Mind, Soul, and Neuroethics

Neuroscience is the next frontier for research, and Kerby Anderson urges Christians to pay attention to these findings and provide a biblical perspective to the research and an ethical framework for its application.

Let me begin with a question. Imagine that our medical technology has advanced enough that we can transplant a human brain. If we exchanged your brain with that of another person, would you wake up in your body with someone else's thoughts and memories? Or would you wake up in the other person's body?

Or consider the following questions concerning brain research:

• Scientists are beginning to work on a "smart pill" that would increase your memory and intelligence. If such a pill existed, who should take it?

• Scientists are working to develop brain fingerprinting to reveal a person's knowledge of events. If perfected, should these brain scans be used like polygraph tests to detect if people are lying?

• Pharmaceutical companies are working to develop chemicals that block the formation of memories. If perfected, should these pills also be used to erase memories that people don't want to have?

• Areas of the brain can be stimulated or suppressed by placing a device over the scalp. Should doctors use these devices to control your brain?

These are just a few of the questions being raised in a relatively new ethical field of discussion known as neuroethics.

In the past few years, neuroscience has been making discoveries about the human brain at an incredible rate of

speed. Advances in neuroscience and imaging methods have made it possible to observe the brain more directly. And advances in neurosurgery have also made it possible to intervene more precisely and effectively.

This new arena of neuroethics is beginning to deal with the hard questions about our rapidly growing knowledge of the human brain and our ethical and social responsibilities concerning this new information. Doctors, scientists, lawyers, politicians, and theologians are all interested in neuroethics. But as you can see from the above examples, the implications of these concerns should extend to all of us since we will ultimately be affected by the moral and legal decisions concerning neuroscience.

In developing a Christian perspective on neuroethics, we should begin with a proper understanding of the mind and brain. Nearly all scientific investigation begins with the *a priori* assumption that we are material, not spiritual. Thus, scientists assume there is only a brain and not an immaterial mind. Put another way, they assume there is only a body and not a soul.

Dualism

Are we merely a brain or are we both brain and mind? This is a fundamental question in science, philosophy, and theology. New advances in science seem to be challenging the notion that we are both mind and brain.

Most Christians are Cartesian dualists in that they believe that the soul inhabits the body. The name Cartesian dualism comes from the philosopher René Descartes who four hundred years ago argued that identity and thought were distinct. He is famous for the phrase, “I think, therefore I am.” In other words, the fact that he could think about himself showed that there was something distinct from him. He was doing something

with his brain, but he was also distinct from his brain because he was having thoughts.

A quarter century ago, Probe Ministries published a book that showed that we are both mind and brain. The book, *The Mysterious Matter of Mind*, by Dr. Arthur C. Custance presented experimental evidence that led scientists to conclude that the mind is more than matter and more than a mere by-product of the brain.{1}

One of the most famous findings in this field involved the research of Wilder Penfield. Although he was born in the U.S., he did most of his research in Canada and was later celebrated as "the greatest living Canadian."

In 1961, Penfield reported a dramatic demonstration of the existence of a mind that is separate from the brain. He found that the mind acted independently of the brain under controlled experimental conditions. His subject was an epileptic patient who had part of the brain exposed. When Penfield used an electrode to stimulate a portion of the cortex, here is what he reported:

> *When the neurosurgeon applies an electrode to the motor area of the patient's cerebral cortex causing the opposite hand to move, and when he asks the patient why he moved the hand, the response is: "I didn't do it. You made me do it." . . . It may be said that the patient thinks of himself as having an existence separate from his body.*
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> *Once when I warned a patient of my intention to stimulate the motor area of the cortex, and challenged him to keep his hand from moving when the electrode was applied, he seized it with the other hand and struggled to hold still. Thus, one hand, under the control of the right hemisphere driven by the electrode, and the other hand, which he controlled through the left hemisphere, were caused to struggle against each other. Behind the "brain action" of one hemisphere was the*

> *patient's mind. Behind the action of the other hemisphere was the electrode.{2}*

This experiment (and others like it) demonstrates that there is both a mind and brain. Mind is more than just merely a by product of the brain.

Neuroscience: Opportunities and Challenges

Neuroscience has been making discoveries about the human brain at an incredible rate of speed, and this provides both new opportunities and major ethical challenges. For example, existing brain imaging methods provide scientists with some very powerful tools to discover the structure and function of the human brain. These tools can detect various brain abnormalities. They can also help in the diagnosis of various neurological disorders.

Scientists have also been using these brain imaging machines to study emotions, language, and even our perceptions. It is possible that eventually these machines could even be used to read our thoughts and memories.

Scientists who have developed a brain fingerprinting machine believe they will be able to determine a person's knowledge of events. By measuring electrical activity within the brain, they can see the response of a person to certain stimuli (words, sounds, pictures). Analysis of these responses might be helpful in various investigations.

Sometimes crime investigators use a polygraph machine to detect lies. But these devices are not completely foolproof. Scientists believe they might be able someday to develop accurate readings from functional magnetic resonance imaging (fMRI) to determine whether a person is telling the truth.

What are the implications of this? Is it possible that one day people who are suspected of a crime will be required to submit to a brain scan? Could brain scans be used to determine high-risk employees, potential criminals, even terrorists? For now, this is mere speculation, but neuroscience may force us to deal with these questions in the future.

Some have even speculated that measurements from these machines could help in distinguishing true memories from false memories. In some experiments, certain areas of the brain appear to respond differently to true memories and false memories.

Could brain scans be used to predict certain neurological disorders? Scientists using fMRI have found that people with schizophrenia have different sizes of key brain structures (e.g., larger lateral ventricles, reduced hippocampus, etc.) than those people without this mental disorder. Many of the ethical questions already surrounding the use of genetic screening would no doubt surface with the application of brain scans that would screen for neurological disorders.

