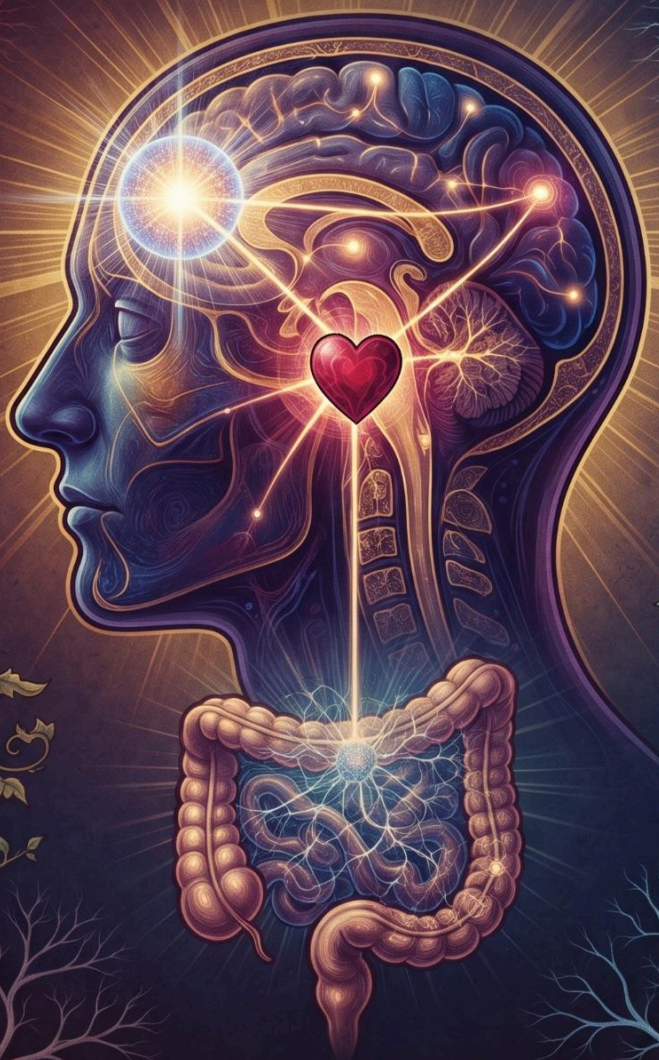
ALL MY HEART, MIND AND STRENGTH

A Brief Survey of the Triune Brain and Why it Matters



BY J.E. ROSE

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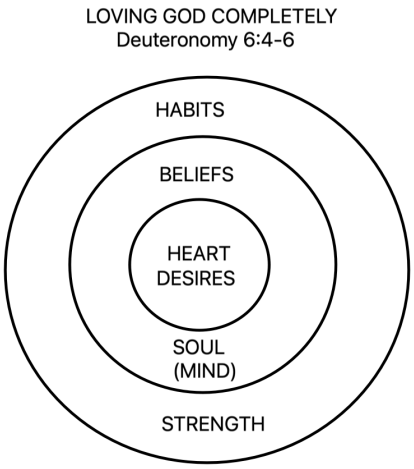
A Brief Survey of the Triune Brain and Why it Matters

By J.E. Rose

One of the most famous Old Testament prayers in the Bible is the *shema,*

"Hear O Israel, the LORD your God, the LORD is one; and you shall love the LORD your God with all your heart, with all your soul, and with all your strength…" (Deuteronomy 6:4). When the religious leaders of Jesus day tried to trip him into blasphemy, asking him the "greatest commandment," he quoted this verse. The triadic formulation is so prevalent in other passages of scripture, in such a variety of contexts and applications, it is not unreasonable to see it as a fundamental characterization of our unique identity as creatures made in the image of our creator.

Though in the last few generations, this triadic statement has often been explained as three separate parts of the person–like three separate boxes in a line–the ancient Hebrews and the biblical uses of the terms were not "linear" or "tripartite" but reflected a holistic and integrated view of the person: rather than separate boxes in a line, the concentric circles of a target: the heart at the center, the soul (or mind) the next circle and the strength beyond that. Functionally speaking we can view the heart as the seat of our desires, the soul as where beliefs are developed, and strength as the patterns and habits of life through which our desires and beliefs are practiced. This is how we love God completely because it includes every dimension of our being.



