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theguardian.com, 01/01/2018, https://www.theguardian.com/technology/2018/jan/01/elon-musk-neurotechnology-human-enhancement-brain-computer-interfaces **Neurotechnology, Elon Musk and**

**the goal of human enhancement**

Brain-computer interfaces could change the way people think, soldiers fight and Alzheimer’s is treated. But are we in control of the ethical ramifications?

**A**t the World Government Summit in Dubai in February, Tesla and SpaceX chief executive Elon Musk said that people would [need to become cyborgs to be relevant in an artificial intelligence](https://www.theguardian.com/technology/2017/feb/15/elon-musk-cyborgs-robots-artificial-intelligence-is-he-right) age. He said that a “merger of biological intelligence and machine intelligence” would be necessary to ensure we stay economically valuable.

Soon afterwards, the serial entrepreneur created [Neuralink](https://www.neuralink.com/), with the intention of connecting computers directly to human brains. He wants to do this using “neural lace” technology – implanting tiny electrodes into the brain for direct computing capabilities.

Brain-computer interfaces (BCI) aren’t a new idea. Various forms of BCI are already available, from ones that sit on top of your head and measure brain signals to devices that are implanted into your brain tissue.

They are mainly one-directional, with the most common uses enabling motor control and communication tools for people with brain injuries. In March, a man who was paralysed from below the neck [moved his hand using the power of concentration](https://www.theguardian.com/science/2017/mar/28/neuroprosthetic-tetraplegic-man-control-hand-with-thought-bill-kochevar).

## Cognitive enhancement

But Musk’s plans go beyond this: he wants to use BCIs in a bi-directional capacity, so that plugging in could make us smarter, improve our memory, help with decision-making and eventually provide an extension of the human mind.

“Musk’s goals of cognitive enhancement relate to healthy or able-bodied subjects, because he is afraid of AI and that computers will ultimately become more intelligent than the humans who made the computers,” explains BCI expert Professor Pedram Mohseni of Case Western Reserve University, Ohio, [who sold the rights to the name Neuralink to Musk](https://www.technologyreview.com/s/604037/meet-the-guys-who-sold-neuralink-to-elon-musk-without-even-realizing-it/).

**He wants to directly tap into the brain, effectively bypassing mechanisms such as speaking or texting. Musk has the credibility to talk about these things**

**Pedram Mohseni**

“He wants to directly tap into the brain to read out thoughts, effectively bypassing low-bandwidth mechanisms such as speaking or texting to convey the thoughts. This is pie-in-the-sky stuff, but Musk has the credibility to talk about these things,” he adds.

Musk is not alone in believing that “neurotechnology” could be the next big thing. Silicon Valley is abuzz with similar projects. Bryan Johnson, for example, has also been testing “neural lace”. He founded Kernel, a startup to enhance human intelligence by developing brain implants linking people’s thoughts to computers.

In 2015, Facebook CEO Mark Zuckerberg said that people will one day be able to share “full sensory and emotional experiences” online – not just photos and videos. Facebook has been hiring neuroscientists for an undisclosed project at its secretive hardware division, [Building 8](http://uk.businessinsider.com/facebooks-building-8-working-on-camera-augmented-reality-mind-reading-projects-2017-3).

However, it is unlikely this technology will be available anytime soon, and some of the more ambitious projects may be unrealistic, according to Mohseni.

## Pie-in-the-sky

“In my opinion, we are at least 10 to 15 years away from the cognitive enhancement goals in healthy, able-bodied subjects. It certainly appears to be, from the more immediate goals of Neuralink, that the neurotechnology focus will continue to be on patients with various neurological injuries or diseases,” he says.

Mohseni says one of the best current examples of cognitive enhancement is the work of Professor Ted Berger, of the University of Southern California, who has been working on a memory prosthesis to replace the damaged parts of the hippocampus in patients who have lost their memory due to, for example, Alzheimer’s disease.

“In this case, a computer is to be implanted in the brain that acts similaly to the biological hippocampus from an input and output perspective,” he says. “Berger has results from both rodents and non-human primate models, as well as preliminary results in several human subjects.”

