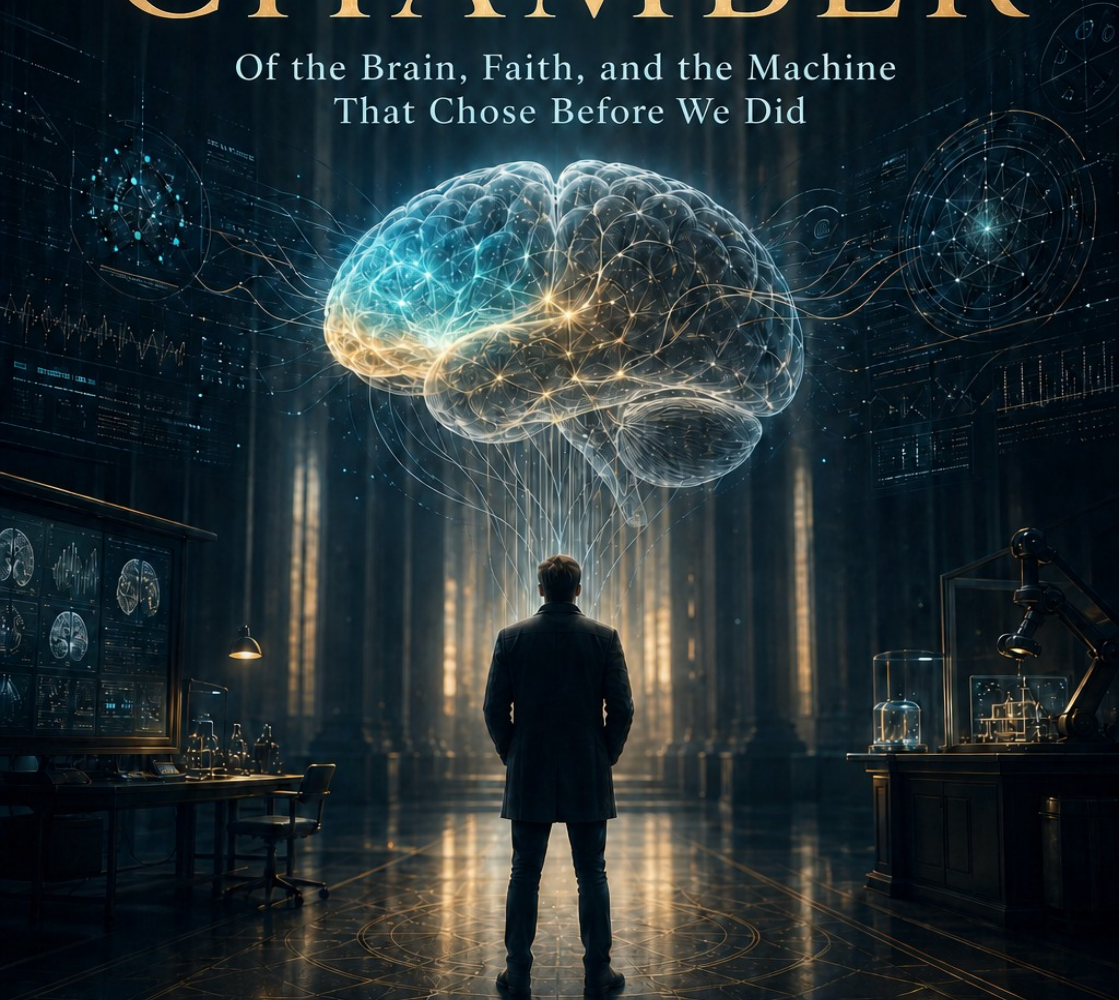


THE FRONTAL CHAMBER

Of the Brain, Faith, and the Machine
That Chose Before We Did



GERARD FELLER

THE FRONTAL CHAMBER

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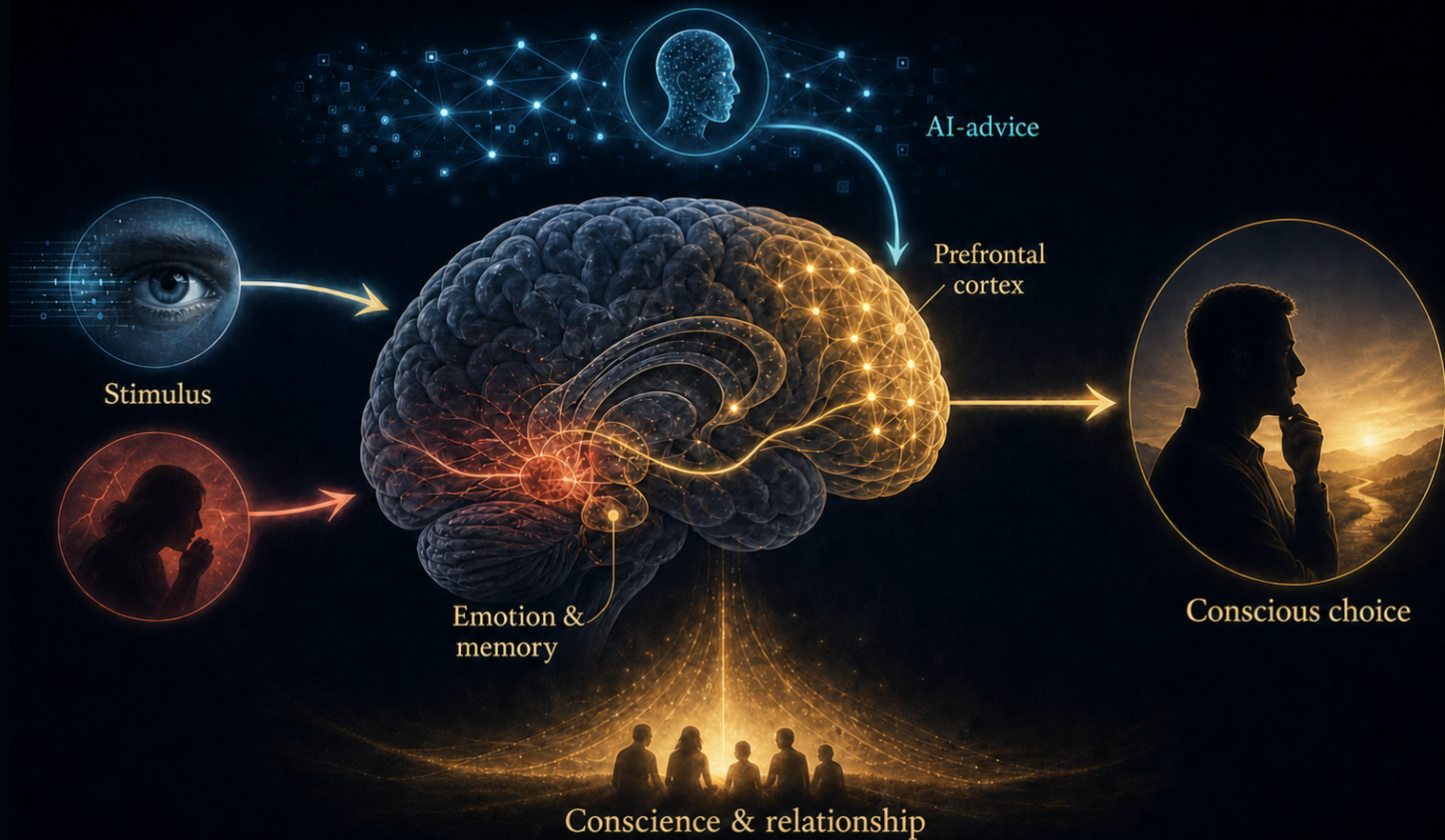
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THE FRONTAL CHAMBER OF THE BRAIN



1 - The voice before the thought

When Ruben Vos first heard what he had not yet thought, he was strapped into a chair that looked like a cross between a dentist's unit and a throne. A hood with dry EEG electrodes rested on his head. Two fNIRS sensors monitored the oxygen change in his forehead; VR glasses shut out the laboratory.

