BOOK REVIEW

The Digital Natives Will Not Save Us

Reflections on *The Shallows*

The Shallows: What the Internet Is Doing to Our Brains
Nicholas Carr (W.W. Norton & Co. 2010), 271 pages

Mary Beth Beazley, rev'r*

> "I declare! Sometimes it seems to me that every time a new piece of machinery comes into the door, some of our wits fly out at the window!"
> — Aunt Abigail, in Dorothy Canfield, *Understood Betsy* (1917), at p. 64 (referring to the introduction of the mechanical clock)

> "Calm, focused, undistracted, the linear mind is being pushed aside by a new kind of mind that wants and needs to take in and dole out information in short, disjointed, often overlapping bursts—the faster, the better."
> — Nicholas Carr, *The Shallows,* at p. 10 (referring to the introduction of the World Wide Web)

The Shallows[1] is one of the most important books on my Faculty Bookshelf, where I keep the books that have changed the way I teach, think, or write.[2] Although it was published nearly ten years ago, it remains an important work for those of us who teach legal writing, and for lawyers and judges as well. *The Shallows* will help you to understand why and how the Internet is changing the way we think. And of course, I make my living

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1 NICHOLAS CARR, THE SHALLOWS: WHAT THE INTERNET IS DOING TO OUR BRAINS (2010).

2 Other books on my faculty bookshelf include Richard H. Thaler & Cass R. Sunstein, *Nudge: Improving Decisions About Health, Wealth, and Happiness* (2009); Carol S. Dweck, Ph.D., *Mindset: The New Psychology of Success* (2007); and Joseph M. Williams & Joseph R. Bizup, *Style: Lessons in Clarity and Grace* (12th ed. 2016).

trying to teach students how to think. If you do, too, you should think about reading *The Shallows*.

I. Our malleable brains

The Shallows taught me that our brains are malleable, and that when we use our brains over and over in certain ways, they may develop ruts—not ruts in what we think, but in the ways that we accomplish that thinking. Our brains crave novelty the way our tongues crave sugar, and that's a problem: the Internet, and the products that exploit access to the Internet, guarantee us novelty at any time or at any place. Sugar is great for dessert, but if we eat it too often, it crowds healthier foods out of our diet. Likewise, novelty is great for a break, but too much of it distracts our brains from the focus that feeds deep learning and deep thinking.

That focus matters to us and to our students because lawyers are knowledge workers: we use knowledge and make new knowledge as part of our work.[3] The best way to make new knowledge is to make new and sophisticated intellectual connections in our long-term memories. To get to our long-term memory, however, information has to travel through our highly-distractible working memory.[4]

Carr explains that working memory is overwhelmed on the Web, because instead of consulting one source of information, "we face many information faucets, all going full blast."[5] And our ability to process suffers: "When the [cognitive] load exceeds our mind's ability to store and process the information . . . we're unable to retain the information or to draw connections with the information already stored in our long-term memory. We can't translate the new information into schemas. Our ability to learn suffers, and our understanding remains shallow."[6]

Carr supports his claims by describing his own relationship with the Internet, starting with his "analogue youth" and moving to his "digital adulthood," where "[r]eading online felt new and liberating."[7] This new and liberating feeling, however, soon faded. In 2007, he notes, "a serpent of doubt slithered into my infoparadise."[8] He laments that "I used to find it

3 *E.g.*, Jason Coomer, Willie Buehler & Bob Binder, *The Attorney As Knowledge Worker,* 68 TEX. B.J. 794, 794 (2005).

4 *See, e.g.,* CARR, *supra* note 1, at 125; V. ZEIGLER-HILL & T.K. SHACKELFORD EDS., ENCYCLOPEDIA OF PERSONALITY AND INDIVIDUAL DIFFERENCES, DOI 10.1007/978-3-319-28099-8_1039-1 (2016). Note that "working memory" is now a more commonly-used term than "short-term memory."

5 CARR, *supra* note 1, at 125.

6 *Id.* at 125.

7 *Id.* at 11, 15.

8 *Id.* at 16.

easy to immerse myself in a book or a lengthy article. . . . Now my concentration starts to drift after a page or two. I get fidgety, lose the thread, begin looking for something else to do. . . . The deep reading that used to come naturally has become a struggle."[9]

I recognized Carr's struggle. When I'm reading a hard-copy book, I find my brain thinking about my phone, wondering if I can check it. When I read online, I have an itchy finger, looking for something to click on. If I'm critiquing a paper in MSWord and get frustrated (that happens sometimes), I feel a physical urge to open a new tab, to escape.

