

MIND CHANGE: HOW DIGITAL TECHNOLOGIES ARE LEAVING THEIR MARK ON OUR BRAINS

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ABSTRACT

This is a review of Susan Greenfield's book *Mind Change: How Digital Technologies are Leaving their Mark on our Brains*. In her book, Greenfield introduces a new field, which is the impact of technology on thinking. The book reviews scary threats of using technology in the digital age. It presents the latest scientific studies and research about how digital technology destroys the mind and affects it deeply and negatively impacts the community.

Mind Change: How Digital Technologies are leaving their Mark on our Brains, S. Greenfield, Penguin Random House, New York, USA, (2015), 348 pp.

KEYWORDS: Technology, Mind, Brain, Change, Impact

INTRODUCTION

The first industrial revolution provided a new transportation such as a car or a train, and that led to a weakening of physical and mental human capacities. Today, it may be even more dangerous to use digital technology as a result of the information technology revolution, because it might deprive humans of the ability to concentrate and think. Susan Greenfield understood the meaning and the importance of the impact on the mind, as well as the surrounding community for those addicted to digital technology. *Mind Change: How Digital Technologies are Leaving their Mark on our Brains* is a unique book in its use of examples of how digital technology destroys the mind and its affects on the community. Greenfield uses the latest scientific studies and research in this book. The book depends mainly on three core principles: 1) the impact of social networking on social relations; 2) the impact of video games on focus, addiction, and violence; 3) the impact of search engines on learning and memory.

In this book, the latest scientific studies and research introduce that technology is not only a source of addiction, but also poses an existing threat. So how can one harness new technology to create better alternatives for future and meaningful lives, before technology turns humans into slaves and people exist only to serve? The author Susan Greenfield considers that technology creates a new environment with many important impacts social relationships, addiction to technology, less focus, more violence, and less learning and memory. Because the human mind adapts it senses and rearranges the order of wiring in the brain in a new form. Each chapter of this book has a topic that is discussed by the author and supported by the latest scientific studies and research, proving its ideas and clarifying its points.

The author, Susan Greenfield is a research scientist, writer and broadcaster in neuroscience and mental health. Greenfield has published a wide range of books on the mind and brain. Greenfield is also a professor at Oxford University in the UK. Her extensive experience allowed her to write this interesting book that includes different types of impacts on the brain.

The title of the book is a reflection of its contents. The latest scientific studies and research reflects past technology use especially the Internet on the human mind. Those who use technology contributed to the reduction in face-to-face social relationships. Greenfield has outstanding experience in the field of technology and its impact on society. She impressively induces the reader's excitement by explaining the title in a distinctive and clear way to make it easier for the reader to understand things in a simple way. Each chapter begins with an introduction that explains its topic and ends with the author's final thoughts and latest scientific studies and research related to the topic.

In the book Greenfield, explains that the "digital culture" will lead to terrible changes in people's mental and physical body systems. In spite of all the appreciation for what has been offered and will be offered in the field of technology, warnings that the intense use of the Internet, social networks, and video games will have a profound negative impact in society should be considered. The book can be viewed as invaluable for researchers and readers interested in the technology field and the impact of technology on the brain and thinking, by providing a unique and distinct experience from the real world. This book reveals the repercussions of the physiological, social, and cultural complexities of life in the digital age, and calls for work to ensure that the future of technology enhances - and not discourages - deep thinking, and human creativity.

Greenfield concludes that as long as the human mind automatically interacts with the environment that surrounds its owner, it must be realized that everyday experiences with digital technology will in some way affect the mind, and thus the way of thinking.

What is interesting about this book's focus, change of mind, is the old idea about technology and the decline of civilization. The book gives paradigms on how the addiction to technology can destroy life as in the story of a Korean couple that was addicted to video games and lost their newborn daughter because of lack of care and hunger. Neuroscience is the domain that seeks to be scientific governance in the social issues. In fact, according to Greenfield a healthy mind is like a healthy society. Just as individuals change with the passage of time, as well, the neurons change, from the exploratory flexibility in young adulthood to maturity and restraint in the stage of adulthood. The brain becomes a mind through consistent neurological collections that work together efficiently until one gets out of adolescence. Humans get to the peak of self-consciousness when they gain the logic of the past, present, and future in the decision-making process, and the opposite is the inattention.

The author discusses all kinds of technology that surround people today, and how people are able to get information directly and immediately and also make connection with other, gaining experiences vivid and distinctive. On the other hand, it leads people to lose privacy rapidly. Greenfield warned for years of the danger of computers and the Internet after they moved from the office to living rooms and the pockets of individuals and impacted people's personal lives. The pioneering work submitted by the author of informational theories, Marshall McLuhan, in the 1960s, made it clear what has happened to us from the electronic age. He has confirmed, along with the owner of big vision in the world of computer, Douglas Engelbart, that the digital tools increased human intelligence and reinforced correlated democracies.

But others, such as psychologist, Sherry Turkle, in her work, *The Second Self*, in 1984, talks about the first generation of children who grew up with computers and how they moved from optimism to honest criticism. Another writer in the field of technology, Nicholas Carr, describes the life of the digital mind as superficiality.