The Neuroscience

We must not look to scientific research for a definitive explanation on this subject. But it is instructive to see what experts have discovered in their laboratories and experiments on the brain. Not surprisingly, stripped of the faulty assumptions it actually points to what God said, particularly the theory of the "triune brain."

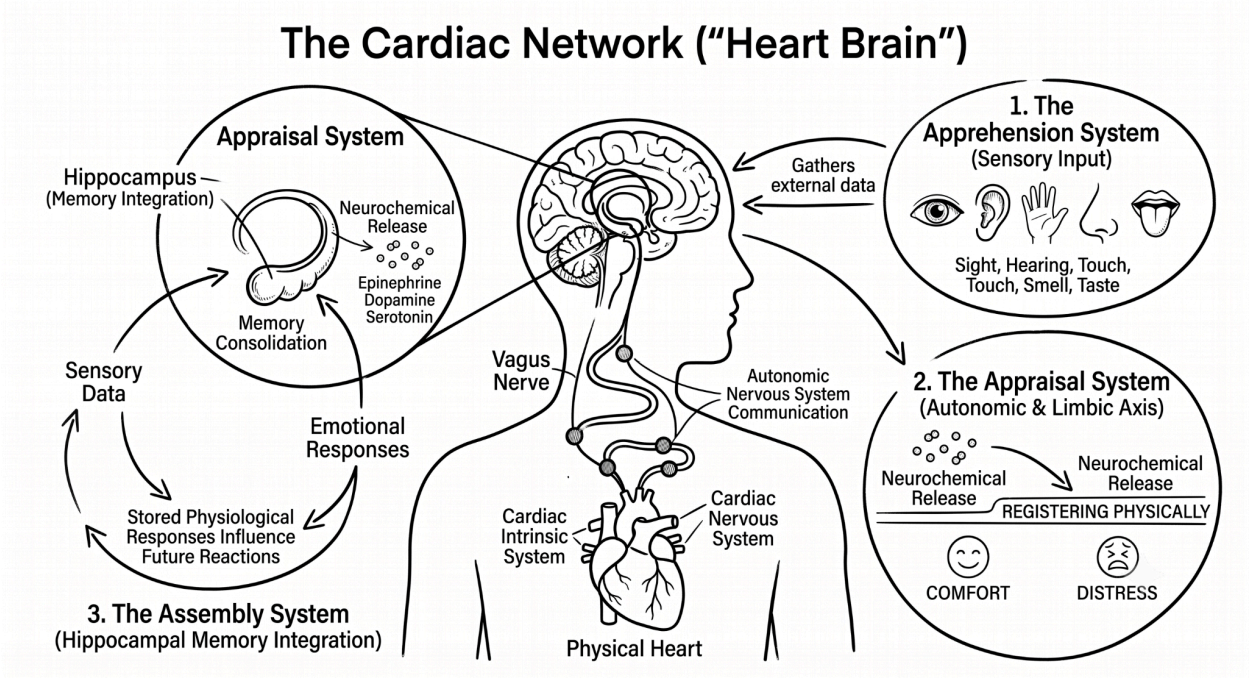
The term "triune brain" began in the 1960s with the research of neuroscientist Paul MacLean. MacLean was a committed Darwinian so his purpose was to demonstrate how the human evolved. He hypothesized that, on a cellular level, it all began with one cell that, over millions of years, evolved and formed three distinct brains. We don't need to look at the particulars of the theory and, in the last decades, it has been rejected, not for its evolutionary assumptions but because it tended to view the three brains as evolving separately from the other. The newest research in embryology speculates that the process began not with one cell but multiples that formed through various kinds of interaction with the other. MacLean's greatest legacy was not his evolutionary framework but his understanding of three centers of neural activity. In popular terms, the terms, "head brain", "heart brain" and "gut brain" are useful tools to understand the different functions of the "triune brain."

Before we move past the science and return to what God has told us in his word about these functional centers of neural activity.

1. The Cardiac Network ("Heart Brain")

Though traditionally viewed merely as a mechanical pump, the physical heart contains an intrinsic nervous system—a complex network of neurons that communicates continuously with the cranial (head) brain via the vagus nerve. This is all part of the autonomic nervous system with its two halves: the sympathetic (stress) nervous system and the parasympathetic (peace) nervous system.

