

## Brain Science Is Changing Our World

Information technology has driven progress for the past two decades. In the future, neuroscience (the science of the human brain) may lead the way.

**S**cience and technology increasingly shape our lives. Computers, cell phones, and iPods connect us with our friends, family, and the world in ways that were only dreamed of by science fiction writers a few years ago. But, as they say, hold onto your seats, you ain't seen nothing yet! Brain science is changing the way we shop, fall in love, learn, control machines, and punish criminals. Will we become better people as a result, or will we just be smarter people doing the same old dumb things?

# Neuroscience and Everyday Life



## Love is in the Air

When people do things that are essential for survival like eating, drinking, having sex, and taking care of babies, a chemical called dopamine is released in the brain, producing a pleasurable feeling. This is an important evolutionary trait. People are hard-wired to enjoy doing the things they need to do to survive.

Apparently, falling in love is one of those things we need to do to survive. Studies show that people who are intensely, romantically in love generate high levels of dopamine. In a study, young people's brains were scanned while they were shown pictures of people they knew. The pictures included the person with whom they were romantically in love. Dopamine levels went up immediately when they viewed the picture of their loved one. There was no increase with the other pictures.

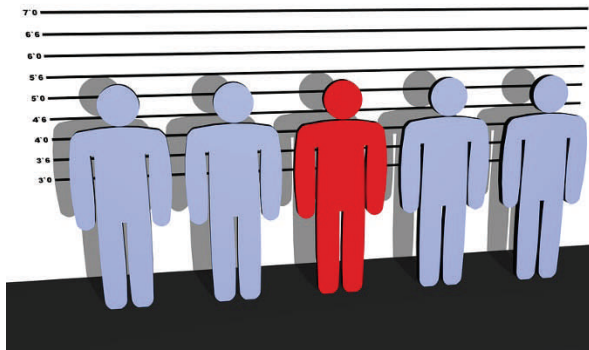
So, if you really want to know whether someone is in love with you, consider getting that person a brain scan. It's a little expensive now but you never know when a home kit might become available.

## Shopping

The process of shopping is really quite simple,. Someone offers something to sell, If you want it and the price is right, you buy it. Right? Well, maybe it's not quite that simple. Often there are multiple things to consider. Is this something you really need? Is the product well made? For the price, is it a good value? Can you afford it? Is there a similar or better product available for a lower price?

These are all good things to consider. But do you know what brain scans show is the major consideration for most buying decisions? Answer: How the purchase will effect what others feel about us—our status among our peers. If you've ever wondered why people spend much more for a name brand item than for a quite similar store brand (often made on the same assembly line), now you know. And so do the manufactures and merchants.

Product makers use brain scans to determine what sales pitches work best with their target markets. Nobody knows why status is so important, but if you value your money, you might question your brain's first choice to buy.



## Law and Justice

Let's say you're a lawyer who is defending a guy who regularly gets into bar fights. In his last fight, he badly injures someone. He is on trial for attempted murder. Could a brain scan help you get him off? Maybe.

Neurological evidence (from brain scans) is increasingly being used in criminal cases. Lawyers hope to find an abnormality in their client's brain that might explain their client's behaviour.

If an expert can testify that a defendant's brain was damaged by fetal alcohol syndrome, for example, it might explain later behavioural problems. This might help a jury let the person off or convict him of a lesser crime.

Of course brain science can't fully explain how the brain works, what it thinks, and why. So it is often difficult to make a direct connection between a person's behaviour and any abnormalities in the brain. And people with similar abnormalities may act in very different ways. Still, as brain science becomes more precise, there may be calls to predict future behaviour because of a brain's characteristics.



## Artificial Intelligence

The human brain evolved over many millions of years. It allowed us to work together and conquer our competition. Having won, without further competition, will our brains continue to evolve? Scientists are not sure.

What seems more likely to happen is that brains will be enhanced by the use of drugs and/or connection to computers with more storage and processing power.

Today, so-called "smart drugs" enhance thinking for short periods of time. The long-term effectiveness and safety of these drugs, however, has not been determined.

Scientists already implant mechanical devices connected to the brain to improve hearing and seeing. Other implants help the brain to control mechanical limbs. Recent experiments show that transmitters connected to the brain can control objects.

Some scientists predict that, within a few decades, neuroscience combined with computer technology will create machines that are far more intelligent than humans. But will they be able to tell a joke or laugh at one?

## Brain Science is Changing Our World | Key Terms

dopamine	A neurotransmitter in animals that functions in part to indicate a pleasurable activity to the brain.
hard-wired	Referring to wiring directly connected to a computer's central processor. In this case, the reference is neurological connections to the human brain that we are born with and do not have to be learned.
neuroscience	A field of study devoted to the science of the nervous system.
peer	A person who is of equal standing with another.
trait	A distinguishing quality or inherited characteristic.

### Discussion Points

1. Our brains are hard-wired to feel good when we do things that are necessary to survive. Other than eating, drinking, having sex, and taking care of babies, can you think of something else that feels good and is necessary for survival? Why?
2. Neuroscience shows that the most important consideration when deciding to buy something is how the purchase will effect what others think about us. Is this true for you? What do you think is most important to you when buying something?
3. Falling in love causes our brain to release pleasure causing dopamine. It makes you excited and you just have to be with the person. Is this something to be concerned about? Why?
4. Brain scans are increasingly being used to defend people when they are charged with violent acts. The idea is that brain damage is the cause of the person's action and they couldn't help themselves. If this is true, can you imagine a time when society will scan people's brains before they commit a crime and then imprison them before they commit a crime?
5. In the movie *2001 A Space Odyssey* the computer HAL not only had a personality but also free will—and that wasn't a good thing. Do you believe science will be able to create a computer that can think for itself? Can you imagine having a machine for a friend?