

The Socio-economy of Surveillance Capitalism in the Context of User Cognition and Psychology

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ABSTRACT

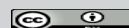
This paper contains a critical reflection of Surveillance Capitalism and its practices, especially in the context of AI-algorithms from the perspective of cognitive and behavioral science. While it focuses on younger generations, specifically those, who grew up with modern technological devices and high social media exposition, the effects of the latter prove to be dramatic — in terms of critical thinking and questioning, bias, misinformation and mental health. This modern form of the implementation of ultra-strong algorithms is a well-documented opportunity for big data companies to earn unimaginable amounts of money, but the socioeconomic effects on different societal groups are all but positive. While a lower general user intelligence (GI) suggests a higher risk of negative individual impact, it will make sense to differentiate a number of key aspects in the investigation, such as societal vs. individual effects, GI, exposition amount and bubble phenomena, as well as different social networks.

Keywords: Surveillance Capitalism, general intelligence, AI, algorithms, big data

The observations in this paper touch upon fundamental growing concerns in modern society, where there appears to be an increasing disparity between rapidly advancing technologies and human cognitive capabilities. With computing power doubling every other year, big data companies have transformed personal data of consumers into a lucrative currency, that has made them the most valuable companies that have ever existed in history. Because these massive amounts of data, that are interconnected in complex manners, can no more be handled by humans, there are powerful Artificial Intelligence algorithms, that create sophisticated profiles out of the raw data, that make it possible so predict human behavior with increasing accuracy. These practices do happen without consumers' awareness or consent, at least to an extent. While little regulated, and due to their operations, subject to many different jurisdictions, big data companies have come a long way in collecting detailed profiles of users, that are sold in order to

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tailor advertising to a highly personalized extent. While this model of gathering intelligence on consumer profiles is a highly valuable stake in digital environments, the shape and form of most digital contents have shifted towards particular content forms, that specifically support the increased display of such ads. It is naturally in the best interest of the mentioned companies, to increase the engagement on an individual basis, which is mainly operated by artificial algorithms, that selects displayed contents based upon the aggregate data transformed into psychological profiles. While this raises privacy and legal concerns, the investigations of this paper will show, how sophisticated the system is, how large the investment stakes are in the business, and how far we can shed light on the practices exhibited. While the aforementioned phenomena are termed *Surveillance Capitalism*, there have been observable psychological phenomena in younger generations, of which almost all fall under the mentioned consumer category, that raise concerns among scientists and educators. While many of the observations have been hard to quantify and investigate, some have been well-established and strengthened the argumentation of critiques. From my own experience, I will draw on a number of observations, that suggest a high probability of being linked to digital exposition. While obviously subjective, the observations could be confirmed through peers and will show to be disjointed from single settings or limitations that would bias the perception too much. However I acknowledge the still prevailing limitations in evidence, but suggest that the general topic be integrated in the discourse of psychology, sociology, educational and computer science. Digital literacy is still at a very early stage when it comes to understanding subversive mechanisms at play. Skillfully concealed through the impression of being free of charge, social networking services deliberately hide their intentions to compile sophisticated consumer profiles, and especially young generations fall prey to manipulation and prediction of behavior. The more subtle and well-hidden these mechanisms operate, the higher the potential for skillful altering of human behavior. Lastly, this paper aims to present an outlook onto the potential damage the little amount of regulation of these practices might have on future generations, while some of the detrimental effects do already show. While we have no clear evidence yet, how much of the shift in attention spans, *Clip Thinking* phenomena and general distraction levels are safe to be considered direct consequence of specific exposition to digital media, we can already assume, that well-evidenced neurobiological processes like neuroplasticity are bound to change human cognition and subsequently, behavior. Thus, it is only logical to assume, that the effects of ever-growing, disjointed, shallow contents, enriched with manipulative advertisements, will have detrimental effects on human cognition and psychology.

Understanding Surveillance Capitalism

The term *Surveillance Capitalism* was introduced likely in 2015, when S. Zuboff described, how the new logic of data accumulation made personal user information similar to an important corporate currency. As a prominent example, the business practices of Google were analyzed. Data was found to be a source of profit, arguably the most valuable one in the age of digital marketing. Their key use patterns of the accumulated user data were the extraction for further analysis (i. e. establishing psychological and behavioral profiling), monitoring, the subsequent personalization of particular services and the implementation of continuous experiments. Interestingly, there are extensive power dynamics at play, when it comes to the utilization of vast amounts of collected personal and behavioral data information. In the modern age of information technology, the majority of advertising happens on the internet. According to recent market research (as of June 2023), conducted by Magna Global, in their press release, they found

digital advertising methods likely reach an account of approximately 69% of total global ad sales, which, at the time of publishment, equaled a mind-boggling USD 577 billion. This, naturally, leaves offline advertising, however structured, at a mere total of 31% (Magna Global, 2023). Those numbers indicate the high importance of online media when it comes to marketing and advertising and the enormous absolute amounts of money spent therefore globally. Note, that the numbers mentioned are on an annual basis, with a presumed growth rate of 8.5% for the year 2023 (*ibid.*). The marketing intelligence service eMarketer expects a total amount of well over 870 billion US-Dollars in 2026, as can be seen in the figure below.

