

# FUTURE MINDS

How the digital age is changing  
our minds, why this matters,  
and what we can do about it

Richard Watson



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Overture

## Screen Culture

This book is partly a sequel and partly a prequel to my previous book, *Future Files*. It's about work, education, time and space, books, baths, sleep, music, and other things that influence our thinking. It's also about how something as physical, finite, and flimsy as a 1.5kg box of proteins and carbohydrates can generate something as infinite and valuable as an idea. Most of all, it's a book of concepts and conversation starters, with 10 key trends as the unifying force, including what I call constant partial stupidity, digital isolation, and a return to the real. It delves into the implications of living in a digital age.

Cellphones, computers, and iPods have become a central feature of everyday life in hundreds of millions of households, offices, and schools around the world. Children as young as 5 spend an average of six hours every day in front of some kind of screen, teenagers and many adults probably more. In the US, for example, adults were spending double the amount of time online in 2009 as they were in 2005. In Europe, the amount of time adults were online grew by around a third over the same time; in the UK, nonworking women are passing almost half their leisure time online, and the average person spends 45 percent of their waking hours on media and communication. Or there's the finding in 2010 that 8–18 year olds in the US spend an average of 11 hours a day in front of a screen, be it a television, a computer, a cellphone, an iPod, or two or more simultaneously.

We are increasingly communicating via text message and email rather than face to face, we have hundreds of online “friends” yet we may not know the people next door, and the first place we look for information is Google.

This technological ubiquity and electronic flood are resulting in significant shifts in both attitudes and behavior, which is what this book sets out to explore. It's about how the digital era is changing our minds—about what's happening now, and what comes next.

But can something as seemingly innocent as a cellphone or a Google search really change the way people think and act? This is a very important question. It is also one that is actively engaging the minds of a number of eminent scientists, particularly those who study the physiology of the brain, because implicit in the question is the thought that the digital age may be changing our brains too.

Michael Merzenich is a pioneering neuroscientist who discovered through experiments that the human brain is “plastic”: it responds to any new stimulus or experience. Our thinking is therefore framed by the tools we choose to use. This has always been the case, but we have had millennia to consider the consequences. Arguably, this has now changed, and Merzenich has argued that the internet has the power to lead to fundamental change in our brain, leading it to be “massively remodeled.” We are already so connected through digital networks that a culture of rapid response has developed. We are currently so continually available that we have left ourselves no time to think properly about what we are doing. We have now become so obsessed with asking whether something *can* be done that we leave little or no time to consider whether it *should* be done.

For example, according to Professor Susan Greenfield, a brain researcher at the University of Oxford, when kids do something they like, such as playing an electronic game, the brain receives a blast of dopamine in the prefrontal cortex. However, if too much dopamine is produced—if they play too often—the parts of the prefrontal cortex associated with reasoning can be compromised. Electronic euphoria thus creates fewer possibilities and less opportunity to develop an original mind.

The digital era is chipping away at our ability to concentrate too. The quality of our thinking and ultimately of our decisions

is suffering. Digital devices are turning us into a society of scatterbrains. If any piece of information can be recalled at the click of a mouse, why bother to learn anything? We are becoming Google-eyed, scrolling through our days without thinking deeply about what we are really doing or where we are really going.

Reading on a computer screen is fast and is suited to foraging for facts. In contrast, reading on paper is reflective and is better suited to trying to understand an overall argument or concept. Both forms of reading—both forms of technology—ought to be able to live alongside each other. Since digital books are becoming instantly available and inexpensive, there is a danger that we will start to view them as just another disposable product, something to be consumed quickly and then thrown away. But if we keep the words and throw away the physical books, we are losing something of great significance, because physical books engage our senses in ways that digital artifacts do not. Reading a physical book is a highly tactile experience that delivers a sense of progression, and printed books give physical and metaphorical weight to the reading experience.

Furthermore, our attention and our relationships are getting atomized. We are connected globally, but our local relationships are becoming wafer thin and ephemeral. We are in danger of developing a society that is globally connected and collaborative, but one that is also impatient, isolated, and detached from reality. A society that has plenty of answers but very few good questions. A society composed of individuals who are unable to think by themselves in the real world.

It is the right kind of thinking—what I call deep thinking—that makes us uniquely human. This is the type of thinking that is associated with new ideas that move the world forward. It is the type of thinking that is inherent in strategic planning, scientific discovery, and artistic invention. It is thinking that is **rigorous, focused, deliberate, considered, independent, original,**



**imaginative, broad, wide, calm, relaxed, attentive, contemplative, and reflective**, where the flow of information is limited and the medium matters—what you might call “slow flow.” It is not shallow, narrow, hurried, cursory, fractured, or distracted.

But deep thinking like this can't be done in a hurry or an environment full of interruptions or hyperlinks. It can't be done in 140 characters. It can't be done when you're in multitasking mayhem. What happens to the quality of our thinking when we never truly sit still or completely switch off? Modern life is indeed changing the quality of our thinking, but perhaps the clarity to see this only comes with a certain distance or detachment—like when you are sitting quietly to read a book, for instance.

You might think that none of this really matters; but it does. The knowledge revolution has replaced human brawn with human brains as the primary tool of economic production. Intellectual capital—the product of human minds—is now what matters most. And we are on the cusp of another revolution, too. In the future, our minds will compete with smart machines for employment and even affection. Machines are becoming adept at matching stored knowledge to patterns of human behavior, so we are shifting from a world where people are paid to accumulate and distribute fixed information to a fluid innovation economy, where people will be rewarded for being conceptual thinkers. Yet this is the type of thinking that is currently under attack.