This network operates primarily below the level of conscious thought, processing physical stress, arousal, and immediate environmental inputs through three distinct functions:



We can further identify subsystems in the heart brain that help us understand how it works in the formation and exercise of desires.

The Apprehension System (Sensory Input): The body continuously gathers external data through the five senses (sight, hearing, touch, taste, smell). The heart's neural pathways react instantly to these physical stimuli long before the conscious mind processes them.

The Appraisal System (Autonomic & Limbic Axis): To prevent sensory overload, the nervous system evaluates inputs through neurochemical releases (such as epinephrine, dopamine, and serotonin). These signals notify the rest of the brain through intensity and tone, registering physically along a spectrum of comfort (pleasure) or distress {pain).

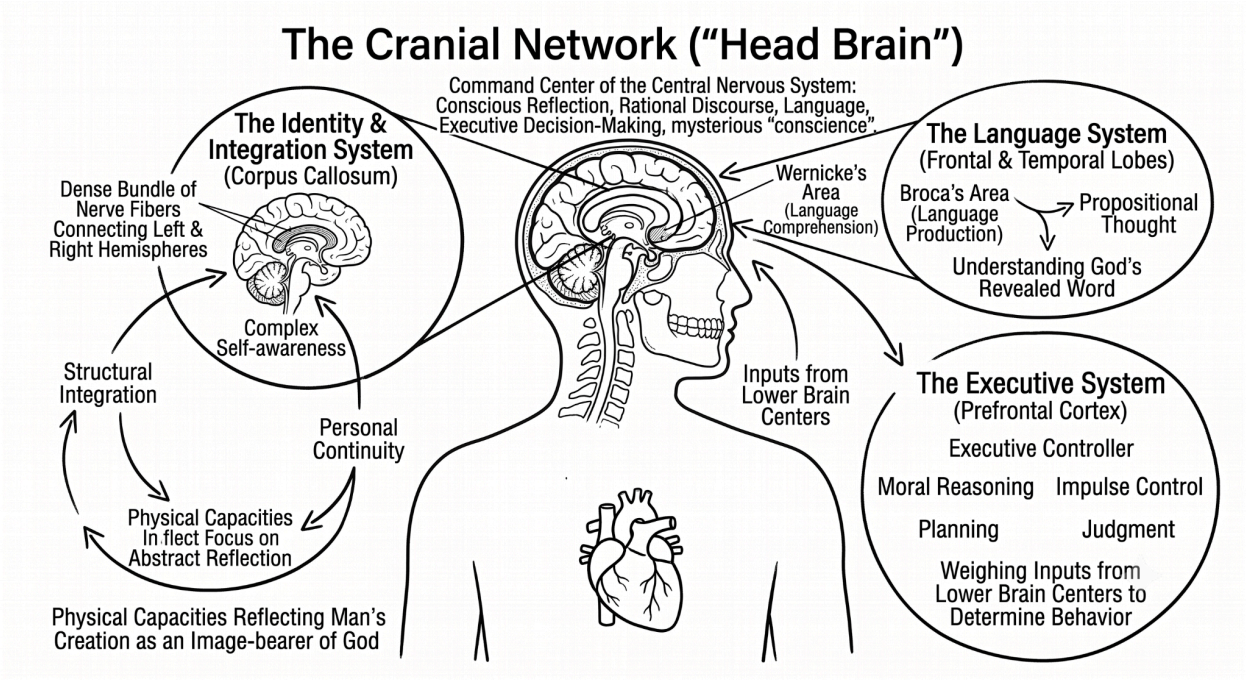
The Assembly System (Hippocampal Memory Integration): Sensory data and emotional responses are processed alongside the hippocampus (located in the brain's temporal lobe), which aids in consolidating memories. These stored physiological responses influence future emotional and physical reactions.

The heart brain functions largely beneath conscious awareness (subconscious), As we will see, each of the brains has a unique “language.” The language of the heart brain is desires–what we want. On the most basic level, what the heart brain wants is pleasure. It also wants to avoid pain. It is no coincidence that these words describe emotions and feelings. That is how we know what we desire.

But as we will learn later, even though feelings and emotions are the language of the heart brain, we must never stop testing and interpreting the message correctly.