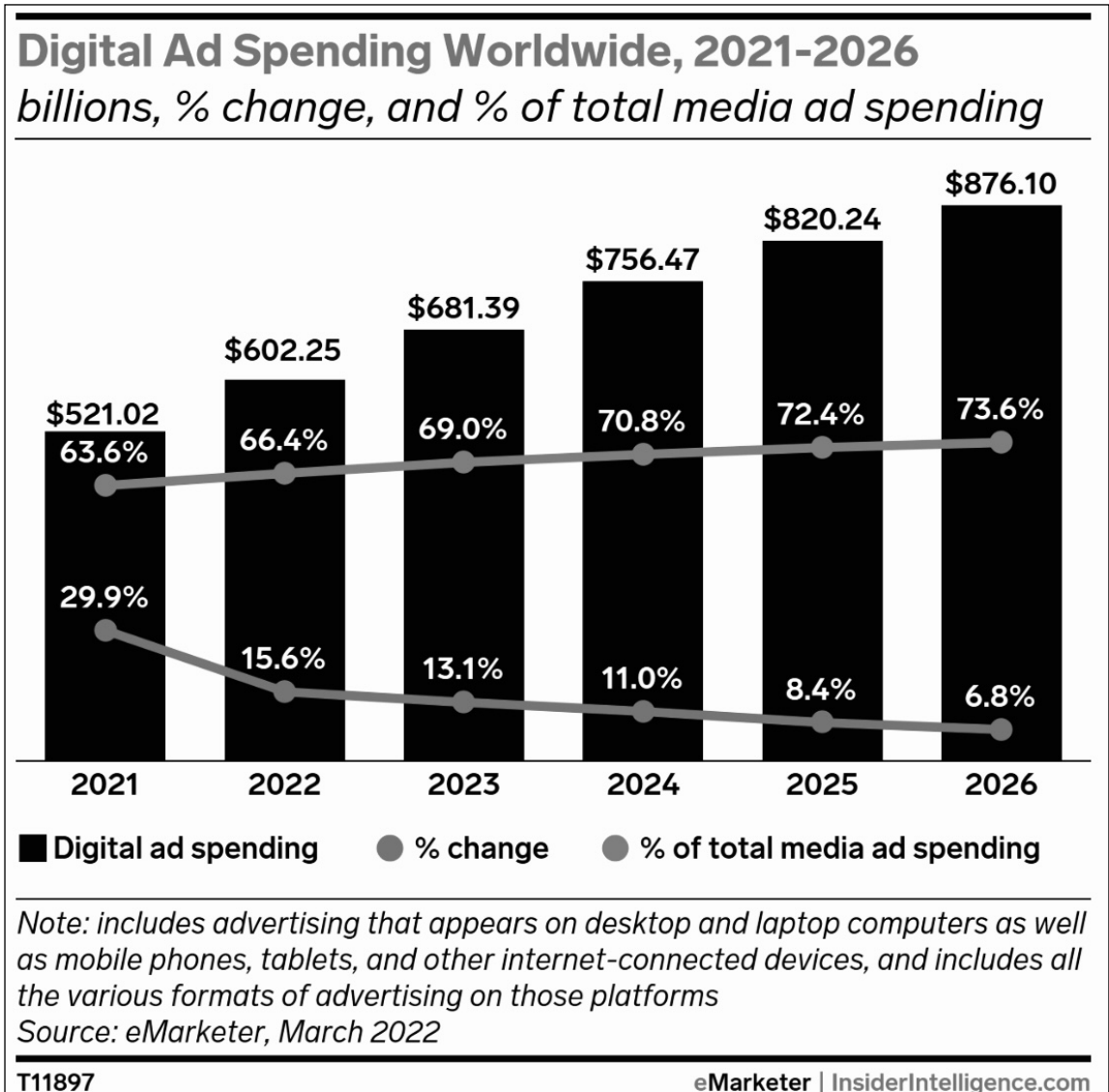


Fig. 1: Global Digital Advertising Expenditure 2021-2026, according to e-Marketer

The entire paradigm for this relatively new form of global expenditure demands for facilitation in some way. This happens through the aforementioned collection of vast amounts of personal data, eventually shaping the term “Big Other”, which relies on the mechanisms of extraction, commodification and eventually, control. The incredible monetary amounts that are globally spent on advertising are meant to be well-placed. For an advertising to reach its target and be effective (which equals turning the highest possible rate of displayed advertising into user action, and ideally a sale), it has to be displayed at the right place at the right time. While exhibiting psychological strategies is not at all a new practice in marketing — it has always quite possibly been one of the most valuable approaches to tailor advertisements in any way, shape or form — it is definitely only on account of the new form of data accumulation, that the targeting and personalization of advertising mechanisms has reached such high levels. The global technology giants have, under relatively weak regulatory oversight, expanded personal data collection and their subsequent analysis capacities to an extent, where there have been created whole new power dynamics among users and their counterparts (Aho & Duffield, 2020).

