Are we losing the art of conversation?

We asked four people who watched an online talk on technology and communication by Sherry Turkle for their opinions.

A The talk certainly gave me plenty of food for thought about the way we communicate these days and how technology is changing our behaviour. People are constantly multitasking, whether it be emailing during meetings or texting in the checkout queue. I really believe it's affecting the way we relate to each other and it's not just in the workplace. Kids fade into the background as parents message at the dinner table or post on social networks during the school run. It's as if we can't bear to miss out on what our online buddies are up to, so we juggle the real and online world. My greatest concern is that we don't give our brains a chance to switch off. It's these precious moments when we actually process information that helps us make important decisions.

B It was a fascinating talk and the speaker really hit the nail on the head with a couple of things. Take parental influence, for instance. How can we expect teenagers not to text while doing their homework when they witness their parents posting on social media while cooking the evening meal or waiting at a red light? She also made a valid point about people wanting to be in two or several places at once. So they switch back and forth between their real-life and online conversations. I see it all the time with my teenage daughter and her friends. They arrange to meet and then sit together in silence while each one engages in a different conversation online.

C So much of what the speaker said rang true. I honestly believe there's a danger that the more connected we are, the more isolated we feel. I don't think this is such an issue for my generation who've lived without technology for so long. We know how to be alone and, more importantly, we know that it's OK to be alone. But the under 20s are another kettle of fish. They're so busy communicating that they never experience the feeling of solitude and run the risk of not learning how to enjoy their own company. In addition, they're learning conversation through messages that can be edited and changed at the expense of learning the art of real conversation in real time with the person in front of you.

D I'm not sure to what extent I agree that people are more alone, but the way we communicate has certainly evolved. We send tiny snippets of conversation or emoticons to each other and I wonder how much this actually allows us to really understand one another. This superficial conversation is replacing in-depth face-to-face interaction with its pauses, intonation and sentiment. The speaker makes a good point about how we're getting used to conversing with machines like Siri or robots, which are totally devoid of any experience of human life. But despite such limitations, we seem to be expecting more from technology and less from each other.

Do you have the right mindset?

[1] Think back to when you were in a classroom, maybe a maths classroom, and the teacher set a difficult problem. (That could have been any time between this morning or a few years ago.) Which of the two following responses is closer to the way you reacted?

A	B
Oh no, this is too hard for me. I'm not even going to seriously try and work it out.	Ah, this is quite tricky but I like to push myself. Even if I don't get the answer right, maybe I'll learn something in the attempt.

[2] Early in her career, the psychologist Carol Dweck of Stanford University gave a group of ten-year-olds problems that were slightly too hard for them. One group reacted positively, said they loved challenge and understood that their abilities could be developed. She says they had a 'growth mindset' and are focused on what they can achieve in the future. But another group of children felt that their intelligence was being judged and they had failed. They had a 'fixed mindset' and were unable to imagine improving. Some of these children said they might cheat in the future; others looked for someone who had done worse than them to boost their self-esteem.

[3] Professor Dweck believes that there is a problem in education at the moment. For years, children have been praised for their intelligence or talent, but this makes them vulnerable to failure. They become performance-oriented, wanting to please by getting high grades, but they are not necessarily interested in learning for its own sake. The solution, according to Dweck, is to praise the process that children are engaged in: making an effort, using learning strategies, persevering and improving. This way they will become mastery-oriented (i.e. interested in getting better at something) and will achieve more. She contends that sustained effort over time is the key to outstanding achievement.

[4] Psychologists have been testing these theories. Students were taught that if they left their comfort zone and learned something new and difficult, the neurons in their brains would form stronger connections, making them more intelligent. These students made faster progress than a control group. In another study, underperforming school children on a Native American reservation were exposed to growth mindset techniques for a year. The results were nothing less than staggering. They came top in regional tests, beating children from much more privileged backgrounds. These children had previously felt that making an effort was a sign of stupidity, but they came to see it as the key to learning.

