Opinion **Cyber Security**

The UK needs a Bletchley 2.0

As cyber threats proliferate, we need to double down on maths to protect security and boost economic growth

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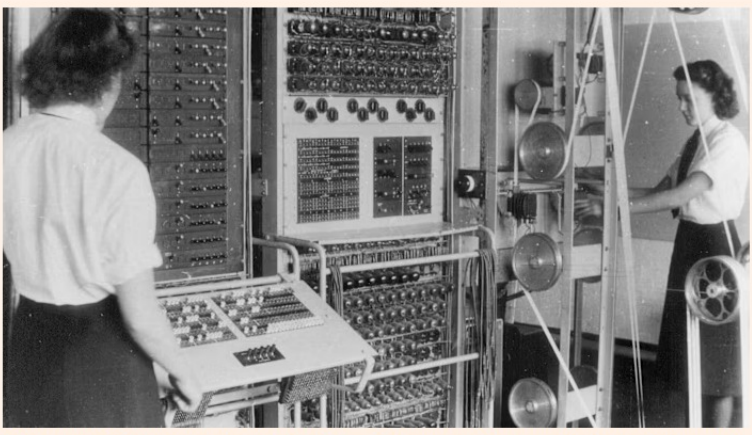

Women operate Colossus computers at Bletchley Park. Too few organisations grasp that maths is their first line of defence against a cyber attack © Bletchley Park Trust

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Published YESTERDAY

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Cyber threats to the UK are growing. Many come from hostile states, others come from sophisticated criminal networks or from bored teenagers in their bedrooms. Some of these have the potential to wreak national havoc.

During the past year, high-profile cyber attacks have disrupted major businesses including Marks and Spencer and Jaguar Land Rover. The M&S hack cost the company upwards of £100mn. The JLR attack created nearly £200mn of extra cyber-related costs for the company and was blamed for costing nearly £2bn overall, denting the entire country's economic growth. With production halted and the whole supply chain impacted, it is believed to be the worst cyber attack in UK history.

The question is not whether the problem will get worse in 2026 but which company or organisation will succumb next.

History could offer some solutions. In 1939, the UK brought together some of the greatest mathematical minds at the unlikely and then secret rural location of Bletchley Park to crack the Nazis' Enigma code, turn the tide and give the Allies the upper hand in the second world war.

We need something similar — let's call it Bletchley 2.0 — to overcome this latest threat, which poses a danger to our economy, technology and wider society. There will be three major differences this time.

First, we already have the National Cyber Security Centre, which provides strong technical and practical leadership. But this is a national emergency and it is happening now. We must bring in more expertise and creativity across the country, from universities and businesses to policymakers, to work with and support the national centre.

Second, the landscape is much more complicated today. There are still many mathematical challenges, but we now have complex digital infrastructures and supply chains that need protection. The software in which we need to encode those protections is also complex. And, crucially, we must study and influence how both users and potential attackers interact with these systems and supply chains. The best defences can be subverted by everyday practices (for example, using a default password).

Third, the pool of people who will be able to help is much larger and more diverse. While 75 per cent of the people at Bletchley were women, very few were cryptanalysts. Now, over 36 per cent of students studying mathematical sciences at university are female (and 33 per cent for computer science).

The mathematical sciences are key to cyber security, developing and exploiting AI, reliable and secure quantum computing, sensing and communication. Too few organisations grasp that maths is their first line of defence against a cyber attack. Recruiting individuals with mathematical skills and thinking could spare companies from being hacked, protect their profits and even save their businesses.

We have a deep history of mathematical excellence in the UK but we must work to maintain it. Research shows the number of maths graduates is forecast to stall — just as their skills are going to be most in demand. The emergence of "maths deserts", as some higher education institutions cut or close maths departments, will make it harder for those with the necessary talent to pursue the subject. Vital maths potential may go to waste, at great cost to the country. The Academy for the Mathematical Sciences estimates that maths skills contribute nearly £500bn a year to the UK economy.

The great minds at Bletchley didn't just crack codes, they kick-started the computing revolution and invented secure telephony. I won't try to predict what new ideas and technologies might emerge from a Bletchley 2.0, but I am confident it would generate concepts to fundamentally improve our way of life.