### "Education: Attention Disarray" by Sherry Turkle

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AT MIT, I TEACH A SEMINAR ON SCIENCE, TECHNOLOGY, AND MEMOIR. Enrollment is capped at twenty students. The atmosphere is intimate. We read memoirs by scientists, engineers, and designers (one student favorite is Oliver Sacks’s *Uncle Tungsten*) and then the students tell their own stories.

MIT students come from diverse backgrounds. Some have lived hardscrabble lives. During a recent fall semester, their stories were particularly poignant. One had escaped with his family from what was then the Soviet Union. Another had overcome deep poverty; there were many nights when he had no choice but to sleep in his car. And yet, through all of this, these students had found their way to science or engineering or design. Sometimes the inspiration had come from a teacher, parent, or friend. Sometimes it came from fascination with an object — a broken-down car, an old computer, a grandfather clock. The students seemed to understand each other, to find a rhythm. I thought the class was working.

And then, halfway through the semester, a group of students asks to see me. They want to say that they have been texting during class and feel bad because of the very personal material being discussed. They say that they text in all their classes, but here, well, it somehow seems wrong. We decide that this is something the class should discuss as a group.

In that discussion, more students admit that they, too, text in class. A small group says they are upset to hear this. They have been talking about the roughest times of their childhoods, about abuse and abandonment. But even they admit that they see checking for texts during class as the norm and have since high school. But why in *this* class? It’s a small seminar. *They are talking about their lives.*

In the conversation that follows, my students portray constant connection as a necessity. These students don’t feel they can be present unless they are also, in a way, absent. For some, three minutes is too long to go without checking their phones. Some say two minutes is their rule. Those who bring tablets to class point out that a “social check” is as simple as touching a Facebook icon on their screen. They want to see who is in touch with them, a comfort in itself.

We decide to try a device-free class with a short break to check phones. For me, something shifts. Conversations become more relaxed and cohesive. Students finish their thoughts, unrushed. What the students tell me is that they feel relief: When they are not tempted by their phones, they feel more in control of their attention. An irony emerges. For of course, on one level, we all see our phones as instruments for giving us greater control, not less.

My students became upset because, in this class, their usual split attention (looking at their phones; listening to their classmates) felt wrong. It devalued their classmates’ life stories (and their own) and made them feel that they were crossing some moral line. They could imagine a day when people around you would be upset and you would still be pulled away to your phone.

A lot is at stake in attention. Where we put it is not only how we decide what we will learn; it is how we show what we value.

### The Myth of Multitasking

These days, attention is in short supply — in college classrooms, its scarcity poses special problems because, after all, so much money, time, and effort has been spent to bring together these students, this professor, these educational resources. And yet here, like everywhere, if we have a device in our hands, we want to multitask.

But in this, we pursue an illusion. When we think we are multitasking, our brains are actually moving quickly from one thing to the next, and our performance degrades for each new task we add to the mix.

Multitasking gives us a neurochemical high so we think we are doing better and better when actually we are doing worse and worse. We’ve seen that not only do multitaskers have trouble deciding how to organize their time, but over time, they “forget” how to read human emotions.

Students — for example, my students — think that texting during class does not interrupt their understanding of class conversation, but they are wrong. The myth of multitasking is just that: a myth.

And yet, multitasking is the norm in classrooms. By 2012, nine in ten college students said that they text in class.

The widespread adoption of texting was a landmark in the unfolding of the multitasked life. For one group of high school seniors in Connecticut, getting a smartphone over the 2008 holiday break made the spring term that followed it a new kind of experience: When these students are at school, in class and out of class, they text continually. There is so much texting during school hours that their school put a “no texting in class” policy into effect, but the young men ignore it: Some claim to have never heard of it. Andrew says, “Most kids can text without looking, so … you’ll just be looking at the teacher, and under the table you’ve got your thumbs going crazy.”

One of the more studious boys in the group, Oliver, takes pains to insist that his teachers should not take it personally when he texts in class. Teachers put the notes online; he “gets” what is going on in class, so “I’m almost always bored and I want to be somewhere else and I’m almost always texting.” He does admit that once he’s texting, the possibilities for concentrating are pretty much gone: “You can’t focus on the thing you are doing when you are sending the text … or waiting to receive a text … there is so much going on with other things you might want to receive on your phone.”