[5] So, back to our original question. If you answered B, well done – you already have a growth mindset. If A, don't worry; everyone is capable of becoming mastery-oriented with a little effort and self-awareness.

We asked four psychologists for their advice on how to be happy and, equally importantly, how to avoid being unhappy.

A There has been a lot of research which shows the importance of physical health in avoiding anxiety and depression. The mind and the body are highly interconnected. We can all make fairly easy changes in our lifestyle to include more exercise, healthier eating, getting enough sleep, being exposed to sunlight and so on. Research into exercise has found that it has a positive impact on mood. Physical activity stimulates the release of endorphins in the brain to produce the feel-good factor. Sleep is vitally important for children and adolescents to help concentration levels. A good night's sleep also stops people being bad-tempered and flying off the handle.

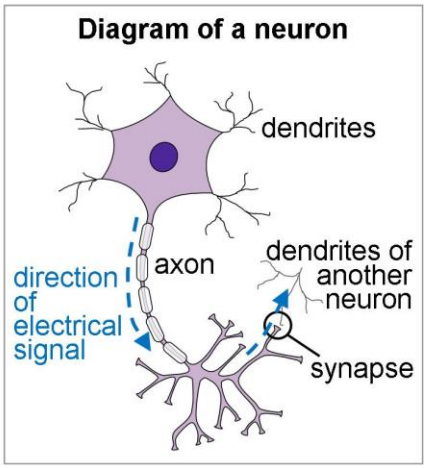
B Having good relationships is a big part of being happy. In one study, most happy people were found to have strong ties to friends and family and they made sure they spent time with them regularly. You also need at least one person who you discuss personal feelings with – called 'self-disclosure'. Just one person for a heart-to-heart is enough, together with a network of other relationships. It's not enough to have lots of friends just to do things with or chat to about music or football. That deeper connection is all-important. Some people need to learn how to listen effectively to others in order to develop stronger relationships.

C I would recommend being completely immersed in a pleasurable activity, sometimes called experiencing 'flow'. The activity could be anything from doing judo to painting a picture to playing chess. Typically, the activities require a certain amount of skill and are challenging but not too challenging. If you are experiencing flow, you lose track of time and are immersed in the present moment. You find the activity rewarding for its own sake. People who spend time doing 'high-flow' activities feel more long-term happiness than those doing things like just lounging around or chatting online.

D Make like Superman! Discover what your unique strengths and virtues are and then use them for a purpose which benefits other people or your community. People who play to their strengths (e.g. curiosity or persistence) or virtues (e.g. justice or humanity) and use them in different ways and in different situations are happier than those who focus more on their weaknesses. In other words, focus on the positive, not the negative, and be true to yourself. Studies in different countries have shown that people who do this report higher levels of well-being.

Me and my brain

We all know that significant changes occur in our bodies during adolescence, but have you ever stopped to wonder what's actually going on inside our brains during this time?



To paint a clearer picture, we should first familiarise ourselves with the different parts of the brain. Did you know, for instance, that our brains are made up of around 100 billion nerve cells called neurons? And stemming from these neurons are several branch-like structures for sending and receiving electrical signals? Every time we do or think anything, a signal is transmitted. The signal travels down a long structure called the axon and, at the end, it passes across tiny gaps called synapses to the dendrites of another neuron, which receive the signal. In this way, messages are sent across our neural network.

Our brain structure changes dramatically as we grow up. Newborn babies have almost all their neurons but few connections between them, which is why they can't do very much. After a few months however, the number of connections explodes, which in turn helps tiny tots master a whole range of new skills such as walking and talking. Despite earlier myths that most brain development is completed in the first few years, we now know that our brains continue to develop throughout our lives and perhaps the most dramatic time of change and development is during puberty.