That fidgety, unfocused feeling is the result of how our behavior has changed our brains. Recent research indicates that even the adult brain is "malleable, or 'plastic.'"[10] Unfortunately, for many, that malleability has allowed our brains to grow accustomed to constantly switching to new tasks. The more fully our brains adjust to that new method of thinking, the more they want to keep thinking that way: "The chemically-triggered synapses that link our neurons program us, in effect, to want to keep exercising the circuits they've formed. Once we've wired new circuitry in our brain . . . 'we long to keep it activated.'"[11]

Carr argues that as our working memory gets overloaded, it becomes "much harder for our frontal lobes to concentrate our attention on any one thing . . . . And . . . the more we use the Web, the more we train our brain to be distracted—to process information very quickly and very efficiently but without sustained attention."[12] In other words, it's not our imagination: we're training our brains to need novelty more frequently, to break focus to respond to vibrations, pings, and pop-ups. And the more we give in to those stimuli, the more we starve our long-term memories, and the shorter our attention spans get.

II. Technology giveth and it taketh

Something good about our hunger for novelty is that it drives us to invent new things, but Carr argues that as humans create new kinds of technology, technology creates new kinds of humans. He focuses especially on "intellectual technologies" (like the Internet) that allow us to "extend or support our mental powers—to find and classify information, to formulate and articulate ideas, to share know-how and knowledge, to

9 *Id.* at 5–6.

10 *Id.* at 21.

11 *Id.* at 34 (internal citation omitted).

12 *Id.* at 194.

take measurements and perform calculations, to expand the capacity of our memory."[13]

As Carr puts it, "[e]very tool imposes limitations even as it opens up possibilities."[14] When technology takes over a task that we used to do by hand, we forget (or never learn) how to do that task, and that skill is lost. Not being able to tell time by the sun may be fine; we now carry phones eternally synched to Greenwich Mean Time. But the Internet presents a problem at once deeper and more significant: It affects ability to focus and to think. We need that ability not just so that we can read maps and remember the capital of Oklahoma;[15] we need it to develop new ways to get to the places on those maps and new ways to run the governments in those state capitals—and for so much more.

As Carr explains, technology both enhances and limits our abilities. When we use binoculars, for example, we can see very far away, but we miss things that are close by, because we have to sacrifice that ability to use the binoculars. Of course, you don't walk down a street holding binoculars to your face, because you would soon stumble and realize your mistake. But we often don't comprehend the mental stumbling that results from our overuse of the Internet.[16]

The Internet's portability and speed allow us to read anywhere, communicate anywhere, and work anywhere. And the fact that we can do these things anywhere usually means that we allow the Internet to *be* anywhere, to intrude anywhere. Unfortunately, the Internet's ability to intrude means that it is almost always taking up space in our brains, crowding out other information before we can transfer it to our long-term memories.

III. Technology and empathy

Like many people, you may be thinking that the "digital natives," that is, those who have been born into the digital world, will be better able to cope with the digital onslaught. Alas, the digital natives can't control biology. They are coping with the digital onslaught the way my generation coped with the sugar onslaught. (Don't ask.) And just as some food companies exploit that sugar craving to get us to eat more vanilla yogurt,[17]

13 *Id.* at 44.

14 *Id.* at 209.

15 Oklahoma City.

16 Admittedly, we do sometimes stumble while we walk down the street looking at our phones . . . .

some tech companies exploit our novelty craving to get us to use more apps, more often.[18]

When we overuse our apps, we allow the Internet to use up even more of our working memory. Worse, we may be affecting countless cognitive functions, from how we interact with each other to our emotional and empathic processes. Researchers who study collaborative groups have found that collaborators speak with each other almost 50% more often when they work with paper than when they work with tablets.[19] The researchers suggest that "digital devices capture more visual and cognitive resources, which force participants to pay less attention to each other and results in noticeably compromised collaboration."[20]

The Internet's similar impact on empathy makes sense when we understand what happens when we read in a focused, linear fashion – as we do when we read fiction. Carr notes that when we are engaged in deep reading, we are conducting a steady transfer of information from working to long-term memory.[21] More significantly, scientists who have conducted brain scans of people reading fiction found that "'readers mentally simulate each new sensation encountered in a narrative'" . . . . [And] [t]he brain regions that are activated often "'mirror those involved when people perform, imagine, or observe similar real-world activities.'"[22]