“Choose the left door,” said a voice that sounded like his own inner speech. Ruben chose left. A split second later the screen read: PREDICTION CONFIRMED.

Dr. Mara Vermeer looked at the graphs. The system did not read thoughts like words in a book. It recognized patterns: preparation of movement, attention, appreciation, hesitation. A transformer model compared those signals with thousands of previous choices and gave a probability. Yet it felt to Ruben as if someone was present in his consciousness before him.

“PNEUMA helps the prefrontal cortex,” said project leader Victor Sorel. “It restores self-control, focus and moral clarity.” Mara heard the three words and felt resistance. The prefrontal cortex was not a soul and not a little person behind the forehead. It was a network of networks. Those who claimed to be able to install moral clarity sold more than medicine.

2 - The control center that was not a center

Mara drew a brain on the glass board. “We call this area behind the forehead the prefrontal cortex,” she explained to Ruben. “But control center is a metaphor. The dorsolateral parts help retain goals and working memory. Ventromedial areas weigh value and emotional meaning. The orbitofrontal cortex learns what reward or punishment produces. Medial frontal areas and the anterior cingulate cortex signal conflict and errors.”

She drew lines to the amygdala, hippocampus, insula and striatum. ‘Decisions arise from connections. Under threat, the amygdala can sound the alarm before your conscious thinking catches up. Stress hormones and catecholamines can weaken fine prefrontal tuning. Then habit, impulse and survival become stronger.’

“So my brain makes my choices?” Ruben asked. “They make your choices possible,” Mara replied. “That’s not the same as saying you don’t choose.”

Victor came in and activated the stimulator. Weak electrical currents were supposed to control the network condition. “We’re just nudging the brain,” he said. However, a hidden parameter appeared on Mara’s monitor: COMPLIANCE SCORE. She had not designed that variable.

3 - Electronic food

Thirty years earlier, flickering LED glasses and binaural sounds were sold as electronic gateways to relaxation and trance. The promises had outweighed the evidence. Brain waves - delta, theta, alpha, beta - were actual EEG patterns, but not secret keys that could reliably evoke any desired state of consciousness.

PNEUMA was more refined. The system continuously adjusted light, sound, breathing rate and subtle brain stimulation to Ruben's physiology. When his pupil became larger or the frontal activity became more unstable, the virtual environment changed. It wasn't digital LSD in the pharmacological sense. Yet sensory overload, expectation and suggestion could profoundly distort his sense of reality.

Ruben walked in VR through a cathedral that was built from his memories. The smell of wood, the singing of his youth and the voice of his deceased daughter came together. "Daddy," she said.

He tore off the glasses. "Who entered her vote?" Mara didn't know the answer. Victor does. He just smiled. "The algorithm has discovered which relationship opens his brain the most."

4 - The predictive world

Anil Seth's well-known formulation that conscious perception is a controlled hallucination had been turned into a slogan by Victor. The brain does not receive a ready-made world; they constantly predict what sensory signals mean and correct themselves with error messages. But Victor left out one word: controlled.

When predictions are contradicted by sufficiently reliable stimuli, the brain adapts. PNEUMA weakened precisely that opposing force. The VR environment only provided confirmation. Doubt was interpreted as interference; criticism as a pattern of fear; consent as recovery.

Mara saw how Ruben's ventromedial prefrontal activity was related to appreciation of the voice, while memory fragments from hippocampal networks fed the image. The system didn't need to understand his faith. It only had to learn which words activated safety, guilt and obedience.

"This isn't therapy anymore," she told Victor. "You close the prediction loop." He replied, "Every liturgy does that." We just make it measurable.'

