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GUEST ESSAY

The Multi-Trillion-Dollar Battle for Your Attention Is Built on a Lie

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In our anxious age, increasing attention is being directed to our attention, and to the extraordinary and seemingly inescapable forces trying to exploit it. In one recent survey, 75 percent of respondents said they have some kind of attention problem. The psychologist Gloria Mark has documented a precipitous slide over the past two decades in our ability to stay on task in various screen-based activities, findings that buttress what has become a widespread complaint. There must be a thousand and one articles asserting that the human attention span has dipped below that of the small, orange carp known as the goldfish, which for some reason has come to serve as the interspecies benchmark of distractibility. Goldfish themselves seem to be doing fine, but here on dry land, about 11 percent of American children have been diagnosed with A.D.H.D.

The implications are vast and troubling: Kids can't read, students can't think and rates of mental illness are spiking. By some accounts, this phenomenon is endangering democracy itself.

We definitely have an attention problem, but it's not just a function of the digital technology that pings and beeps and flashes and nudges us ever closer to despair. It starts with the way we think about attention in the first place. An industry estimated to be worth $7 trillion views attention in the narrowest possible way: as something that can be measured in terms of device-engaged, task-oriented productivity, then optimized and operationalized and profitably controlled. That narrow view of attention has become so dominant that it even pervades efforts at resistance, including the countless well-meaning calls to "improve focus" or "avoid distraction." In our efforts to liberate ourselves, we have become anxious accountants of our own attention.

This kind of quantitative thinking about attention is the legacy of a little-known line of laboratory research. Begun in the 1880s and spanning the long 20th century, it was conceived in a spirit of bold inquiry and undertaken with the goal of civic and medical betterment. The scientists who led the research succeeded in making many human experiences safer and more efficient. They helped to advance innovation and win wars. By using increasingly complex instruments to optimize our capacities, however, they established a powerful paradigm that saw humans as attention-paying machines, paying attention to machines. That model helped give rise to the present era, when most of us spend more than half our waking hours on devices designed to keep us enthralled to the taps and swipes of the attention economy.

Real attention cannot be measured with a stopwatch or an app, and real attention — human attention — is far deeper and more complex than the ability to get stuff done. We know this, of course: The lives we long for involve going for an undisturbed walk in the park with a friend, getting lost in a book or even simply daydreaming. Life is made of these things, and they are made of attention. Armed

with relentless, increasingly artificial-intelligence-driven feeds, Big Tech is conducting a successful attack on that richness, that expansiveness, that freedom. To survive it, and to build something better, we need to rethink attention itself.

Vivian Dehning

How do we attend? The answer has changed across history. For Saint Augustine of Hippo, writing in North Africa in the fourth century, authentic attention placed us in relation with the divine. For Saint Ignatius of Loyola, holed up in his cave in Catalonia in the 1520s, what he called "attentive contemplation" was both a daily practice and a moral imperative.

During the Enlightenment, close attention emerged as a virtue essential to knowledge and disciplined investigation, as demonstrated in 1740, when the naturalist Charles Bonnet conducted a vigil of 21 days, daybreak to nearly midnight, to study the life cycle of a single aphid. At the dawn of the 20th century, the American philosopher William James insisted that voluntary human attention was the linchpin of free will.

By that time, some laboratory researchers had begun to turn their attention to attention as a subject of explicit scientific inquiry. One of the first to undertake such investigations was James McKeen Cattell, a German-trained American at the University of Pennsylvania. Dr. Cattell, the first professor of psychology in the United States, used a fast-snap shutter to flash a few letters for a tiny fraction of a second. The test subjects then repeated back to him as many letters as they could remember. Observing a range of results, Dr. Cattell concluded that they reflected a significant feature of cognitive ability: what he called the "span" of attention.

Subsequent researchers used the attention span metric to identify children's mental "deficiency." Still other scientists began looking for daily attention patterns. The quantitative study of human attention had begun, and with it a pervasive program to sort and grade and optimize our attentive capacities, as measured while sitting in front of screens.

Today we think about attention spans as a matter of duration, something that can be measured in seconds or minutes. Dr. Cattell's early research, by contrast, mostly focused on the span in a spatial sense: How many objects could a person take in at a glance? Laboratory studies of how time affects attention weren't far behind, largely driven by the application of quantitative psychology to the needs of 20th-century warfare.

Such was the remit of the British psychologist Norman H. Mackworth. From his laboratory at the University of Cambridge, Dr. Mackworth and his applied-psychology colleagues were studying how to improve automotive safety when geopolitics intervened. In 1940, as the Battle of Britain raged, he was recruited to conduct highly classified research into human interaction with a different kind of machine, the airplanes that the Royal Air Force was flying across the English Channel on dangerous missions against German U-boats.

