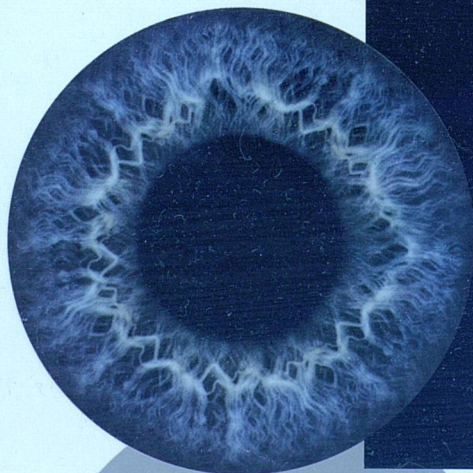
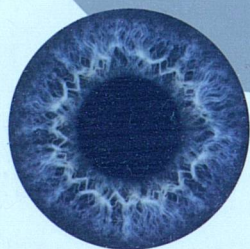


THE QUEST
FOR IDENTITY
IN THE 21ST
CENTURY



Susan
Greenfield

i.d.

TUN DR. MAHATHIR MOHAMAD

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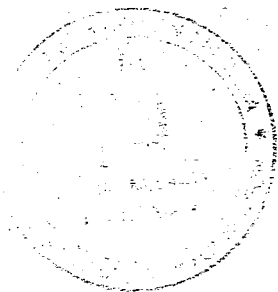


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For
John and Carolyn Lloyd-Davies

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PREFACE

I was a Baby Boomer, born into a world of unprecedented and expanding realms of consumerism, health and education, from where the future always beckoned as a bright, shiny place. And the innovation and iconoclastic march of the 1960s reinforced the idea that, for my generation, anything was indeed possible, from material gain to personal development to social progress. At that time it wasn't so much that I was 'interested' in the future from an academic stance – I was simply dying to be a part of it. Then my world tilted.

In the 1970s the economic gloom was reflected in Britain in strikes, a three-day week and national power cuts. Meanwhile, at the personal level there was suddenly real work to do: after wonderfully unstructured undergraduate days of self-indulgent thinking, reading, writing and dreaming in a library, there were now long hours of routine slog in an unlovely research lab, battling with practical problems and the caprices of grinding experimental procedures. Nature gave up her secrets grudgingly and very, very slowly; most days, things went far from according to plan. And so it was in the wider world. Deaths in Vietnam, then deaths in Northern Ireland, rendered the 1960s' vision a tinny, tarnished absurdity, as captured in a play we all saw at the time: *Kennedy's Children*, by Robert Patrick, in

which a handful of characters in a New York bar don't actually interact, but deliver monologues about how their individual lives have been shaped by the era. We were indeed all on our own.

The material confidence of the 1980s was somehow unmatched, at least from where I was standing, by a corresponding mindset that could cope with it. Carried away by Filofaxes, shoulder pads, City careers and the mandate to succeed, none of us was really fulfilled for very long, and most of us were anxious. The 1990s were worse in that the personal insecurities continued, undermined further by far less consumer comfort and a scary new high-tech takeover of all aspects of our lives, including even attitudes and expectations.

When I wrote *Tomorrow's People* not long after the millennium, discussion of new technologies and the life-style they could bring was far less rehearsed, and therefore seemed to me to be completely crucial to examine – which is what I did. But even over the relatively brief period of time since then, much of what seemed at the time startling has already crept into the warp and weft of our daily lives and raised concerns that everyone now acknowledges, from obesity to literacy standards to then unheard of and unimaginable screen crazes such as *Facebook* and *Second Life*.

Back in 2002, I felt it necessary to flag some of the possible outcomes of an increasingly pervasive and invasive technology. But such predictions as I ventured then tended to be rather negative: the perhaps unhelpful message that things might well be different for the next generation could have been construed as somewhat Luddite as well as

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lacking in passion and compassion. I was by no means sure of where we as a society, and as individuals, might want to go, given the extraordinary time and facilities and longer lifespan that the new developments were making possible. But since then, these issues have become mainstream.