Mohseni adds: “The [US government’s] Defense Advanced Research Projects Agency (DARPA) currently has a programme that aims to do cognitive enhancement in their soldiers – ie enhance learning of a wide range of cognitive skills, through various mechanisms of peripheral nerve stimulation that facilitate and encourage neural plasticity in the brain. This would be another example of cognitive enhancement in able-bodied subjects, but it is quite pie-in-the-sky, which is exactly how DARPA operates.”

## Understanding the brain

In the UK, research is ongoing. Davide Valeriani, senior research officer at [University of Essex’s BCI-NE Lab](http://essexbcis.uk/), is using an electroencephalogram (EEG)-based BCI to tap into the unconscious minds of people as they make decisions.

**BCIs could be a fundamental tool for going beyond human limits, hence improving everyone’s life**

**Davide Valeriani**

“Everyone who makes decisions wears the EEG cap, which is part of a BCI, a tool to help measure EEG activity ... it measures electrical activity to gather patterns associated with confident or non-confident decisions,” says Valeriani. “We train the BCI – the computer basically – by asking people to make decisions without knowing the answer and then tell the machine, ‘Look, in this case we know the decision made by the user is correct, so associate those patterns to confident decisions’ – as we know that confidence is related to probability of being correct. So during training the machine knows which answers were correct and which one were not. The user doesn’t know all the time.”

Valeriani adds: “I hope more resources will be put into supporting this very promising area of research. BCIs are not only an invaluable tool for people with disabilities, but they could be a fundamental tool for going beyond human limits, hence improving everyone’s life.”

He notes, however, that one of the biggest challenges with this technology is that first we need to better understand how the human brain works before deciding where and how to apply BCI. “This is why many agencies have been investing in basic neuroscience research – for example, the [Brain initiative](https://www.braininitiative.nih.gov/) in the US and the [Human Brain Project](https://www.theguardian.com/science/2013/oct/15/human-brain-project-henry-markram) in the EU.”

Whenever there is talk of enhancing humans, moral questions remain – particularly around where the human ends and the machine begins. “In my opinion, one way to overcome these ethical concerns is to let humans decide whether they want to use a BCI to augment their capabilities,” Valeriani says.

“Neuroethicists are working to give advice to policymakers about what should be regulated. I am quite confident that, in the future, we will be more open to the possibility of using BCIs if such systems provide a clear and tangible advantage to our lives.”

# theguardian.com, 07/28/2018, https://www.theguardian.com/technology/2018/jul/28/dcms-report-fake-news-disinformation-brexit-facebook-russia

# A withering verdict: MPs report on Zuckerberg, Russia and Cambridge Analytica

**Select committee criticises Facebook response and urges tighter internet regulation**

## Facebook

The DCMS select committee’s far-reaching interim report on its 18-month investigation into fake news and the use of data and “dark ads” in elections offers a wide-ranging, informed and sustained critique that carries with it the full weight of parliament. The verdict is withering: [Facebook](https://www.theguardian.com/technology/facebook) failed. It “obfuscated”, refused to investigate how its platform was abused by the Russian government until forced by pressure from Senate committees and, in the most damning section, it aided and abetted the incitement of racial hatred in Burma, noting that even the company’s chief technical officer, Mike Schroepfer, called this “awful”.

Recommendations include:

• “Clear legal liability” for tech companies “to act against harmful and illegal content” with failure to act resulting in criminal proceedings.

• Full auditing and scrutiny of tech companies, including their security mechanisms, and full algorithm auditing. Strengthen the Information Commissioner’s Office (ICO). Impose a levy on tech companies operating in the UK to pay for it. The Competition and Markets Authority should investigate fake profiles and advertising fraud.

• A ban on micro-targeted political advertising to similar audiences.

• A “new category of tech company” to be formulated which “tightens tech companies’ liabilities and which is not necessarily either a ‘platform’ or ‘publisher’”.

• Sweeping new powers for the Electoral Commission and a comprehensive overhaul of existing legislation that governs political advertisements during elections.

• A further demand for Mark Zuckerberg “to come to the committee to answer questions to which Facebook has not responded adequately to date”.

• A code of ethics that all tech companies will agree to uphold.