2. The Cranial Network ("Head Brain")

What the Bible often calls the “soul” (Deuteronomy 6) or the “mind” we can call the head brain. It contains the physical organ in the cranium (skull) along with a vast network of nerves connecting it to every other part of the body.



The head brain itself weighs roughly three pounds and consists of soft neural tissue within the skull. It serves as the command center of the central nervous system. We can think of it as the physical seat of conscious reflection, rational discourse, language, and executive functions.

Even as the heart brain consists of three subsystems, key structures within the head brain include three;

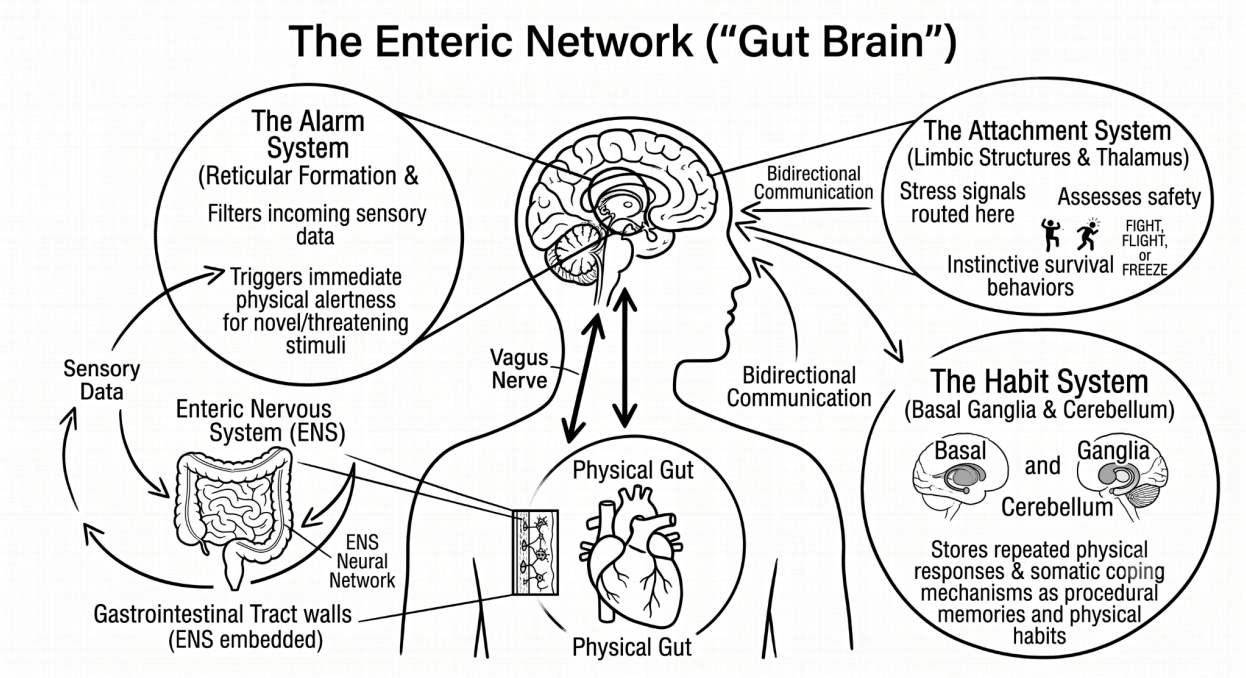
The Identity & Integration System (Corpus Callosum): The left and right hemispheres of the cerebrum are connected by a dense bundle of nerve fibers known as the corpus callosum. This structural integration allows for complex self-awareness, personal continuity, and abstract reflection—physical capacities that reflect man's creation as an image-bearer of God.

The Language System (Frontal & Temporal Lobes): Human thought and communication rely heavily on language centers (such as Broca's and Wernicke's areas). Internal dialogue ("self-talk") and propositional thought are mediated through these physical pathways, serving as the vehicle for understanding God's revealed Word. The more we learn about language the more we appreciate its significance, not only in how we communicate to others but in how we understand the world. It so happens that the vast majority of language in the head brain is non-verbal. Experts call it "metacognition"--what we identify as "thinking" and "talking to ourselves."

The Executive System (Prefrontal Cortex): Located behind the forehead, the prefrontal cortex governs moral reasoning, impulse control, planning, and judgment. It acts as the executive controller, weighing inputs from lower brain centers and determining physical behavior.