Despite his new problem with focus, even in 2008, Oliver expects that what he has now is what he’ll have in the future. He imagines that from now on, when he feels bored, he will immediately add a new layer of communication. So for him, “boredom is a thing of the past.” Every generation, he says, had its own way of responding to being bored, especially during classes. Other generations passed notes, doodled, or zoned out. His generation can send texts and go to Facebook. He calls his generation “lucky”: “We have the awesome new power to erase boredom.”…

So, dropping out of a classroom conversation can begin with a moment of boredom, because a friend reaches out to you, or because, as one student in my memoir class put it, “You just want to see who wants you.” And once you are in that “circuit of apps,” you want to stay with them.

In classrooms, the distracted are a distraction: Studies show that when students are in class multitasking on laptops, everyone around them learns less.

One college senior says, “I’ll be in a great lecture and look over and see someone shopping for shoes and think to myself, ‘Are you kidding me?’ So I get mad at them, but then I get mad at myself for being self-righteous. But after I’ve gone through my cycle of indignation to self-hate, I realize that I have missed a minute of the lecture, and then I’m really mad.”

It’s easy to see how concentration would be disrupted in this crucible of emotion. But even for those who don’t get stirred up, when you see someone in your class on Facebook or checking their email, two things cross your mind: Maybe this class is boring, and maybe I, too, should attend to some online business. Yet despite research that shows that multitasking is bad for learning, the myth of the moment is still that multitasking is a good idea. A series of ads for AT&T show a young man chatting with a group of schoolchildren about the things children know.

Or perhaps, the things children know that adults want to validate. One of the things that the children and the adult agree on is that faster is better. A second is that it is better to do more than one thing at a time. This is a myth that dies hard.

And we are not inclined to let it die because multitasking feels good. It is commonplace to talk about multitaskers as addicted. I don’t like to talk about addiction in this context because I find that discussing the holding power of technology in these terms makes people feel helpless. It makes them feel they are facing something against which resistance seems almost futile. This is a fallacy. In this case, resistance is not futile but highly productive. Writers, artists, scientists, and literary scholars talk openly about disenabling the Wi-Fi on their computers in order to get creative work done. In the acknowledgments of her most recent book, the novelist Zadie Smith thanks Freedom and SelfControl, programs that shut off connectivity on her Mac.

The analogy between screens and drugs breaks down for other reasons. There is only one thing that you should do if you are on heroin: Get off the heroin. Your life is at stake. But laptops and smartphones are not things to remove. *They are facts of life and part of our creative lives. The goal is to use them with greater intention.*

Instead of thinking about addiction, it makes sense to confront this reality: We are faced with technologies to which we are extremely vulnerable and we don’t always respect that fact. The path forward is to learn more about our vulnerabilities. Then, we can design technology and the environments in which we use them with these insights in mind. For example, since we know that multitasking is seductive but not helpful to learning, it’s up to us to promote “unitasking.”

It’s encouraging that it is often children who recognize their vulnerabilities to technology and come up with ways to deal with them, even when adults are pulling them in another direction. In fact, the critique of multitasking is a good example of where I’ve seen children take the lead. Reyna, fourteen, has been issued an iPad at school. The entire eighth-grade curriculum is on it. But so are her email and favorite games, including *Candy Crush.* In order to get work done, she prints out her reading assignments and puts aside the iPad. She learned to do this from her sister, who had experienced the same attention problems with a curriculum-on-a-tablet. Reyna describes the problem:

People really liked [the iPad] because … they could look things up really quickly in class, but also … people were getting really distracted. Like, my sister had an iPad and she said that her and her friends’ texts were blocked but they had school emails. And they would sit in class and pretend to be researching but really they were emailing back and forth just because they were bored — or they would take screenshots of a test practice sheet and send it out to their friends that hadn’t had the class yet.

But my sister also said that even when she and her friends were just trying to study for a test, “they would go and print everything that they had on their iPads,” because studying was made a lot more difficult because of all the other distractions on the iPad, all the other apps they could download.

