

network users is particularly important, since researchers at the Massachusetts Institute of Technology (MIT) have pointed out that on Twitter it is mainly humans, and not bots⁶, who are responsible for spreading misleading information⁷.

In this context, information manipulation strategies are based on information overload, instantaneity and the extremely swift dissemination of inaccurate information, in order to capture users' attention by inhibiting their reflexive abilities and exploiting “*emotion and fatigue [which] destroy critical thinking abilities*”⁸. The aim is therefore to “*turn to the ultimate target of disinformation: the human brain*”⁹. Back in 2004, Patrick Le Lay, then-CEO of TF1, said “*what we sell to Coca-Cola is available human brain time*”¹⁰. Michal Kosinski, a practising psychologist and assistant professor of organisational behaviour at the Stanford Graduate School of Business, describes this phenomena as an “*effective psychological targeting as a tool of digital mass persuasion*”¹¹.

II) The militarisation of the human mind: cognitive warfare

The militarisation of the human mind became the subject of a NATO-funded study in 2020 articulated around the concept of ‘cognitive warfare’¹². The study focuses on the transition from information warfare to cognitive warfare (‘From Information Warfare to Cognitive Warfare’¹³). In this context, NATO organised an exercise in Canada on 30 November 2021 on cognitive warfare¹⁴. Cognitive warfare was then described as follow : “*Cognitive warfare seeks to change not only what people think, but also how they act. Attacks on the cognitive sphere involve the integration of cybernetics, disinformation, psychology and social engineering capabilities. [...] Cognitive warfare positions the mind as a battleground and a contested territory. Its aim is to sow dissonance, generate contradictory narratives, polarise opinion and radicalise groups. Cognitive warfare can incite people to act in ways that can disrupt or fragment an otherwise cohesive society. The resulting disorder can influence decision-making, change ideologies and create distrust among allies*”¹⁵.

It is worth remembering that mind control is not a recent objective: between 1953 and the early 1970s, the CIA unsuccessfully carried out a vast illegal project called ‘MK-ULTRA’, experimenting on American citizens using methods designed to control or programme the minds and behaviour of individuals¹⁶. Similar studies are still carried as of today. In 2019, the journal *Scientific Reports* reported on an experiment in which Chinese researchers managed to connect the mind of a human to that of a rat to control the latter's movements in a maze, with a 90% success rate¹⁷.

6 A ‘bot’ is a programme that performs automated tasks, repeating predefined actions. A ‘botnet’ is a network of bots whose actions can be coordinated to carry out certain tasks (e.g. distributed denial of service attacks - DDoS).

7 DIZIKES, Peter. « Study : On Twitter, false news travels faster than true stories » [online]. *Massachusetts Institute of Technology News*, 8 mars 2018. Available at : <https://news.mit.edu/2018/study-twitter-false-news-travels-faster-true-stories-0308>

8 BLOCH, Marc. Réflexions d’un historien sur les fausses nouvelles de la guerre. *Revue de synthèse historique*, n° 33, 1921, p. 32.

9 HUYGHE, François-Bernard. Préface du rapport, *Observatoire (dés)information & géopolitique au temps du COVID-19*, Institut de relations internationales et stratégiques (IRIS), Dossier final, 2021, p. 5.

10 ANIZON, Emmanuelle, MILOT, Olivier, ZARACHOWICZ, Weronika. “On me transforme en marchand de cerveaux” : quand Patrick Le Lay tentait de se défendre [online]. *Télérama*, 19 mars 2020. Available at : <https://www.telerama.fr/television/nous-vendons-du-temps-de-cerveau-humain-disponible-quand-patrick-le-lay-tentait-de-se-defendre.n6618251.php>

11 DECLOQUEMENT, Franck. La science derrière Cambridge Analytica : pourquoi le profilage psychologique est réellement efficace sur les réseaux sociaux ? [online]. *Atlantico*, 24 octobre 2018. Available at : https://www.academia.edu/37639944/ATLANTICO_La_sciences_derriere_Cambridge_Analytica_pourquoi_le_profilage_psychologique_est_reellement_efficace_sur_les_reseaux_sociaux_email_work_card=view-paper

12 DU CLUZEL, François. « Cognitive Warfare », *Innovation Hub*, 2020, 45 p.

13 *Idem*, p. 6.