In April 2006, we had a debate in the House of Lords on the impact of the latest technology on the way young people might think and learn differently from preceding generations. The diversity of the contributions, with many different issues being raised, convinced me that the time was ripe to face up to the future technologies and explore the impact they would have, in the broadest possible sense, on those born in this century. The big question, it seemed to me, did not stop at how our children and grandchildren might learn: the implications went more deeply, into what *kind* of people they might become. Would they have options open to them, both good and bad, that had never before confronted humanity? And this issue of a new type of identity in the future inevitably raised questions about our identity today.

The more I thought about it, the more fascinated I became with how we define ourselves and others, which in turn relates to how fulfilled we are as individuals, which then, or so my fevered thinking ran on, brings us to the big and ancient topics of happiness and the meaning of life. In this book, I want to see if neuroscience can make an important contribution in helping us with the truly big questions, and even offer new insights on the eternal problems that have been with us humans for over a hundred thousand years.

In his recent book, *The Meaning of the 21st Century*, James Martin argues that we shouldn't just ask what is

going to happen in the future, but how we are going to shape the future. Neuroscience, I firmly believe, is perfectly positioned as a discipline not only to help explain why we are as we are, but to explore how we might change and be changed. My recurring theme is the dynamism, the ‘plasticity’, of the human brain and the wonderful benefits and terrifying threats that that malleability brings. I want to show how our identity *is* our brains, or rather our minds: as such we are highly vulnerable, but at the same time could be potentially fulfilled as never before, by future technologies. Lofty goals, agreed – but ones that our children and grandchildren might never forgive us for shunning.

One of the inevitable challenges of applying brain research beyond its normal context is striking the right balance between the necessary technical detail on the one hand, and on the other, couching somewhat rarefied neuroscientific findings in terms that are clear, relevant, interesting and above all understandable to the non-specialist. Such an exercise can never satisfy everyone, and I ask the forgiveness of my more purist colleagues who could feel offended that I have not given certain scientific nuances the attention they might otherwise deserve. Similarly, I really hope that the general reader will see that there *is* a point, in the early chapters, in first getting to grips with the basic neuronal nuts and bolts of brain functioning, and the neuroscientific story so far.

Given the extremely multidisciplinary nature of the subject, I have had to turn to many colleagues and friends for advice and help. In alphabetical order, I would therefore like to thank: Peter Brown, Gordon Claridge, Guy Claxton, Ellie Dommett, Michael Hill, Paul Overton, Jonathan

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Sharples, Nick Shea, John Stein, Kathleen Turner, Jack Velero, Katja Weich, Martin Westwell and Russell Wilcox. I'm also indebted to Emma and James Arbuthnot for putting up with me as the most anti-social house guest ever when, over Easter 2007, I commandeered their study to press on with the writing, emerging only at mealtimes. Younger friends have also helped, without knowing it, on giving a perspective on the preoccupations of the next generation: Alice Arbuthnot, Phoebe Collins, Merryn Hurley-Rawlins and Amy Irvine.

I'd also like to thank my publishers Rowena Webb and Helen Coyle for their enormous support and unstinting enthusiasm throughout.

Finally, however, the biggest debt of gratitude goes to my wonderful friends, for just being there throughout and whenever. In particular, Carolyn and John Lloyd-Davies deserve a special mention. As I write these words, they are facing the biggest challenge, the most overwhelming journey of their lives, as they come to terms with serious illness. I dedicate this book to them, in admiration of their great courage, love, dignity and, above all, humour.

Susan Greenfield
Oxford
December 2007

THE FUTURE

The twenty-first-century is promising and threatening much. We now live in a world and at the beginning of an era where nothing, other than huge changes, can be taken for granted. The dire consequences of global warming are finally permeating everyone's mindset, while the technology now assumed as indispensable and integral to our daily existence is actually becoming ever more pervasive, invasive and startling. But although the instability and insecurity of the environment is a current, constant topic of debate, the impact of twenty-first-century technologies, not so much on our outer lives but on our inner ones – our minds – is not really being questioned. Yet just look at us, and how we are changing.