## Cambridge Analytica

It was the [Cambridge Analytica](https://www.theguardian.com/uk-news/cambridge-analytica) scandal that blew open the committee’s inquiry in March, though it had already been a focus of its investigations. At its hearing in Washington in February, it had asked a series of pointed questions of Simon Milner, a Facebook executive, whose answers the report describes as “disingenuous”.

The report includes:

• “Disturbing evidence” of work overseas that it urges the National Crime Agency (NCA) to investigate, including allegations it worked with Black Cube, an Israeli intelligence firm “whose work allegedly included illegal hacking”.

• New allegations of an undercover sting carried out by a “temporary SCL [parent company of Cambridge Analytica] employee” who was paid £10,000 by Alexander Nix to bribe a politician in St Kitts in the Caribbean.

• Details about Cambridge Analytica’s relationship with Henley & Partners, a passport investment company that has programmes in St Kitts and Malta. The committee also noted that [Daphne Caruana Galizia](https://www.theguardian.com/world/2017/oct/16/malta-car-bomb-kills-panama-papers-journalist), an investigative journalist, who was murdered in October last year, was investigating the company, highlighted the damage that these passport sales were inflicting on both Malta and the European Union. The report urges the NCA to investigate SCL’s work with Henley & Partners. It also notes Lord Ashcroft had recently extolled the virtues of Malta as the “best destination for ambitious UK firms” to have a post-Brexit presence in the EU.

“Really worrying” evidence that [SCL also worked for the UK government](https://www.theguardian.com/uk-news/2018/mar/21/mod-cambridge-analytica-parent-company-scl-group-list-x), had provided psychological operation training for Ministry of Defence staff, had received classified information about Afghanistan and, according to Nix’s testimony, had “secret clearance”. The report urges the government to ensure the NCA investigates.

• Concerns about “the administrator’s proposals in connection with SCL Elections Ltd, as listed in Companies House, and the fact that Emerdata Ltd is listed as the ultimate parent company of SCL Elections Ltd, and is the major creditor and owed £6.3m”. Recommends the NCA investigates.

## Russia

DCMS committee chair Damian Collins told the Observer that when it first started asking questions about Russia, it very quickly led to questions about interference in British elections, including the EU referendum. “And we noticed an aggressive campaign against us even asking these questions. It underlined the need to persist, which we have done.”

He said that the committee believed the evidence it had received so far from Facebook represented only the “tip of the iceberg”.

The report includes:

• A call for a full investigation into contacts between [Arron Banks](https://www.theguardian.com/uk-news/arron-banks) – millionaire backer of Leave.EU – and Russian officials and his business dealings with Russian companies. “We understand the National Crime Agency is investigating these matters. We believe that they should be given full access to any relevant information that will aid their inquiry.”

• A call for a full investigation into the source of Banks’s donations to the referendum “to verify that the money was not sourced from abroad”. It notes that “should there be any doubt, the matter should be referred to the NCA”.

• A proposal for limits in future elections on individual donors and for major donors to “demonstrate the source of their donations”.

• A demand for further investigation by Facebook of Russian interference on its platform. Facebook’s denial of “direct Russian interference using Facebook in the Brexit referendum” was “disingenuous and typical of Facebook’s handling of our questions”.

• Calls for a full ICO report on [Aleksandr Kogan](https://www.theguardian.com/technology/2018/jun/19/aleksandr-kogan-facebook-cambridge-analytica-senate-testimony), the Russian-born scientist who was working in Russia with grants from the Russian government while harvesting Facebook data for Cambridge Analytica.

• A request for more information about the ICO’s statement that Cambridge Analytica’s systems had been “accessed from IP addresses that resolve to Russia and other areas of the CIS [Commonwealth of Independent States]”.

• A statement from the British government on “how many investigations are currently being carried out into Russian interference in UK politics”. It says: “It would be wrong for Robert Mueller’s inquiry to take the lead about related issues in the UK.” It calls for coordination between all relevant authorities.