So how should we as individuals and organizations be dealing with our changing way of thinking? How can we harness the potential of the digital age while minimizing its downsides? That's what this book is about.

We need to do a little less and think a little more. We need to slow down—not all the time, but occasionally. We need to stop confusing movement with progress and get away from the idea that all communication and decision making have to be done instantly.

Try as I might, I find it difficult not to be sucked into the vortex of change. To me it feels as if time itself is being compressed. Having even an hour during the day just to think or write, uninterrupted, is becoming a luxury, mainly due to digital technology. I never quite feel as though I am in control, and when I do get a chance to think I usually end up mentally commuting back to an era when things were simpler and more certain.

A study by the University of California (San Diego) has found that in 2008 the average person's daily intake of information was 300 percent greater than in 1960. I don't know about the exact percentage, but I am certainly faced with an avalanche of information every day and I'm on a digital diet of continual deletion. But like any slimming diet it's difficult to stick to for long, so the digital binging goes on and the megabytes keep building up. And while the vast amount of information at our disposal gives us all the appearance of being more intelligent, we're making more and more silly mistakes, what I term constant partial stupidity.

I can read newspapers and websites from all over the world, at a time and a place of my choosing, and I can communicate with their authors, too. But I miss old-fashioned conversations and serendipitous encounters. Even when I do see people, the chances are that our chat will be fleeting or else the pudding of chilled berries will be interrupted by Apples and BlackBerries, at which point any interesting ideas will be frozen out.

But enough about me—over to you. Why, in an age of too much information and too little time, should you read this book?

Whether you want to find out about the benefits of boredom, mental privacy, the rise of the screenager, the sex life of ideas, or how digital objects and environments are changing our minds, you'll find thought-provoking discussion and practical suggestions about what's happening and what we can do about it. This is a book for anyone who's curious about rethinking their thinking or about unleashing the extraordinary creative potential of the human mind.

I am often described as a futurist, but my opinion about what might happen next is continually evolving. However, what I can say with some level of certainty is what is happening to me right now and where I am going next. So the book is about some of the emerging trends and “weak signals” I am watching and about what is going on inside my head.

- ¶ The culture of rapid response plus ease of access to anything is encouraging mistakes. This is leading to a state of constant partial stupidity and multitasking mayhem. While multitasking means that we are getting better at thinking faster, the quality of that thinking is suffering. We can do more than one thing at once, but we can rarely do them well. Some studies suggest that multitasking increases stress-related hormones like adrenaline and cortisol and that this is prematurely ageing us through what is called biochemical friction. The backlash to multitasking will be a trend called single tasking, an idea borrowed from the Slow Food movement.
- ¶ While screens offer us many opportunities, they can encourage thinking that is devoid of context, reflection, and an awareness of the big picture. Similarly, the trend for packaging information in byte-sized chunks means that we are sprinting toward the lowest common denominator. The countertrend to this (again an offshoot of Slow Food) will be “slow media”—long copy analysis and slow, paper-based communication.
- ¶ We are living faster than we are thinking. We relish the speed of communication that is possible, but it is sometimes forcing us to respond without thinking things through properly. We need to slow some things down a little. A study at the Unconscious Lab at Radboud University in the Netherlands found that we make more effective decisions if we walk away from a problem and allow our brain to mull it over from a different perspective. We also need to step off the “speed is good” treadmill and deal with our fear that a slower pace will somehow have a negative impact on economic growth or progress.
- ¶ While we benefit from the ubiquity of information and the possibilities of greater communication, constant digital disruptions and too much information are atomizing our attention and splintering our concentration. We are finding it difficult to remain focused and we are becoming addicted to the screen. We need to get away from the idea that all information is useful and adjust to a new reality where attention is power and it is trust in information that is critical.

- ¶ The constant flow of information on what other people are doing allows us to get a sense of their lives. Small bits of information, mundane and trivial though they may be on their own, eventually build into a kind of narrative. Scientists have called this phenomenon ambient intimacy, similar to how you can pick up another person's mood by being close to them and decoding the small signals they transmit. But constant connectivity means that we are replacing intimacy with familiarity, and this can also make our physical relationships with other people more ephemeral. Hence, we face a threat of widespread digital isolation. Expect to see a significant "return to the real," which will be linked to trends such as authenticity, localism, and craft.
- ¶ We have greater choice and more personalization, but concentrating on ourselves can reduce the opportunity for serendipitous encounters, with both people and information. We are shutting ourselves off from potentially valuable experiences and lessons. For example, work at the University of Chicago demonstrated that a more restricted range of sources are being cited in academic journals as sources move online, concentrating on fewer, more recent articles. Our thinking needs to be not merely deep but also wide, allowing for the cross-pollination of ideas and activities.
- ¶ The anonymity of the web is eroding empathy, encouraging antisocial behavior, and promoting virtual courage over real emotion. At the same time, oversharing information about our precise location or interests may let us know who else is in the vicinity, but it is also making us vulnerable to everyone from advertisers to burglars. Digital immortality also means that it is becoming increasingly difficult to forget previous actions or to get past our past.
- ¶ Online crowds are drowning out individual wisdom and experience. Online collectivism via social networks also means that we face pressure to be online and to conform to group norms. We are finding it much harder to escape from the presence of others and to be truly alone to concentrate on our thoughts and our ideas. What is known as attention restoration theory claims that just like people need to sleep, our brains need to take time out from the deluge of outside stimuli in order to relax and restore effective functioning. We rarely take pleasure in doing nothing and just enjoying our surroundings, yet doing so is one way of improving our mind and its capabilities.