During this period of reorganisation, the brain witnesses a sudden increase in neurons not dissimilar to a plant growing uncontrollably in spring. Just as we prune a plant to make it stronger and healthier, we prune our brains. The connections that are used become stronger, whereas those which aren't used wither and die. So, the more frequently an action or thought is activated, the stronger the connections become between the neurons, which in turn strengthens the part of the brain being used. This explains why the more you do something, the better you become at it, reinforcing the old adage 'practice makes perfect'. In fact, it would seem that the teenage brain provides optimum conditions for perfecting skills such as playing a musical instrument, speaking another language or learning a complex computer game. It could therefore be argued that teenagers determine the development of their own grey matter through the activities and experiences they engage in.

It may also be unsurprising to many to learn that the last part of the adolescent brain to develop is the frontal cortex, responsible for self-control, problem solving and decision making. Consequently, long before teens become adept at rational, abstract thinking and logical decision making, they rely on the emotional centre of the brain to make choices and think. So perhaps unpredictable, volatile, risk-taking teenage behaviour, often put down to hormones, may actually have more to do with what's going on inside our brain.

Robots: friend or foe?

What is the future of artificial intelligence (AI)? Will it be possible for robots to be autonomous? If so, when will that happen and will it be a good thing? We asked four experts what they think.

A

I would say that we are quite a long way off developing the computing power or the algorithms for fully autonomous AI, though I do think it will happen within the next thirty or forty years. We will probably remain in control of technology and it will help us solve many of the world's problems. However, no one really knows what will happen if machines become more intelligent than humans. They may help us, ignore us or destroy us. I tend to believe AI will have a positive influence on our future lives, but whether that is true will be partly up to us.

B

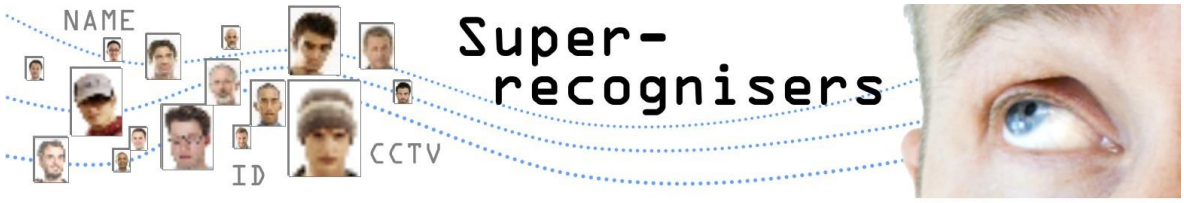
I have to admit that the potential consequences of creating something that can match or surpass human intelligence frighten me. Even now, scientists are teaching computers how to learn on their own. At some point in the near future, their intelligence may well take off and develop at an ever-increasing speed. Human beings evolve biologically very slowly and we would be quickly superseded. In the short term, there is the danger that robots will take over millions of human jobs, creating a large underclass of unemployed people. This could mean large-scale poverty and social unrest. In the long term, machines might decide the world would be better without humans.

C

Personally, I think it's fascinating to consider how we'll speed up our evolution as a species by augmenting our bodies. Imagine if you could implant a computer inside our brain! Soon we'll be able to do just that and enhance our mathematical ability, audiovisual perception and our memory, and this idea is only going to become more and more commonplace. AI is also popping up in the world around us. Recent developments include self-driving cars and drones carrying life-saving equipment to people at sea. Granted, there have been a few teething problems: one woman who was asleep on the floor had her hair eaten by her robot vacuum cleaner and there have been fatal accidents with self-driving cars. But progress always comes at a cost, and for me the advantages far outweigh the disadvantages.

D

I'm a member of the Campaign to Stop Killer Robots. Forget the movie image of a terrifying Terminator stamping on human skulls and think of what's happening right now: military machines like drones, gun turrets and sentry robots are already being used to kill with very little human input. The next step will be autonomous 'murderbots', following orders but ultimately deciding who to kill on their own. It seems clear to me that this would be completely unethical and dangerous for humanity. We need to be very cautious indeed about what we ask machines to do.