This student knows that it is hard to concentrate in class when you are holding a device that you associate with games and messaging — a device built to encourage doing one thing and then another and another. Reyna came to her experience with the iPad at school with many advantages: She had experienced school without it. She remembered that she used to be less distracted. She had a point of comparison and she had her sister as a mentor. But increasingly, students like Reyna are the exception. Children who begin school with an iPad won’t know that you can “force” a state of greater concentration by using media that allow you to do only one thing at a time. It’s up to a more experienced generation to teach them.

Students who print out their assignments in order to have time away from screens should give educators pause when they, with the best of intentions, try to make things more efficient by closing the library and declaring books obsolete.

### The Opposite of Unitasking: Hyper Attention

Many educators begin with an accommodation: They note that students text and search the web in class, and they say, “Fine” — in previous days, students would find other ways to zone out, and this is the twenty-first-century equivalent. But some educators do more than accommodate the distractions of digital media. They see a new sensibility of fractured attention and they want to use it as an opportunity to teach in a new way.

So, literary theorist Katherine Hayles argues that fractured attention is the sensibility of the twenty-first century and that to look back to “deep attention” in the classroom is to be unhelpfully nostalgic.

(My skepticism begins here, as I think of Reyna and her sister, who print out their reading assignments so as not to be distracted on the iPad.) Students, says Hayles, think in a new mode, the mode of “hyper attention.” Given the realities of the classroom, educators have a choice: “Change the students to fit the educational environment or change that environment to fit the students.”

In other words, for Hayles, there is no real choice. Education must embrace the culture of hyper attention. As an example of a constructive way to do this, Hayles points to experiments at the University of Southern California in a classroom outfitted with screens.

One mode of interaction is “Google jockeying”: While a speaker is making a presentation, participants search the web for appropriate content to display on the screens — for example, sites with examples, definitions, images, or opposing views. Another mode of interaction is “backchanneling,” in which participants type in comments as the speaker talks, providing running commentary on the material being presented.

There is no doubt that Google jockeying speaks to our moment. Students say that they want to turn away from class when there is a lull. Google jockeying implicitly says, all right, we will get rid of those lulls. Even experienced faculty start to ramp up their PowerPoint presentations in a spirit (not always acknowledged) of competing with students’ screens. Or we tell them, as Hayles suggests, to go to the web during class time for opposing views, images, and comments. Or to make a comment of their own.

But there is another way to respond to students who complain that they need more stimulation than class conversation provides. It is to tell them that a moment of boredom can be an opportunity to go inward to your imagination, an opportunity for new thinking.

If a moment of boredom happens in a classroom, rather than competing for student attention with ever more extravagant technological fireworks (*Google jockeying!*), we should encourage our students to stay with their moment of silence or distraction. We can try to

build their confidence that such moments — when you stay with your thoughts — have a payoff. We can present classrooms as places where you can encounter a moment of boredom and “walk” toward its challenges. A chemistry professor puts it this way: “In my class I want students to daydream. They can go back to the text if they missed a key fact. But if they went off in thought … they might be making the private connection that pulls the course together for them.”

When those who are fluent in both deep attention and hyper attention — and certainly Hayles is in this group — look at hyper attention, it is tempting to see something exciting because it is new. But they still have a choice. They can switch between ways of knowing. But children who grow up in an all-multitasking environment may not have a choice.

A life of multitasking limits your options so that you cannot simply “pick up” deep attention. What is most enriching is having fluency in both deep and hyper attention. This is attentional pluralism and it should be our educational goal. You can choose multitasking. You can also focus on one thing at a time. And you know when you should.

But attentional pluralism is hard to achieve. Hyper attention feels good. And without practice, we can lose the ability to summon deep attention.

Eric Schmidt of Google, spoke to a college audience and expressed his own concern. He told the students that he used to read books on airplanes, the one place where there was no Wi-Fi. Now, with Wi-Fi on airplanes, things have changed: “Now I spend all my time being online, doing my emails, interacting and all that, and the book doesn’t get read. I think we’ve got to work on that.”

Schmidt made this comment while promoting a book he authored that celebrates, even in its subtitle, how technology will “reshape” people.