A related question in this growing field of neuroethics is the use of mood altering drugs. Psychopharmacology has already provided pills to treat depression, anxiety, and even attention deficit disorder. Future development in this area will no doubt yield other mood-altering and brain-altering drugs.

In the future, it might be possible to genetically engineer drugs or even genetically engineer human beings to treat and even cure mental disorders. This same technology might also allow scientists to increase memory and perhaps even increase intelligence. For now, the idea of a smart pill is just science fiction. But what if we develop such a medicine? Who should get the pill? Under what conditions would it be administered? These are all questions for the twenty-first century in this growing field of neuroethics.

Erasing Memories

In the film *Eternal Sunshine of the Spotless Mind*, a couple (played by Jim Carrey and Kate Winslet) undergo a brain procedure that allows them to erase each other from their memories because their relationship has turned sour. The story develops when Joel discovers that his girlfriend, Clementine, has undergone a psychiatrist's experimental procedure which removes him from her mind. Joel then decides to undergo the same procedure. In the process, however, he rekindles his love for her.

Although the film is science fiction and essentially a thought experiment, erasing memories is something scientists are pursuing right now. They are already testing a pill that, when given after a traumatic event, seems to make resulting memories less intense. The pill appears to blunt memory formation and could be very useful as a treatment. For example, this pill could be used if a person experiences a horrible event (such as a rape or witness to a murder). It would also be helpful to those who have endured an earthquake, hurricane, or tsunami.

Doctors also believe that it would help victims of post-traumatic stress disorder (PTSD). This was a problem first recognized in the Vietnam War and a disorder diagnosed in men and women who have been serving in Iraq and Afghanistan. Those affected often experience mental symptoms (flashbacks) and physical symptoms.

When a traumatic event occurs, the brain is flooded with stress hormones (such as adrenalin) that actually store these memories in different ways than the manner in which memories are normally preserved. These memories seem to be stored in our brain's hard drive, and therefore seem nearly impossible to erase.

The new pills are a class of drugs known as beta blockers

which can cross the blood-brain barrier. They can actually dull the impact of the memory formation by getting to the place where stress hormones work to form these traumatic memories. Scientists believe that they can not only blunt the impact of these memories, they might even prevent PTSD. Some physicians believe it might be possible to cure PTSD by triggering these memories and then administering this new drug to eliminate them.

Not everyone is excited about the prospects of erasing memories. Already we have a variety of drugs that can alter a person's personality. Antidepressants and tranquilizers are used by millions of people every day. Antipsychotic drugs are used to treat people with such mental disorders as schizophrenia. Erasing a person's memory with certain drugs would certainly change their personality. Would that change always be for the better?

When researchers working in the area of erasing memories were asked to testify before the President's Council on Bioethics, there was deep concern. Chairman Leon Kass argued that painful memories serve a purpose and are part of the human experience.

Biblical Perspective

Advances in the field of neuroscience certainly raise new ethical dilemmas for the twenty-first century. But they also challenge the biblical understanding of human nature. Neuroscience is beginning to explain a great deal of human behavior by mapping the human brain. Scientists are locating regions that influence personality, character, and even spirituality. Does this challenge the concept of Cartesian dualism? Can we explain mind as merely a by-product of brain?

One researcher in this field thinks the research does challenge this biblical foundation. She says you "can still believe in what Arthur Koestler called 'the ghost in the

machine'." But she concludes that "as neuroscience begins to reveal the mechanisms of personality, character, and even sense of spirituality, this Cartesian line of interpretation becomes strained. If these are all features of the machine, why have a ghost at all? By raising questions like this, it seems likely that neuroscience will pose a far more fundamental challenge to religion than evolutionary biology."{3}

So if you think evolution has been a challenge to Christianity, just wait until the findings of neuroscience reach the society at large. There are large and significant issues that need to be addressed. So what is a Christian perspective on these issues of mind/brain and body/soul?

First, the Bible teaches that when the soul leaves the body, the body is dead (James 2:26). And if the soul returns to the body, the whole person comes back to life (Luke 8:55). This dual nature of the body and soul is documented in many passages of Scripture (Matt. 26:41; Rom. 8:10; 1 Cor. 5:5; 6:17, 20; 7:34; 2 Cor. 7:1; Gal. 5:17).

Second, the New Testament also talks about the resurrection of the body, and Paul elaborates on the nature of this body (1 Cor. 15:35-44). We have the most complete picture of this resurrection body by observing what the Bible tells us about Jesus Christ after His resurrection. Paul tells us this is the body we will have (Phil. 3:20-21).

This resurrection body of Jesus Christ was able to freely pass through physical barriers (walls, locked doors). But it could also be examined for purposes of identification. It is a body that is able to communicate with the physical world (can be seen, heard, felt). Likewise, we can anticipate that our bodies will be able to share a meal and then disappear only to reappear in another location. It will also be a body that can act upon the physical world by moving objects, going for a walk, even starting a fire.

The Bible teaches that we are more than matter. We are both body and soul, mind and brain. Neuroscience is the next frontier for research, and Christians must pay attention to these findings and provide a biblical perspective to the research and an ethical framework for its application.

Notes

1. Arthur C. Custance, *The Mysterious Matter of Mind* (Grand Rapids: Zondervan/Probe, 1980).

2. Wilder Penfield, in the "Control of the Mind" Symposium, held at the University of California Medical Center, San Francisco, 1961, quoted in Arthur Koestler, *Ghost in the Machine* (London: Hutchison Publishing Group, 1967), 203-4.

3. Martha J. Farah, "Neuroethics," Op-Ed, American Medical Association, www.ama-assn.org/ama/pub/category/12727.html.

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