# theguardian.com, 07/20/2018, https://www.theguardian.com/technology/2018/jul/19/facebook-fake-news-violence-moderation-plan

# Facebook's plan to kill dangerous fake news is ambitious – and perhaps impossible

**New policy to tackle content that could fuel violence may be well-meaning, but the complexity of the task is mind-boggling**

Facebook has been grappling with its role in spreading false news and disinformation for a few years, but a spate of mob violence in India, [Sri Lanka](https://www.theguardian.com/commentisfree/2018/may/05/facebook-anti-muslim-violence-sri-lanka) and [Myanmar](https://www.theguardian.com/world/2018/apr/03/revealed-facebook-hate-speech-exploded-in-myanmar-during-rohingya-crisis) have spurred the social network into a knee-jerk policy change.

Until now, [Facebook](https://www.theguardian.com/technology/facebook) has dealt with disinformation by making it less prominent in people’s news feeds. This week, the company announced it would start to delete inaccurate or misleading information created or shared “with the purpose of contributing to or exacerbating violence or physical harm”.

On the face of it, it seems like a reasonable and well-intentioned policy. However, the lightest interrogation reveals a mind-bogglingly complex and thankless task.

In addition, any successes will be undermined by the fact that much of the inflammatory misinformation in South Asia is being spread through Facebook’s sister platform WhatsApp, where encryption makes content moderation impossible.

The policy change will first be implemented in Sri Lanka, where pernicious falsehoods on the platform, such as [the allegation that Muslims were putting sterilisation pills into food intended for the country’s Sinhalese majority](https://www.nytimes.com/2018/04/21/world/asia/facebook-sri-lanka-riots.html), have stoked riots, beatings and the destruction of mosques and Muslim-owned businesses. The Sri Lankan government temporarily blocked Facebook services in March in an effort to defuse the situation.

Facebook said it was working with local civil society groups to identify which content might contribute to physical harm. Once the company has verified that information is false and could be a contributing factor to “imminent” violence or harm to physical safety, Facebook will take it down.

Last month, the company said, it removed content that falsely claimed Muslims were poisoning food. The company would not reveal the exact content it had removed, nor the names of the civil society groups it was working with. [Sanjana Hattotuwa](https://groundviews.org/author/sanjana/) from the Centre for Policy Alternatives, [one of the more vocal civil society groups in Sri Lanka](http://groundviews.org/2018/04/10/open-letter-to-facebook-implement-your-own-community-standards/), said: “This is not something we were told about.”

Even if Facebook cracks misinformation on its main platform, it has a trickier problem on its hands with WhatsApp

The policy announcement appears to have been rushed out to provide some “news” for dozens of non-US journalists whom Facebook had flown in from Europe, Asia and Latin America for a day-long media event at the company’s Menlo Park headquarters on Wednesday.

This could explain why Facebook representatives were not able to answer questions about the specifics of the policy, which the company plans to roll out over the coming months. What is the threshold for violence? A punch? Arson? A lynching? Will it retroactively delete hoaxes like Pizzagate that bubble up for months before someone shoots a gun in a pizza parlour? Will Facebook defer to civil society groups on all sides? If so, what will it do if there is no consensus?

Beyond the practicalities of implementing the policy, one of the most glaring challenges appears to be how Facebook will know if its actions are really helping to mitigate violence.

“You will never know the harm you prevent,” said Joan Donovan from Data and Society. “It’s an immeasurable win and impossible to evaluate.”

Still, even in its messy form, the update has been welcomed by those who have grown frustrated by Facebook’s inaction in the name of freedom of expression.

“This is a positive step forward,” said Claire Wardle, a research fellow at the Shorenstein Center on Media, Politics and Public Policy at Harvard who specialises in the spread of misinformation. “It’s been a wake-up call in the last six months to see how rumours are escalating into real-world violence.”

“It doesn’t mean it’s going to be easy. It’s massively complex and I hope they work very closely with local civil society groups and hire moderation staff of people who speak local languages,” she added.

While civil society groups can identify content that might incite violence, they don’t have access to Facebook’s social graph.

“Facebook knows the ways this misinformation travels,” said Donovan. “It knows there are hubs and spokes. It needs to use its own data and invest in those groups that can help them understand the context of their data to spot actual manipulation and thwart these accounts.”