The term *Surveillance Capitalism*, hence, displays the practices that are exhibited without the explicit awareness or consent of users. The fact, that those surveillance structures do not happen, or are not established, in a unidirectional manner, however, necessitates an investigation approach so deeply complex (Rudschies, 2022), that it would possibly exceed any limit of comprehension or comprehensive display, for the sheer number of forces at play and the complexity of distribution of how power, hierarchy and surveillance is exercised. For that reason, our observation will presume, that there is a surveillance economy that has vastly shifted the paradigms of modern capitalism towards a mechanism that is capable of not only targeting advertising content with utmost precision, but that is also capable of predictive and manipulative intervention, to an extent, where behavioral prediction and sophisticated nuances of manipulation are employed towards an alienation of individuals from their own intrinsic decision-making psychology. The exile of individuals from their own behavior shows to be the most worrying part of modern day technology ethicists, such as Jaron Lanier and Tristan Harris, who are known for their advocacy for ethical designs of technological devices and platforms.

As early as 1982, Arrington raised concerns about advertising practices that employ behavioral prediction of consumers, arguing that such practices invade and violate consumer privacy and autonomy. Notably, at the time, there were no social networks that could have facilitated the vast amounts of personal and behavioral data, and it was already a concern in business ethics. Nowadays, where there are sophisticated profiles of users, the amounts of data that are processed in order to make those predictions, have become exponentially much more detailed and accurate. Since, it has become impossible to process the ever-growing amounts of data by hand, nowadays, there are highly accurate Artificial Intelligence models, that possess capabilities of processing data snippets through such interconnected reference data, that predictions of even the tiniest fractions of human behavior become possible. Many contemporary scientists (including myself) are concerned about these practices, where manipulation of human behavior happens on a basis of invading practices, that consumers are mostly unaware of. Investigations have shown, e.g., that accuracy of targeted advertising campaigns is enhanced by as much as 19%, if the algorithm factors in the location real-time data that is harvested from the user’s mobile phone pings. Machine Learning algorithms are nowadays capable of making behavioral predictions upon mobile advertising responses, preferences, buying habits and engagement patterns (Zubcsek *et al.* 2017). There are certainly risks involved that border the violation of consumer rights (Laux *et al.* 2021), but even more, I believe, it is an ethical question. In 2017, Malthouse & Li highlighted potential reinforcement of prejudices, processing

of biased datasets etc. to name a few ethical concerns that are linked hereto, raising legal questions in the discussion just as well.

In this particular context, the ultra-fast advancing computing power and Artificial Intelligence, that have grown at exponential rates in only a matter of a few years, oppose a rather static human intelligence level, that opts to withstand sophisticated manipulation through behavioral prediction and constant feed of subtle, well-placed information. It makes sense to visualize these perspectives:

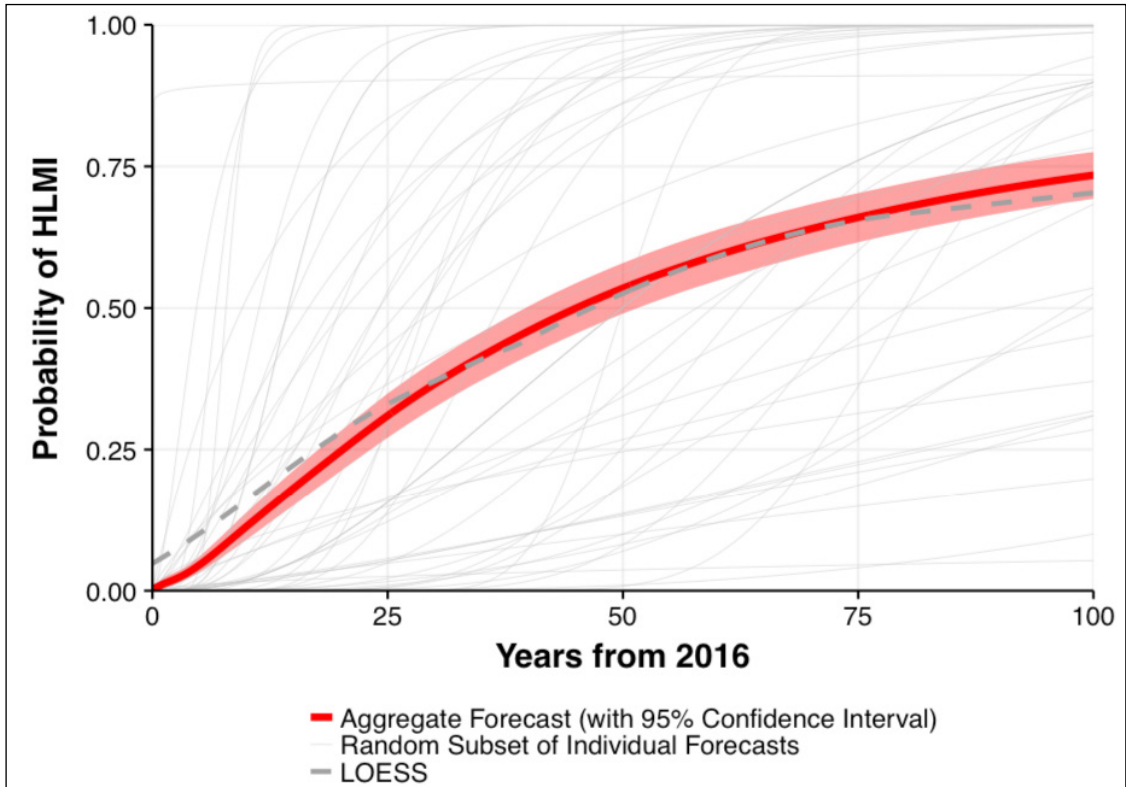


Fig. 2: Aggregate Artificial Intelligence Expert Forecasts of the probability of the occurrence of *High-level Machine Intelligence* (HLMI) (y) in (x) number of years. According to Grace *et al.* (2018), the mean shows a likelihood of 50% of HLMI to occur within 45 years from 2016

Furthermore, according to “*Moore’s Law*”, the evolution of computing observes a doubling in the transistor count per unit (chip) roughly each 18 months. That is, over the same timeframe, the cost in production halves.

Lastly, it is interesting to consult the phenomenon experts have termed *Singularity*, which is deemed to be the point in time t , at which computing power in the form of compounded Artificial Intelligence exceeds that of all compounded human brains together. The countdown to *Singularity* has also been described as the *Kurzweil-Curve*, named after Raymond Kurzweil. This can be visualized through a graphical illustration of the computations per second, in the evolution of total computing power:

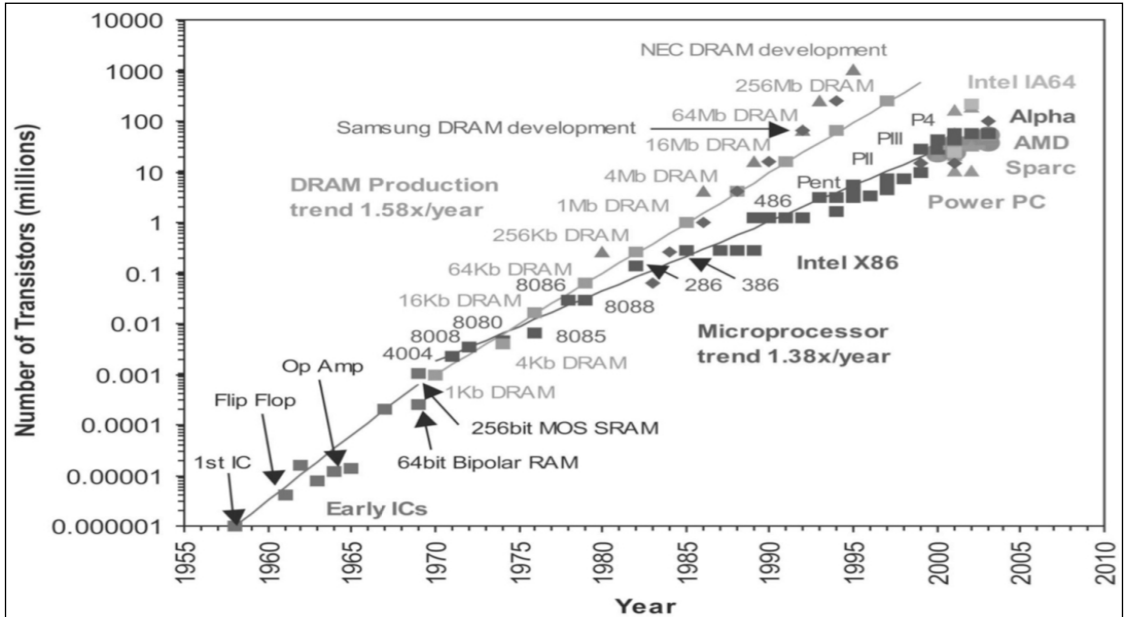


Fig. 3: Evolution of the number of transistors on selected microprocessors and memory ICs as demonstrated by Stojcev *et al.* (2004)