Daily the press shake their collective head over binge-drinking teenagers, feral and dysfunctional, of obesity reaching epidemic proportions, and of gun crime and murder among a generation that should have ahead of them a life that is longer and more stimulating than at any previous time in history. Even for the great majority who don't hide behind hoods, and who do make it routinely to school, there's a big question mark over what to teach, and how. Increasingly children are turning to sources of authority that they have never met, searching on the internet, socializing on the screen, spending on average six hours a day in two dimensions.

Meanwhile many older people are facing the prospect of long lives with no obvious purpose. Increasingly freed up from fatal or debilitating diseases, they see decades of post-retirement time stretching out into a solitary and empty end-game. For others less lucky, there is the spectre of neurodegenerative disease, in particular of conditions such as Alzheimer's disease and the most frightening prospect of all, loss of the mind – of everything that makes you so unique and special.

And then there's my generation, the ones in the middle, living life like hamsters in a wheel, bombarded with aspirational goals, desperately worried about how we match up, what we look like, what others think; many are asking, above all, why they are not happy. In his recent survey of global wellbeing, *Affluenza*, the psychologist Oliver James blames many of such ills in Western society on 'selfish capitalism', an unfettered consumerism that has arisen from our shifting, almost a century ago, to a market economy. We have been cajoled all too often into buying things that we don't need but only want. And the reason we crave more clothes, cars, goods, brands and so on is that they will 'say something' about us – symbolize our distinct, preferably superior, identity. But as with all arms races, there is no happy finishing post. Small wonder that the most prevalent disease soon will be not AIDS but depression: the World Health Organization predicts that as the twenty-first century unfolds a staggering one in four people will succumb.

And small wonder, then, that alternative paths seem highly attractive – paths uncluttered by consumer goods and paved out straight before us, with no confusing diver-

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sions or side tracks. In itself, such an option is far from new: the twentieth century was arguably a battleground between a blatantly decadent consumerism and tougher, purer, simpler lifestyles dictated by the blueprints of ideologies, be they political, religious or some cult cocktail of the two. Whether the emphasis lay in the genes, as the Nazis would have it, or the environment, as Marxism preferred, the individual has in both cases been cast in a predictable mould: identity shifts away from the unique person with their idiosyncratic personality in favour of the collective persona, the collective narrative. Now such single-minded devotion has taken on a ferocity and extremism that might even eclipse the gut-wrenching inhumanity of those previous, more overtly political ideologies.

What do these very different black scenarios none the less have in common? In a word: identity. In two words: identity crisis. How do you see yourself? What defines you? What makes you happy? What do you want from life? These questions, naïve and unoriginal though they may sound, are in my view right up there with the current crisis of climate change as we contemplate how we are going to live out the next few decades and beyond. But this particular problem relates not so much to the outer world as to the inner landscape of the human mind: how you see yourself, and how you think others perceive you.

Many of the current spate of gun attacks in inner cities are allegedly triggered by an imagined slight, some facial expression or gesture perceived as an insult. Could the far more widespread phenomena of obesity and binge drinking stem from the same basic issue of status? Over-eating

or over-drinking might be precipitated by disappointment and frustration in what or who you are, or perhaps by the lure of a pure escapist, hedonistic thrill of anonymity, or by peer pressure or, most likely, by all of the above. If so, as with the more extreme cases resulting in violent crime, such behaviours would all none the less be traceable to the idea of the self, to how that person sees themselves in relation to others. Similarly, the quest for the perfect body, or the perfect home, also reflects an identity defined by a highly specific, though by no means universal, Western cultural manual. Meanwhile, the fulfilment and pleasure of defining oneself in the robust and fixed terms of a fundamentalist rulebook have always been equally, if not more, reassuring.

But now we can add to the mix a new type of devotion. Now we have a way of subsuming individual identity, or perhaps of developing a false persona, or maybe even of losing one's identity altogether. Information technology, nanotechnology and biotechnology are already transforming our lives, and they will be pervasive and invasive in unprecedented ways. But there is no point in either hyping or fearing these new technologies as factors that will impinge on the minds of generations to come until we can place them in the context of the workings of the brain itself.

