

Chapter 1

Introduction to Framing and “Solving” Problems

ABSTRACT

The authors present an overview of the four phases of problem solving: (1) problem identification; (2) solution design; (3) implementation; and (4) evaluation. The four types do not of course exhaust all the various kinds of problems and types of complexity. They are merely a start. And it’s definitively not the case that one cannot prefer one or more of the types at the same time. Nonetheless, typically, one prefers one more than the others. Likewise, while all four phases are of equal importance, the authors are primarily concerned with the problem identification phase. For if we end up “solving the wrong problem(s) precisely,” then we only end up adding to complexity.

“The greatest challenge to any thinker is stating the problem in a way that will allow a solution.” — Bertrand Russell

Learning Objectives

- Define what constitutes a ‘mess’, ‘problem’, and ‘exercise’
- Differentiate a ‘mess’ from an ‘exercise’
- Identify steps to frame a ‘problem’
- List four different problem treatments
- Describe the three elements of Ends Planning
- Explain the Diamond Model’s four phases of problem solving

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INTRODUCTION

In a small coastal town named Seaville, residents began noticing peculiar changes. The local beach, where families spent their summers building sandcastles and picnicking, started shrinking. Each year, there was less and less space to lay out a beach towel, and some of the oldest beachfront cafes had to be abandoned due to increasing water levels. The town’s fishermen, who had fished the nearby waters for generations, began complaining about decreasing fish catches and the unpredictability of the weather.

Meanwhile, inland, farmers faced their own set of challenges. Unpredictable rain patterns meant that some months saw intense flooding, while others brought drought-like conditions. Crops that once thrived in Seaville started failing, and the apple orchard that held the town’s annual apple-picking festival produced fewer apples each year. Residents also started experiencing hotter summers and colder winters, with many elderly citizens finding it particularly challenging to cope with the extreme temperatures.

All these changes in Seaville weren’t isolated incidents but were interconnected symptoms of a larger issue: climate change. The rising sea levels affected the beach and fishing patterns, while the changing weather patterns impacted agriculture and daily life. Seaville’s challenges were not singular problems that could be tackled individually but a complex web of interrelated issues—a true “mess”. Addressing one concern without considering the others would only provide temporary relief and potentially exacerbate other problems.

Let’s delve deeper into the complex web of interrelated issues Seaville faces due to climate change:

Rising Sea Levels

Seaville: As the global temperatures rise, polar ice caps melt and cause sea levels to increase. In Seaville, this results in the gradual loss of beachfront. The increased salinity from seawater intrusion can contaminate freshwater sources and affect local aquifers, making freshwater less available for the community.

Farmer’s Fields: Farmlands near the coast experience saltwater intrusion, which damages the soil quality, making it less fertile and harder for crops to thrive.

Changed Rainfall Patterns

Seaville: Inconsistent rain affects the town’s infrastructure. Sudden heavy rainfall can cause local flooding, affecting homes and businesses, while prolonged dry periods can deplete local reservoirs, leading to water shortages.

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