A panel of Princeton University scientists recently gathered together to deliberate whether strong religious belief can coexist with reliance on science. Constraining their definition of truth to factual human knowledge, the panel, led by professor of molecular biology Lee Silver, posed the provocative question, whether science has effectively demonstrated that religious beliefs have no place in the rational mind. How one decides that question guides the answer to a related question essential for the Christian physician. How can faith in Jesus Christ coexist with medical science?

Central to newfound confidence in the claim that science has superseded faith is the expanding scientific account not only of nature but also of human nature. At the leading edge of this research, neuroscience is unveiling spectacular discoveries about the brain. Neuron by neuron, the brain is yielding its intimate details to sophisticated neurochemical, neurogenetic and neuroimaging methodologies. The molecular basis of perception, reasoning, decision, faith and belief?every category of thought?has become accessible to the scrutiny of neuroscience. Neuroscience thus offers an increasingly detailed account?in purely physical terms?of mental processes that previously were understood to be within the purview of philosophy, religion and the arts.

Functional magnetic resonance imaging (fMRI), which detects regional increases in blood flow that accompany neural activity, has become a powerful tool to investigate the neuronal architecture of the brain systems underlying specific cognitive functions. Whereas in the past, localizing brain functions relied on the study of patients with brain lesions that happened to
destroy those functions, fMRI permits precise, noninvasive, spatial and temporal resolution of psychological processes in the intact, living brain. Brain regions showing increased metabolic activity over baseline will "light up" on fMRI scans. Language, for example, has been mapped in this way, as fMRI studies have shown involvement of the occipital cortex in reading text, the left posterior temporal lobe (Wernicke's area) in comprehending language, the right temporal lobe in assessing context, and the left inferior frontal lobe (Broca's area) in producing speech.

In recent years fMRI has turned to investigating the moral domain. Studies of subjects presented with moral dilemmas have shown that there is no one moral center in the brain. Rather, moral thought corresponds to a complex network of complementary cognitive processes traceable to a variety of discrete brain regions. Moral discernment engages systems of sensory decoding and abstract reasoning. Intuitive judgments heed long-term memories? emotional tags. Conscious decision integrates the sometimes competing neural streams of reasoning and intuition in the dorsolateral prefrontal and anterior cingulate cortices, where there exists what C. S. Lewis recognized metaphorically as a liaison between cerebral man and visceral man. Finally, implementation, planning, and self-control of moral action require healthy frontal lobes.

Religious thought, too, has reclined under the scanner for analysis. Some of the brain correlates of belief and disbelief have recently been identified. Just as for language and moral judgment, investigations have not found any one "God spot" in the brain, as if religious ideas were compartmentalized and detached from other thoughts and concerns.

In an experiment that produced a brain phenomenon apparently indistinguishable from spiritual experience, neuroscientist Michael Persinger applied transcranial magnetic stimulation to the cerebral cortex of healthy volunteers. Even when the subjects were not told that the device was turned on, they reported a mystical sense of another's presence. Philosopher Patricia Churchland cites that study as evidence that all religious experiences are ultimately neurobiological in cause. However, one synthetic experience in the laboratory does not invalidate the spiritual awareness that many Christians testify has provided them comfort or insight during life's trials. Artificially inducing what Lewis called a numinous sensation by stimulating the parietal cortex no more disproves the existence of the transcendent than would stimulating the occipital cortex and causing the illusion of light disprove the existence of the sun and stars. The intensity of subjective experience in isolation from reason is not necessarily a reliable guide to truth.

If future technologies were to penetrate the brain with even higher resolution and, applying every conceivable biophysical stimulus, still fail to extract an objective sign of mental transcendence, the case for Christianity would not be weakened. Scientific facts, while valid and useful, are not the only ways of knowing about the world. The competence of science is limited to the measurement of phenomena that are quantifiable and consistently reproducible. These include the structure of inanimate matter and predictable patterns of fields of energy. Even here nature conceals subtle details that are permanently incalculable and forever untraceable. Most importantly, the universally human questions of origin, purpose, and ultimate meaning surpass what can be fully answered at the material level. Such questions engage the mind and its capacities for abstract thought, conscience and personal agency, all of which resist a complete explanation in scientific terms. At the patient's bedside, physicians understand that beyond scientific diagrams, gene maps and charts, there is a further aspect to human nature. The truly
spiritual aspect of the human mind may be a gentle whisper, which science, despite its remarkable proficiency, overlooks (1 Kings 19:12, NIV; John 3:8; Heb 11:3).