The model of Greenfield is different because it emphasizes the incompatibility between human and machine and how it has impacted the brain. This is an important difference from the prevailing views of how technology impact humans. Moreover, Greenfield examines how to use the digital technology in itself such as video games to combat its harmful effects. Greenfield offers a strategy composed of four elements to face the mind change. These are to provide more space for experts in the traditional media, to conduct surveys of the technology communities worldwide, to intensify the financing of laboratory studies, and to use computer software to address the shortcomings caused by the excessive presence of the screen. In the early twentieth century, William Ogburn, the prominent sociologist, was asked, how can human society evolves while biology has not changed in 25,000 year? His answer, which introduced the concept of technological change, was new at that time. In his controversial book *You and Machines* (1934), Ogburn compared copper-skinned Indians with the native population of the machine age. He showed how in less than one generation they got rid of the nature and tradition restrictions. Ogburn does not judge the rapid technological advances as good nor evil in isolation from their effects. No one can stop it, and this is what the experts (which he is one of them) are helping the government, industry sector, and individuals to adapt to.

Greenfield wrote about the impact of social networks on identity and social relationships, the impact of video games on focus, addiction, and violence, and the impact of search engines on learning and memory.

The book indicates that the social networks, though they have the ability to enhance genuine friendships, instead are at the expense of lost time the human have to practice sports or read a book. Then the writer believes that the generation of "YouTube" is more interested in expressing it self than attention to know the world.

MySpace and Facebook are creating a youth culture of digital narcissism; open-source knowledge sharing sites like Wikipedia are undermining the authority of teachers in the classroom; the YouTube generation are more interested in self-expression than in learning about the world; the cacophony of anonymous blogs and user-generated content is deafening today's youth to the voices of informed experts (p. 7).

Greenfield considers in her book, that because of the social networks identity is not same. No longer do human beings know someone as a neighbor. For example, an intimate knowledge became an electronic knowledge. So Greenfield warns of the smart phones and social networks, weakens social networking skills, increase of loneliness and the phenomena of jealousy, and damage of human minds in general. Greenfield has long expressed such warnings of the negative effects of technology, which has already been delivered in a speech years ago in front of the United Kingdom's House of Lords, she said: "I think it would be for social networks like Facebook a great impact on the brain systems, it will lead of the human mind by the middle this century to become a completely childish, and prone to falling into the mazes of omissions and the inability to concentrate and shaky sense of identity" (p. xiii, xiv).

Greenfield sees that video games could strengthen skills related to attention, speed of movement, and focus on the goal; but spending continuous and long time in the exercise of these games reduces the ability of continuous attention. In other words, the greater the communication with the digital culture, including video games, the greater the sense of isolation. With increasing the addiction to this culture, and with these changes begin mental changes, so decreases the

mental focus and decrease the degree and period of attention. American Studies in 2012 showed that the school student ages 10-13 years played video games an average of 43 hours a week, which decreased their reading hours by 30% and also decreased their doing homework hours by 34%.

According to the Greenfield vision, the reading books are, the best way to learn, but others may refuse especially young people in this category. The writer also focused on the another issue, which is the role of the Internet in low memory capacity; saying: "Why remember a student the answer of multiplied nine in nine as long knowing that the solution in the smart phone or computer? Even the names anyone can type the first name to his friend in the search engines to remember his friend name fully " (p. 219,220). The author believes that the electronic search mechanisms plunge their generation of users in the ocean of surface answers to the trivial questions; the human mind capacities about serious and depth of thinking.

One of the amazing points that Greenfield wrote about is that the brain enjoys the developmental ability to adapt with this environment, and the digital world is changing more quickly than individuals and governments are able to keep up with. This leads to destruction of many lives and a sharp decline in children's activities outside the home. Moreover, the author's shows that the lack of the Internet world to the causal sequence and immediate consequences and submit it an immediate access to information without any direction or guidance, led to shrinking the extent of our attention and the decline of our depth thinking, and wilting the relations between people. Perhaps the most affected population of the native digital age was bred in the volatile environment the thousand years of evolution upside down.

This book has many strengths. It offers several important warnings and associations in a way of people using technology to prevail in this digital age and its impact on their neural networks. This topic has been supported with the latest scientific studies and research that emphasizes the impact of technology on the human mind. There is a variety of information and frightening threats of the use of digital technology and its impact on the depth of thinking and memory, social communication skills, and the mental focus and stamina and patience. The book introduces to the audience a chart for the way of the future. It provides information about mind change alerting people about these warnings to take caution.

This book also has some weak points. It represented dialectical book rather than to put some alternatives or solutions to be more useful and influential. The author focused a lot in the negative side effects of technology and ignored the positive side. Also the author did not mention any serious attempts to address these risks and threats.

CONCLUSIONS

This is the human brain with digital technology, where the digital revolution that exploits tendency the human to heedlessness. The author reached through the laboratory studies that the social networks and video games raises addictive in the same way raised by junk food. Furthermore, the writer claimed that because cyberspace of causal sequence is lacked, it allows instant access to the information without guidance, shrinks attention, lack of deep thinking, wilt of personal relationships and lack of human talking face to face as conversely it can add a friend by clicking on a link in Facebook. This is more harmful to the digital people, with a rapid change in their minds adapted with all new technology, which were born in an environment that has evolved across thousands of years.