Even if Facebook cracks misinformation on its main platform, it has a trickier problem on its hands with WhatsApp, where much of the [most dangerous rumour-mongering in South Asia takes place](https://www.theguardian.com/world/2018/jul/03/whatsapp-murders-india-struggles-to-combat-crimes-linked-to-messaging-service). WhatsApp messages have end-to-end encryption, which means that Facebook cannot see or moderate their content.

In places like Sri Lanka and India, people use the messaging app differently from the typical American. Users will join groups with more than 100 participants (WhatsApp caps groups at 256 members), used to broadcast and discuss local issues – and disinformation.

“The networks are like a honeycomb, with political operatives with 10-20 phones networked into all different groups. They will start a fire in each of those groups and then other political operatives will forward the message into other groups,” said Donovan.

“Because the switch isn’t algorithmic but human, it means that Facebook in effect is trying to police human behaviour,” she said.

Pankaj Jain, who runs Indian verification site [SM Hoax Slayer](http://smhoaxslayer.com/)dedicated to debunking fake news online, said that WhatsApp was “obviously” worse than Facebook for spreading misinformation. He said this was partly because the messaging app was so easy to use and had the widest reach among rural communities, and partly because data charges were so low.

His third reason relates to a fundamental privacy feature within the app. “People who create and spread fake news are aware they can’t be tracked so WhatsApp is their first choice for fake news.”

Harssh Poddar, a senior police official in the city of Malegaon in the Indian state of Maharashtra who has dealt with [mob violence triggered by unfounded fear over child kidnappings](https://www.nytimes.com/interactive/2018/07/18/technology/whatsapp-india-killings.html?utm_source=digg&utm_medium=email), agreed. But he noted that the new Facebook policy could be helpful at eliminating some of the source videos and memes that get shared through WhatsApp, nipping them in the bud.

“It would make a difference to the extent that it might quell some of the sources from where these doctored videos or fake news are spreading,” Poddar said.

Poddar, who has been [running his own media literacy training in Malegaon](https://www.npr.org/2018/07/18/629731693/fake-news-turns-deadly-in-india), would like Facebook to be more responsive to requests from local law enforcement to help identify habitual offenders on WhatsApp.

The WhatsApp spokesman, Carl Woog, speaking at the Facebook media event, described the violence in Sri Lanka and India as “horrific”.

“It’s been really terrible to watch and our hearts have been broken by what we’ve seen,” he said.

[The company has been running ads in Indian media](https://www.theguardian.com/world/2018/jul/13/fake-news-whatsapp-ads-india-mob-lynchings) and working with civil society groups to run training sessions on misinformation and digital literacy. The app has also introduced a new label for forwarded messages which highlights that an item of content has not been originally composed by the sender.

“We take this quite seriously,” said Woog. “But there are limitations.”

Without access to the content of WhatsApp messages, Facebook must focus on the metadata, including phone identifiers, IP addresses and how messages flow between members of different groups, and who are the influencers.

“We’re going to see a lot of moves [from Facebook],” Wardle said, “as they have realised WhatsApp is their Achilles heel.”

# theguardian.com, 07/18/2018, https://www.theguardian.com/technology/2018/jul/18/eu-fine-google-android-anti-competitive-behaviour-consumers

# The EU fining Google over Android is too little, too late, say experts

**Industry analysts fear action against anti-competitive behaviour will punish consumers more than Google**

The European commission [has fined Google £3.8bn for anti-competitive behaviour](https://www.theguardian.com/business/2018/jul/18/google-faces-record-multibillion-fine-from-eu-over-android) regarding its Android mobile operating system. It’s looking to force the company to cede some control, but is it too little too late?

The record fine is not to be dismissed, but for Google it is the EU’s suggested remedy – the prising loose of its tight grip around [Android](https://www.theguardian.com/technology/android) – that may have the largest impact.

The underlying Android operating system used on more than 2bn devices worldwide is open source and therefore free to use as manufacturers see fit. But the Android that most in western markets see is actually a combination of that underlying open source system with services licensed for free from [Google](https://www.theguardian.com/technology/google).

## The problem

The Google Play Store is the largest gateway to third-party apps available on Android and is considered an essential part of the Android experience for mainstream consumers.