It is very possible that in God's design, this is where we can find the conscience. Though mammals have head brains it is important to emphasize how different they function in God's design. Though they have similar brain regions–corpus callosum, temporal lobes, prefrontal cortex–they are a fraction of the size and complexity. Only our corpus callosum gives us the capacity of self-awareness; only our temporal lobes can form symbolic interaction (words with meaning) and only our prefrontal cortex can seat the conscience–what God calls the "law written on the heart."

3. The Enteric Network ("Gut Brain")



The gastrointestinal tract possesses its own extensive neural network, known scientifically as the Enteric Nervous System (ENS). Is it actually a brain? Yes! Particularly when we define a brain as a processing center for internal information. Embedded in the walls of the long digestive tract, the ENS communicates bidirectionally with the central nervous system via the vagus nerve and the brainstem.

This system plays a vital role in survival, habit formation, and physical alerts:

The Alarm System (Reticular Formation & Brainstem): Located at the base of the skull, the reticular activating system filters incoming sensory data. Novel, unexpected, or threatening stimuli bypass standard processing to trigger immediate physical alertness.

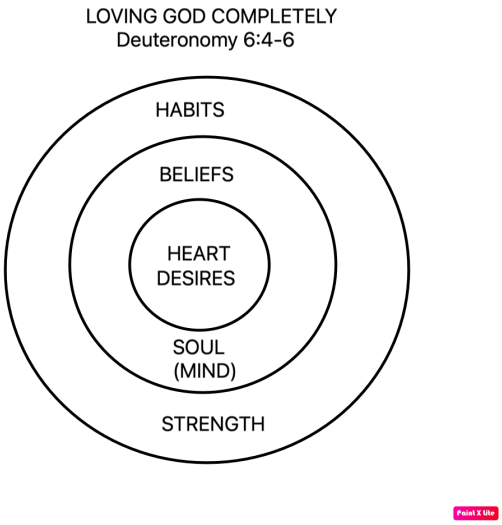
The Attachment System (Limbic Structures & Thalamus): Incoming stress signals are routed through the thalamus and amygdala, assessing safety and driving instinctive survival behaviors (fight, flight, or freeze).

The Habit System (Basal Ganglia & Cerebellum): Repeated physical responses and somatic coping mechanisms are stored as procedural memories and physical habits.

Because the enteric nervous system generates immediate physical sensations (e.g., "gut feelings" or visceral anxiety), it heavily influences our emotions and can impact our choices as well. While these physical signals perform vital biological survival functions, they are not fool proof. Children are often afraid there is a monster under the bed in part because of inaccurate messages in the gut brain. As adults we carry many of those errant messages for the rest of our lives. God never intended gut feelings to serve as moral guides.

Loving God With the Triune Brain

The Bible does not use the language of neuroscience to describe the way we feel, think or act. Even so, as the last sections demonstrate, there is significant insight with application to the words in Deuteronomy. Loving God with all our heart, soul and strength can be described as the way God intended the triune brain to work. Before Adam sinned (Genesis 3), that was how Adam's brain worked. After he sinned, the various functions of each brain were broken and subject to greater brokenness. Even so, God's "good news" was to forgive his sin and restore his brokenness, evident in the Deuteronomy passage.



Adam's Heart Brain - Sinful Desires

A Broken Apprehension System (Sensory Input): Having used his senses sinfully (to eat the fruit), his broken apprehension system would always risk focusing on the wrong things, feeding sinful desires.

A Broken Appraisal System (Autonomic & Limbic Axis): Though God designed the appraisal system with various neurochemical releases (such as epinephrine, dopamine, and serotonin), having experienced pain and pleasure in his temptation and fall, these signals would be unreliable and prone to error. He would now always be tempted to desire pleasures he should not want.

A Broken Assembly System (Hippocampal Memory Integration): Sensory data and emotional responses were still processed alongside the hippocampus but the actual selection and organization was now broken and subject to memory integration errors.

Adam's Head Brain - Sinful Beliefs

Adam's head brain continued to function, however it was now disposed to false beliefs about himself, God, circumstances and others.

A Broken Identity & Integration System (Corpus Callosum): Adam's sense of self (identity) was corrupted by his sin. He would always be tempted to view his own significance (self-image) incorrectly. False beliefs about himself would mean he was tempted to have false beliefs about God and others also.

