Our ‘Deep Reading’ Brain: Its Digital Evolution Poses Questions

‘The reading circuit’s very plasticity is also its Achilles’ heel. It can be fully fashioned over time and fully implemented when we read, or it can be short-circuited ...’

ARTICLE BY

MARYANNE WOLF

Will we lose the “deep reading” brain in a digital culture? No one knows—yet.

The preceding paragraph provides a legitimate synopsis of this essay. It also exemplifies the kind of reduced reading that concerns me greatly, both for expert adult readers and even more so for young novice readers, those who are learning how to read in a way that helps them to comprehend and expand upon the information given.

The challenges surrounding how we learn to think about what we read raise profound questions. They have implications for us intellectually, socially and ethically. Whether an immersion in digitally dominated forms of reading will change the capacity to think deeply, reflectively and in an intellectually autonomous manner when we read is a question well worth raising. But it isn’t one I can answer now, given how early we are in the transition to digital content.

In my work on the evolution of the reading brain during the past decade, I have found important insights from the history of literacy, neuroscience and literature that can help to better prepare us to examine this set of issues. The historical moment that best approximates the present transition from a literate to a digital culture is found in the ancient Greeks' transition from an oral culture to a literacy-based culture. Socrates, who was arguably Greece’s most eloquent apologist for an oral culture, protested against the acquisition of literacy. And he did so on the basis of questions that are prescient today—and, in that prescience, surprising.

Socrates contended that the seeming permanence of the printed word would delude the young into thinking they had accessed the crux of knowledge, rather than simply decoded it. For him, only
the intellectually effortful process of probing, analyzing and internalizing knowledge would enable the young to develop a lifelong, personal approach to knowing and thinking, which could lead them to their ultimate goals—wisdom and virtue. Only the examined word—and the examined life—was worth pursuing. Literacy, Socrates believed, would short-circuit both.

Using a 21st century paraphrase, the operative word is “short-circuited.” I use it to segue into a different, yet concrete way of conceptualizing Socrates’s elegantly described worries. Modern imaging technology allows us to scan the brains of expert and novice readers and observe how human brains learn to read. Briefly, here is what we find: Whenever we learn something new, the brain forms a new circuit that connects some of the brain’s original structures. In the case of learning to read, the brain builds connections between and among the visual, language and conceptual areas that are part of our genetic heritage, but that were never woven together in this way before.

Brain Pathways: Created By Reading

Gradually we are beginning to understand the stunning complexity that is involved in the expert reader’s brain circuit. For example, when reading even a single word, the first milliseconds of the reading circuit are largely devoted to decoding the word’s visual information and connecting it to all that we know about the word from its sounds to meanings to syntactic functions. The virtual automaticity of this first set of stages allows us in the next milliseconds to go beyond the decoded text. It is within the next precious milliseconds that we enter a cognitive space where we can connect the decoded information to all that we know and feel. In this latter part of the process of reading, we are given the ability to think new thoughts of our own: the generative core of the reading process.

Perhaps no one better captured what the reader begins to think in those last milliseconds of the reading circuit than the French novelist Marcel Proust. In 1906, he characterized the heart of reading as that moment when “that which is the end of [the author’s] wisdom appears to us as but the beginning of ours.” A bit more than a century later, in 2010, book editor Peter Dimock said that “[this] kind of reading, then, is a time of internal solitary consciousness in which the reading consciousness is brought up to the level of the knowledge of the author—the farthest point another mind has reached, as it were ...”

The act of going beyond the text to analyze, infer and think new thoughts is the product of years of formation. It takes time, both in milliseconds and years, and effort to learn to read with deep, expanding comprehension and to execute all these processes as an adult expert reader. When it comes to building this reading circuit in a brain that has no preprogrammed setup for it, there is no genetic guarantee that any individual novice reader will ever form the expert reading brain circuitry that most of us form. The reading circuit’s very plasticity is also its Achilles’ heel. It can be fully fashioned over time and fully implemented when we read, or it can be short-circuited—either early on in its formation period or later, after its formation, in the execution of only part of its potentially available cognitive resources.

Because we literally and physiologically can read in multiple ways, how we read—and what we absorb from our reading—will be influenced by both the content of our reading and the medium we use.
Few need to be reminded of the transformative advantages of the digital culture's democratization of information in our society. That is not the issue I address here. Rather, in my research, I seek to understand the full implications for the reader who is immersed in a reading medium that provides little incentive to use the full panoply of cognitive resources available.

We know a great deal about the present iteration of the reading brain and all of the resources it has learned to bring to the act of reading. However, we still know very little about the digital reading brain. My major worry is that, confronted with a digital glut of immediate information that requires and receives less and less intellectual effort, many new (and many older) readers will have neither the time nor the motivation to think through the possible layers of meaning in what they read. The omnipresence of multiple distractions for attention—and the brain's own natural attraction to novelty—contribute to a mindset toward reading that seeks to reduce information to its lowest conceptual denominator. Sound bites, text bites, and mind bites are a reflection of a culture that has forgotten or become too distracted by and too drawn to the next piece of new information to allow itself time to think.

We need to find the ability to pause and pull back from what seems to be developing into an incessant need to fill every millisecond with new information. As I was writing this piece, a New York Times reporter contacted me to find out whether I thought Internet reading might aid speed reading.

“Yes,” I replied, “but speed and its counterpart—assumed efficiency—are not always desirable for deep thought.”

We need to understand the value of what we may be losing when we skim text so rapidly that we skip the precious milliseconds of deep reading processes. For it is within these moments—and these processes in our brains—that we might reach our own important insights and breakthroughs. They might not happen if we’ve skipped on to the next text bite. Tough questions. Rigorous research. These are what are needed now of us as we ponder the kind of readers we are becoming and how the next generation of readers will be formed.

Our failure to do this may leave us confronted with a situation that technology visionary Edward Tenner described in 2006: “It would be a shame if brilliant technology were to end up threatening the kind of intellect that produced it.”

Maryanne Wolf directs the Center for Reading and Language Research and is the John DiBiaggio Professor of Citizenship and Public Service and professor of child development within the Eliot-Pearson Department of Child Development at Tufts University. She is the author of “Proust and the Squid: The Story and Science of the Reading Brain,” published by HarperCollins. A version of this essay will be translated for the Frankfurter Allgemeine Zeitung.

Help advance the Nieman Foundation’s mission “to promote and elevate the standards of journalism” by making a donation (http://nieman.harvard.edu/about/make-a-gift/).

© 2015 by the President and Fellows of Harvard College