Prevailing interpretations of neuroscience research presuppose that all brain phenomena are causally determined chains of biophysical events. If truth be established by the volume of data, then a naturalistic appraisal of the human mind would seem to be gaining in acceptance. Frequent comparisons of the brain to the computer reinforce the broader cultural plausibility of a materialistic understanding of human nature. Within that framework, there can be no assurance that the concept of free will, with its weighty implications for personal moral responsibility and autonomy in medical decision-making, has any meaning. Neuropsychologists now debate whether free will might be nothing more than an illusion, since the outcome of a decision can be predicted by changes detectable in the prefrontal and parietal cortices seconds before entering conscious awareness.14 Alongside increasing optimism in science is a growing skepticism among many contemporary philosophers who ask whether all of consciousness ultimately reduces to an accidental matrix of synaptic impulses.15-18 According to that view, one?s decision to choose the good over selfish interests would be automatically determined solely by antecedent physical forces. Whatever one?s reply to Jesus? question, ?Who do you say I am?? (Matt 16:15), the materialist recognizes only a reflex, as if belief were equivalent to a yawn.

So impressive is the expanding horizon of neuroscience that Francis Crick, co-discoverer of DNA?s double helix, has posited what he called his ?astonishing hypothesis,? which is, ?... that ?You, ?your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behaviour of a vast assembly of nerve cells and their associated molecules.?19

Despite the rhetorical certainty the words, ?in fact? seem to imply, Crick?s claim is no more than a hypothesis. It is not, of course, a scientific hypothesis, but rather a metaphysical one which exceeds what science can legitimately claim. Crick?s sweeping negative assertion that we are no more than cells and molecules defies verification, since the scientific method is qualified to describe only what can be empirically observed and quantified. By defining human consciousness exclusively in terms of matter in motion, Crick assumes as a premise the very conclusion that he wishes to reach.

The contributions of neuroscience are necessary, but not sufficient, to explain human thought. A functional neuroanatomical account of moral reasoning broadens the explanation of how one reasons, but it cannot show how one ought to reason. Nor can a scientific description limited to factual knowledge about the brain inspire the care of the sick or resolve difficult dilemmas in medical ethics. Less astonishingly, acceptance of Crick?s hypothesis would reduce the value one accords to others. A materialistic appraisal of human nature would thus impoverish medicine. The obligations to love one?s neighbor (Lev 19:18; Mark 12:31) and serve one another (Gal 5:13) would make little sense if the ethos of health care were based on the lonely view that patients are essentially churning aggregations of molecules.

Nor does the naturalistic methodology of neuroscience adequately account for the scientist behind the experiment whose mind engages nature by drawing inferences and reasoning with inquisitiveness and intentionality. There is, after all, a Crick behind the hypothesis. C. S. Lewis considered naturalism to be self-refuting because it is inconsistent with the validity of reasoning,
on which all possible knowledge depends.\textsuperscript{20} If mental processes were dictated solely by a deterministic biophysical chain of causation in the brain, then the scientist would have no reason to believe that scientific insights into nature are true and trustworthy rather than just a reflection of the way the brain happens to work.\textsuperscript{21} Attempts to explain reason naturalistically end up explaining it away.