[1] Hundreds of angry people took to the streets in London and at least ten other English cities in 2011. Petrol bombs were thrown, buildings and vehicles destroyed and shops looted. Many of the rioters were caught on CCTV cameras, but most of the images were poor and the perpetrators had covered their faces.

[2] Gary Collins, an off-duty policeman, was watching the London riots on TV. He immediately recognised several people and cut his holiday short to help with identification. He ended up spending six months going through the CCTV film and managed to identify 190 people, many from their eyes alone. His help was of decisive importance in the investigation. Even with 200,000 hours of footage, facial recognition software managed to identify just one person.

[3] Collins is no ordinary police officer. Soon after joining the police force, he realised he had a special gift: after seeing a face briefly, he could remember it in detail years later. He is what is known as a super-recogniser. This term was first used in 2009 when a study estimated that 1–2 per cent of the population have severe problems recognising faces – called prosopagnosia or 'face-blindness' – and another 1–2 per cent are exceptionally good at it. They can recall up to 95 per cent of faces they see, whereas an average person remembers about 20 per cent.

[4] London's Metropolitan Police set up a unit of super-recognisers in 2015 after Collins' success proved it could be useful. It is the first of its kind in the world. Detective Chief Inspector Mick Neville of Scotland Yard, one of its founders, had realised that there was a problem with CCTV back in 2008. CCTV film was not used efficiently in the courts and did not seem to work as an effective deterrent. If criminals were captured on film, they knew they were unlikely to be recognised.

[5] Neville's unit has changed all that. Since it started, the tiny team of six officers has made nearly a quarter of all identifications in London, mainly by spending hours scanning film and photos. This is impressive, considering that there are 32,000 police officers in the city. The team's success relies on the ubiquity of CCTV; there are thought to be more than four million cameras throughout Britain.

[6] This winning combination of human skill and technology has helped convict criminals from shoplifters and pickpockets to sex offenders and murderers. Offenders are very seldom convicted solely on the evidence of a super-recogniser, but it is used to direct investigations. Many defendants plead guilty when they realise they have been caught red-handed.

[7] Super-recognisers could be useful in many jobs such as security and passport control. Find out about *your* powers of recognition with the University of Greenwich test: http://superrecognisers.com/

A If we boasted the superhuman ability to fly, we would no longer need to worry about plunging from balconies or tumbling out of trees. It would also have a significant impact on urban architecture as buildings could soar with no need for lifts, except when transporting heavy loads. In addition to the potential change in city landscapes, dwellings on the sides of steep cliffs and hills would become more accessible, which could affect property prices. On the question of immortality, an obvious drawback would be the strain on the Earth's resources due to intense overpopulation. It's difficult to envisage how food and housing would stand up to such a challenge.

B It would be great if we all possessed superhuman speed like Marvel hero Quicksilver, because we'd be able to stay in bed until the last possible moment without running the risk of being late for school or work. However, the sceptics among us put forward the idea that moving at such speed would ignite our shoes and leave a blaze which would disintegrate everything trailing behind us. This is aside from being blinded by bugs, birds or dirt that happen to get in our path. One superpower I'm not convinced by is immortality. Human existence would become relentlessly monotonous and tedious – a real-life Groundhog Day. Furthermore, any once-in-a-lifetime experiences would completely lose their value. I must admit, I'm intrigued to know to what extent our perception of time would change. As it is, time appears to pass more quickly as we age, but what would happen if we lived for eternity?

C There are obvious pluses to humans being able to fly, such as a huge reduction in traffic congestion and pollution, not to mention more affordable travel expenses. Needless to say, it would not be without its complications. With the entire population racing around above the ground, some degree of air traffic control would be required to keep chaos at bay. However, we would be at even greater risk if we were able to run at superspeed. Not only would we destroy everything in our path but direct collisions with objects or other people would undoubtedly be fatal. Looking on the bright side, perhaps with so many of us being obliterated on impact, overpopulation from immortality wouldn't be so likely.

