



Impact Statement

Benjamin Gu, Grade 10

***The Unfinished Map of the Mind*, 2026**

Watercolor, pen, colored pencil on paper, 24 x 18 inches

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Unsung Hero: Dr. Patricia Goldman-Rakic

Dr. Patricia Goldman-Rakic was a trailblazing neuroscientist whose groundbreaking work greatly advanced our understanding of the prefrontal cortex and its crucial role in higher cognitive functions like working memory and executive functions. Her innovative research, which integrated anatomical, electrophysiological, and behavioral methods, provided foundational insights into the neural basis of cognition. She identified distinct areas within the prefrontal cortex and demonstrated their specific roles in processes such as working memory and executive function.

I chose Patricia as my subject because today, brain science has entered an important period of development. The arrival of the AI era requires finding a connection and breakthrough between human self-exploration and continuous technological progress. Patricia plays a key role in this research, and her research findings have inspired subsequent medical and technological developments. At the center, she appears calm and grounded, her expression steady, almost knowing. I wanted her presence to feel human and approachable, in contrast to the complexity surrounding her. Her crossed arms suggest both confidence and quiet authority—a scientist who reshaped how we understand memory and cognition.

Behind her, I painted a blue-toned figure with the brain exposed, filled with mechanical and circuit-like imagery. This represents the inner workings of the brain—the systems she spent her life decoding. The wires, grids, and abstract machinery blend biology with technology, hinting at how her research bridged neuroscience and computational thinking. At the bottom of the composition, the four neuronal activity graphs are directly inspired by scientific research findings. Drawing from Goldman-Rakic's descriptions, I translated these signals into visual rhythm—treating spikes, waves, and intervals not just as data, but as a kind of quiet music. Through repetition, variation, and flow, I tried to express my own understanding of neural activity using the cadence of art. The lines rise and fall like pulses of thought, suggesting how memory and cognition are not static, but constantly moving, oscillating, and alive. The abstract patterns of points, lines, and planes throughout the composition are not random decorative elements—they are my visual language for the structure of the nervous system. Points represent individual neurons, the smallest units of thought. Lines extend from these points like axons and dendrites, forming pathways of communication. Planes, layered and intersecting, symbolize larger neural networks—regions of the brain where information is integrated, processed, and transformed.

These elements echo the principles of Neural network, where simple units connect to create complex systems capable of memory, reasoning, and perception. The repetition and rhythm of these patterns reflect how signals travel across synapses, constantly forming and reforming connections. Some lines are ordered and grid-like, suggesting structured cognition, while others are fluid and organic, capturing the adaptability and plasticity of the brain.

In the context of the neuroscience and the Artificial Intelligence era, these geometric abstractions also blur the boundary between biological and artificial systems. What appears as simple geometry becomes a bridge—linking human neural circuits with computational models and suggesting the emergence of brain–computer interface technologies.

I layered these patterns so that they overlap, intersect, and sometimes dissolve into one another, reflecting how thoughts are never isolated. Every idea is the result of countless interactions, both structured and spontaneous. Through this visual system, I wanted to show that beneath the complexity of the brain lies a hidden order—one that can be expressed through the simplest elements of art: point, line, and plane. At the same time, I wanted to acknowledge a deeper truth: human understanding of the brain is still limited. Even within the structured grids and vivid patterns, there are areas that remain unresolved, fragmented, or intentionally obscured. These spaces reflect the unknown—the parts of cognition we have yet to fully grasp. Scientists have given us an essential key, gradually unlocking the mysteries of human thought layer by layer, but the full picture is still unfolding.

In the context of neuroscience and the Artificial Intelligence era, the work also gestures toward a future shaped by brain–computer interface technologies. These emerging connections suggest that while our knowledge is incomplete, it is continuously expanding—bridging the gap between mind and machine.

Through this piece, I wanted to honor not only what has been discovered, but also what remains unknown. The painting becomes a space between certainty and mystery—a reminder that every answer in science opens the door to new questions, and that the exploration of the mind is an ongoing, ever-deepening journey.