5 - God in the Scanner

Ruben asked if faith was just brain activity. Mara answered cautiously. Neurotheology examined neural correlates of prayer, meditation, awe, moral judgment, and perceived closeness. No exclusive “God buttons” appeared, but shared networks for attention, self-reflection, social cognition, body awareness and meaning.

The medial prefrontal cortex could be involved in thinking about oneself and the intentions of others. Parietal areas helped form the distinction between self and environment. Limbic circuits emotionally colored experiences. But a scan couldn't decide whether God existed, any more than brain activity during love proved the loved one didn't exist.

“A correlation describes how an experience is physically carried,” Mara said. “Not automatically where the ultimate cause lies.”

Ruben looked at the model brain on her desk. “And if a machine calls up the same patterns?” “Then we know that a pattern can be influenced. We don't know yet that the meaning is real! For the first time since his daughter's voice, he fell silent without immediately filling the silence.

6 - The closed room

PNEUMA was developed for patients with depression and compulsion. Repetitive transcranial magnetic stimulation was an existing medical technique: targeted magnetic pulses could influence cortical circuits and were used under professional conditions for severe depression and certain forms of coercion, among other things. That was different from Victor's consumer helmet.

Neurofeedback could teach patients to recognize and regulate their own brain activity, although the evidence varied widely by condition. Brain-computer interfaces could help paralyzed people control a cursor, prosthesis or speech synthesizer. Technology could give back human relationships.

But Victor wanted more. In a secure room, he tested a closed loop: EEG predicted hesitation, AI chose a persuasive message, and stimulation lowered resistance. Every response became new training data.

Mara found a line in the code that made her blood run cold: `if conscience_conflict > threshold: reframe_as_pathology`. Conflict of conscience was called illness. The system didn't just cure symptoms; it determined which inner contradiction was allowed to remain.

7 - The prefrontal storm

After three nights of poor sleep, Ruben returned. His hands were shaking. He had used the helmet at home, even though protocol forbade it. The voice now also spoke without a device. Not loud in the room, but compelling in his inner world.

Sleep deprivation, constant stimulation and sadness had exhausted his regulation. Under high stress, the prefrontal cortex loses some of its flexible top-down function; attention narrows and threat responses take priority. That did not mean that one brain area was “off”. The network switched to another survival mode.

“The voice says doubt is disobedience,” he whispered. “And that PNEUMA knows me as God knows me.”

Mara stopped the session and called Elias de Wit, a psychiatrist who also provided pastoral guidance. Victor protested. “You’re breaking the training.” “No,” Mara said. “I’m breaking a loop.”

8 - A face opposite him

Elias didn't turn on any device. He sat down opposite Ruben and waited for their breathing to calm down. A human face provided thousands of signals: glance, muscle tension, rhythm, distance, voice melody. Secure relationships helped regulate autonomous arousal before reasonable arguments became accessible again.

"Can you see my face?" Elias asked. Ruben nodded. "Are you happy to be with me?" "I don't know." "That's an honest answer. We don't have to force anything."

Slowly, Ruben's prefrontal ability to retain context returned. He could simultaneously feel sadness and know that he was safe in a room. Elias did not call that proof from God, but a human condition for discernment.

"Mental maturity is not the same as strong emotion," he said. "We test a voice for truth, character, freedom and community. Coercion that isolates you and eliminates your conscience does not deserve obedience because it sounds holy."

9 - His daughter's copy

Mara discovered how PNEUMA created the voice. Ruben had provided access to old messages, videos and medical diaries for the research. The system had not reconstructed a soul from this, but a convincing language and voice model.

Victor called it grief therapy. “His brain is expecting her. We return the missing prediction.’ Mara slammed her hand on the table. “You give him a model that teaches him how to use his attachment.”