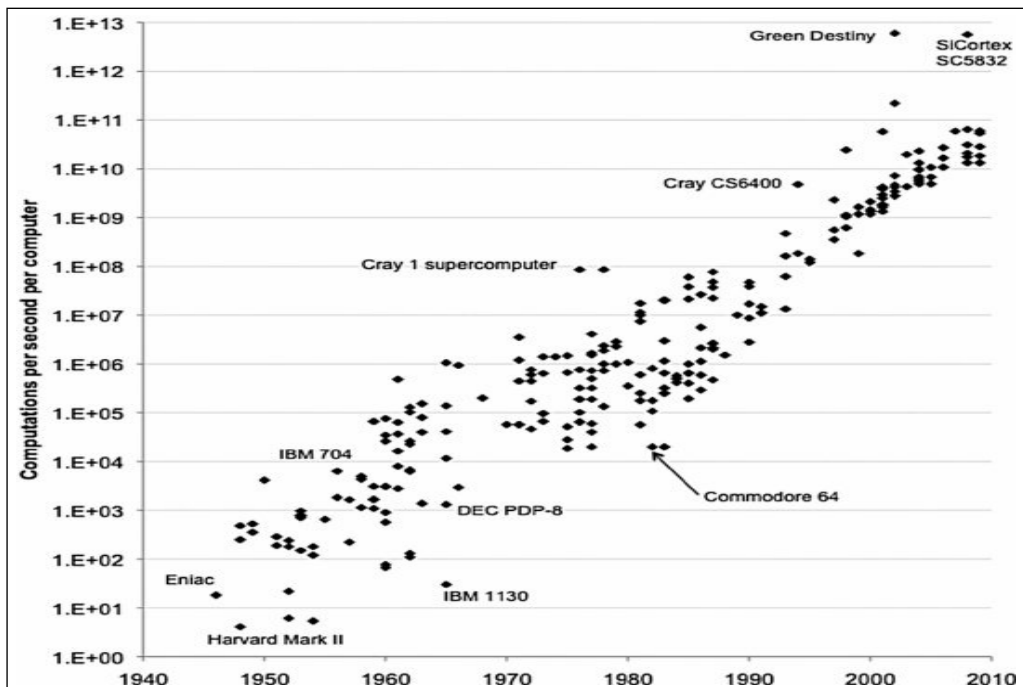
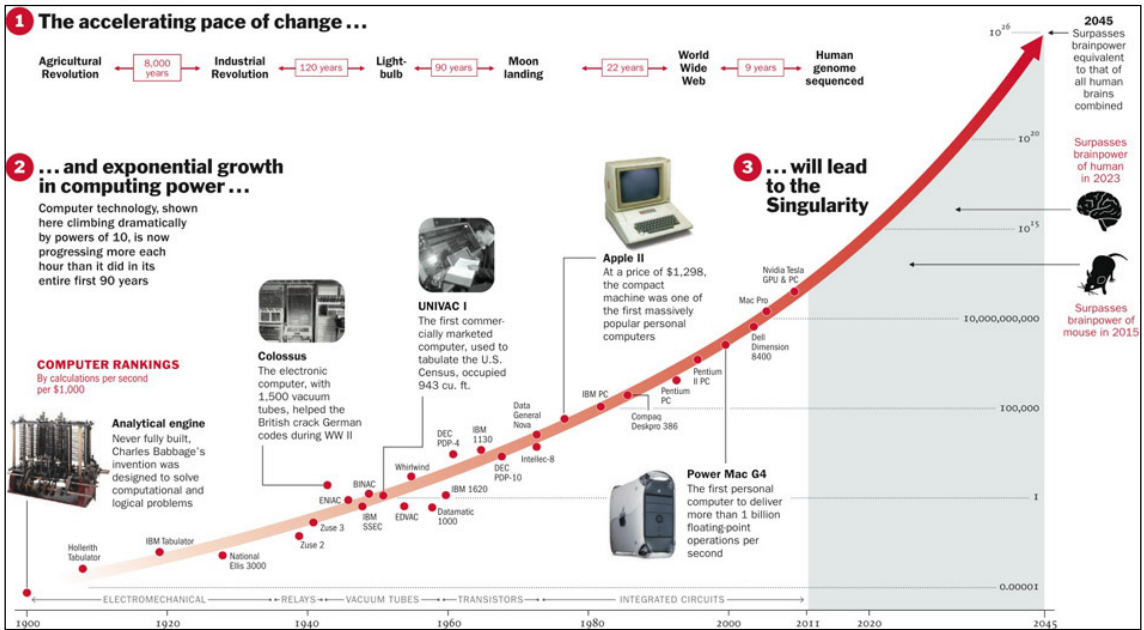


Fig. 4: Evolution of total computing power measured in maximum computations per second at t , as demonstrated by Koomey *et al.* (2011)

Fig. 5: Further comparison chart by Time Magazine, depicted in particular the 1.E+16 approximately equaling the computing power of a human brain, and 1.E+26 equaling the compounded human computing brain power on earth by the year 2045, which marks the threshold year in which the aggregate machine computing power is expected to exceed that of all compounded human cognitive capacity.



