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Chapter 8 Rationalism versus Empiricism in Design

Rationalism holds the belief that people naturally have the talent to design, even though they are likely to make mistakes in the beginning. Through proper education, they can obtain sufficient knowledge to make their design free of errors. In contrast to rationalism, empiricism contends that people make mistakes innately and repeat them again and again. They have to continue gaining experiences to correct their faults and iterate on the design. Relevant examples for both beliefs have always existed. Aristotle was a rationalist who thought that he was able to explore science through reasoning, although this led him to incorrect ideas about gravity. Galileo, on the other hand, was an empiricist, and he challenged Aristotle's theory through experimentations that led to the correct theory.

As for software design, these different thoughts have caused a dispute about whether people can design a complex software object correctly. A rationalist, Edsger Dijkstra, believed that people could achieve this. However, empiricists deny this thinking and are convinced that people are subject to making mistakes. The only way to accomplish flawless designs is to continually design, test, modify, and verify throughout the whole process.

The author is a complete empiricist and uses his own examples to demonstrate that there is a rare possibility of designing a program that runs flawlessly the first time. In my opinion, I entirely agree with the author's thoughts. In my previous experiences, not only in my academic studies but also in my work, creating an error-free program on the first try has never happened. Iterative development and repeated verification are necessary for me to make my design run correctly and satisfy the needs of the project.

Chapter 10 Inches, Ounces, Bits, Dollars – The Budgeted Resource

In any design, there must be at least one limited resource, and every member cannot overuse this resource. This reminds me of projects that I participated at my previous work places. Typically, the common budgeted resource in these projects was money. The supervisor who coordinated several function teams required each function leader to provide a weekly report of the deployed budgets, such as human resources, traveling fees, etc. All those items were related to money. He had to ensure that no one went over the budgets. This was difficult and stressful. However, the budgeted resources are not always unalterable. In my previous experiences, according to the urgency, some tasks needed to be done as soon as possible. Money was not rationed in these moments as the completion date was the first priority. In some situations, the technical limitation can be the budgeted resource. However, with the advance of technology, this budgeted resource also can be changed.

The author suggests that a project manager is the person who should control the budgeted resources. The person should identify the budgeted resources explicitly because sometimes they can be changed. This manager also needs to track these resources publicly. Also keeping buffer for the emergent cases are necessary. Finally, another point is that it is appropriate to allow only one person to control the budgeted resources.