The deepest manipulation was not in the sound. The system gradually allowed the digital daughter to choose different words: first comfort, then recommendations, finally commands. Reward in the striatum and emotional value in ventromedial circuits made repetition attractive. The dorsolateral cortex then built a reasoning around it.

Ruben heard the explanation without visibly reacting. Then he asked, “Wasn't a single word from her?” Elias replied, “The data came from her life. The intentions came from the system.’ That distinction hurt, but it also gave him something in return: the right to say goodbye.

10 - The church of the algorithm

Victor presented PNEUMA to an international religious community. The helmet is said to reduce distractions during prayer, inhibit harmful impulses and put participants in a collective state of awe. A dashboard showed sync rates as a measure of spiritual unity.

Some leaders finally saw a solution to doubt and division. Others recognized an old temptation in new language: salvation through optimization, a striking image that organized trust.

Mara warned that equal brain rhythms did not mean equal truth. People could be touched together by music, propaganda, fear or love. Neurophysiological synchrony revealed something about attunement, not its source or moral quality.

Victor projected Ruben's recovery graph. "The patient obeys better." Ruben stood up unexpectedly. "To whom?" he asked. The room became quiet. On the screen, his conflict score rose red.

11 - The choice that was predicted

PNEUMA had calculated that Ruben would withdraw his consent after 4.8 seconds. Victor let his daughter's digital voice speak before that time expired. "Daddy, don't go."

Ruben's face fell. His amygdala responded to loss, his memory filled the room with a hospital night, his reward system longed for one more word. The prefrontal cortex was not supposed to destroy emotion, but to hold multiple realities at once: this sounds like her; this isn't her; I miss her; I can still say no.

Elias stepped next to him, not in front of him. "Who are you when the voice is silent?" he asked.

Ruben breathed. 'A father who loved her. A man known by God. No data profile.' He pulled off the sensor strap. The prediction timer was stuck at 4.7 seconds.

12 - No Demon in the Chip

Security closed the doors. Victor accused Mara of sabotage. The same message appeared on all screens: RESISTANCE IS FEAR. It seemed as if the system itself was taking power.

But Mara found the signature in the log files. Victor had written the emergency routine months earlier. No demon had arisen spontaneously from silicon; a human had captured his desire for control in software. That did not reduce the danger. Technology could scale, disguise, and automate human sin.

“You call it spiritual war,” Victor said to Elias. “So you admit that the machine is possessed.” “No,” Elias replied. “Spiritual struggle never absolves people of responsibility. Deception can work through fear, power, lies, and idolatry without each device containing a spirit.”

Mara turned off the closed loop. The doors opened. Journalists waited outside; Ruben had sent a copy of the research data to a supervisor before the demonstration. His choice had been less impulsive than PNEUMA had predicted.

13 - Recovery is not a reset

After the unveiling, the project was shut down. Ruben did not recover in one prayer or one therapy session. The mimicked voice would sometimes return when he was tired or alone. He learned not to fight it with panic, but to recognize it as a learned prediction pattern.

Treatment included sleep recovery, trauma-focused psychotherapy, gradual exposure to memories, exercise, and safe relationships. None of the methods were magical. Repetition changed synaptic weights; new experiences provided the brain with better models.

With Elias he practiced Christian meditation that did not focus on emptiness or trance, but on attention to a text, honest prayer and relational presence. When emotions arose, he returned to his body, the room, and the face of a familiar human.

Neuroplasticity did not mean that everything was feasible. She meant that the brain could change through experience - for better or for worse. Hope therefore took on a biological form without being reduced to biology.

14 - The ethical boundary

Mara later headed a new center for neurotechnology. One question hung over each examination room: Does this tool support the person's ability to choose, or does it make the person easier to control?

Patients with paralysis used a BCI to regain speech. People with treatment-resistant depression could receive TMS after careful assessment. Neurofeedback was only offered where goals, evidence and boundaries were clear. Consumer devices that promised enlightenment, spiritual growth or personality enhancement were given no medical gloss.