Clip Thinking: A Fragmentation of Thought in the Information Era

The term *Clip Thinking* is not widely known or recognized in cognitive science yet, however, the idea is supported by a growing number of cognitive and behavioral scientists. The *Clip* in *Clip Thinking* refers to the modern style of contents and information, that is presented on popular media platforms, especially since Tik Tok has risen in popularity among a younger audience. While social media platforms nowadays prefer to present content in:

- Easily digestible,
- Bite-sized,
- Disjointed
- Short-form

Styles on highly interactive interfaces. I want to mention from the beginning, that while the shift in content in this regard is a commonly accepted fact, there is mixed evidence for the phenomenon in discussion, that Clip Thinking is an *emerging trend*, rather than a cognitive processing style. According to Smith & Duggan (2013), the evolution of content presentation can be attributed to the general demand for quick and easy information, that is easily accessible and provided in rapid pace which mirrors modern day life. It is yet subject of an ongoing discussion in the psychological and sociological discourse, if that form of

content consumption has the discussed implications on general cognitive action in humans, impacting capabilities and changing behavioral patterns as well. In my reflective part of this paper, I will take these into deeper consideration, as well as the tendency to neglect critical thinking elements when consuming information, aligning with the general narrative of the prioritization of fast-paced, bite-sized chunks, especially in a disconnected manner, that requires little-lasting attention spans. My suggestion in this reflexive narrative will be, that there might be connections in thinking patterns, that are characterized by quickly shifting contents, bite-sized information chunks, that are quickly replaced, shortly memorized, and require little to no critical assessment, and the overall tendency to neglect deeper thinking patterns, that require sustained attention and focus with intricate involvement of critical assessment of information, validation and capabilities of discerning high- from low-quality content.

For this chapter, I will generally characterize the term *Clip Thinking* and the associated patterns that go along with it, as well as the prevalent opinions. As has been established in the previous chapter, the global advertising market is enormously competitive, with large sums of money spent to capture the attention of users, in order to maximize reach, visibility and eventually, turnover. It is natural, that the attention of a user, coming from this perspective, translates into money for the companies that intend to sell their products. For that reason, the transformation of the digital landscape to highly visual, interactive and quickly shifting content can be easily explained and understood. The volume of information is naturally overwhelming, since the human brain is not naturally wired to process such amounts of content in such short timeframes.

Thus, obtaining the undivided attention of a consumer, even if only for seconds, can translate into highly profitable monetization, when observed at large scale. And we are speaking large scale, remembering the staggering amounts that are annually spent in the business of digital marketing. In the same context, the provided content on numerous platforms has shifted to match these demands, so that it is discussed, whether these changes in information consumption have consequences that exceed the digital landscape. While there are researchers, who argue, that those shifts to bite-sized content reflect general paradigm shifts in the digital era, where a fast pace demands quick and easy information chunks (Vorderer *et al.* 2016), there are numerous critical voices that argue, that attention spans in consumers are notably decreasing, deep thinking capabilities are neglected and there is a reduced capacity for sustained attention in general (Carr, 2010).

There is an omnipresent barrage of information, that our brains can't naturally process at the pace it emerges, and the memorizing process would be totally overwhelmed if there were required longer attention spans for consumption. Again, I must make the reader aware of mixed evidence on the case matter, because there have been investigations on the *net loss* in cognitive capacity, where there were indications, that the *Clip Thinking* phenomenon rather poses an adaptation to information-rich environments with quickly consumed and digested informational chunks (Wang & Tchernev, 2012). There are a number of arguments that I want to hold against the idea, that information is retained just as effectively, but I will elaborate on that at a later point. What we should separate from one another in terms of this paper, is the perception of the phenomenon of *Clip Thinking* in general, from the suspected or alleged root in media consumption, or the shape and form thereof. As we have now established, the perceived phenomenon is tightly linked to a decline in attention spans in general. This alone is subject of scientific debate, with studies on self perception suggesting, that there is a general decline (Ettarh *et al.* 2018). Giraldo-Luque

et al. (2020) found evidence for general developmental issues and psychological shortcomings, among which attention span is mentioned, associated with the interactive — and thereby partially deliberately *addictive* — nature of social networks. While that is, an older investigation by Swing *et al.* (2010) came to the conclusion, that early exposition with screen media, especially video games, would later be associated with difficulties in sustained attention, that last through adolescence and adulthood. In the respective discourse, it has often been argued, that social networks, that are now powered by ever-increasingly powerful algorithms, require the user to stay engaged for as long as possible to increase their possibilities to display as many personalized advertisements as possible, per session. All of that is very well-summarized in many works of Jaron Lanier and Tristan Harris, and a growing number of their peers, who have, based on their careers in the respective field, gained valuable insights and crucial insider information on the practices that respective companies engage in, and on the intrinsic mechanisms of employing computational intelligence for the monetization of digital content. In my own reflective narrative, I will attempt to synthesize these assumptions and the scientific facts, that have yet been established, with my own experience and observations that I was able to make at various institutions.

