Evolutionary neuroscience and public policy:

Designing modern systems for our ancient brains

Dr Paul Goldsmith
Visiting Professor at the Institute for Global Health Innovation, Imperial College

Every week MPs encounter constituents whose lives have been derailed by systems that, despite good intentions, fail to deliver positive outcomes.

Consider three common scenarios:

1. Case one is Sarah, who has fallen out with a friend. She feels rejected, low, anxious. She seeks help. She gets a GP appointment in four weeks. Then a referral to CBT in four months. She starts antidepressants, but they numb rather than resolve the issue. Signed off sick, she spirals into passivity, losing connection with the world.
2. The next case is Tom, who gets into a fight on a night out. It's a stupid mistake, not part of a criminal pattern. But the police are involved, charges are filed, and he's sucked into the slow-moving legal system. Four years later, he's in prison, surrounded by hardened criminals, learning more about crime than rehabilitation.
3. The final case is Jake, who earns enough with a combination of salary and benefits to pay the bills, but is deeply unhappy. He's constantly comparing himself to others and feels like a failure, trapped in a cycle of stress and self-doubt.

Now let's replay these cases in a different policy context – one where things work the way they were designed to.

1. Sarah feels low after falling out with a friend. But instead of waiting months for therapy, she is immediately supported by an integrated care system that re-engages her in daily activities. By the next day, she is back participating, her distress naturally resolving.
2. Tom makes a mistake and gets into a fight. He faces immediate consequences – a brief period of shunning and reputational damage. But he's soon given a chance to make amends and regain his standing. Within days, he's back contributing to the group, the incident forgotten in the face of shared purpose. Swift, reintegrative justice.
3. Jake, who feels pressure to succeed. But for him success isn't defined by abstract, distant goals. It's about visible contribution to the group – tool-making skills, physical endeavour. He has clear pathways to earn respect and status through demonstrating competence and commitment. His motivation remains high as he sees his efforts directly rewarded with esteem from his peers. He gains validation with status.

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The difference between these two versions? My speculation is that version two is how their cases would have played out 30 thousand years ago. The worse outcomes nowadays occur because we are victims of an evolutionary mismatch between the environment that shaped our brains and the one we now inhabit.

Our brains in effect are ancient tools operating in a modern world – shaped for small, fast-feedback groups, not bureaucratic delays and anonymity.

Understanding the brain's hard wiring

To fix modern policy, we need to understand what our brains are designed to do. Let's take this back to the most basic level of brain function, which reflects the fundamental difference between plants and animals. Not photosynthesis – our skin uses UV light to make vitamin D. The difference is movement, as in changing location. Animals must move to survive. But movement alone isn't enough – it must be toward a goal. So our neurobiology is built around rewarding goal pursuit and disengaging us when the effort required exceeds the perceived reward.

Dopamine is the fuel of goal pursuit. Well-being doesn't come from achieving a goal alone but from the striving toward it. Our brains evolved to reward effort and progress, not passive receipt. When rewards come too easily, we feel less fulfilled – because nature never envisaged us sitting still and being handed everything. In ancestral settings, continuous small victories – hunting successfully, finding food, contributing to the group – ensured reliable dopamine release.

However, modern society is full of unachievable expectations leading to widespread dissatisfaction. This is particularly problematic when goals are

distant, abstract, or socially constructed – such as career milestones, social media recognition, or financial success – because the brain struggles to register meaningful progress.

When a goal appears unachievable, our brain triggers disengagement, experienced as melancholy. It's a normal process, providing we switch to a more productive goal – abandon the forage if the yield is too low and weather is closing in. But in modern life it is much more difficult to abandon goals.

The basics of this goal control mechanism, the accelerator and brake – our reward and inhibition systems – lie deep in our brain and are common to all animals.

More specific goals are layered onto this, which evolution has honed for our survival. These are like Maslow's hierarchy of needs. First, the basic survival needs: food, water, warmth.

Layered on top of this is validation – the deep need to receive signals from others that we belong and will be looked after by the group. And beyond that, status – our relative position in the group, which historically ensured better resources, mates, and protection.

We have a whole set of emotions to optimise these group interactions and maximise cooperation and endeavour. Remember that these are all ultimately goals – achieving them increases our wellbeing and failure to do so brings melancholy. We cannot change these aspects of our brains. They are hardwired.

Policy reforms: adapting to the brain's operating manual

Too often modern policies ignore our brain's core needs and functions, to disastrous ends. Let me give you some examples.

Policies often inadvertently promote passivity, weakening goal-seeking behaviour. Welfare systems, while well-intentioned, can sometimes discourage the very activities that boost mood and self-esteem, replacing them with inactivity. Physios say 'Motion is Lotion', and this is important in more ways than one. Staying active not only keeps our bodies healthy, but delivers broader wellbeing to our minds too.

> Ignoring our evolutionary heritage leads to policy that is at best inefficient, at worst actively damaging

Then there's the anonymity of modern reciprocity – where the state or more distant institutions deliver everything – and weaker social cohesion. Consider my old unadopted road. Every year, the residents cleared the drains and swept the leaves to prevent flooding. We worked together, chatted, and strengthened community ties. The elderly prepared tea and cake at the end. Then a new committee chair, an accountant, suggested we simply pay the council £50 to do it. While efficient, this would have destroyed the social bonding, the natural dispute resolution over hedge heights, and the satisfaction of shared effort. Efficiency is different from effectiveness.

Similarly, policies that encourage local responsibility rather than state-dominated handouts foster stronger community ties and individual purpose.

This same principle plays out in welfare. Historically, mutual aid reinforced social bonds – helping others directly was also an investment in future support. In contrast, modern welfare systems anonymize both giver and receiver, stripping away the social reinforcement that made reciprocity effective. The result? A weaker sense of community and personal purpose.

As mentioned earlier, we also have hardwired emotions designed to shape group behaviour – anger, guilt, shame – all of which evolved to drive cooperation in real-time, over short feedback loops. So a further example of modern problems are legal systems which stretch retribution far beyond the timeframes our brains evolved to handle. Instead of swift resolution, victims remain trapped in prolonged distress, while offenders often emerge more alienated than rehabilitated.

This links to the pinnacle, but also Achilles heel, of our brain evolution – our ideating frontal lobes. While they enable us to juggle multi-step processes, inhibit short-term impulses, and track complex social interactions, they also have evolutionary design constraints which mean that we can't think systematically, and like with ChatGPT, are prone to overvalued ideas and even delusions, and at risk of getting trapped in unhelpful rumination. Like with large language models (LLM), this is in part to do with the 'training data' for our frontal lobes – every exposure we've had since childhood, with our earliest foundational learnings having the greatest influence. Except unlike an LLM, our deepest encodings are more hard-wired in.

The implication for policymakers is clear: ignoring our evolutionary heritage leads to policy that is at best inefficient, at worst actively damaging. A growing body of interdisciplinary research, spanning neuroscience, evolutionary biology, and anthropology, now provides actionable insights for better policy design. The goal isn't to replicate ancestral living conditions but rather to shape modern institutions to better fit the brain we have, rather than the brain we might wish for.

Parliament now has the opportunity to leverage an evolutionary-informed framework for policy-making, harnessing cutting-edge research to build a society better aligned with the human brain's ancient wiring.