14 Government of Canada. NATO Innovation Challenge - Fall 2021. The Invisible Threat: Tools to Combat Cognitive Warfare" [online]. Government of Canada, 6 December 2021. Available at: <https://www.canada.ca/fr/ministere-defense-nationale/campagnes/defi-d-innovation-de-l-otan-automne-2021.html>

15 *Ibid.*

16 ROCKFELLER, Nelson A., CONNOR, John T., DILLON, Douglas C., GRISWOLD, Erwin N., KIRKLAND, Lane, LEMNITZER, Lyman L., REAGAN, Ronald, SHANNON, Edgar F. « Report to the President by the Commission on the CIA activities within the United States. » Washington D.C, Boston Public Library, juin 1975, 324 p.

17 ZHANG, Shaomin, YUAN, Sheng, HUANG, Lipeng, ZHENG, Xiaoxing, WU, Zhaohui, XU, Kedi, PAN, Gang. « Human Mind Control of Rat Cyborg's Continuous Locomotion with Wireless Brain-to-Brain Interface ». *Scientific Reports*, 4 février 2019.

In a nutshell, the paramount thing in information warfare is to be able to control and influence public opinion¹⁸. France has developed a similar cognitive warfare project, called 'Myriade', inspired by the work of the Red Team, a group of science fiction writers who develop scenarios for the Ministry of the Armed Forces to anticipate future threats. The project includes the use of 'deep brain fakes' for advanced mind manipulation and the daily use of virtual reality to confine individuals to alternative truths¹⁹.

III) What *modus operandi* ?

The strategy of capturing audience attention is used in particular during election campaigns. For example, Donald Trump believed that winning the attention of voters was more important than winning the battle of conviction²⁰. This strategy led the US presidential candidate to be extremely present on social networks in 2016. He overwhelmingly dominated exchanges on Facebook, and his statements attracted, on average, twelve times more interest than Hillary Clinton's in Republican states and twice as much in Democratic states. This informational omnipresence has made Donald Trump's proposals more viral and given them greater visibility among the American electorate²¹.

Attention is also captured by exploiting people's emotions and cognitive biases, facilitated by the capacity for mass dissemination of information and overexposure to the latter. Cognitive biases can be defined as "*the human brain's propensity to reproduce errors of judgement (including by misinterpreting the meaning of messages), aggravated by its tendency to adopt behaviour that is visibly inconsistent with experience or commonly available knowledge*"²². For example, a "confirmation bias" is when one seeks out information that confirms that one's ideas and prejudices are borne out by the facts. In this context, the deregulation of the information market tends to reinforce "*cognitive demagoguery*"²³, leading to the perpetuation and dissemination of false information that capitalises on erroneous intellectual processes that are nevertheless attractive to the mind²⁴. In fact, cognitive biases are tools that make it possible to sort through an ever-increasing volume of information, resulting from the combined use of social networks and mass media²⁵.

Cognitive biases can thus be used to create rapid but plausible (in most cases) reflexive processes, based on a mixture of personal preferences and social expectations. As a result, the plausibility of the shortcut inhibits any mechanism for checking sources. In this context, the manipulation of information is all the more effective if it is based on previously identified political, religious or social opinions²⁶.

Faced with these problems, some authors believe that action against campaigns to manipulate information should be based primarily on educating citizens about access to information and the hierarchy of sources²⁷. Indeed, belief in manipulated information is partly correlated with the low level of education and training of the target population, over and above cognitive bias or partisan attachment²⁸.