The cyber-world is already with us, of course. For the moment cyber-technologies are in the main screen-based, be they a mobile, a laptop or an iPod. You might well argue that the TV is, and always has been, a screen and that we've managed to accommodate it without human nature undergoing any apparent cataclysmic makeover. But there *is* a big

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difference from twentieth-century TV: twenty-first-century screen technologies, including the television, are interactive. This means you can be involved in the world on the screen and play a part in the ongoing narrative to greater or lesser extents. Soap operas, so called because of the industry that originally sponsored them, started out on American radio in the 1930s; they were to prove an early introduction to the experience of living a life vicariously, albeit many stages removed from real life. But still, good enough to offer a sanitizing alternative.

Reality TV has been the next big pull, going one better by using real people rather than actors, and therefore bringing the events on the screen even greater credibility while still offering the protection of a second-hand voyeurism. The cyber-experience of *Second Life* is perhaps the ultimate in this line of screen escapism. Emphatically not a computer game, *Second Life* offers a complete new world, one in which you live out a completely different existence directly, though again not as your 'real' self.

But the new technologies and software are doing more than softening our sense of identity; they are particularly powerful simply because they are so pervasive. In the late twentieth century no one really questioned whether the ability to record TV programmes and the opportunity to log missed phone calls was changing our mentality too much. Taken for granted though the VHS recorder and the Ansaphone now are, at the moment of their original appearance they freed us up for the first time from the inconvenient happenstance of life. We started to be more in control of our *time*. It was the first step, perhaps a small one, towards piecing together our own individual reality.

Now the mobility of the cellphone, the iPod and the laptop have empowered us further, this time in relation to freedom over our *space*. The portable screen has put us continuously in touch with one another, interacting and controlling. Increasingly the global cyber-world, accessible at fingertip touch whenever we wish and wherever we are, promises a more reassuring, safer option than the messy, haphazard world of the in-your-face three-dimensional life: a real life of banana skins and elephant traps, however metaphorical.

But the information technologies are perhaps already blurring the cyber-world and ‘reality’. One particularly depressing anecdote I heard just after 9/11 was that there were some who couldn’t really believe that the planes crashing into the Twin Towers, and the instant conflagration, were actually ‘real’, so similar were the events to some games. This conflation of the cyber and real worlds is starting to impact on two very different aspects of our lives that until now I, for one, have taken pretty much for granted: fun and privacy.

First, let’s think about having fun. A very understandable current concern is that a whole range of erstwhile demanding intellectual activities are becoming obsolete in favour of the quick fix of a laugh, a rush of adrenalin and the immediacy of the next sensory kick. The worry is that the challenge of understanding Dostoyevsky will be evaluated and found wanting against the new universal yardstick of how much fun you’re having. Just as text messaging doesn’t tap into our abilities to exercise the wide range of vocabulary and expression of previous letter-writing generations, could it be that our very understanding, our sense

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of reasoning, might now also be diminished and brutalized by the simplistic sensory sensations of the screen experience?

Fuddy-duddy quibbling though this may sound, we should not dismiss such worries out of hand as being out of step with the lifestyle of today and tomorrow. Having fun has always been on the human agenda, but, intriguingly, not all the time. Just as we might feel sorry for someone who claims they never have any fun, so we would feel a similar sense of sadness for someone who boasted that their life was just one long round of it. But perhaps this balance *is* shifting in favour of the kind of activities that are normally associated with having easy fun rather than thinking deeply.