Reflective Insights and Observations: An Attempted Narrative Justification

The topic in discussion is particularly difficult to outline, since there is still little evidence for many assumptions; many of which are based on observations and experience. Establishing joints and connections among raw data and quantitative investigations always leaves room for misinterpretation. On account of the sometimes little tangible or hardly quantifiable phenomena, it can be especially difficult to create a wholesome picture without bias. In social sciences, the number of parameters, that we can take into account when investigating a phenomenon reaching this deep, is sheer endless. Therefore, and to engage discussion, readers are invited to challenge the narrative, reflect on own experiences, or point out other aspects. For the scope of this paper, I will only employ a selection of the most important.

The experiences I have made during years of teaching secondary students at German schools, as a duty for scientific inquiry in educational science, were probably those, that shaped my opinion the most. While I could reflect on many of my own experiences, I had various opportunities to exchange them with peers, and it showed, that the ones they had made, had been no less worrying than my own. I have intentionally left out the discussion point of the addictive design of both mobile devices and their applications, especially, again, social networking platforms. Since the scope of this paper is limited.

In this chapter, however, the reader will become aware of the issue automatically. The attachment of students in age ranges from (roughly) 15 to 19 or 20 to their mobile devices, during or off class, was a burden for the teaching process, up to the point, where there had to be established the rule that all phones be handed to the teacher or placed in particular containers at the entrance. Each lesson, any teacher of any class would have to remind the students to put their phones into the containers. They would literally never do it automatically, just glimpsing at the chance the teacher would possibly forget to demand it. Unbeknownst to the students, I used many lessons of deliberately “*forgetting*” to observe their behavior. During lessons, where it became too extreme, I would order them to place the phone into the container — it was impossible to order them to put it into their own bag, because it would take a maximum of a few minutes until they had either forgotten about it, or a notification would urge them to take it out again, resisting the urge appeared impossible. In single cases, where phones rang, it happened, that a student could not even resist the urge to pick up the call — during class. They knew, that the consequence would

be immediate exclusion from class, yet they appeared to be unable to withstand the tempting device at that moment. The same showed at moments, when I ordered them to put the phones into the container, which was followed by standing up and walking in slow-motion, with their eyes glued to the screen until the phone was physically out of reach. Addictive patterns could thus clearly be observed. What could have been interpreted as a deliberate provocation, was on a deeper level concerning behavior, that could be compared to only obeying upon the classroom hierarchy, while having to literally fight an inner battle.

As concerning as that was, there were numerous such incidents that peers reported in similar settings, at a total of five schools where I inquired, having either been teaching there myself, or having maintained close contacts to peers, being in symposia for either English advisory or for the Chamber of Commerce. I could recall dozens, if not hundreds of such incidents, that showed immense levels of distraction, addictive behavioral patterns and highly concerning shortcomings in critical thinking. Furthermore, I have been a communication senior lecturer at an adult education facility for years, where there is a strategic combination of communication education and training, and otherwise psychological supervision employed, for the participants have dropped out of their regular profession for manifold reasons, often of psychological nature. I will thus not take the individuals into account, that reportedly had issues like burnout, ADHD or depression, as that would compromise the argumentation. I am much rather relying on the age distribution in this case, where I could, with immense clarity, observe behavioral differences among participants regarding their age, and subsequently, their upbringing as digital generation. Interestingly, the distribution of almost any of the considerable attributes for sociological inquiry had been present at one time or another. That means, from very low to very high (*perceived!*) GI, gender, age, education, life experience, cultural and religious background, peer circles and so forth. I could observe immense differences in general sustained attention, deepness of comprehension and subsequently argumentation lines in tailored discussions and self-reflection. These differences, over the course of years, pointed in a clear direction: the aggregate and vast majority of clearly observable issues with critical reflection, deepness of inquiry, and most of all, sustained attention, revolved around a specific age range — the one that we consider to have been brought up in the digital era. Another point I could observe, was an apparent correlation among this generation's leisure activities, that involve the physical presence of peers (e.g. engagement in sports clubs), or the total absence thereof, and the regularly occurring incidents, that showed the assumed presence of addictive behavioral patterns. While those individuals, that exhibited the strongest addictive behavioral patterns, i.e. the least self-control in terms of appreciation of their mobile devices, communicated few to no regular hobby activities, those that reportedly engaged in physical peer presence activity, were notably less prone to exhibit such behavior.