D In my view, being able to fly would pose a security threat at both national and international level. Border protection would become a major concern and countries would constantly need to patrol their airspace. It would be more difficult to protect individual properties too, which could increase the risk of burglary and personal safety. Air traffic control would be inevitable in towns and cities to bring some order to the skies. With regard to immortality, there is no question it would deplete the planet of its resources and the prospect of living in increasingly overcrowded conditions is far from appealing for most. My superpower of choice would be the ability to move at superhuman speed. With the necessary face and head protection to keep us intact, tardy arrivals would become a thing of the past.

In December 2016 Edgar M. Welch drove six hours from his home to Washington DC, where he opened fire in a pizzeria with an assault rifle. He had previously read an online news story about the restaurant being the headquarters of a group of child abusers run by Hillary Clinton. He decided to investigate for himself; fortunately, no one was hurt.

The story about Hillary Clinton is one of the most famous examples of the growing phenomenon dubbed 'fake news'. The conspiracy theory about the pizzeria began to appear on websites and social networks in late October, before the US election. This was quickly denounced by publications such as *The New York Times* and *The Washington Post*. However, many people thought that these papers were themselves lying for political ends and instead of disappearing, the fake story snowballed. Tweets from 'Representative Steven Smith of the 15th District of Georgia' claimed that the mainstream media were telling falsehoods. Even though both this name and district were invented, the message was re-tweeted many times. A YouTube refutation of the *New York Times* article got 250,000 hits.

Fake news stories can be hard to control for several reasons. Many people mistrust established news sources and others just don't read them, so the debunking of a fake story by a serious newspaper or TV channel has limited effect. In addition, the internet is very hard to police. When users are caught misusing one media platform, they simply go to another one or start up a website themselves.

There are also various reasons why people create fake news. Some have political motives, to belittle or incriminate their opponents. Other websites, like The Onion, deliberately publish fake news as satire – humorous comment on society and current affairs. Another group is in it for the profit: many people clicking on entertaining fake news stories can bring in a lot of advertising revenue. One man running fake news sites from Los Angeles said he was making up to US$ 30,000 a month in this way. There are also those, like the small-town teenagers in Macedonia who wrote fake news stories about Donald Trump, who seem to be motivated partly by money and partly by boredom.

So, what can we do to stop fake news spreading? First, make sure that the websites you read are legitimate, for example by looking carefully at the domain name and the About Us section. Check the sources of any quotes or figures given in the story. Remember that amazing stories about famous people will be covered by the mainstream media if they are true. Only share stories you know are true and let your friends know, tactfully, when they unknowingly share fake news. Together we can turn around the post-truth world!

Two remarkable people

Keeping an eye on the health of our seas

You might be forgiven for thinking that Lewis Pugh is somewhat out of his mind, particularly since he once swam in water so cold at the North Pole that the cells in his fingers burst. The extreme swimmer then went on to almost drown while swimming in a glacial lake on Mount Everest because of the thin air, and more recently has become the first person to swim long distances across seven seas including the Mediterranean, the Red Sea and the Black Sea. His motive is crystal clear: to draw the attention of politicians and leaders to the degradation of the environment, particularly our oceans, before it is too late. Lewis would like to see the number of marine protected areas in the world increase from 3 per cent to 10 per cent in an attempt to reverse the damage caused by human activity such as overfishing, polluting and littering. During his expeditions, Lewis has witnessed this environmental destruction first-hand. He's swum over coral reefs bleached by the increase in water temperature, and observed underwater deserts beneath the shallow waters of the Red Sea, devoid of life and strewn with plastic. Pugh believes that nature can recover if it is given space to do so, but the clock is ticking. If we don't start looking after our seas, we may soon have an unsolvable problem on our hands.