Schmidt isn’t happy that he has exchanged books for email and messages, but he believes in the forward march of technology.

Elizabeth, a graduate student in economics, is not so sure about the forward march. She is convinced that the “natural multitasking” of her work life has left her with diminished cognitive capacity.

Before graduate school, Elizabeth worked as a consultant. It was a job that led her to make multitasking a way of life. “For instance, I could be fielding emails from clients, looking up industry data to insert into a PowerPoint presentation for an urgent meeting, researching which restaurant to take my best friend to that night, while writing the actual requirements document I was supposed to be working on that day. My routine practice of multitasking led to another behavior — skimming.” It was only when Elizabeth returned to the university that she saw the full effect of years spent multitasking, a life lived in hyper attention. Now, as a graduate student, she has been assigned an excerpt of Plato’s *Republic* for an ethics class.

I had skimmed the chapter, as was my habit, then, realizing that I hadn’t retained much, reread it again and even made a few notes. Unfortunately, on the day of the class, I did not have that notebook with me, and while I remembered the overall gist of the chapter (moderation — good; desire for luxury — bad), I struggled to recall specific ideas expressed in it. Without access to my cell phone to refer to the article or read up on Plato on Wikipedia, I wasn’t able to participate in the class discussion. Having access to information is always wonderful, but without having at least some information retained in my brain, I am not able to build on those ideas or connect them together to form new ones.

As I speak with Elizabeth, it is clear that more is at stake than disappointment in her class performance. If she can’t “build on ideas or connect them together to form new ones,” she knows she won’t be able to have certain kinds of conversations — in her view, probably the most important ones.

And attention is not a skill we learn for one domain. When you train your brain to multitask as your basic approach — when you embrace hyper attention — you won’t be able to focus even when you want to. So, you’re going to have trouble sitting and listening to your children tell you about their day at school. You’re going to have trouble at work sitting in a meeting and listening to your colleagues. Their narrative will seem painfully slow. Just as middle school children don’t acquire the skills for conversation because they lack practice, university students lose the capacity to sit in a class and follow a complex argument. Research shows that when college students watch online educational videos, they watch for six minutes no matter how long the video. So videos for online courses are being produced at six minutes.

But if you become accustomed to getting your information in six-minute bites, you will grow impatient with more extended presentations. One college senior describes her friends’ taste for the short and terse: “If they had their choice, conversations would begin with a tweet and end in a tweet.”

Maryanne Wolf, a cognitive neuroscientist at Tufts University, had long observed students’ fractured attention spans but did not feel personally implicated until one evening when she sat down to read *The Glass Bead Game* by Hermann Hesse, one of her favorite authors. Wolf found it impossible to focus on the book. She panicked and wondered if her life on the web had cost her this ability. When Eric Schmidt noted his difficulty with sustained reading, he remarked, “We’ve got to work on that.” Wolf immediately got to work. She began to study what skimming, scanning, and scrolling do to our ability to read with deep attention — what she calls “deep reading.

Her thesis is that a life lived online makes deep attention harder to summon. This happens because the brain is plastic — it is constantly in flux over a lifetime — so it “rewires” itself depending on how attention is allocated.

Wolf, Hayles, and Schmidt have all diagnosed a problem with deep attention. But they turn in different directions when it comes to what to do next. Hayles argues for a conscious pedagogical accommodation to the new sensibility. Schmidt shrugs and says that in the end, technology will lead us in the right direction. Wolf’s focus on the plasticity of the brain gives her a different perspective. For if the brain is plastic, this means that at any age, it can be set to work on deep attention. Put otherwise, if we decide that deep attention is a value, we can cultivate it. Indeed, that is what Wolf discovered for herself. She had trouble with the Hesse but kept at it. And she says that after two weeks of effort, she was once again able to focus sufficiently to immerse herself in deep reading. Wolf’s experience suggests a pedagogy that supports unitasking and deep reading. But if we value these, we have to actively choose them.