The Play Store is free to use under licence from Google, but comes with a set of conditions smartphone manufacturers must meet. The most important of these, and the one the EC has a problem with, is the requirement to set Google as the default search engine and the pre-installation of certain apps, including Google Chrome, YouTube and the Google search app. Google also dictates that some of the pre-installed apps be placed on the homescreen.

Users can delete these apps from their homescreen, choose to change the default search engine and switch out Google’s apps for alternatives, but many do not and are instead drawn to Android because of these services.

Geoff Blaber from analyst firm CCS Insight said: “Although an open source operating system, Android was introduced as a vehicle for Google’s licensable apps and services and to extend the Google business model as engagement shifted to mobile. In this context, Android has been incredibly successful.”

That is the reason it is licensed free to manufacturers, and ultimately the reason devices that cost less than £50 can exist. The more eyeballs the Android-maker can secure on its own products, or Google-fed advertising in third-party apps, the more money it can make from its core business model of selling and displaying ads.

The consequence of this strategy is that competing search engines and apps are effectively shut out of the dominant mobile platform, which is what the EC has a problem with.

## The remedy

What the EC is demanding is that Google cede some control over Android in its licensing. The EC is demanding that manufacturers should be free to use Android and include the Google Play Store without having to pre-install the Google Search app and Chrome.

It’s a similar strategy to that [employed by the EC in 2004](https://www.theguardian.com/business/2008/feb/27/microsoft.europe1), when it forced Microsoft to release a version of Windows without Windows Media Player and [later offer a browser choice screen](https://www.theguardian.com/business/2009/dec/16/eu-competition-microsoft-browser-agreement), which allowed users to select a web browser other than Internet Explorer.

But as with the Media Player-free version of Windows, Windows XP N, for which there was no demand, consumers are unlikely to buy a version of Android without Google’s services.

“The EU’s stance is arguably six to eight years too late,” said Blaber. “Android has already helped establish Google apps and services as essentials for consumers in the western world.

“While the separation of apps from the operating system may help foster competition over the longer term, manufacturers will continue to need to offer Google services to be competitive and address consumer demand.”

Richard Windsor from research company Radio Free Mobile said that because users in the EU are so accustomed to using Google services and have come to prefer them “separating Google Play from the rest of Google’s Digital Life services would have very little impact as users would simply download and install them from the store”.

The EC also ordered Google to stop paying smartphone manufacturers and mobile network operators through revenue sharing for exclusively including Google Search on their phones. Finally, Google is also ordered to stop blocking manufacturers from using so-called [forked](https://en.wikipedia.org/wiki/Fork_(software_development)) or modified versions of Android, such as Amazon’s Fire OS, if they want to use Google services on their other devices.

## The consequences

Google has over the last few years attempted to exert greater control over the Android ecosystem and solve two of its biggest failings. The first is to improve security.

Android smartphone manufacturers have, until recently, been in no hurry to push out updates either for the underlying operating system or security patches, which have become increasingly crucial to safeguarding consumer data.

Google’s efforts to cajole manufacturers has meant that at least a few of the biggest manufacturers have committed to monthly security updates. A weakening of Google’s control over Android would likely result in an eroding of this progress on security and harm consumers.

The second is so-called fragmentation. Due to the lacklustre approach to updates by smartphone manufacturers, there are millions of devices out there with various older versions of Android, which makes ensuring that an app can run on the 2bn-plus devices in the world very hard for developers.

Google has made some progress in nullifying fragmentation through a combination of pressure on manufacturers to update customer devices, the progressive decoupling of essential systems from the underlying operating system into Play Store-updatable services and increased compatibility requirements to license the Play Store in the first place.

“There is a significant danger of unintended consequences that penalises the consumer,” said Blaber. “This ranges from increased fragmentation and greater app inconsistency to increases in hardware cost should Google decide to change or adapt the Android business model.”

Ultimately, Google could end up changing the way it licenses Android, potentially charging for it or limiting access to it, rendering some devices, manufacturers and companies infeasible.

Google will have 90 days to offer potential solutions to the antitrust charges, which will then be reviewed by the EC, but we should expect the Android maker not to take this lying down.

