross-cutting policy, budgets, data and implementation teams to achieve targets like cutting homeless rough sleeping by two-thirds, halving teenage pregnancy and reducing the gap between poorest neighbourhoods and the average (perhaps surprisingly, all of these targets were met). The people most affected by issues were involved in policy design – and sometimes asked to present directly to Cabinet (e.g. young people on deprived housing estates or the homeless).

The Strategy Unit which I oversaw provided a similar capacity for problem solving and longer-term thinking across all areas of policy, again linking the core functions of intelligence mentioned earlier. There was to be explicit use of evidence (published at the beginning of projects); gathering of data; open processes; mixed teams of civil servants and outsiders, experts and generalists; and active use of methods like red teams and scenarios and formal modelling. One of our best innovations was anonymised exercises to get the true beliefs of the top ministers and civil servants to surface what they thought but couldn't say. Another project helped put in place a comprehensive system for managing risk – including the framework that identified pandemics as the UK's top risk – which, again, involved linking observations of possible threats, analysis, prediction, memory and judgement.

The guiding principle was to understand government as a system of cognition, and one that is constantly in a struggle not to be deceived, diverted and deluded, and wherever possible to democratise strategy, so that more of the work of analysis, assessment and policy creation was opened up to the vast majority of citizens who are not directly employed by the state, both to improve its quality and to enhance trust in democracy.

Within governments multiple different ways of thinking combine and collide. They include three types of thought that Aristotle described: **techné** – the practical knowledge on how to build a hospital in a week or distribute emergency loans, which is closest to engineering; **episteme** – the more analytic knowledge of macroeconomics, or evidence on what works, or the modelling of pandemics, closer to what we call science; and **phronesis** – the practical wisdom that comes from experience, and includes an ethical sense and an understanding of contexts.

They also include the kinds of knowledge owned by different professions within government which form part of governments' ability to think:

- Statistical knowledge (e.g. unemployment rises in the crisis);
- Policy knowledge (e.g. what works in stimulus packages);
- Scientific knowledge (e.g. antibody testing);
- Disciplinary knowledge (e.g. from sociology or psychology on patterns of community cohesion);
- Professional knowledge (e.g. on treatment options);
- Public opinion (e.g. quantitative poll data and qualitative data);
- Practitioner views and insights (e.g. police experience in handling breaches of the new rules);
- Political knowledge (e.g. when parliament might revolt);

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- Legal knowledge (e.g. on what actions might be subject to judicial review or breach Human Rights Conventions);
- Implementation knowledge (e.g. understanding the capabilities of different parts of government to perform different tasks);
- Economic knowledge (e.g. on which sectors are likely to contract most);
- ‘Classic’ intelligence (e.g. on how global organised crime might be exploiting the crisis);
- Ethical knowledge about what’s right (e.g. on vaccinating children who may have relatively little risk from a disease);
- Technical and engineering knowledge (e.g. on how to design an effective tracing system or build a new high-speed rail line);
- Future knowledge (foresight, simulations and scenarios, for example, about the recovery of city centres);
- Knowledge from lived experience (the testimony and experiences of citizens, usually shared as stories, for example, about experiences of the pandemic).

None of this knowledge is monopolised within government. Much of it is increasingly organised in varied forms of collective intelligence, influenced by civil society, media, academia and business. Moreover, within government there is no monopoly of authority and no meta-theory to tell which you should pay most attention to at which time. Faced by an epidemic it’s wise to lean on your scientists – but they can’t tell you whether it will turn out to be socially acceptable to ban human contact, close the schools or arrest people for leaving exclusion zones, and in most cases the different types of knowledge will point in conflicting directions.

So any government badly needs the integrative intelligence of *phronesis*, or wisdom. That means being fluent in many frameworks and models and having the experience and judgement to apply the right ones, or combine them, to fit the context.

Yet this kind of wisdom is scarce at the best of times. Leaders with backgrounds in law, journalism or economics may have little sense of neighbouring disciplines and the same may be true of civil servants. Most of this training is poorly suited to today’s problems like pandemics or climate change or regulation of global financial markets, which instead require familiarity with systems thinking and complexity, science and psychology. Moreover, few have learnt how to work with external collective intelligence – how to mobilise information, ideas and insights from the public.

