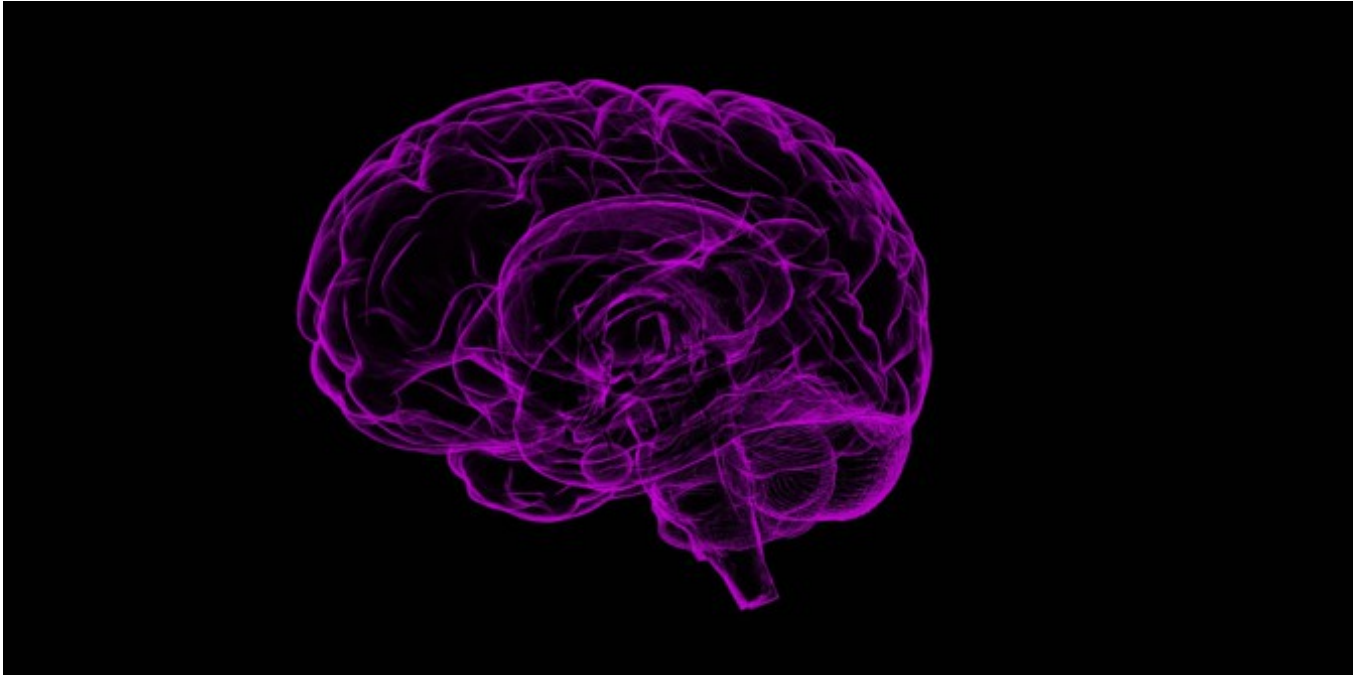


Claims that the Internet damages our memory and cognition may be unfounded

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Why store information in biological memory when it is reliably available on the Internet? Some argue that relying on the Internet is adaptive because it frees up internal resources which can then be used for other cognitive tasks, whereas others argue that this is maladaptive because it makes us less knowledgeable. In this blog post, I first look at some of the scientific evidence regarding the effects of the Internet on memory and then suggest an approach to think about the desirability of these effects.

The World Wide Web was invented by Tim Berners-Lee in 1989 at CERN in Geneva, initially to help scientists store and communicate data but soon developed into a global phenomenon we now know as the Web. We use the Web for various purposes, including to store and retrieve information, for example on Wikipedia or IMDB. Humans have offloaded memory functions to external media at least since the invention of clay tablets, and our brains have co-evolved with technology ever since. But, whilst we have always offloaded information-storage functions to external media, the Internet differs from previous external information systems in its scope, constant availability, tendency to absorb and transform other media, and its multifunctionality. It is therefore important to better understand what the Web does *for* and *to* our cognitive capacities.

Over 2,500 years ago, Socrates worried that written language would “produce forgetfulness in the minds of those who learn to use it, because they will not practice their memory”. Similar worries are now expressed about the Internet. Theorists like Nicolas Carr and Susan Greenfield, for example, argue that using the Internet has detrimental effects on biological memory.

Their claims are partly based on research in cognitive psychology done by Betsy Sparrow, Jenny Liu and Daniel Wegner. In a paper titled “[Google effects on memory](#)” and published in *Science*, they present a number of experiments where participants had to remember various trivia statements such as “An ostrich eye is bigger than its brain”. The participants were told that these statements were sometimes stored in a particular folder on a desktop

computer and sometimes they weren't. Without going into the statistics and details of the experiments, the researchers conclude that when we know information is accessible externally, we put less effort into encoding it internally; and when we know information will not be accessible externally, we put more effort into encoding it internally and have better recall of that information.

So, the argument goes, reliable access to the Internet results in storing fewer facts in biological memory. However, it is, first, important to be aware that Sparrow et al's experiments were neither done with using Google nor information on the Web. Their experiments were done by using information stored in folders on a computer in a psychology laboratory. Whether storing information in folders on a desktop computer in a psychology laboratory is relevantly similar to using the Internet in real-world situations as to justify the claims Sparrow et al make about the Internet needs more scientific justification and empirical evidence. Note that I'm not claiming that the Internet does not transform our memory and cognition. It does. We just don't know yet *how* exactly. The alarmist claims by Carr and Greenfield seem unfounded. We need more scientific research about the cognitive effects of the Web before we can make value-judgements.

But how to think about the desirability of the effects the Web has on our memory and cognition? Clive Thompson puts it well when he writes: "From Socrates onward, we lose old cognitive skills as we gain new ones, but we've benefited from the trade-off." I think Thompson is largely right, in that we indeed lose some of our cognitive skills but overall benefit from new cognitive technologies. For example, with written language we have partly given up our narrative culture, but much progress in philosophy, science, engineering, law, and literature would have been impossible without it. It seems fair to say that written language has created an overall benefit for human cognition and culture.

A similar argument can be made about other cognitive technologies such as maps, calculation devices, clocks, and the Internet, in that they produced an overall cognitive benefit. This consequentialist view, however, may not be accepted by those who think that having certain cognitive skills has intrinsic value, and whose value should not be measured in relation to what we might gain.

I think cognitive skills such as navigating, calculating, problem-solving, and remembering have both intrinsic value (i.e., they have value in themselves) and instrumental value (i.e., they have value because we can use them to achieve our goals). Technologies such as the Internet transform both the intrinsic and instrumental value of our cognitive skills. Focussing on instrumental value, it seems that in an information society such as ours, having the skills to efficiently navigate, evaluate, compare, and synthesise online information are (under most circumstances) more valuable than, for example, having a lot of facts stored in biological memory. But it is important that we have a debate as a society about which cognitive skills we value in our 21st century information society. It does not seem to be something we can decide from the comfort of our philosophical armchair.



Notes:

- *This blog post is based on and contains extracts from the author's paper [The Internet, Cognitive Enhancement, and the Values of Cognition](#), *Minds and Machines*, 26, 398-407, (2016).*
- *The post gives the views of its author, not the position of LSE Business Review or the London School of Economics.*
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