

Future Employers Will Scan Your Brain to Learn Your Secrets

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We're spending a week looking at the Biotech Breakthroughs, which will define the coming century. When we think of our bodies, we often forget the mind is a part of that. That's a grave mistake – as some of the most interesting progress will come as a result of advances in the realm of neurology and psychiatry.

Here are some of the forthcoming surprises, from this often-overlooked field.

Psychiatry gets rigorous

Psychiatry's bible is the *Diagnostic and Statistical Manual of Mental Disorders* – and we are currently on volume five. You might think that this means that psychiatry is a fairly rigorous scientific discipline – but the truth is very different.

In the passage of time, everything from homosexuality to Asperger's (now under Autistic Spectrum Disorder) has been included in the *DSM* – only to be deleted, or reorganised, in later versions. This shuffling is just one sign that psychiatry lacks the biological rigour of much of medicine. Causes and mechanisms behind many illnesses are as yet unknown; distinctions between conditions are blurred.

While there is no effective model for some diseases, on a molecular or neurological level, it is difficult for them to be classified accurately. Conditions which are an extension of normal feelings and behaviour are particularly hard to diagnose. We all feel anxious at times, so when does an anxiety disorder start? It's very difficult to tell.

However, new research is enabling us to identify tell-tale markers in the brain for a range of conditions. One example is a biomarker for impending suicide attempts, which has recently been identified. This approach may help us to diagnose these conditions – perhaps [even before symptoms appear](#). In some cases, diagnosis in childhood may be possible – and potentially even in the womb.

One taxing consequence of such progress will be the effect on the criminal justice system. If people offend because their brains are different, what right do we have to punish them? Alternatively, if we can prove that certain brains are primed for crime, some may argue for preventative incarceration. It's a fascinating time for psychiatry – and a testing one for moral philosophy.

Check out our previous coverage on [mental health and neurological diseases](#).

Brain-machine interfaces

The brain-machine interface is becoming ever more sophisticated. Obviously, such technologies are an absolute boon for the small minority of patients who have movement disorders, such as motor neuron disease (also known as amyotrophic lateral sclerosis or ALS). Beyond that, they are showing promise for everything from fighter jets to alertness sensors.

I went to a presentation a year or so ago, where a firm with a brain-machine interface was demonstrating its use as a training aid. Those who had a characteristic series of brain responses to mistakes learnt more quickly how to avoid them in future.

This is a technology whose ultimate use-cases can only be dreamed of, as yet. Would you be comfortable with living in a world where a recruiter expected to give you a brain scan, before employing you? It's a critical sector – and even Elon Musk is getting in on the action, with his Neuralink venture.

Check out our previous coverage on [brain-machine interfaces](#).

General artificial intelligence

This isn't a medical technique per se, but it definitely merits a mention. We are not yet close to artificial intelligence (AI) capable of emulating or replacing humans – but it's not unimaginable. Would bereaved parents ever get tempted to recreate the mind of a deceased child in a computer? I think they might. Likewise, will people try to "extend" life, by creating a computerised simulation of themselves? We already have a very basic version of this – with social media services that learn your of posting,

and continue automatically. Tweeting from beyond the grave is now a thing!

However, even a crude simulation of the human mind is likely to be decades away. Nevertheless, I can imagine a world where we try to simulate the consciousness of others in computers – even if we can't genuinely recreate it.

Check out [our previous coverage on AI](#).

You feedback is always welcome: andrew@southbankresearch.com.

Best,

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