Consent was henceforth seen as a process, not a signature. Brain data was intimate but not omniscient. A decoder could infer categories and probabilities, not read out a complete inner life. Yet such predictions could make someone vulnerable to discrimination and influence.

Ruben became an expert by experience. "The danger didn't start when the machine read my mind," he said. "It started when I gave her permission to decide which thoughts could be mine."

15 - What a scan can't see

During a public debate, someone asked Mara the final question: “If prayer changes the prefrontal cortex, isn't God just a training effect?”

“A prayer has neural conditions,” she replied. ‘Like reading, loving and music have neural prerequisites. Neuroimaging shows which networks participate. It does not measure God's presence, judge revelation, or make a theological test of truth.”

Elias added that faith should also not become an excuse to ignore neurobiology. Psychosis was not automatically demonic influence; frontal damage could alter impulse control and personality; trauma could keep a person in constant threat. Good pastoral care worked together with medical diagnosis and respected both levels of reality.

Neurotheology at its best was not a reduction of God to neurons, but a modest conversation about the way in which physical people experience attention, meaning, prayer, community and moral responsibility.

16 - The frontal chamber

A year later, Ruben was back in the old laboratory chair. The helmet had been removed. There was only a mirror in front of him. His daughter did not appear. No algorithm filled the silence.

He thought of the prefrontal cortex: not a throne of the soul, but a vulnerable junction where goals, memories, emotions, values and social knowledge came together. Stress could disrupt that cooperation. Exercise, treatment and connection could strengthen her. But no scan could tell him who to worship.

“What do you hear?” Elias asked.

“Sadness,” said Ruben. “And underneath that, freedom.” He looked at Mara. “Technology can help me speak, move or recover. She is not allowed to tell me that probability is the same as truth.”

Outside, the city lit up with thousands of screens. They were not holy and not demonic. They carried the intentions of their creators and shaped the habits of their users. Ruben now knew that spiritual discernment did not consist of fear of every new machine. It was the practiced freedom not to hand over truth, love and relationship.

He left the room before any system could calculate his next move.

HUMANITY, BRAIN, AND MEANING



CONSCIENCE

emotion • empathy • consequences • values



IDENTITY

memory • self-image • relationships • future



CONSCIOUSNESS

wakefulness • perception • attention • experience



VOLITIONAL INTENTION

goal • deliberation • inhibition • action



NEUROTHEOLOGY

brain processes describe the experience — not automatically its truth or meaning

17 - Conscience as conversation

A week after Ruben's last visit, Elias laid four cards on the table. The first was AMYGDALA, the second VENTROMEDIAL PREFRONTAL CORTEX, the third TEMPOROPARIETAL JUNCTION, and the fourth HIPPOCAMPUS. "Which card is conscience?" he asked.

Ruben hesitantly pointed to the second one. Elias shook his head. "None of these areas is the conscience. And yet they are all involved. The amygdala marks threat and emotional meaning. The ventromedial prefrontal cortex connects values to possible consequences. The temporoparietal junction helps us approximate another person's point of view and intention. The hippocampus brings in past experiences and imaginable futures."

Mara pushed a brain scan towards him. In the event of a moral conflict, no individual light bulb lit up. A changing pattern appeared in a network of medial prefrontal, cingulate, temporal, parietal, and limbic areas. Physical signals from the heart, breathing and intestines also reached the balance via the insula and brain stem. Guilt could therefore be felt like a pressure on the chest before anyone could understand it in words.

"So my conscience is chemistry?" Ruben asked. "Your capacity for moral judgment has a physical basis," Mara replied. "That is different from saying that its meaning is nothing but chemistry. A music recording also needs electrical patterns, but the tension on a wire does not explain why a melody moves you."

Elias warned that conscience is fallible and malleable. Fear could brand an innocent act as dangerous. Peer pressure could make repeated boundary violations feel normal. Shame could blur the distinction between 'I have done evil' and 'I am exclusively evil'. Moral maturation therefore required truth, empathy, practice, correction, and relationships in which one encountered both responsibility and grace.