Maintaining control of Android, and therefore the ever increasing shift to mobile, is essential to Google’s continued dominance. As with the Microsoft case in 2004, it could take years for the battle to play out through appeals. Any eventual remedy could come much later than the EU would like, and be less likely to have the desired impact for opening up to the competition.

“Any action by the EU is akin to shutting the stable door after the horse has bolted,” said Blaber.

**KEYWORDS**

**Neurotechnology, Elon Musk and the goal of human enhancement**

* Merger of biological and machine intelligence -> necessary to stay economically valuable
* Goal of Musk -> connect computers directly to human brains
* Brain-computer interfaces aren’t new -> various form already available
* Most common use = enabling motor control & communication tools for people with brain injuries
  + E.g.: man who was paralysed from below the neck moved his hand with his thoughts
* But Musk want to use BCIs in a bi-directional capacity => that would make us smarter and improve our memory
* Kernel = startup to enhance human intelligence by developing brain implants
* Zuckerberg said that people will be able to share full sensory and emotional experiences online
* We’re at least 10-15 years away from the cognitive enhancement goals
* Best current example = work of professor Ted Berger = working on a memory prosthesis to replace damaged parts due to, per example, Alzheimer’s disease
* During training, the machine knows which answers were correct and which were not. User doesn’t know all the time
* Biggest challenge = we first need to better understand how the human brain works

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* Distrubing evidence => NCA worked with Black Cube, an Israeli entelligence firm = illegal hacking
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* Facebook => spreading false news and disinformation for a few years
* Dealt with disinformation => making it less prominent in people’s news feeds. Would start to delete inaccurate or misleading information created or shared => purpose of contributing / exacerbating violence / physical harm => seems like a reasonable and well-intentioned policy
* Inflammatory misinformation in South Asia => spread by WhatsApp => encryption makes content moderation impossible
* Policy change will be first implemented in Sri Lanka => because Sri Lankan government blocked Facebook services => effort to defuse some situations caused by fake informations
* Facebook => working with local civil society groups to identify which content might contribute to physical harm
* Once Fb verified that the information is false and could contribute to imminent violence or harm to physical safety, Fb will take it down
* Fb said, that they removed content that falsely claimed Muslims were poisoning food in Sri Lanka
* Most glaring challenges of implementing the policy = how Fb will know if its actions are really helping to mitigate violence => immeasurable win and impossible to evaluate
* Update welcomed by those who are frustrated by Fb’s inaction => positive step forward
* Even if Fb cracks misinformation on its main platform =>trickier problem with Whatsapp
* Whatsapp is obviously worse than Fb for spreading misinformation
* More responsive to requests from local law enforcement => identify habitual offenders on WhatsAppp

**The EU fining Google over Android is too little, too late, say experts**

* European commission fined Google 3.8bn pounds for anti-competitive behavior
* Services licensed for free from Google is included in the Android OS used on more than 2bn devices worldwide
* Play Store is free to use under licence but comes with a set of conditions like:
  + Set Google as the default search engine
  + Pre-install Chrome, YouTube and Google search app
  + Some of those apps must be placed on the homescreen
* The reason why it is licensed free to manufacturers is that it extends the Google business model to mobile
* Consequence = competing search engines and apps are effectively shut out of the dominant mobile platform
* Demand of EC = Google cede some control over Android in its licensing. Manufacturers should be free to use Android and include Google Play Store without having to install Chrome & Google search app. Google has to stop paying smartphone manufacturers and mobile network operators. Google is also ordered to stop blocking manufacturers from using forked or modified versions of Android, such as Amazon’s Fire OS => if there’s a will to use Google services on their devices.
* Google resolved the 2 biggest failing of Android ecosystem :
  + Security
  + Fragmentation = there are millions of devices with older versions of Android => very hard for developers to make sure that their app can run on the +2bn devices in the world
    - How did Google resolve it ? through a combination of pressure on manufacturers to update customer devices, progressive decoupling of essential systems
* Google could end up the way it licenses Android
* Google have 90 days to offer potential solutions => will be reviewed by the EC => except that the Android maker not to take this lying down