

# CM- pre-course assignment

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## Summary - Chapter 1 and 3

The two chapters provided from *"Models of the Mind"* by Grace Lindsay embody an in-depth overview on the intersection of mathematics, logic, and neuroscience, elaborating on how these disciplines contributed and still contribute to understanding the brain.

This chapter introduces the concept of "extended cognition" offloading mental workload to the surrounding environment of the agent to improve mental efficiency. Mathematics is portrayed as the universal language that enables objective scientific inquiry. However, biologists face difficulties with mathematics, citing oversimplification and complexity as barriers. Ultimately, the necessity of mathematical models in understanding complex biological systems like brain functions is essential.

McCulloch and Pitts, who linked neuronal activity to Boolean logic, laid the groundwork for thinking about the brain in computational terms. The perceptron marked a significant step in artificial intelligence, moving from theoretical models to practical, learning systems applying McCulloch and Pitts theories. Practically implementing the theory of neural computation and thereby gaining a new ways of investigating the brain paved the way for the field of connectionism.

Moreover, it becomes evident that a complex structure like the brain cannot be fully understood by only one discipline of the sciences, but demands an interdisciplinary approach. Thus, solving the mystery of the brain can only be done by using all resources science can offer. That is why studying the brain inherently embodies modern alchemy.