This is not to say that thinking deeply isn't enjoyable – but the pleasure is of a different type from that of surrendering to sensations. My own view is that the enjoyment of reading Shakespeare or Joyce involves an appreciation and savouring of 'meaning': some cerebral light flashes on as you start to see one thing in terms of something else, and place an event or behaviour in a new, wider context. Really 'understanding' something, be it in science or literature, usually devolves from that 'Aha' moment, from making a connection: by contrast, having fun is usually based on the opposite, on *dissolving* connections, splitting the here-and-now moment from the past and the future, splitting the sensational taste of the ice cream or chocolate from the 'significance' of unhealthy food, splitting the thrill of downhill skiing from the associations of injury, and above all splitting the sense of self, of a particular identity, in favour of abandonment to the raw sensory experience. You 'let yourself go'. This idea might seem a little far-fetched as

my opening premise; but it is a provocative one, and one which we should (as we shall shortly) be considering seriously. Let me be blunt and ask up front: is screen culture jeopardizing good old-fashioned abstract thought?

The second area that we have taken for granted, at least until recently, is privacy. And the reason that a private life used to be such a clear and unambiguous concept was that until the end of the twentieth century the technology simply wasn't there to challenge our privacy on a systematic, mass scale. Of course, phone-tapping, private detectives and amoral journalism have been around for as long as there's been 'modern' life. But in the previous century the privacy of the average citizen, conscientiously living out a normal, everyday existence, was assured. Not any longer.

In the shadow of the current debate in the UK on the desirability or otherwise of identity cards, we are resigned to cyber-profiling as we shop online, as search engines start to collate data on us in our innocent curiosity, as the unscrupulous devise ever more ingenious ways of accessing our credit cards. All of us, all of the time, now have our privacy under siege. We need to take active measures to protect it and be alert to situations where it might be eroded.

Yet with the advent of cyber-pastimes such as chatting on *Facebook*, a way of life for many teenagers and young adults, such precautions are becoming ever harder to take. (Just in case you haven't yet been initiated by your children, *Facebook* is a social networking site which links friends and strangers and enables them to share conversations, photos, videos and games.) However, such otherwise normal communication is now only conducted via a screen, rather than

face to face: more significantly still, it is out there on the web, public. A sixteen-year-old intern in our lab, Amy, introduced my research group of twenty-something-and-upwards geriatrics to *Facebook*. She summed up her reaction to using it herself like this: 'I can see that *Facebook* makes you think about yourself differently when all your private thoughts and feelings can be posted on the internet for all to see. Are we perhaps losing a sense of where we ourselves finish and the outside world begins?'

Until now these technologies have been screen-based, essentially visual. In and of itself this is an interesting issue: what impact might such a biased input of fast-moving icons to the brain have on the way we think? Yet soon voice-activated devices will be with us, as will computation embedded in clothing, jewellery and spectacles. It seems bizarre to imagine a world of endless spoken cyber-conversations, a kind of wrap-around, purely auditory Google. And while it might stretch credibility to the limit to envisage why you would ever need to ask your sweater the date of the Battle of Hastings or the height of Kilimanjaro, surely it is possible that future technology would enable you to interrogate anything already being carried around on your body – from watches to coat-sleeves – for oral updates, music, price quotes, directions and more.

No longer anchored to a screen and keyboard, unencumbered by bulky devices, you will meander in a three-dimensional space that is increasingly shaped by a fourth, cyber dimension. The firewall of brain and body will weaken as it is breached each moment by the spoken word monitoring and guiding each step. Will there now be time and place ever just to stand still?



If you've ever wondered what effect video games have on your children's minds or worried about how much private information the government and big companies know about you, *ID* is essential reading.

Professor Susan Greenfield argues persuasively that our individuality is under the microscope as never before. Two huge forces - new technologies and old ideologies - are, in their different ways, impacting on our minds. Never before have we more urgently needed to look at what we want for ourselves as individuals, our children and for our future society.

Drawing on the latest findings in neuroscience, Susan Greenfield shows how far we are in control of the development of our brains and minds - and looks at how we can promote our own individuality and find fulfilment.

ID is an exploration of what it means to be human in a world of rapid change, a passionately argued wake-up call and an inspiring challenge to embrace creativity and forge our own identities.

'Susan Greenfield enthral and intrigues her readers in equal measure . . . a force of intellect and a force of nature' **JOHN HUMPHRYS**



Baroness Susan Greenfield is Professor of Pharmacology at Oxford University and Director of the Royal Institution.

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