Hula-hooping for human rights

Wasfia Nazreen first came across a hula hoop as a young girl, when she saw a foreign child who was visiting her native Bangladesh playing with one. Wasfia reluctantly stood by and watched, as in her country it was believed that girls should not play with hula hoops or ride bikes. Now Wasfia is one of the few people in the world to have climbed the Seven Summits, including Everest and Kilimanjaro, and the first to have hula-hooped on each peak. Her reason for doing so: to empower women and girls in a country which discourages them from doing sport. Wasfia has dedicated her life to supporting human rights and has witnessed numerous international humanitarian projects in her homeland to educate and train women and girls, but once too often they have been left with nothing when such projects have stopped running. Wasfia saw that Bangladesh needed to stand up for itself and so she brought together two of her passions, mountaineering and human rights, in order to try and change attitudes towards women in her country. She originally took up climbing while working on humanitarian campaigns in Tibet and Nepal, as in a coastal, primarily flat country like Bangladesh most people have never set eyes on a mountain. Her campaign seems to be doing the trick as fellow countrymen and women are sitting up and taking notice along with the rest of the world.

What do you know about spiders?

Spiders can be found on every continent of the planet except Antarctica. They are both hunters and hunted. They capture their prey in a variety of ways, either by spinning a web and waiting for their unsuspecting prey to fall into the trap, or jumping out of a hiding place onto a passing meal. Except for the plant-eating *Bagheera kiplingi*, these eight-legged invertebrates are serial carnivores: most love to snack on insects while others are tempted by lizards, birds, frogs, fish and the occasional snake. There are spiders that eat other spiders, and some female widow spiders eat their mates, even while they are mating. In turn, spiders are preyed on by lizards, birds, snakes and scorpions as well as some insects such as the mantis and a type of wasp that buries the arachnid alive! Spiders are also eaten by humans; they are a delicacy in some cultures of the South Pacific and a popular street food in South East Asia.

Spider venom is present in most species and serves the purpose of stunning or killing their prey rather than attacking humans. In fact, only 25 of the known spider species produce venom which can actually harm humans, and although spider bites can be painful, they are rarely deadly. Australia's notorious Sydney funnel-web spider has not produced any fatalities since anti-venom was developed in 1981. However, take care not to rub hairy spiders like tarantulas up the wrong way. When they feel in danger, they defend themselves by ejecting a cloud of urticating hairs. These irritating hairs then embed themselves in the skin or eyes of the attacker.

Despite having adapted to a range of habitats and temperatures, spiders rarely stray far from their home environment. Ballooning spiders are an exception as they can migrate fairly long distances by drifting through the air with air-filled balls of silk. Spiders tend not to favour significant changes in temperature, and tropical spiders such as tarantulas prefer warm surroundings and find many European climates a little nippy. Even the ones who hitch a ride to Britain by boat or plane from the tropics don't survive long.

Spiders can produce several different types of silk from their silk glands and nozzles, otherwise known as spinnerets. They range from stickier threads used to weave webs to capture their prey to incredibly strong threads which can support their own weight. The toughest spider silk is up to six times stronger than human bone, and that made by orb-weaver spiders is on a par with the strength of steel. In fact, some experts suggest that spider silk would be more effective than Kevlar in bulletproof vests. However, harvesting the thread on spider farms is complicated as these territorial creatures prefer their own company and could end up killing each other. Nevertheless, having studied the complex nature of spider silk, scientists have managed to replicate the resilient fibres, which has enormous potential for developing a range of things from synthetic muscle tissue to high-performance sports clothing.

Arachnophobia, or the irrational fear of spiders, is among the most common phobias in the Western world. It is thought to date back thousands of years and might be the result of an instinctive response displayed in early humans. For a long time throughout Europe, spiders were wrongly believed to spread diseases such as the plague. However, out of all the known spider species on the planet, only around 2% are actually harmful to humans. Other cultures such as Native Americans depict them in a more favourable light as they believe spiders are lucky and consider them symbols of wisdom.