The changing mind

Mass IT consumption is having a major impact on the way we all think, argues neuroscientist ***Susan Greenfield*** *— and it's vital that business leaders understand the profound implications.*

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When Baroness Susan Greenfield, one of the world's leading neuroscientists, says that digital technology is changing the way we think – for better or for worse – people sit up and take notice. Indeed, in recent years, the Oxford University professor of synaptic pharmacology and member of the UK's House of Lords has not been afraid to court controversy with her strong opinions on how IT, and in particular the influence of the world wide web, online social networking and computer games, is having an impact on the workings of the human brain.

Her detractors, many of them fellow scientists, have criticized her for failing to produce sufficient evidence to back up her claims. But to Greenfield, who happily reels off a list of academic journals that have published research supporting her theories, their disbelief echoes a time when few were prepared to accept that man-made climate change was an emerging reality. "About 30 years ago, the term climate change was only recognized by perhaps a few 'pointy heads,'" she says. "Once people started to introduce the idea, there was a resistance because it challenged our view of the world, our comfort, security, stability. Some people think climate change is exaggerated, some people think we're doomed, some people think science can help. My contention is we're facing a similar ▶

issue where the impact of technology is pervasive and invasive in a way that is unprecedented."

But while Greenfield's concept of what she calls "mind change" may seem alarming, she is at pains to say she is not making a value judgement about technology. "The term 'mind change' is a neutral one, it's value-free," she insists. "Digital technology *is* going to change the way we think. What I'm not saying is whether that's good or bad."

On the plus side, she points to an increase in average IQ scores in many countries, citing evidence from the popular science author Steven Johnson's book *Everything Bad is Good for You*, in which he describes how greater interaction with computers has actually improved our cognitive abilities, and that the skills involved in playing a computer game, for example, can sharpen our mental agility. Given that the core focus of Greenfield's research is finding new approaches to arresting brain degeneration, particularly in cases of Alzheimer's and Parkinson's disease, activities that can exercise the mind, especially in later life, can be deemed a positive development for the benefit of mankind.

Greenfield is also highly enthusiastic about the growing convergence of consumer technologies, which she describes as "exciting," particularly in the field of mobile computing that is increasingly bringing devices closer to the humans who are using them. "Clearly, that is the way technology is going," she says. "A mobile phone — which is really a small computer that you take with you everywhere — is a part of you. If someone even holds my mobile I feel uncomfortable, yet if they hold my laptop I don't mind at all."

However, these technological positives are accompanied by a host of caveats. "When you're good at an IQ test, what you're actually doing is using mental agility, you're seeing patterns or connections very quickly and you're reaching a very specific right or wrong answer," she explains. "We may have seen a positive change in IQ trends, but what we haven't seen is a shift in insight — whether that's insight into the economic situation or solving the Middle East crisis." Similarly, while the use of many technologies creates a demonstrable and "fantastic" improvement in sensory motor skills, that is only because "the human brain becomes good at whatever it rehearses."

The real value emerges at higher levels. Getting the best out of technology — particularly in the enterprise space — flows from the way in which we turn information into knowledge and insight, she argues. So while dealing with an onslaught of data coming through their servers every day, corporations need to ensure they have trained staff who can apply context to that information, rather than simply processing it.

"We need to go from having the ability and the facility to have endless stats that are not necessarily related to a past, a present or a future, to a wider conceptual framework," she says. "Companies are putting a premium on the one commodity they can't buy, and that's creativity and creative individuals. You might have people with high IQs who can process information quickly, but that is not the same as seeing something in a new way, or understanding something from a different angle and coming up with a new product."

She points to the specific capabilities of the human mind that, as yet, computers have not been able to replicate. "What we can do is think laterally," she argues. "We can think just using intuition and common sense. We can have hunches, we can be creative, and above all we can understand and have insight. Computers can't do that."

Or at least not yet. "I don't think it's beyond the wit of man to design software that helps to convert information into knowledge," she says. "Something more than just Wikipedia, that's not just giving you more facts, but helping you make conceptual leaps between one thing and another."

One of the obstacles to turning that information into knowledge, in her opinion, is that technology itself doesn't give us the space to do so. She cites Google chairman Eric Schmidt, who was recently quoted as saying he worried that "the level of interrupt, the sort of overwhelming rapidity of information... is in fact affecting cognition."

The suggestion: a generation of "digital natives" is entering the workforce, and while they might be able to check their email on a smartphone and simultaneously execute a work task on screen, their understanding of what they are doing, and why they are doing it, is essentially shallow. The constant drip-feeding of information they are processing will never be fully put into context because their engagement is spread too thinly.

"How can you possibly be concentrating and analyzing what's coming in if you're busy processing something going out?" Greenfield asks. "If you're constantly outputting, you're not digesting what's coming in." The imperative for business, therefore, is to design an environment where genuine blue-sky thinking can take place, where employees take time out from the screen, slow down their thoughts, talk through their ideas.