Seduced by Transcription: Putting Machines Aside

Carol Steiker, a professor at Harvard Law School, is committed to a particular form of unitasking: the unitasking that follows naturally when students take class notes by hand. Harvard, like so many other law schools, took great pride in having all classrooms “wired” over the past decade or so, and for many years, Steiker allowed her students to take notes on laptops. I speak with Steiker and a group of other law professors. At one time they had all allowed their students to take class notes on laptops. It seemed natural. Coming out of college, students were accustomed to doing things this way. And the professors didn’t want to be in the position of “thought police,” checking if students were on Facebook during class time. The consensus: If a student couldn’t pay attention in a law school class, that would soon become the student’s problem. That student would fall behind. Steiker explains why her position has changed, radically. She saw that students taking notes with computers suffered from more than inattention. They were losing the ability to take notes at all. She puts it this way: “Students taking notes on computers seemed compelled to type out the full record of what was said in class. They were trying to establish transcripts of the class.”56 To put it too simply: Students were putting themselves in the role of court stenographers. For Steiker, this was a problem in itself. She wants note taking to help students integrate the themes of her class. For her, note taking trains students to organize a subject in a personal way. It cultivates an art of listening and thinking that will be important to the future lawyer. And Steiker says that the urge to “transcribe” had a curious side effect: Her law students didn’t want to be interrupted in class. Steiker says, “They sometimes seemed annoyed if you called on them because it broke up their work on their transcriptions. If your notes are meant to capture the themes of the class, you remember your own participation and you make it part of the story. If you are trying to write a transcript of a class, class participation takes you away from your job.” Here is how Steiker describes a turning point in her understanding of how note taking on computers stands in the way of what she wants to accomplish in her classroom: One of the students in the first year had a serious illness that kept her out of class for several weeks. The students banded together into teams that would take notes for her in every course. After one class, the young woman who had been responsible for note taking in my class on that day came up to me, upset. Could she please have my class notes to send to her absent classmate? Her computer had run out of power and she had no power cord. She hadn’t been able to take notes in class. I asked the obvious: Why hadn’t she taken notes with pen and paper? The student looked at me blankly. This simply had not occurred as a possibility. This simply was something she no longer could do. There are at least two ironies here. First, behind our note taking on computers was a fantasy: When the machines made it possible for us to take notes faster, we would take notes better. Instead, we don’t take notes at all but behave like transcribing machines. Second, when the day comes that machines are able to take notes for us, it will not serve our purposes, because note taking is part of how we learn to think. So now, Steiker allows no technology in any of her classes. She says, laughingly, that she came to this position in steps. She first told her students that they couldn’t use computers in class. So they put their laptops away but kept checking their phones in class. “I found this amazing,” she says. In fact, her students were thinking like lawyers, following the letter but not the spirit of her instructions. “So, then, I had to be explicit that I really meant no devices at all. This seemed surprising to them. They are so used to looking down at their phones — having a phone in class didn’t seem to them like holding on to a technology.” There is much talk about the advantage of our devices becoming so habitual and easy to use that they become invisible. It is usually assumed this is a good thing. But if we don’t “see” our devices, we are less likely to register the effect they are having on us. We begin to think that the way we think when we have our devices in hand is the “natural” way to think. Now, in a device-free class, Steiker says, “The students aren’t annoyed when you call on them.” She’s optimistic, convinced that taking notes by hand is forcing her students to be better listeners. “They can’t write fast enough to do a transcript, so they have to figure out what is most important.” When she tells this story, I think back to a comment that an eleventh grader made to me a decade ago about why she likes to bring her laptop to class. “When I have my computer, I like it that I can write everything down.” At the time, I didn’t pursue the comment. Some costs take a while to become apparent.

