MULTITASKING, DISTRACTION, AND VULNERABILITY: HUMAN SECURITY IN A DIGITAL AGE

Date: November 18, 2024

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KEY EVENTS

On November 18, 2024, Dr. Gloria Mark presented *Multitasking, Distraction, and Vulnerability: Human Security in a Digital Age* for this year's West Coast Security Conference. The presentation was followed by a question-and-answer period with questions from the audience and CASIS Vancouver executives. The key points discussed were the correlation between technology use and attention spans, human interventions with AI, and regaining control over our attention spans in the digital world.

NATURE OF DISCUSSION

The modern use of digital devices presents a paradox: despite being designed to enhance human capabilities, devices are often linked to higher stress levels and reduced productivity. The mind contains limited attentional resources and is hindered when completing multiple tasks at once. Regaining control over our attention requires being conscious of both automatic and intentional actions whilst reaffirming personal goals. Dr. Gloria Mark is author of "Attention Span: A Groundbreaking Way to Restore Balance, Happiness and Productivity" and writes a weekly Substack titled "The Future of Attention".

BACKGROUND

Presentation

Dr. Gloria Mark noted that stress has been determined to be an epidemic of the 21st century and that the mainstream use of technological devices, while designed to extend human capabilities, produces a surplus of information that poses cognitive barriers to the human mind.

She explained that the brain has a limited capacity for attention; neuroscience imagery substantiates this, showing that blood flow in the brain changes corresponding to the extent that a person remains focused. Multitasking or remaining focused for extended periods of time exacerbates a person's mental workload and draws from a limited pool of mental resources.

Dr. Mark studied the relationship between people's use of devices and attention span in order to better understand how people are using technology. Her studies use a variety of sensors to measure heart rate, facial detection, and other indicators of attention duration. The results measuring focus averaged to be approximately two and a half minutes, but when switching between window application browsers, attention duration averaged to be 47 seconds. She also found that people tend to change screens about 566 times a day, leading the mind to make rapid, cognitive switches that regularly interrupt personal work, for example by checking emails. While the myth of multitasking suggests that doing multiple tasks simultaneously is productive, Dr. Mark suggested that people are not wired to be able to do two or more things at the same time, unless one of these tasks is automatic, such as walking and texting. In reality, multitasking entails shifting attention between different tasks and this has been clinically proven to lead to mistakes. For example, a case study of physicians who switched their attention rapidly made errors in 208 out of 239 written prescriptions. Essentially, a switch cost — the amount of time it takes a person to reorient to a new task — occurs, which interferes with the ability to concentrate on the next switch.

Dr. Mark's research illustrated a high correlation between switching windows on computers and stress as measured by heart rate monitors and other sensors. Multitasking is similarly associated with high systolic and diastolic blood pressure and presents a harmful cycle in which being interrupted leads to stress and fatigue, which hinders executive functioning, or the filtering out of peripheral distractions, from taking place. This fatigue can then lead us to become more susceptible to interruptions. Furthermore, Dr. Mark's experiments involved an emotion detection software which measured facial expressions for participants across two groups: uninterrupted or interrupted in their tasks, in which they were measured as having neutral and angry expressions, respectively.

Dr. Mark distinguished attention into categories of engagement and challenge, mapping out attention spans of 42 information workers and identified a rhythm of focused attention with peaks and valleys. Firstly, a person that is highly engaged and challenged is labeled as being in a focused state. Next, a person that is highly engaged but not challenged is referred to as being in a rote state of attention. Thirdly, a person that is not challenged nor engaged is in a state of

boredom. Lastly, a person that is highly challenged but not engaged is labeled as being in a state of frustration. This pattern illustrates that people comprise limited attentional resources, in which they move between the peak of their resources or reach a peak after becoming replenished from a lower operation point.

Noting the commonness of AI across information work, Dr. Mark stressed that AI is not empathic nor explanatory, lacks human reflection, and does not understand the user, illustrating the importance of considering how humans can best work with AI. Whereas AI is skilled in completing clear-cut tasks like calculations, humans are better skilled at working with ambiguity. Finding a space to merge human intelligence with the skills that AI offers is critical to form a synergistic relationship and human intervention and oversight is crucial to monitor and ensure results are accurate. Setting conventions on how AI may be used in the workplace across different tasks and oversight, while considering that people have a natural tendency to think independently is crucial. Dr. Mark also warned against blind trust in AI and the output it produces, given that many large language models have approximately a 14% error rate.

To regain control of our attention in the digital world, it is essential to consider controlled processing versus automatic processing. The former refers to habits in which people are conscious of their actions, such as staying vigilant whilst reading an article and conducting an analysis. The latter refers to automatic habits like checking the news without thinking. Dr. Mark noted that the lure of the internet and the ability to access information in seconds supports the development of automatic habits. Becoming more conscious of these automatic actions can allow us to develop meta-awareness, in which a person is aware of what they're doing, as opposed to using automatic actions that come from habit. This is a skill that may be developed from recognizing when automatic actions take place and pausing to consider if they are efficient in the moment, leading one to become more intentional in their actions and keep a clearer track of personal goals.

Dr. Mark concluded by reflecting on the importance of taking sufficient breaks to maintain focus. Instead of using digital tools to be as productive as possible, enhancing feelings of positivity is needed to build engagement and wellbeing.

KEY POINTS OF DISCUSSION

- Multitasking and the shifting of attention rapidly is shown to increase stress, negative emotions, and produce more errors across tasks.

- AI lacks human reflection and requires users to work harder to be understood; we must merge human intelligence with its strengths and remain cautious, as even top models still have notable error rates.
- We can move towards regaining control of our attention in the digital world by considering controlled processing versus automatic processing in our daily lives.
- Taking sufficient breaks and balancing work tasks with simple, engaging activities aids productivity.

FURTHER READING

Borghouts, J., Eikey, E., Mark, G., De Leon, C., Schueller, S. M., Schneider, M., ... & Sorkin, D. H. (2021). Barriers to and facilitators of user engagement with digital mental health interventions: systematic review. *Journal of medical Internet research*, *23*(3), e24387

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