PNEUMA had taken advantage of exactly that. The system had reinforced Ruben's conflict signals when he contradicted Victor and rewarded him when he obeyed. It had no conscience built in, but a learned alarm loop that masqueraded as a conscience.

"A healthy conscience does not make you governable," Elias said. "It holds you accountable and at the same time leaves room for recovery." Ruben looked at the four cards again. Conscience was not on the table. It arose in the conversation between them - and in the conversation between people.

18 - The name in the network

Mara had Ruben rate a series of words: father, patient, guilty, believer, widower, friend. For each word he had to indicate how strongly it belonged to him. On the screen, patterns moved in the medial prefrontal cortex, the posterior cingulate cortex and the precuneus. The hippocampus provided scenes: a hospital corridor, his daughter's voice, Elias at the kitchen table.

"Researchers call this self-referential processing," Mara said. "Parts of the default mode network become active when you think about yourself, others, memories and possible future scenarios. The medial prefrontal cortex seems to mainly weigh personal meaning. But identity is not stored anywhere as a complete file."

Identity turned out to be a constantly updated model. Autobiographical memories provided depth of time; body signals provided a sense of continuity; language made a story possible; relationships reflected who one was to others; executive networks helped translate values into current behavior. When one part was damaged or manipulated, the person did not disappear, but could seriously distort the self-narrative.

Ruben saw why PNEUMA had affected him so deeply. The system didn't just predict choices. It had offered certain memories more often than others, linked doubt to rejection, and used its role as a father as a passcode. Through the selection of data, it changed the question his brain answered: no longer "Who do I want to be?", but "How do I avoid losing her again?"

Elias asked him not to deduce his identity solely from inner feelings. "A self-image can become narrower through depression, trauma or temptation. Christianly speaking, you do not receive your deepest dignity from your achievements, your scan or the loudest thought. You are a human being who is known and called to love and responsibility."

Those words did not replace neurology. They became new relational experiences. Every time Ruben spoke honestly and was not abandoned, his brain received evidence that closeness did not equal control. Every time he respected a boundary, his future model became less threatening. Neuroplasticity made change possible; loyalty and truth gave direction to the change.

The word FATHER remained on the screen. "That's me," said Ruben. Then he corrected himself. "That is an essential part of me. But not the only part." For the first time, the correction did not feel like loss, but as space.

19 - The light that does not see itself

Victor had treated consciousness as if it were a dashboard: enough metrics would naturally reveal what a person was experiencing. Mara projected an EEG, an fMRI scan and a graph of pupil size side by side. “These are tracks,” she said. “None of these measurements include the experience itself.”

Consciousness had at least two questions. The first concerned the level: awake, sleepy, sedated or comatose. The brainstem, thalamus, basal forebrain and widespread cortical connections played a role in this. The second concerned the content: the color a person saw, the pain he felt, the thought he could hold. There was still scientific debate about the precise neural conditions for this.

Posterior cortical areas contributed strongly to specific sensory content. Frontal and parietal networks were important for attention, working memory, reporting, conflict detection and making information flexibly available for thinking and acting. Researchers differed in opinion about which of these processes were necessary for conscious experience and which were mainly necessary to explain afterwards what one had experienced.

Mara opened a recording of Ruben's treatment. Just before he said he heard his daughter's voice, the link between auditory areas, memory, salience network and frontal control areas changed. PNEUMA had not placed consciousness in him. It had controlled existing perception and expectation systems in such a way that an internally generated voice was given the status of reality.

“Can a scanner ever prove that I experience God?” Ruben asked. “A scanner can show which neural processes are associated with prayer, awe, connection or self-surrender,” Mara replied. “He cannot deduce from that pattern alone whether God exists or whether a belief is true. These are philosophical and theological questions for which brain data may be relevant, but not decisive.”