In these sorties, the Allies were armed with a powerful new technology: air-to-surface vessel radar that could scan the choppy seas beneath a bomber and detect hidden submarines.

But really, it was the person using the device who did the detecting. These delicate and expensive radar devices sent microwave signals down to the water and then, when they bounced back up to the receiver, registered them as a luminous speck on a small screen. If no human being saw that flicker, the U-boat remained invisible and the whole system was useless — a multi-million-dollar paperweight in the roaring cabin of an R.A.F. Wellington.

To avoid that outcome, Dr. Mackworth set hundreds of young recruits in front of a specially designed clock whose second hand would every so often skip forward a double beat, and asked them to record when the skip occurred. From this experiment emerged a major finding he called "the vigilance decrement": After around 30 minutes of staring at the clock, the test subjects started to miss a lot of skips. And if they were missing those skips in the laboratory, they were likely to miss those crucial blips in combat.

In most of human life, this kind of error wouldn't have mattered. For a cave-dwelling Homo sapiens, it was certainly advantageous to be a vigilant night watchman, but the stimulus you were waiting for wasn't a tiny speck on a screen; it was, say, a 10-foot tiger. Figuring out how to retrain the modern mind to attend to these subtle mechanical stimuli was a new kind of life-or-death challenge.

From those bombing raids above the English Channel was born one of the major research projects of the war years and of the Cold War era that followed: Human Factors Research, which worked to quantify and assess human behaviors in relation to machines. The clock used in those experiments came to be called the Mackworth Clock, and it is still used in research today. As for the specific line of research Dr. Mackworth led, it developed across the 1950s and 1960s into a specialty known as vigilance studies.

The question driving vigilance studies was how to keep humans attentive to dull and remote screen tasks. This meant the control room of the era's automated factories and power plants and the silent watchfulness of nuclear diplomacy. Vigilance studies lay at the heart of the Cold War military-industrial complex.

Unlike the time and motion studies of the first industrial age, this was a time and nonmotion study. The screen was now the primary interface between machines and their increasingly sedentary users.

Dr. Mackworth and his colleagues experimented with alerts and buzzers. They pioneered ergonomic displays. They tried dosing subjects with amphetamines. (Modern approaches to A.D.H.D. use drugs from the same family.) Above all, Dr. Mackworth and his fellow attention scientists refined metrics that tally the human capacity to stay focused on a device.

The man who replaced Dr. Mackworth as the head of the applied psychology unit in Cambridge, Donald Broadbent, was another researcher with military experience. His particular interest was exploring the maximum number of commands one person could process — a question that had immediate consequences for a Navy officer who might be getting reports from multiple aircraft spotters that he had to relay to the men working the guns. Mr. Broadbent came to see human attention as essentially a matter of information management, what he described as a “filtering” problem to be resolved by clever techniques that tagged and prioritized the most useful inputs. His diagrams depict human attention as a series of tubes and valves. They are flow charts for data, in which human attention functions as a mechanical contraption.

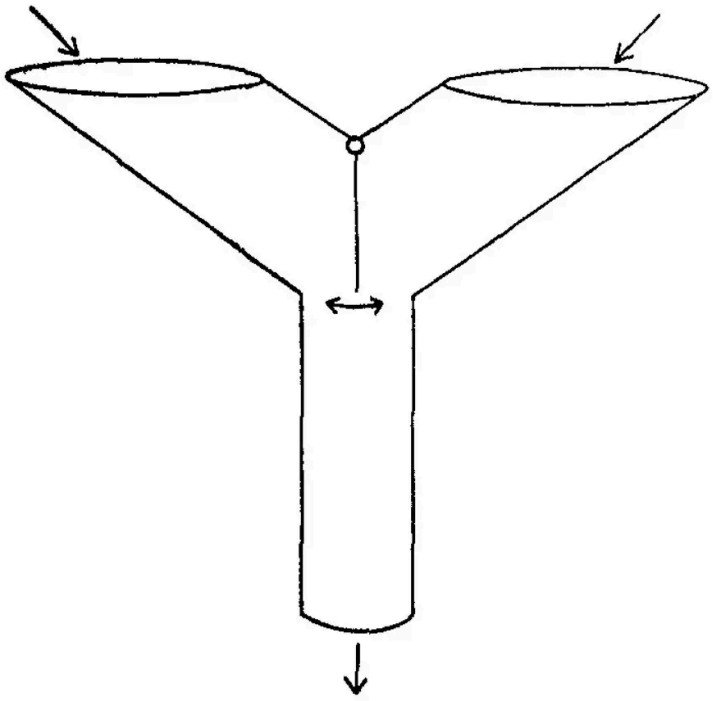

FIG. 1. The simple model for attention.