Carr fears that our ability to engage in "meditative thinking," which Martin Heidegger saw as "the very essence of our humanity," might become a victim of this "headlong progress."[23] Carr warns that "[t]he tumultuous advance of technology could . . . drown out the refined perceptions, thoughts, and emotions that arise only through contemplation and reflection."[24]

17 For example, a Guardian opinion columnist notes that the upward trend in weight began around 1976, and he cites filmmaker Jacques Peretti ("The Men Who Made Us Fat"), who argues that "food companies have invested heavily in designing products that use sugar to bypass our natural appetite control mechanisms, and in packaging and promoting these products to break down what remains of our defenses." George Monbiot, *We're in a new age of obesity. How did it happen? You'd be surprised*, THE GUARDIAN, Aug. 15, 2018.

18 *E.g.,* D. B. Dillard-Wright Ph.D., *Technology Designed for Addiction: What are the dangers of digital feedback loops?* PSYCHOL. TODAY, Jan. 4, 2018, https://www.psychologytoday.com/us/blog/boundless/201801/technology-designed-addiction.

19 Jonathan Haber et al., *Paper vs. Tablets: The Effect of Document Media in Co-located Collaborative Work*, AVI '14 PROC. OF THE 2014 INT'L WORKING CONFERENCE ON ADVANCED VISUAL INTERFACES 89–96, 94 (2014), http://dl.acm.org/citation.cfm?doid=2598153.2598170.

20 *Id.*

21 *See* CARR, *supra* note 1, at 124–25.

22 *Id.* at 74 (internal citations omitted).

23 *Id.* at 222 (internal citation omitted).

24 *Id.* (internal citation omitted).

Carr argues that "[t]he price we pay" for technology's power is "alienation. . . . The tools of the mind amplify and in turn numb the most intimate, the most human, of our natural capacities—those for reason, perception, memory, emotion."[25] He warns that "[w]e shouldn't allow the glories of technology to blind our inner watchdog to the possibility that we've numbed an essential part of our self."[26]

Notably, he describes an experiment that measured subjects' abilities to empathize with those who suffered from physical vs. psychological issues.[27] Researchers discovered that it takes time for the brain to transcend the body and begin to understand "the psychological and moral dimensions of a situation."[28]

The researchers believe that their experiment shows that "the more distracted we become, the less able we are to experience the subtlest, most distinctively human forms of empathy, compassion, and other emotions."[29] One researcher argues that "we need to allow for adequate time and reflection," for certain kinds of thinking, "especially moral decisionmaking about other people's social and psychological situations."[30] She notes that if things are happening "too fast," we may never fully experience emotions about other people's psychological states."[31] Carr doesn't believe that the Internet is undermining our "moral sense," but he worries that it may be "altering the depths of our emotions as well as our thoughts."[32]

IV. Do I recommend this book?

You may be surprised to hear that I don't find this book depressing. Yes, it's a bit disheartening to recognize your own issues with focus and attention. But *The Shallows* is an important book because we are all living with a cognitive candy store in our back pockets, and we have to learn how to fight the cognitive bulimia that is starving our long-term memories of intellectual nutrition.

For there is a difference between information and knowledge, between making quick decisions and exercising sophisticated judgment. Carr argues that unlike the Web, our brains are not for storing infor-

25 *Id.* at 211.

26 *Id.* at 212.

27 *Id.* at 220–21.

28 *Id.* at 221 (citation omitted).

29 *Id.*

30 *Id.* (quoting Mary Helen Immordino-Yang, a member of the research team) (endnote omitted).

31 *Id.*

32 *Id.*

mation, they are for processing it. When our minds are well-nourished, they contain a "wealth of connections" that leave the Internet in the dust:

> [T]he Web is itself a network of connections, but the hyperlinks that associate bits of online data are nothing like the synapses in our brain. . . . They have none of the organic richness or sensitivity of our synapses. . . . When we outsource our memory to a machine, we also outsource a very important part of our intellect and even our identity. William James, in concluding his 1892 lecture on memory, said, "The connecting *is* the thinking." To which could be added, "The connecting *is* the self."[33]

Thus, we can't always solve our problems by turning to the Web to add facts to our ideas like we're adding ketchup to French fries. To promote knowledge-making and intellectual discovery, we must keep filling our long-term memories with information and experiences so that the knowledge can be in there cooking, so we can make those connections when we need them.

I can't tell you where those connections will lead, but I know they will be better connections if we understand the mysteries of *The Shallows.*

33 *Id.*