Not only must the reasoning mind in some way stand apart from nature to comprehend nature, but the mind that considers science encounters, knowingly or not, signs of a creative Mind behind nature (Psalm 19:1; Rom 1:20). The mere possibility of engaging in scientific investigation depends on the attributes of that Mind. On this point the record of history is instructive, for science as a fruitful and self-sustaining enterprise was stillborn in previous cultures that believed nature to be undirected or the Mind behind nature to be capricious.\textsuperscript{22} Modern science emerged in history at a time when Western European culture was steeped in the understanding that the universe is the orderly creation of a rational God. For only a rational God could have authored a coherent universe that scientists can confidently investigate and hope to comprehend.\textsuperscript{22} The salient question, then, is not whether religious beliefs have a place in the rational mind but, more properly, what kinds of religious beliefs are rationally compatible with all that is known about nature and the human condition.

If the scientific account has truly displaced rational belief in God, then the Christian faith is empty and futile, the dead perish without hope of afterlife, sins are unforgiven, and those who place their hope in Christ are the most pitiable of people (1 Cor 15:17-19). There is, however, much more than the narrow analysis of naturalism to consider. A worldview purged of theological content casts aside the accumulated wisdom of thousands of years of Western history informed by monotheism, disregards the contemporary discourse concerning the unavoidably transcendent implications of the origin of the universe and its particular conditions finely tuned to support life,\textsuperscript{23} and ignores the healing contributions of innumerable healthcare professionals through the ages inspired to serve the sick by their faith in a loving God.\textsuperscript{24}

There is a larger view of human nature than is dreamt of in the philosophy of naturalism. Judeo-Christian teaching bases human dignity on the understanding that humankind is created in the image and likeness of God (Gen 1:26). This \textit{imago Dei}, which all men and women bear, is not a scientific notion and thus cannot be defined by physical, genetic or cognitive criteria alone. From a biblical perspective, every human being has value beyond measure (Matt 18:14, 25:40; 2 Pet 3:9). The Hebrew Scriptures declare (e.g., 2 Chron 7:14; Psalm 105:4; Jer 29:13) and the New Testament affirms (e.g., Matt 11:28-30; John 3:16; Rev 3:20), that human beings have the special capacity to enter into a personal relationship with God. This larger view accommodates all that science reveals about human nature. That the human brain is a vast assembly of 100 billion neurons exchanging signals through 160 trillion synapses\textsuperscript{25} comes as no surprise to the biblical perspective on humanity as ?fearfully and wonderfully made? (Psalm 139:14). To the scientific account the larger view adds hope exceeding anything technology can deliver (John 11:25; 1 Cor 15:22, 51-57; Col 1:27).\textsuperscript{26}

This larger view promises that science can never disprove the existence of God. There is no area of brain function off limits to neuroscience, provided the experiments are conducted ethically. Scientific discoveries have hardly put to rest the dialectic between science and faith. On the contrary, they reinvigorate it. Thinking about the brain with all the mind deepens the
scientific appraisal. In so doing, it is important to be attentive to unstated philosophical presuppositions regarding the nature of humanity and reality. Rather than question whether science has replaced religion, a better question to ask is, what should be the right relationship of one to the other?

The story of neuroscience is punctuated with reminders that the reality of God is not dependent on human thought, as if His sovereign provision and guidance were the result of human striving or faith the product of sufficient effort to imagine Him clearly. There is assurance in His grace and rest in His presence (Psalms 23, 46:10).

The subject of neuroscience—the human brain—is at once wondrous and wanting. In all of creation nothing more intricate is known. Yet its thoughts are imperfect and its behavior gravely flawed. The mind is not yet in its true form. The renewing of the mind requires communion with the mind of God (Isa 1:18; Rom 12:2), whose thoughts the Scriptures indicate are vast and profound (Psalms 92:5, 139:17, NIV) and utterly unlike our own (Isaiah 55:8-9). It is unnecessary to ask what kind of science can apprehend the mind of God, as if that were possible. For God, in His mercy, through His Son has bridged the unfathomable divide and invites all people to draw near to Him (Rom 10:6-10). The mind of faith looks to what science has not yet seen (Heb 11:1). Herein lies the hope of seeing God face to face (1 Cor 13:12).

References

The views expressed herein are his own and do not necessarily reflect the positions of Mayo Clinic, USA.

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