So, for government to work well as a brain, it needs not only the infrastructures and systems described above, but also people prepared with a new curriculum that’s better suited to the tasks they’ll face, a curriculum that helps them how to use, question and synthesise multiple kinds of insight, models and knowledge, and that gives them a feel for how complex and dynamic systems behave in practice.

The United Nations Development Programme (UNDP) and collective intelligence

Collective intelligence methods have been experimented with by many governments, from Taiwan to Bangladesh, though they remain more unfamiliar in some. They have also been used in cities, for example, in Milan, Helsinki or Barcelona, to guide planning and the allocation of resources. In recent years the **UNDP** has been an energetic advocate of their use as a new approach to governance, particularly through the new Accelerator Labs set up in 2019–2020 in over 100 countries to speed up innovation around the SDGs. A recent report

provides a series of case studies and analysis of how different collective intelligence methods could be used.⁴ For governance and accountability, it highlights methods such as eye-witness video and crowd-mapping which are being used to document violence or human rights abuses, with a view to holding perpetrators to account. There are many examples of governments crowdsourcing ideas and opinions from citizens during policy making, as well as citizens generating new forms of data to monitor policy implementation. The report describes the use of collective intelligence methods to anticipate, monitor and adapt to systemic risks, including real-time monitoring of the environment (e.g. deforestation and air quality), helping organisations to improve their capacity for early warning, monitoring and response to natural disasters, conflict and epidemics. These include working with on-the-ground volunteers to provide data about emerging issues, or with crowd-mappers to capture location information for crisis preparedness. Others combine data sets, including web-scraped social media data, for real-time public health surveillance, or ask large groups of people to forecast geopolitical events. One interesting aspect of this work is the growing number of cases that combine artificial and collective intelligence together, whether for monitoring or problem-solving.

The UNDP work is a pointer to a future model of government and public administration that puts a much greater emphasis on the mobilisation and deployment of knowledge and data of all kinds, with the orchestration of collective intelligence brought into the core of how government works.

Conclusions

Most governments throughout history were designed with an assumption that intelligence should be hoarded and kept internal. The practice and mentality of collective intelligence turns this on its head, emphasising shared intelligence of all kinds, and around the world there are many impressive attempts to mobilise collective intelligence of all kinds – like vTaiwan involving millions in decision-making, the widespread use of experiments in countries like Canada and Finland, the open data movement, the evidence movement and the creation of large-scale societal platforms like India's Aadhaar project and its spin-offs.

Although these remain relatively marginal, it's not too hard to describe a more ideal kind of government: one that attends to the various elements of intelligence it needs, from observation to empathy to prediction; that links them together in intelligence assemblies for all the tasks that matter most; and that is led by officials and politicians with sufficient integrative skills that they can make sense of complex systems and the messages that come from very different ways of seeing and knowing.

COVID-19 has shown once again just how utterly dependent we are on the quality of government. Improving its ability to think, act and learn, and make the most of collective intelligence in all its forms is probably the greatest meta-task of our times, vital not only for the pandemic but also for the big tasks ahead. COVID-19 has been a horrible shock and a horrible test for governments. But one of its legacies may be to remind us that government is, and should be, quite like a brain, and that on balance it would be better to have one that isn't trapped in delusions but is able to face up to the world as it is, and then change it for the better.

Notes

- 1 We will increasingly need new arrangements to govern that data, some of the options for which are explored here: www.nesta.org.uk/blog/new-ecosystem-trust/
- 2 www.covidandsociety.com
- 3 This paper on 'Anticipatory Public Budgeting' sets out the key ideas: <https://gic.mbrcgi.gov.ae/storage/post/f6bTTIppsLhLEIDnEVTTTRm36I3t70HP4rY722t0.pdf>
- 4 <https://acceleratorlabs.undp.org/content/acceleratorlabs/en/home/UNDP-AcceleratorLabs-Nesta-CollectiveIntelligence-Design-Innovation-Data-Technology-SustainableDevelopment-SmarterTogether-Report-Event-Launch.html>