Available at : <https://www.nature.com/articles/s41598-018-36885-0>

18 EUTROPE, Xavier. Entretien avec Maud Quessard. L'important dans une guerre informationnelle est d'avoir la main sur les opinions publiques [online]. *INA, La revue des médias*, 16 mars 2022. Available at : <https://larevuedesmedias.ina.fr/guerre-information-propagande-influence-russie-ukraine-medias-narratif-opinion-publique?amp>

19 BAROTTE, Nicolas. La « guerre cognitive », nouvel avatar des guerres futures [online]. *Le Figaro*, 26 novembre 2021. Available at : <https://www.lefigaro.fr/international/la-guerre-cognitive-nouvel-avatar-des-batailles-futures-20211126>

20 BRONNER, Gérald. « Information et crédulité au temps du COVID-19 », Observatoire sous la direction de François-Bernard Huyghe, directeur de recherche à l'IRIS, et Anne Sénèque, médecin, chercheuse à l'IRIS, *Observatoire (dés)information & géopolitique au temps du...*, op. cit., p. 11.

21 *Ibid.*

22 *Id.*, p. 101.

23 *Id.*, p. 10.

24 *Ibid.*

25 FRAU-MEIGS, Divina. « Les enjeux de la réception : comment mesurer l'influence de la désinformation ». In : MARANGÉ, Céline, QUSSARD, Maud, *Les guerres de l'information à l'ère numérique*, Paris, Presses universitaires de France, éditions PUF, avec le concours de l'Institut de Recherche stratégique de l'École militaire, 2021, p. 336.

26 *Ibid.*

27 DELERUE, François. Les menaces numériques en période électorale. In : MARANGÉ, Céline, QUSSARD, Maud, op. cit. note 25, p. 362.

28 FRAU-MEIGS, Divina, op. cit. note 25, p. 338.

In addition, it is possible to provoke an "emotional contagion". In other words, this can be referred to as "*a transfer of emotions from one individual to another; a sort of wave that can, from one person to the next, affect the whole of humanity. It can be compared to contagion by a virus that acts in a few thousandths of a second*"²⁹. Indeed, it has been found that negative emotions are much more contagious than positive ones, and that they have a more lasting impact on an individual's state of mind³⁰. Hyperconnection generates an "*excess of emotional information*"³¹. Between 11 and 18 January 2012, Facebook and American academics decided to alter the news feeds of 700,000 users of the social network. It was found that the targeted users began to use more negative or positive words depending on the content they had been exposed to or the reactions of their contacts on the social network. The notion of "*mass emotional contagion via social networks*"³² was used to analyse this phenomenon, demonstrating the capacity of these platforms to serve as vectors for the manipulation of information, but also the potential consequences of algorithmic access to it.

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The information age has been characterised by the rise of new communication technologies that have allowed images to circulate more widely, encouraging phenomena of "*media contagion*"³³. Controlling these technologies has proved increasingly complex, as borders provide only imperfect protection from information coming from abroad, while the evolution of Western media has made democracies more vulnerable in the event of international tensions³⁴. Faced with the increasingly rapid international dissemination of information, governments have gradually come to see the need to adopt communication strategies tailored to periods of crisis or conflict.

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29 Interview with Christophe HAAG, author of *La contagion émotionnelle*. SENDER, Elena. Emotions are contagious like viruses [online]. Sciences et avenir, 25 April 2019. Available at : https://www.sciencesetavenir.fr/sante/la-contagion-emotionnelle-decryptee-par-christophe-haag_133145

30 *Ibid.*

31 *Ibid.*

32 AGENCE FRANCE PRESSE. « Contagion émotionnelle » : Facebook, objet d'une enquête pour manipulation [online]. *La Presse*, 2 juillet 2014. Available at : <https://www.lapresse.ca/techno/internet/201407/02/01-4780382-contagion-emotionnelle-facebook-objet-dune-enquete-pour-manipulation.php>

33 MARANGÉ, Céline, QUESSARD, Maud, *op. cit.* note 25, p. 12.

34 GRISET, Pascal. *Les révolutions de la communication XIXe-XXe siècle*. Paris, éditions Hachette, 1991, p. 188.