Good leaders, she adds, will be the ones who can promote that deeper understanding, who provide the dots but don't join them together. "A good leader and someone who can bring out the best in people is someone who can paint a vision. So it's not so much you tell people things, but you say, 'Imagine if we could do this. Imagine if we could increase our sales by tenfold a month.' Martin Luther King said, 'I have a dream.' He didn't say, 'I have a five-year plan.' Charismatic leaders share their vision, but don't give everyone all the answers. What we need is a more question-rich world. At the moment we live in an answer-rich, question-poor world."

Styling: Alex Reid. Previous page: Shirt & skirt www.bastyan.co.uk; earrings www.marni.com. This page: Shirt www.maxmara.com; skirt www.zara.com. Desk by Bruno Fattorini for MDF Italia; Lotus chair www.viaduct.co.uk. Hair & make-up: Aimee Robinson.

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Hand-in-hand with this shallower understanding is a decline in empathy, claims Greenfield. She points to a study, published at the end of 2010 in the magazine *Scientific American*, which found that college students' self-reported empathy has declined since 1980, with an especially steep drop in the past 10 years. By engaging in a screen-dominated world where one is the "passive recipient of senses," as one might be in a computer game, she believes, we lose our connections with the outside world and struggle to understand it.

One of her favorite examples to illustrate this is the empathy we might feel for Princess Maria in Tolstoy's *War and Peace*, compared with the fight to save a princess in a computer game. "When you play to rescue the princess, it's not because you care about her, but rather the thrill of the process of playing and winning the game. When you read a book, it is because you care about the characters, their relationships with others and their fates," she says.

Combine lack of empathy with a shallower level of understanding, and people are also more likely to take risks. When people play computer games, their actions don't have long-term consequences. They may get shot down in a war game but they can live to play another day. She describes this as a "toxic combination of excitement and safety."

"Where's the risk when you play a computer game?" she asks. "It's faster and brighter and noisier and more interactive than the real world, but it's also totally safe. It offers you for the first time ever two mutually exclusive things that until now have been in dynamic equilibrium: [danger-induced] excitement and safety."

Being exposed to this culture of never knowing the consequences of our actions may have had ▶

a more wide-ranging impact than many people realize, argues Greenfield. She goes as far as to suggest that a less risk-averse culture may have played some part in the recent global financial crises. "I won't be crass enough to say that all the financial ills are due to this, but one thinks of young traders sitting there, just pressing buttons and shifting money around in the way their predecessors didn't," she says.

Greenfield accepts that some level of risk can be a good thing, though, and claims that: "I have always been a risk-taker in my research... What you need is not someone who just says 'no' all the time. There's a middle ground you want to occupy." But how do we achieve that balance? In a world where open source technology is becoming pervasive and organizations of all kinds are starting to open up their data to the wider public, our whole notion of progress is predicated on a certain element of risk and openness, she suggests.

When it comes to workplace collaboration via social networks, for example, Greenfield believes there are advantages, in that we can introduce checks and balances and still come up against other people's thoughts.

But again she urges caution: "It seems to be a given that being connected is a good thing, and sharing things can be, a bit like with open source, a good thing. But I think if people get used to only being able to think collectively and 'in the cloud,' as is already happening, then where do 'you' end and 'I' begin? Where's the firewall of your personality? When things move as a swarm they only move in one direction and if you want a diversity of views and talents, you'll be homogenizing everything if everyone is thinking collectively. I think the goal will be to get people to work in teams, but teams where individuality is recognized."

Greenfield is now making her own attempt to harness the positive aspects of technology. She is working with a team of developers to create an app that can stimulate thought by providing simple access to information about how the brain works: a "mind change" app. One of the elements of the program will be the facility for subscribers to log their own experiences with technology (for example, how long they have spent in front of a screen on a particular day) and record how they feel about it. She hopes it will create a vast global survey of views around our technological experiences.

A second project is, perhaps surprisingly for a scientist of her standing, a novel. Provisionally entitled *2121: A Tale from the Next Century*, it's the story of a dystopia, what happens as a consequence of what she believes to be our over-reliance on technology today. "The best review I could have would be for someone to say it was like the *1984* or *Brave New World* of our time," she explains. "It's about people who live in a completely cyber-based world, where everyone is healthy and beautiful, but they don't interact, they don't have a narrative in their life."

Combining her core scientific research at Oxford — which continues to look at new ways to deal with brain degeneration — with her role as a member of the House of Lords (where she sits as an independent "crossbencher"), while also writing fiction and non-fiction and developing apps, should be exhausting. But her portfolio approach to life and work is refreshing, and one Greenfield would like to see become more of a social trend in decades to come.

Technology has delivered us a much longer and healthier life, she says, and should we choose to use it selectively and not to the exclusion of everything else, then there's no reason why it can't be a fulfilling element of our lives. As she puts it in a nutshell: "We should shape the environment with technology, not the other way around." ●

● *Further reading: www.susangreenfield.com*

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