My conclusion points to less total screen exposition during leisure time, going along with less digital total immersion, and vice versa, a very high level of reported leisure screen time accounting for a higher extent of addiction behavioral patterns. Generally, this showed in grades in such a way, that those who were the least attentive and most distracted, exhibited the poorest performance, which is little surprising. In higher education, naturally, there have been few observations so far, because the generation that I am most concerned with in this regard, is just about to enter higher education age range. It must also be clarified, that in the realm of higher education, while possibly there will be a general decline in performance, I believe that it will not be as steep as in secondary education, because those who performed poorly during secondary education (whether on account of aforementioned phenomena or otherwise), will probably not even be able (or attempt to) pursue higher education at all. Lastly, as a corporate communication advisor, my position in communicational settings confirmed these experiences during many communication training

sessions, where participants associated with the “digital upbringing“ were notably sooner distracted and had to be reminded to concentrate on the session instead of their phones. Although these sessions were fewer per participant in total, so that I could tell less about other parameters like perceived GI etc., the general experience I had made was absolutely confirmed, regardless of the business sector or department. Furthermore, when discussing topics like general job performance and similar topics, large numbers of long-time employees reported experiences they had made with younger generation trainees and interns; without specific inquiry. I found those accounts to carry particular weight, because of the very reason, that I had explicitly *not* steered or guided the topic into the direction of this narrative — that fact, in so far, substantially underscores the weight carried by the individuals‘ accounts. They sometimes had an apparent character of “rants“ about the next generation employees. All these insights and observations made over years, together with probably thousands of students and peers I have met and interviewed and lessons I have held in such various settings and among such diversified participants, have led to a big picture that I am today confident to be able to put in perspective, along with the synthesized literature and investigated correlations.

Further Literature and Synthesis

It has been established, that the general exposition to digital devices, often referred to as *screen time*, has notable correlations to mental health. Social networks have been the subject of ongoing investigation when it comes to their effects on mental health among adolescents, especially on account of phenomena like peer pressure, self-perception, confidence and the so-called “fear of missing out (FOMO)“. I have touched upon that previously in the context of emerging M-Learning (Gross, 2023). I am convinced, that although scientific investigation and discerning between correlation and causation is especially difficult in this context, that if a higher exposition to social media content is found to cause a higher risk of mental disorders like anxiety and depression, all the observable phenomena, that are yet to be quantified in commonly accepted studies, can be linked to the same sort of exposition, even if for different reasons. The universe of digital content is so vast, that its interconnections become ever more complex. Little do I believe, that the constant consumption of super-fast paced (and merely shallow) content, on a daily basis, for hours on end, has no effect on the human brain. Choudhury & McKinney (2013) rightfully mention the still evolving evidence base of the central role that neuroplasticity plays in the influence of digital media cultures on shaping adolescent brains, and therewith cognition and behavior. Furthermore, during the COVID-19 lockdowns, understandably, social media exposure increased, which could be linked to emotional overeating based on social anxiety (Gao et al., 2021), and a generally higher level of neuroticism could earlier be linked to increased use of Facebook in order to seek social validation and appreciation, which in turn led to social overload, jealousy and generally paradoxical affects — while intended to enhance mood, it increased addiction potential and worsened emotional settings (Abbasi & Drouin, 2019). I am closing this synthesis with a suggestion: Price & Duman (2019) could establish, that impairments in neuroplasticity could be traced back to chronic stress and depression, because neuronal atrophy and synaptic loss could be observed. We do also commonly accept vast correlations between social media exposition and mental health problems like anxiety (i.e. stress-levels) and depression (Gross 2023; Twenge et al., 2018a; Twenge et al., 2018b), it may be questioned, if therethrough digital media consumption in modern age exacerbates negative effects on neuroplasticity at all.

CONCLUSION

Modern age brings forth novel technology, that is responsible for many outstanding achievements in science and society. It is however an important part of any innovation, that we reflect critically upon the changes in society, that are fueled by digital devices and media. Certainly, this paper shall not be an advocacy against novel digital media, or social networks in general. It rather aims to raise awareness for the potential that modern technology has in establishing fundamental changes in humanity, both on a broad societal scale, as well as concerning the individual. As far as we have come in advancing technology to highly sophisticated levels, the assessment of consequences on social aspects has always been running behind. Considering the exponential growth of computing power, it is only a matter of time, until the complexity of the entire digital universe will exceed human understanding, and as computing power grows, human cognition levels stay static (more or less), and Artificial Intelligence is bound to increase its influence on our daily lives. From that perspective, more scientists should speak up about the — to date — rather neglected or belittled aspects, that Big Data, IoT and AI have on the social environment. The motivation to mystify findings and alienate investigations is clearly economically motivated. As S. Zuboff (2020) argues in the documentary *The Social Dilemma*, there is a reason, that the discussed companies, that sell the intelligently compiled consumer profiles to advertisers, are the wealthiest companies in the history of humanity: they sell certainty at scale. Certainty, that targeted content matches best to the behavioral prediction an algorithm makes. The parallel psychological investigations that have been made, especially with the generation that entirely grew up in the digital age, match the subjective impressions that urgently suggest causative links between the high exposition with such media and a large number of mainly negative changes in cognition and behavior, and as well in the development of mental health among adolescents.

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