A mechanical model for human attention and immediate memory, Donald Broadbent, Psychological Review, 1957.

An array of stuff comes into the senses, but only some of it goes down to the brain. Attention, for Mr. Broadbent, was that little valve in the diagram that can swing right or left, determining what bits of the world make it to the mind. It's a long way from Saint Augustine.

This mechanistic view of attention would prove useful in contexts far removed from battle. In casinos, for one: A new generation of electronic slot machines used carefully calibrated feedback to induce what the anthropologist Natasha Dow Schüll has called the "machine zone," a state of passive, frictionless and highly addictive engagement that kept gamblers' eyes glazed and their hands on the lever.

Yet the ultimate realization of all that research into random pings, flashing lights and endless interaction isn't a peacetime pursuit. It's the war for consumers' attention that's being waged on the portable computer in your pocket.

The mechanical understanding of attention has transformed our world. It underpins the sophisticated data surveillance operation that works to monetize tiny movements of our eyes and minds. It fuels the six largest corporations on the globe, representing $19 trillion in market capitalization. The recent rise of super-powerful artificial intelligence marks an epochal escalation in this already staggering project.

A.I. systems are currently using all their smarts (and all our data) to figure out how to needle and cajole, seduce and suborn, to maximize human "engagement" — i.e., quantified attention. And they are winning. The philosopher (and former Google ad strategist) James Williams has called this extractive enterprise the "killer app" of the new generation of A.I. Because these largely unregulated systems, at work on children and adults alike, constantly aim to manipulate what we see and want, they constitute nothing less than a bio-hack at the scale of Earth's population.

Many readers will know that the past decade's most important article in A.I. research, and one of the most cited scientific papers of all time, is entitled "Attention Is All You Need." Written by eight Google researchers in 2017, this landmark text lays out the fundamental architecture of the machine-learning system now at the heart of the attention economy. What is the "attention" of the title? Amazingly, it has exactly nothing to do with our human ability to give our minds and senses to the world. Rather, it is the name the authors give to a mathematically precise way of computing and ranking information in complex data sets.

A more machine-driven, more purely functional notion of attention is impossible to imagine.

Does it need to be said? We are not machines. Our lives are not data problems that can be quantitatively optimized. And the actual human ability to attend is something much more expansive and much more beautiful than a tool for filtering information or extending our time on task. True attention lies at the heart of personhood: reason, judgment, memory, curiosity, responsibility, the feeling of a

summer day, the burying of our dead. All of these require and activate our presence. As for mental functions that can be measured and indexed — and ultimately bought and sold — they are precisely the kind of attention we need to escape. That is the paradoxical legacy of Dr. Cattell, Dr. Mackworth, Mr. Broadbent and their ilk, who sliced and diced attention in the lab, bequeathing to us attentional lives that are relentlessly priced by machines.

The French mystic and political activist Simone Weil was a rough contemporary of both Dr. Mackworth and Mr. Broadbent. In 1943, when they were conducting their experiments, she was on their side of the channel — a Jewish refugee from Paris, working for the Free French in London. She would die of tuberculosis before that year ended, a hero of the resistance and a martyr for an uncompromising and intense vision of the human spirit. She, too, was a theorist of attention, but of a very different kind. Here is what she wrote on the topic in her notebook, published after her death: "The authentic and pure values — truth, beauty and goodness — in the activity of a human being are the result of one and the same act, a certain application of the full attention to the object." This is a theory of attention rooted in love, care and commitment, an ethics of attention that cannot be sold or stolen.

We must orient ourselves toward that vision. Defeating the forces that frack human beings in order to extract the financial value of their attention is going to require a broad movement: parent activism, new legislation and regulation, novel forms of consciousness raising and collective resistance. It is going to demand fresh civic commitments as well as personal dedication. Call it attention activism or even, as we have come to think of it, a new politics of "attensity." This promises to be one of the central challenges of the decade ahead, an emergent movement for well-being, justice and flourishing. For freedom.

All of this begins with a key recognition: True attention cannot be measured by a machine. The fullness of our authentic human attention, shared with others, is the power with which we make the world. It's worth fighting for.

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Southwest, the Toronto International Film Festival and the Tribeca Film Institute, co-directed the short film "Twelve Theses on Attention." Peter Schmidt is the program director of the Strother School of Radical Attention in Brooklyn, which he co-founded. The authors co-edited the book "Attensity! A Manifesto of the Attention Liberation Movement," forthcoming from Crown in January.

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