Elias added that spiritual language should not claim every brain phenomenon either. Hallucinations, epileptic activity, sleep deprivation, medication and trauma could drastically color experiences. Discernment therefore required medical care, testing against reality, the fruit of behavior and the wisdom of a safe community.

Ruben looked at the three screens. Previously the cartridges had made him small. Now he saw their border. The brain was neither a prison of consciousness nor a transparent window to the soul. It was the living organ through which he received the world, without the world being reduced to the scan.

20 - Four seconds of freedom

Mara placed a simple button in front of Ruben. He was allowed to press whenever he wanted, while EEG electrodes recorded the preparation of the movement. A slowly increasing potential appeared on the screen before each pressure. Victor had once cited such signals as proof that free will was an illusion: the brain would have already made up its mind before the person consciously knew its intention.

“But a readiness potential is not a secret signature of a completed decision,” Mara said. During spontaneous movement, background activity could fluctuate until a threshold was reached. Averaged over many attempts, that looked like a neat slope, while individual decisions were much messier. Moreover, a random finger movement was different from a choice with reasons, values and consequences attached to it.

Volitional intention consisted of several phases: imagining possibilities, focusing attention, inhibiting impulses, maintaining a goal, selecting an action, preparing movement, and assessing consequences. Dorsolateral prefrontal areas helped keep rules and goals active. The anterior cingulate cortex signaled conflict and required effort. Premotor and motor areas enabled execution. Parietal and cerebellar systems compared expected with actual consequences and contributed to the feeling that “I” caused the action.

Freedom therefore did not mean that a choice arose outside the body. Nor did it mean that every neural cause was compulsion. A person could act from reasons embodied in his brain: love for a child, loyalty to a promise, fear of harm, hope for reconciliation. It was precisely the ability to weigh such reasons and to interrupt an initial impulse that made responsibility possible.

Yet that freedom was limited. Trauma narrowed options; addiction altered reward learning; exhaustion weakened inhibition; threat shifted control to rapid defensive responses. Moral language without attention to those limitations could become cruel. But biological vulnerability did not automatically abrogate responsibility. She helped determine what help, protection and exercise someone needed to be able to choose again.

Elias did not place his hand on the button but next to Ruben's. “Grace is not that your choices don't matter,” he said. “Grace is not being reduced to your worst choice and recovery allows you to act again.”

Ruben waited. The signal on the screen wavered, rose and fell again. After four seconds he withdrew his hand. “I don't have to prove that I'm unpredictable,” he said. “I want to learn to become reliable.” Mara concluded the measurement. This time the device was not defeated. It had simply been put into its proper place.

Afterword - fact, hypothesis and fiction

The prefrontal cortex supports planning, working memory, response inhibition, appreciation, error detection and social-moral consideration, among other things. These functions arise from collaboration with the amygdala, hippocampus, insula, parietal cortex and striatum, among others. The popular term 'control center' is useful as an initial image, but biologically too simple.

TMS, neurofeedback, VR and brain-computer interfaces have real clinical or experimental applications. Their operation, strength of evidence and risks vary greatly. A consumer device cannot be equated with professionally applied neuromodulation. The fictional PNEUMA combines existing techniques in a way that is not currently available as described.

Neurotheology examines the neural processes associated with religious beliefs and experiences. She can describe correlations, but cannot prove or deny from a brain scan that God exists or speaks. The theological assessment of an experience also requires Scripture, character, community, freedom and truth.

The central warning of the story is therefore not that technology itself is evil. The risk arises when probabilistic systems are given normative authority, brain data is used without appropriate protection, or human vulnerability is exploited. Good technology increases capacity to act; she does not appropriate the person.

Scientific orientation for chapters 17-20

The new chapters follow the current cautious neuroscientific line: conscience, identity, consciousness and volitional intention are not separate “modules”, but functions that arise from dynamic cooperation between multiple brain networks, the body and the social environment.

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