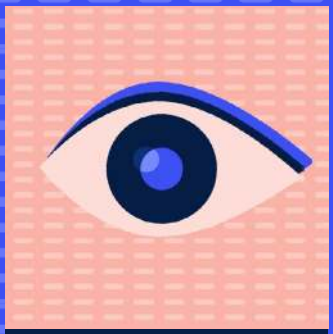


FUTURE DIGITAL THREATS TO DEMOCRACY

This ongoing series from Technology for Global Security and the Center for a New American Security examines the elements and potential implications of digital threats to democracy over the next ten years.

Digital Threats to Democracy: The Online Brain

M. Nina Miller, Technology for Global Security

WHAT IS DIGITALLY IMPAIRED COGNITION?

A growing reliance on digital systems is gradually subverting human cognition by making it more difficult for individuals to maintain attention, remember information, and think critically. When was the last time you memorized a phone number or address? Perhaps you hop between multiple screens at your job—checking a text at the same time that an Instagram notification pops up and you simultaneously Google search a work-related query. This gradual impairment of human cognition erodes three pillars of democracy: a well-informed population, resilience to foreign influence, and the capacity for effective public debates.

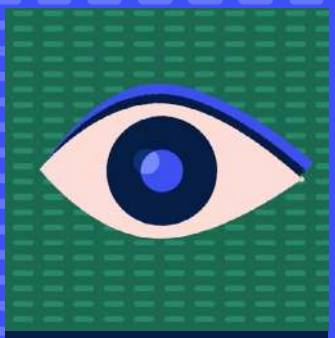
Digitally impaired cognition emerges from neuroplasticity: the brain's inherent ability to form new pathways in response to stimuli over a lifetime. As Norman Doidge describes: "[Nature] has given us a brain that survives in a changing world by changing itself." The incremental intrusion of digital devices into our lives is causing an alarming erosion of independent mental faculties. A number of symptoms characterize this impairment of human cognition:

- Individuals require greater effort to maintain focus due to frequent attention switching between different digital tasks.
- Gathering information online could decrease the information entering long-term memory, yet individuals perceive they have internalized the internet's knowledge.
- Digitally distracted parents who spend less time interacting with their children could cause future generations to struggle with language, executive function, and education.

DIGITALLY IMPAIRED COGNITION AND DEMOCRACY: A VICIOUS CIRCLE

The medium that delivers information mediates how culture, politics, and individual thought develop. As Kevin Kelly describes, for centuries, long-form published texts were the dominant mechanism of societal organization and debate. In contrast, today's public discussions are digitized, decontextualized, and condensed. While our collective digital future has immense potential, societies take generations—if not centuries—to adapt and restructure in response to new mediums of communication. In the meantime, the intrusion of digital devices into every aspect of modern life has a pervasive negative impact on democratic institutions and norms.

The symptoms of digitally impaired cognition make public education and collective action more difficult. As digital devices increasingly shape our brains,



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it will grow harder to motivate the public to maintain focus, digest information, and hold facts in their memories. Moreover, the increasing complexity and interconnectedness of digital tools and cognition makes public education even more difficult. This vicious circle will erode key institutions of democracy.

Digitally impaired cognition will affect industry, government, and civil society:

- Workforce productivity could decrease due to distracted laborers becoming increasingly reliant on digital information, despite the benefits of digital connectivity.
- Transient public attention may shorten news cycles, while elected officials benefit from holding malleable policy positions to align with their constituents' shorter attention span.
- Voters who are easily distracted and largely dependent on online resources will be increasingly vulnerable to influence operations.

DRIVERS OF DIGITALLY IMPAIRED COGNITION

Digital devices are increasingly affordable and ubiquitous in every aspect of work, education, and leisure. This trend is partly driven by technical development, which drives engagement by exploiting biases and emotions. For instance, microtargeting identifies personalized areas of interest to consumers and often undermines their critical thinking about related issues. Many platforms engineer content algorithms to promote virality, sensationalism, and provocation.

Digitally impaired cognition is driven in part by underlying cognitive factors. Consumers struggle with information overload, which outcompetes internal memory and decision-making processes. Additionally, addiction to online attention drives increased use of digital devices and makes it difficult to distinguish between validation and rejection in the real or digital worlds. Research in neuroscience and psychology is enabling better targeting and persuasion. For instance, motion captivates the brain and eyes, which makes viral videos more addictive.

A ZERO-SUM QUESTION?

Cognitive research tends to follow years behind cutting-edge technologies, so researchers are only now beginning to understand the impact of television and videogames on human psychology. Predicting the cognitive effects of new technologies like augmented reality (AR)/virtual reality (VR) or brain-machine interfaces (BMI) is necessarily extrapolative, but it is clear that dependency on the digital world is reshaping our brains.

In his 2016 essay "I Used to Be a Human Being," Andrew Sullivan describes:

> This was a zero-sum question. [He] either lived as a voice online or [he] lived as a human being in the world that humans had lived in since the beginning of time.

The human brain adapts to survive in a changing world by changing itself, but how can we prevent our digital brains from breaking the analog systems of democracy?

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