A Broken Language System (Frontal & Temporal Lobes): The majority of Adam's language was nonverbal, in his private thoughts (mind). Though he undoubtedly had a superior ability to speak and understand, because of its connections to the heart brain, he would be tempted to distorted internal and external messages. Language is the architecture of beliefs in the head brain.

A Broken Executive System (Prefrontal Cortex): Perhaps the most significant impact was Adam's executive system, particularly as the seat of his conscience. God intended conscience to be an ever present reminder of our obligations as creatures to our creator. When he failed, he would experience guilt and shame. He would often avoid the voice of conscience and bring even more guilt and shame.

Adam's Gut Brain – Sinful Habits

A Broken Alarm System (Reticular Formation & Brainstem): Because the alarm system filters incoming sensory data, novel, unexpected, or threatening stimuli bypass standard processing to trigger immediate physical alertness. Adams' broken alarms would often misinterpret the sensory data. He would fear things he should not and not fear things he should.

A Broken Attachment System (Limbic Structures & Thalamus): His attachment system was designed to drive him to secure relational connections when he was in trouble–particularly to God himself. His broken system meant he would tend to look for safety and security from danger in the wrong places.

A Broken Habit System (Basal Ganglia & Cerebellum): Repeated physical responses and somatic coping mechanisms were stored as procedural memories and physical habits in his basal ganglia and cerebellum. Sinful habits would be stored as procedural memory and particularly difficult to overcome.

Why This Matters for Our Daily Lives

Loving God with All His Heart, Soul and Strength

Though Adam loved God, it was never with all his heart, soul and strength. None of the Bible's great heroes could either. Nor can we.

Triune brain theory can help us appreciate why. To do so would require that we fix our broken hearts. And, as we've seen, they are not only broken but corrupted by sin. We may be able to relearn particular habits in the gut brain on our own, think different thoughts and beliefs in the head brain, and even change some of our desires in the heart. However, we are utterly incapable of fixing everything, and totally unable to address the "greatest problem of life" on our own: the sin that indwells us.

The good news of the Bible is that what we could not do, God sent his son to accomplish for us. Paul described it as two laws: the law of our natural, biological life as children of Adam (the law of sin) and the new law "of the Spirit of life in Christ Jesus."

There is therefore now no condemnation to those who are in Christ Jesus, who don't walk according to the flesh, but according to the Spirit.[a] 2 For the law of the Spirit of life in Christ Jesus made me free from the law of sin and of death. 3 For what the law couldn't do, in that it was weak through the flesh, God did, sending his own Son in the likeness of sinful flesh and for sin, he condemned sin in the flesh, 4 that the ordinance of the law might be fulfilled in us who don't walk according to the flesh, but according to the Spirit. 5 For those who live according to the flesh set their minds on the things of the flesh, but those who live according to the Spirit, the things of the Spirit. 6 For the mind of the flesh is death, but the mind of the Spirit is life and peace; 7 because the mind of the flesh is hostile toward God, for it is not subject to God's law, neither indeed can it be. 8 Those who are in the flesh can't please God (Romans 8:1-8).

Understanding the intricate unity of God's design of our bodies and minds matters because it rescues our daily life of faith and obedience from the dangers of "gnosticism." For millenia, what is called "gnosticism" has lurked in the background of Christian belief as a subtle or outright rejection of the body as less important than the soul. This was never God's idea! A correct appreciation of creatures made in his image requires valuing his choice to give us bodies.

Too often, Christians compartmentalize spiritual life also, separating thoughts and feelings in daily life from what is thought to be matters of faith and religion. When they do, they risk treating faith as a mere matter of "head knowledge" while ignoring the visceral, physical realities of embodied fatigue, anxiety, and automated habits.

By recognizing that our desires, thoughts, and physical routines (heart, mind, and strength) are thoroughly integrated yet comprehensively fallen, we see that sanctification is not merely a cognitive exercise of positive thinking. Instead, it demands a holistic, grace-driven reordering of

our entire embodied existence. Because Christ redeemed both soul and body, our daily rhythms—from the physiological stress responses in our gut to the focused intent of our prefrontal cortex—are fields for Holy Spirit-empowered transformation, wherein every pulse and neural pathway is consecrated to love God fully.