A Love Letter to Collaboration

In a recent course, I required students to collaborate on a midterm project. I imagined my students in conversation, working together at long tables in a dining hall. I imagined late nights and cold coffee in Styrofoam cups. But there had been no late nights or long tables. All the collaboration had happened on Gchat and Google Docs, a program that allows several people to work on the same document at once. When my students handed in their projects, their work was good. But when I gave out the assignment I was interested in more than the final product. I know that the alchemy of students sitting around a table can sometimes spark conversations that lead to a new idea. Instead, my students found an app that made presence unnecessary. They had a task; they accomplished it with efficiency. My experience in that course is a case study of why measurements of productivity in higher education are dicey. Gchat and Google Docs got the job done by classical “productivity” measures. But the value of what you produce, what you “make,” in college is not just the final paper; it’s the process of making it. My students are unapologetic about not meeting in person. Jason, a sophomore, says, “The majority of my studying in the past year has been that someone makes a Google Doc with the terms that need definitions, you fill in the ones you know, and then you work on it together. You have a chat session and you do that to collaborate.” This joyless description made me rethink my fantasy of long tables, cold coffee, and late nights. My fantasy, from his point of view, asks for the unnecessary. But his reality allows little space to talk about a new idea. Sometimes, students who collaborate with online chat and electronically shared documents work in the same building. They simply choose not to study in the same room at the same table. They go into online chat sessions rather than chat in person. Why? For one thing, they tell me, roles can be made clear and it is clear when someone falls behind. More important, when you collaborate online, everyone stays on point. People may drop out to text or do some online shopping, but when they are on the chat, they are on topic. In a face-to-face meeting, you can see people’s attention wander off to their phones. On Gchat, the inattention of your peers is invisible to you. Once you make the assumption that when people work, they will want to text and shop as well, it helps to collaborate on a medium that hides what Jason calls their “true absences.” Gchat lets the simulation of focused attention seem like attention enough. Whenever you see them, your colleagues are working on the problem at hand. So, Jason says, “We take the route of technology whenever possible.”

Gchat makes Jason’s group seem “on topic” even as their minds wander. But it doesn’t leave room for what I’ve said I want when my students collaborate. I’ll call it intellectual serendipity. It may happen when someone tells a joke. Or daydreams and comes back with an idea that goes in a new direction. None of this is necessarily efficient. But so many of our best ideas are born this way, in conversations that take a turn. I want my students to have this experience. But given an opportunity to collaborate, my students glide toward the virtual. Some tell me that anything else, regardless of the merits, is totally impractical in today’s college environment. Everyone is too “busy.” I can’t help but think that talking in person is one of the things they should be busy with. In my interviews with college students, most insist that they will know when they have to schedule a face-to-face meeting. They will know if something comes up that they can’t take care of over Gchat. But my experience is that you really don’t know when you are going to have an important conversation. You have to show up for many conversations that feel inefficient or boring to be there for the conversation that changes your mind. When the economist Daniel Kahneman won the Nobel Prize, he was, like every winner of the prize, asked to write an official Nobel biographical statement. One section of his biography is a tribute to his late colleague Amos Tversky. Kahneman explained that the ideas for which he won the prize grew out of their time spent working together. In the end, his Nobel biography amounted to a love letter to conversation.57 We spent hours each day, just talking. When Amos’s first son, Oren, then fifteen months old, was told that his father was at work, he volunteered the comment “Aba talk Danny.” We were not only working, of course — we talked of everything under the sun, and got to know each other’s mind almost as well as our own. We could (and often did) finish each other’s sentences and complete the joke that the other had wanted to tell, but somehow we also kept surprising each other. Here we see conversation as not only an intellectual engine but the means by which colleagues were able to cross boundaries that are usually only dissolved by love. Conversation led to intellectual communion. When I explain my current project, people often say, “You’re so right to study conversation. For communication, it has the broadest bandwidth — it’s the best way to exchange information.” Kahneman and Tversky teach us that while this may be true, it is far from the whole story. Conversation is a kind of intimacy. You don’t just get more information. You get different information. The bandwidth argument leaves out this essential.

What also is striking in Kahneman’s Nobel address is his description of the pace of his work with Tversky. In 1974, Kahneman and Tversky wrote an article for *Science* that went on to be one of the founding documents of behavioral economics

It took them a year, working four to six hours a day. Kahneman writes, “On a good day we would mark a net advance of a sentence or two.” So the people who support conversation because they think it will make things go faster (“Don’t email me, it’s faster just to come to my desk and ask me!”) are seeing only a small part of what makes face-to-face conversation powerful. For Kahneman and Tversky, conversation wasn’t there to go faster, but to go deeper.

College should be a time to invest in teaching students about the long-term value of open-ended conversations, but in today’s environment, it is hard to argue the value of conversation for learning because it is hard to measure its value with productivity metrics, especially in the short term.